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AUSTRALIA

E.L. 20/96 - Elliott Bay,

Southwestern Tasmania.

Annual Report 12/4/00 – 11/4/01

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Distribution:
1 - Mineral Resources Tasmania
1 - Exploration & Management Consultants Pty. Ltd
1 – McNeil Associates Pty. Ltd
1 – Tasmine Pty Ltd

Compiled By: Peter McNeil – Operations Manager
Exploration & Management Consultants Pty. Ltd.

Date: April, 2001

SUMMARY

E.L. 20/96 - Elliott Bay lies at the southern end of Tasmania's Mt Read Volcanics and it covers a sequence of Cambrian calc-alkaline felsic to mafic volcanics. The region has excellent prospectivity for VMS. and/or gold deposits. Enough surface exploration has been conducted in the area to tend to preclude the existence of a major (>10 million tonnes) near surface polymetallic orebody.

The prospectivity and potential for locating VMS orebodies at deeper levels is still considered to be excellent. Gold orebodies have not been systematically explored for in any detail and their prospectivity is also considered to be excellent.

Continued data review with some compilation was undertaken by Exploration & Management Consultants Pty Ltd during the term , along with attempts to obtain a JV partner. Billiton Exploration Australia undertook a limited review of the geological / geochemical data and reprocessed the existing geophysical coverage (except AEM) to search for and enhance any deep or subtle anomalies that were not discerned historically or were overlooked. Billiton's report (by Southern Geoscience Consultants) is appended.

ELA 21/99 was lodged jointly by Exploration & Management Consultants Pty Ltd (EMC) and McNeil Associates Pty Ltd to obtain a dominant ground position in the significantly under explored SW of Tasmania. All the prospective Mt Read Volcanics between Low Rocky Point and Macquarie Harbour (44 linear km strike length) are now packaged for joint venture or financing opportunities as the 'SMRV' – Southern Mount Read Volcanics Project (EL 20/96 + ELA 21/99). Reporting is still being undertaken separately.

Future work is proposed to involve undertaking a new generation aeromagnetic / E.M. survey, with target follow up (geophysical, geological and geochemical) and extensive drilling, following transfer of the license to Tasmine Pty Ltd and subsequent receipt of funds from a proposed IPO.

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6.0 CONCLUSIONS

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APPENDICIES

1. Report by Southern Geoscience Consultants Pty Ltd (B.L.Craven and W.S.Peters) for Billiton Exploration Australia Limited titled SIROTEM, Magnetic and Gravity Data Review

2. CD-ROM containing geophysical data, plan images and reports.

FIGURES

No.	Title	Scale
1.	Tenement Locality Plan Showing Prospects (on Tasmanian Lands Dept Topographic Base)	~178,000
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3.	Gold Anomalous Drainages, VG Sites & Prospect Locations	~178,000
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1.0 INTRODUCTION

E.L. 20/96 covers 13 km^2 (in discrete two blocks of 11km^2 and 2km^2 - reduced from 180 km^2) and is located on and near Tasmania's southwest coast (Figure 1). The license is accessible by the four wheel drive Low Rocky Point track from Birch Inlet on Macquarie Harbour (if you are quite competent on a 4WD bike) to the un-manned 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. The prospective rocks in the license are generally poorly outcropping and are often covered by short heath and thin (to 1m) Tertiary gravels.

Certain sectors of the south-west of Tasmania are World Heritage listed. The outcrops of Mt Read Volcanics (Figure 2) at Elliott Bay (and some Eo-Cambrian tholeiitic volcanics on the Sorell Peninsula) were specifically excluded from the World Heritage areas on the basis of their mineral prospectivity (and lesser wilderness values).

2.0 EXPLORATION PHILOSOPHY

Tasmine's exploration philosophy with respect to the general Elliott Bay region emphasises the necessity for a serious commitment to additional aerial geophysics and drilling. Targets ideally would have coincident geochemical and geophysical responses. Major RC drilling programs are warranted at various prospects but cannot be undertaken due to inaccessibility relating to the very poor condition of the Low Rocky Point Track. If this track were improved it would assist exploration immeasurably in the area and also recreation and tourism aspects.

The potential sources of gold in the EL 20/96 area (Figure 3) can be summarised as being the following:

- V.H.M.S. deposits
- Quartz-pyrite-chlorite-tourmaline alteration zones related to shears
- Quartz-gossanous zones associated with magnetite-chlorite alteration at granite margins.
- Stratabound replacement of coarse pyroclastics.
- Quartz veins
- Tertiary gravels

A number of conclusions have been reached regarding gold exploration and they are similar to concerns and conclusions noted by previous explorers, being:

- Gold is erratically distributed in soil samples and C horizon samples appear to be the best indicator of its presence or absence
- Detailed panning in creeks to locate the entry point of gold may be the best way to initially track it to source
- If C horizon sampling is utilised the sample should be obtained using a purpose built power auger. Post hole diggers are ineffective if the soil cover is > approximately 0.5 m
- Additional exploration in the region, specifically for gold, is still highly warranted.

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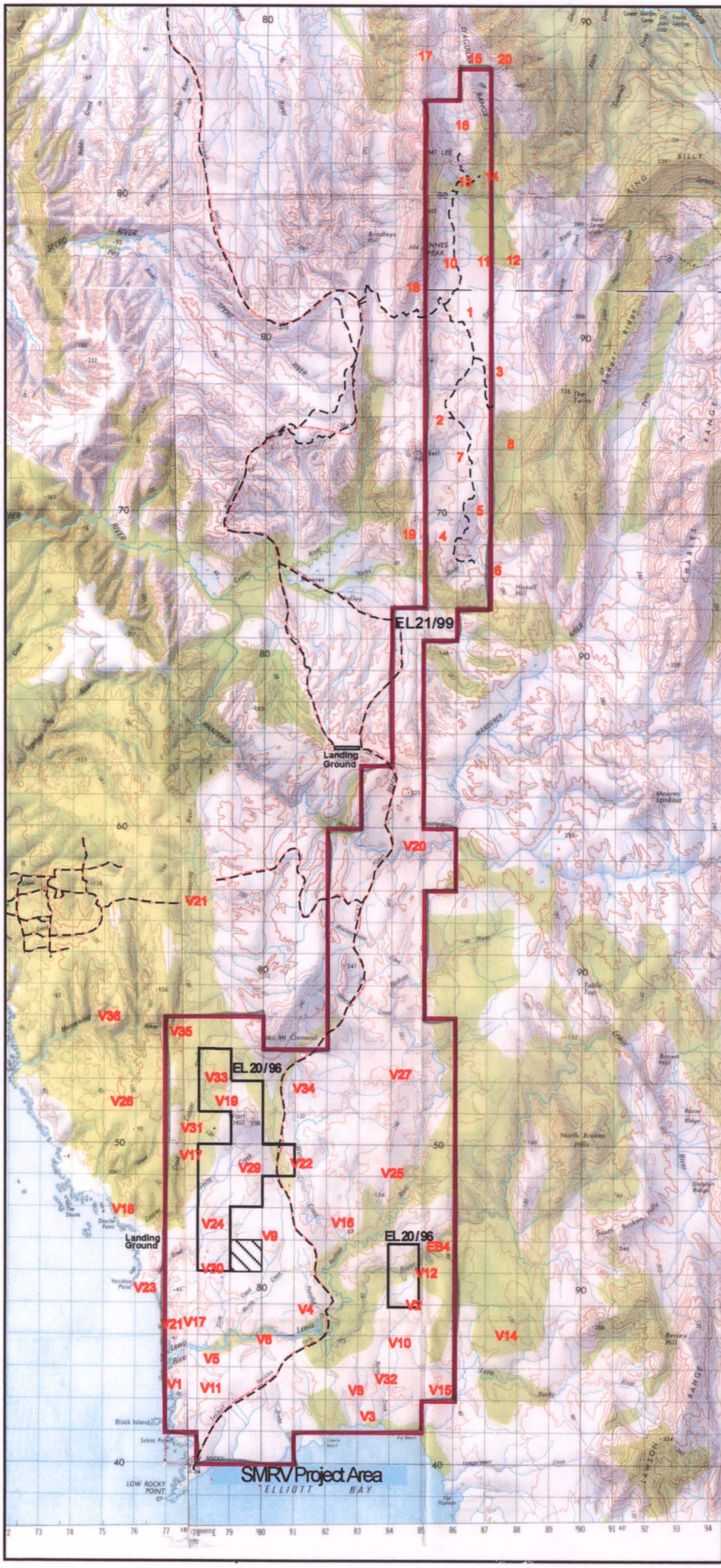

LEGEND

V19 Prospect Location

Blue - Streams

EL 21/99 Boundary

EL 20/96 Boundary

Tracks

Brown - Topographic Contours
Cream - Scrub, low vegetation
Green - Dense vegetation

5 cm

N

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EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
SW Tasmania - SMRV Project

Tenement Locality Plan Showing Prospects (on Topographic Base)

Scale - As Indicated

Km

Compiled: P. McNeil	Date: Feb 2001	PLATE:
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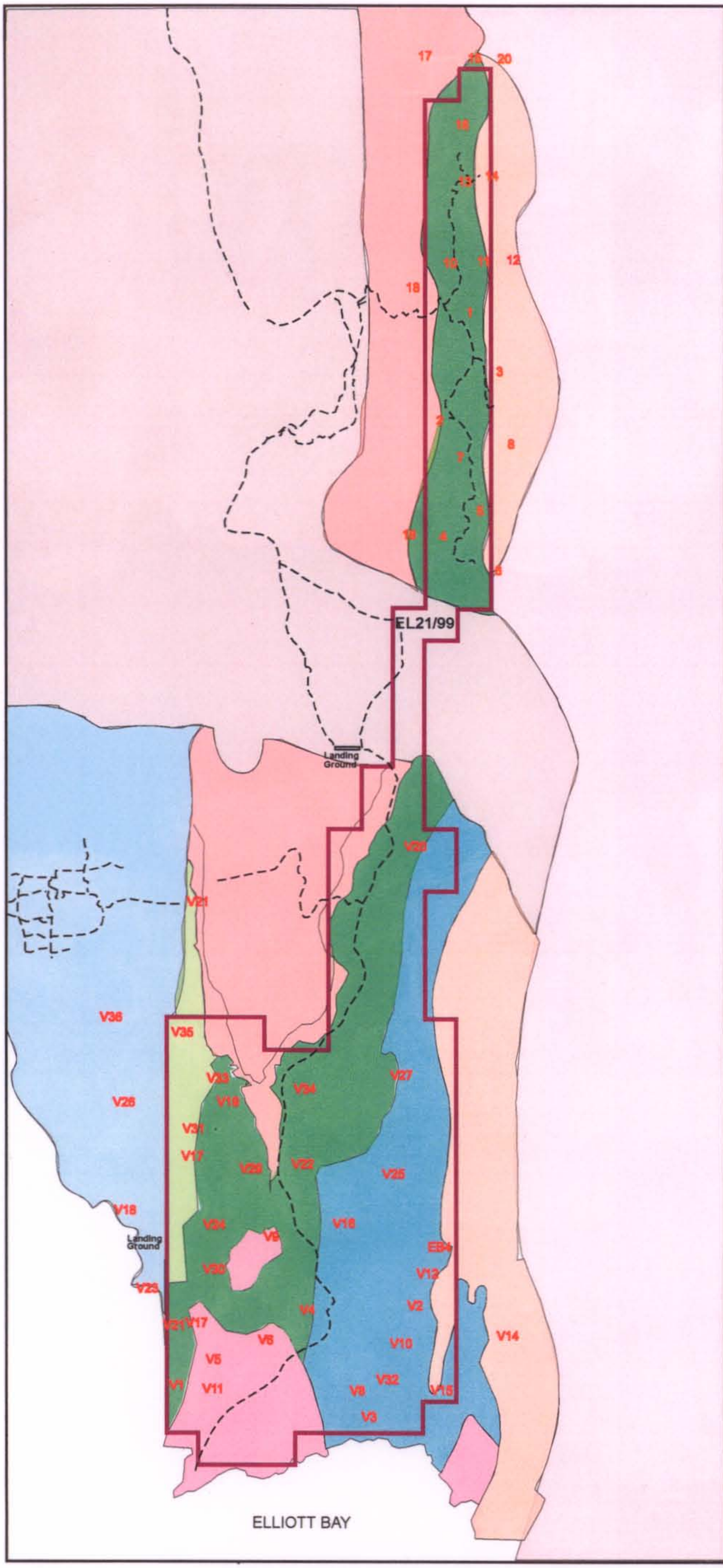

5 cm

LEGEND

V19 Prospect Location

EL 21/99 Boundary

EL 20/96 Boundary

Tracks

Geology

Tertiary Sediments

Ordovician / Cambrian Conglomerates

CAMBRIAN SEQUENCES
Mt Read Correlates

Mafic Lavas & Volcaniclastics

Undifferentiated Acid Volcanics

Wart Hill Pyroclastics

Hudson River Pyroclastics

Elliott Point Prophyry

Granite

Pre Cambrian Metamorphics

N

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EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
SW Tasmania - SMRV Project

Simplified Geology

Scale - As Indicated

Km

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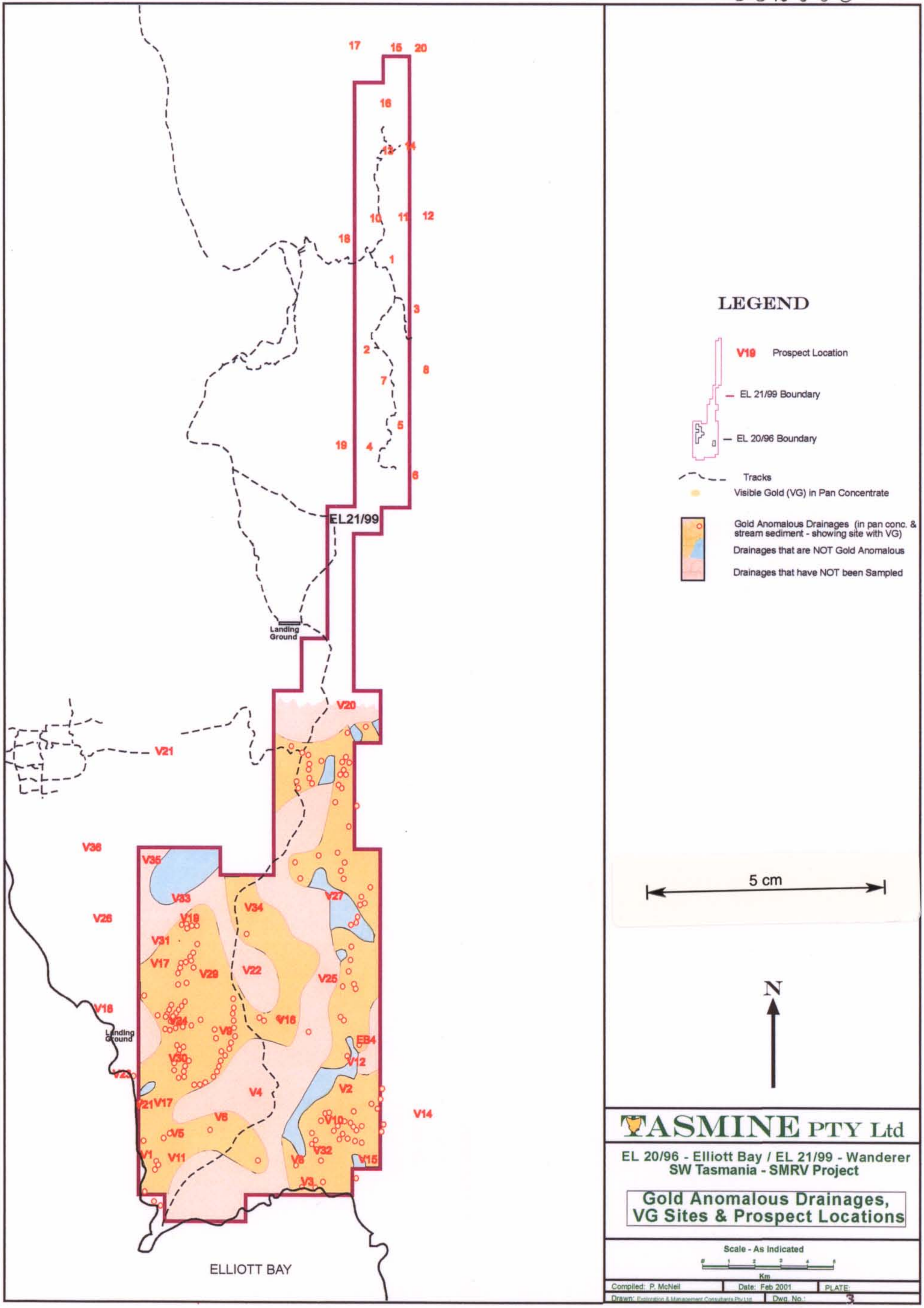

EL21/99
Landing Ground
V20
V21
V36
V35
V33
V34
V27
V26
V31
V17
V29
V22
V25
V16
V24
V9
EB4
Landing Ground
V30
V12
V4
V2
V17
V6
V14
V5
V11
V32
V15
V3
ELLIOTT BAY
LEGEND
V19 Prospect Location
EL 21/99 Boundary
EL 20/96 Boundary
Tracks
Visible Gold (VG) in Pan Concentrate
Gold Anomalous Drainages (in pan conc. & stream sediment - showing site with VG)
Drainages that are NOT Gold Anomalous
Drainages that have NOT been Sampled
5 cm
N
TASMINE PTY Ltd
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
SW Tasmania - SMRV Project
Gold Anomalous Drainages, VG Sites & Prospect Locations
Scale - As Indicated
Km
Compiled: P. McNeil
Date: Feb 2001
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3.0 EXPLORATION HISTORY

Introduction

The Elliott Bay area lies at the extreme southern end of the Mount Read Volcanics. The area saw some prospecting around the turn of the century with T.B. Moore 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.

Old Workings

Old workings are visible at V2 (hereafter Voyager is abbreviated to V - i.e. Voyager 2 becomes 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.

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 inspections of old workings were made at 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 Geoex Pty Ltd to fly a McPhar H-400 EM survey over the Elliott Bay area. The McPhar H-400 EM survey has been superseded by later airborne EM surveys in the area.

Geopeko (1976-1985)

Geopeko extensively summarised all of their work in their 1985 relinquishment report (Herrmann 1985). Their work defined 36 prospects given the prefix Voyager. A brief summary of exploration conducted annually by Geopeko follows.

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. EM anomalies defined by the McPhar H-400 survey V3 and relinquished V4 and aeromagnetic anomalies from the same survey over other relinquished Voyager prospects.

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 2 and 3). The V 3, 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.

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. In general inconclusive results were obtained from following up the EM anomalies.

Detailed work was conducted over V2 and 3. 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 2 short holes (for 61.2 metres) at V3.

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.

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.
(2) Stratabound gold in volcanics .
(3) Rosebery type V.H.M.S. deposits in the V2-V3 area in the south
(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 V2 + V3.
(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 (griding, magnetics, VLF-EM and TURAM).

1980-81

Field work concentrated on areas of alteration defined by previous work at V3, 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),

At V3 DDH V3/3 intersected felsic volcaniclastics with disseminated pyrite and minor local zinc mineralisation (8 metres @ 0.37% Zn).

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 was conducted over prospects in the north-eastern part of the area of Mt. Read Volcanics on now relinquished prospects. Work included griding, soil sampling and stream sediment sampling (including panned concentrates), VLF-EM and magnetics.

Felsic volcaniclastics were intersected on one of the relinquished prospects 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 V31 confirmed that the sulphides are located in quartz veins along a geological contact.

1982-83
Aquitaine Australia Minerals Ltd joint ventured into the project in 1982, but withdrew in 1983.

Extensive dipole-dipole IP survey was completed over the volcanics on either side of the Mt. Osmund syncline from V33 on the western side to relinquished 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 V9 area this work consisted of a fixed loop UTEM III survey (four loops for ~ 4 line kilometres).

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.

Cyprus (Arimco)-Poseidon (1985-1990)

Cyprus 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
- 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. The prospects were relinquished in 1999.

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

1986-87

Regional:

Work Carried Out

- Compilation of 1:10000 prospect mapping at 1:25000
- Regional Stream geochemical sampling using -80# and panned concentrates (Cu, Pb, Zn, As and Au).
- Rock chip sampling
- Air photo interpretation of structures.

Results

- Bishop (1987) recommended follow-up of a number of DIGHEM anomalies, Evaluation of all previous geophysical work by Mitre Geophysics (Bishop, 1987)
- 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.

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:

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.

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.

Bishop's compilation also included a complete compilation of previous surveys, geology etc for the area at 1:25000 scale.

1988-89

Work Carried Out

None in the relinquished area

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. 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. 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.

Plutonic (1994-95)

Plutonic were successful in tendering for the Elliott Bay area against three other companies. Their work consisted almost entirely of reviews in the V19 area, but included the re-logging of core and outcrop at V3, as well as geophysical surveys in the V3 area, moving loop SIROTEM (9.7 kilometres). Plutonic's work essentially repeated that completed by previous explorers.

4.0 PROSPECTS

A large number of prospects have been identified by Geopeko, Cyprus and Aberfoyle's work. Figures 1, 2 & 3 show their locations, figures 4-7 show various aspects of the area between prospects V9 and 19 and figure 8 shows ground magnetics at V19. 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.

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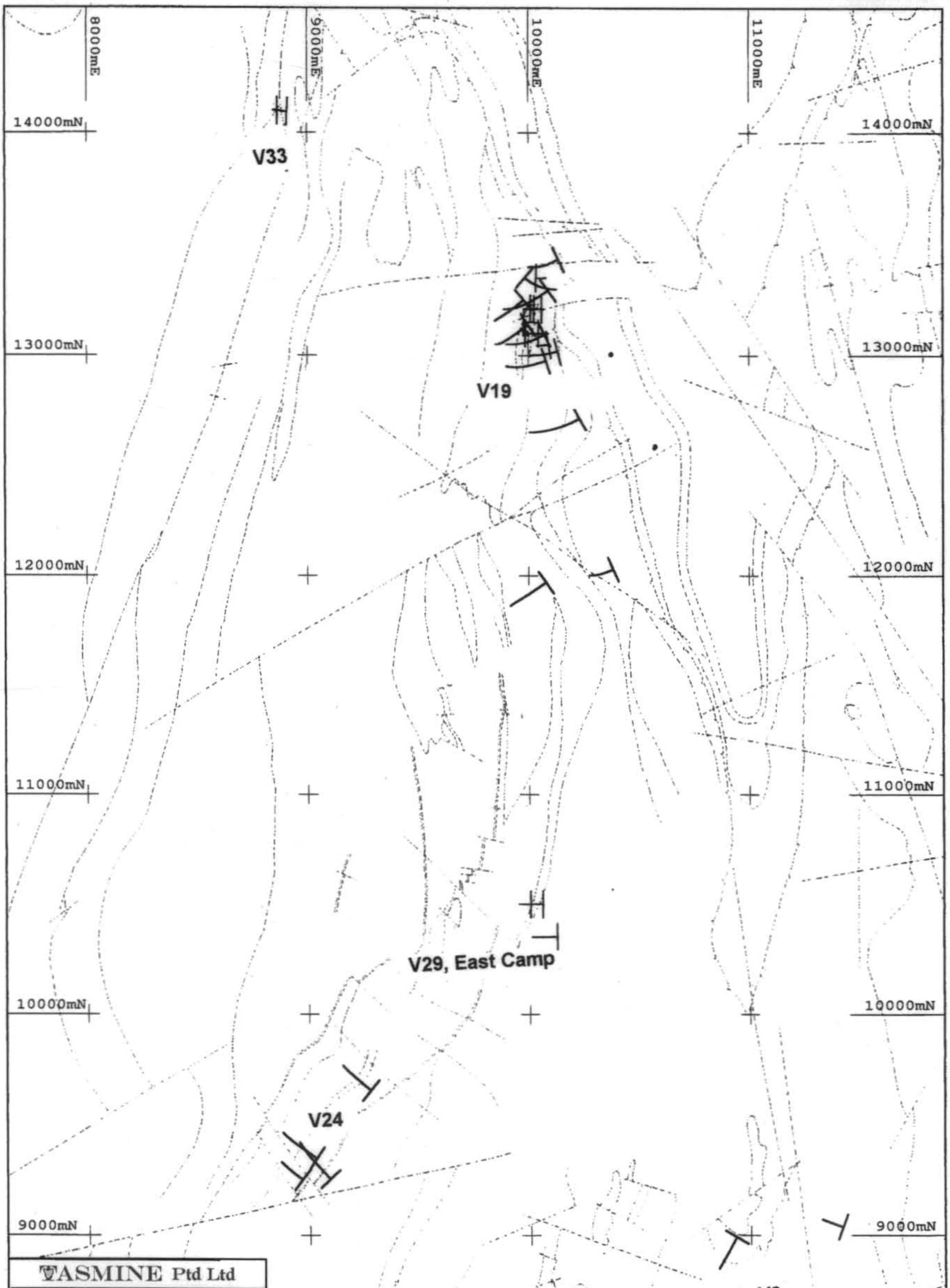

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SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
V9 to V19 Prospects
Geology + Drill Hole Traces
Scale - As Indicated
Compiled: P. McNeil
Date: Feb. 2001
PLATE:
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9000mE
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V33
V19
V29, East Camp
V24
V9

5 cm

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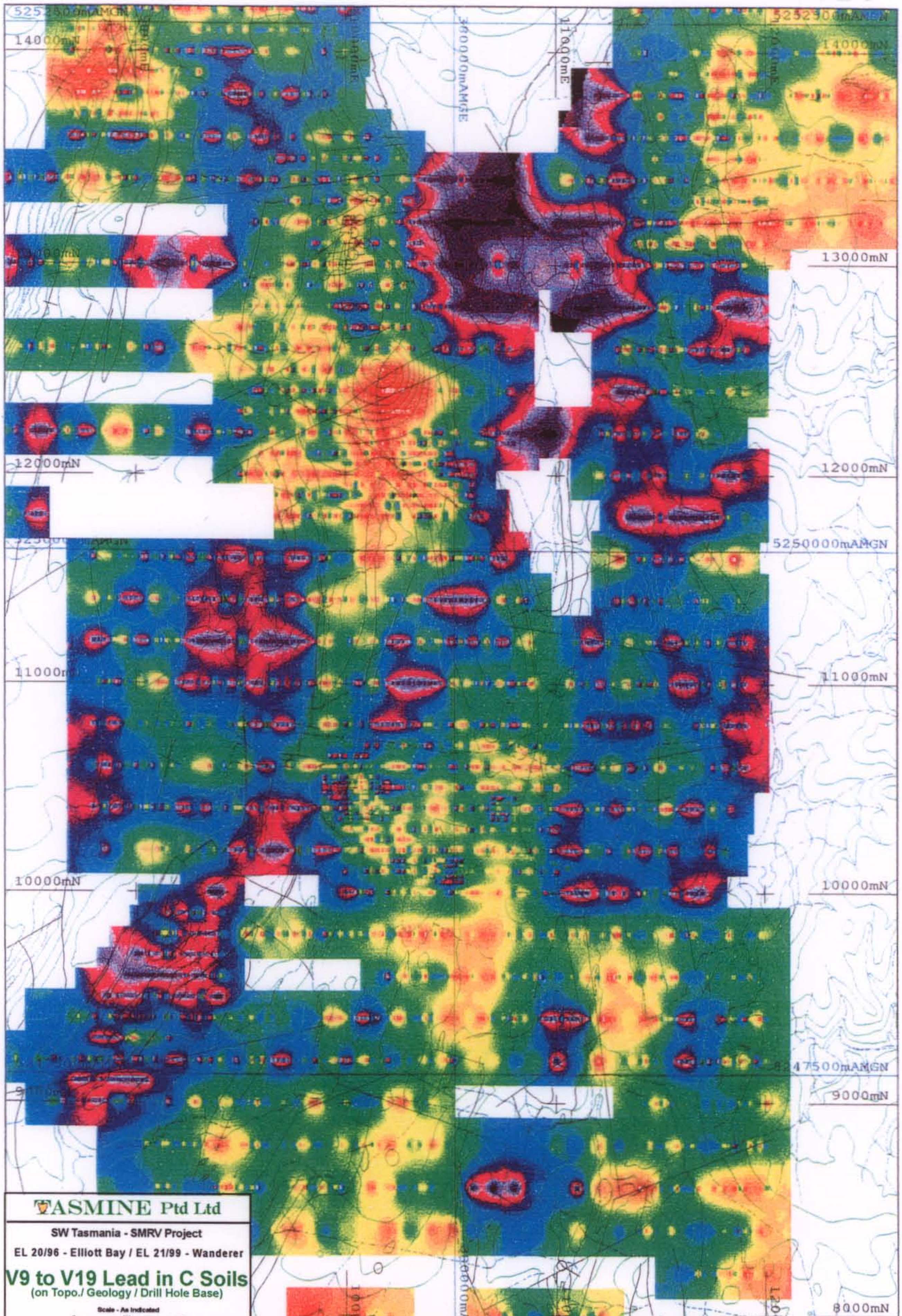

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TASMINE Ptd Ltd
SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
V9 to V19 Lead in C Soils
(on Topo./ Geology / Drill Hole Base)
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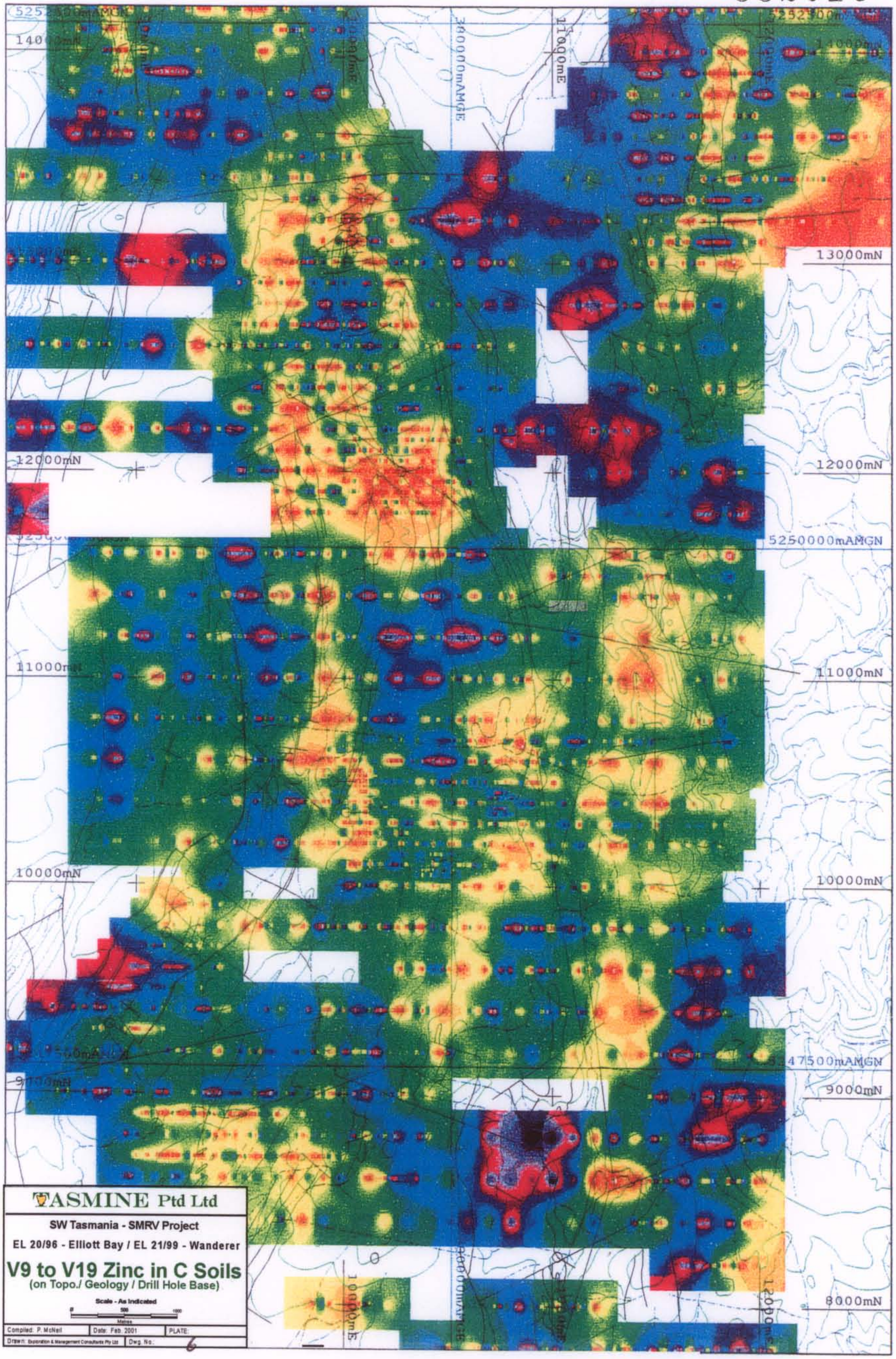
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TASMINE Ptd Ltd
SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
V9 to V19 Zinc in C Soils
(on Topo./ Geology / Drill Hole Base)
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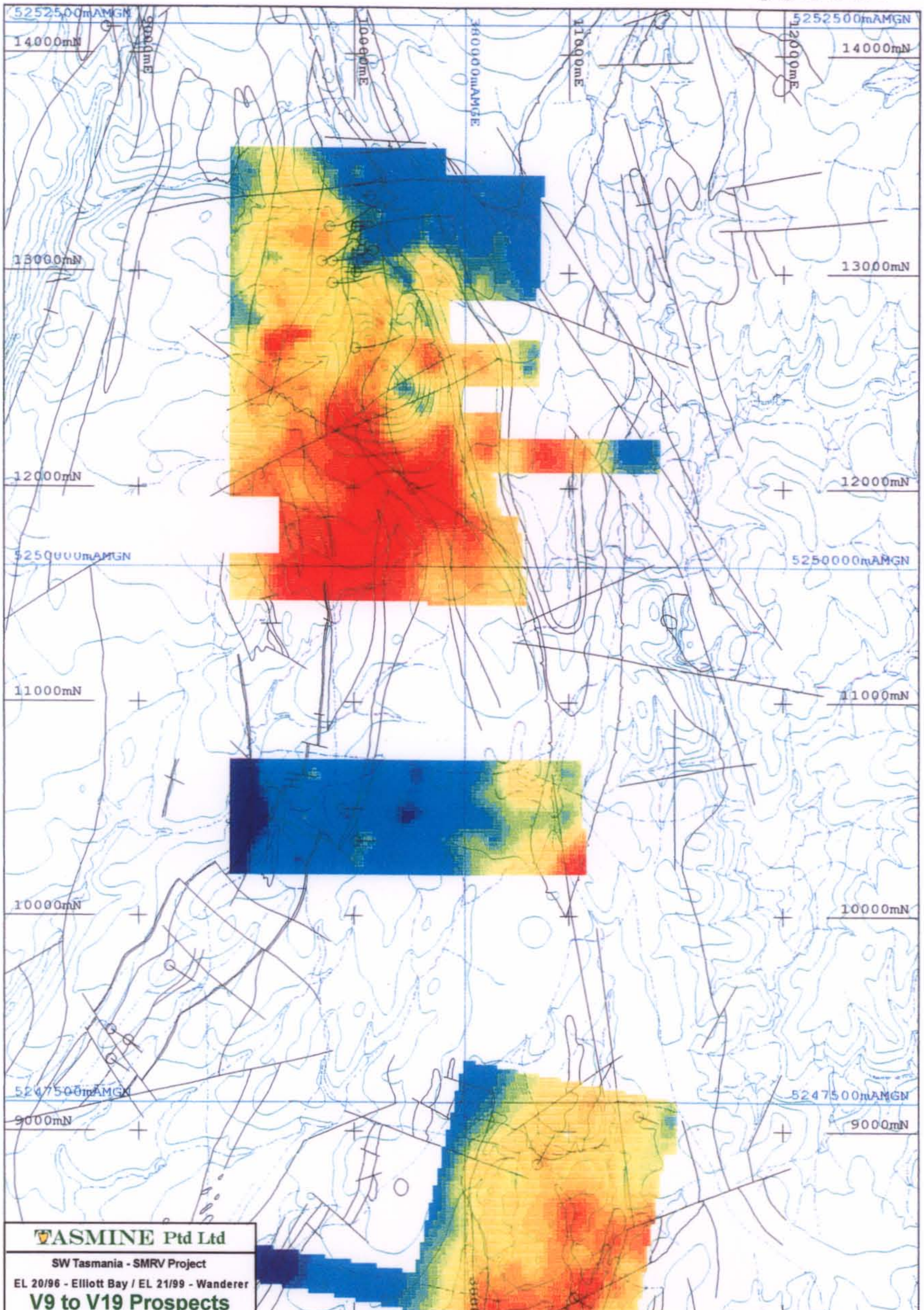
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TASMINE Ptd Ltd
SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
V9 to V19 Prospects
Aeromagnetic Image
Scale - As Indicated
Metres
Compiled: P. McNeil
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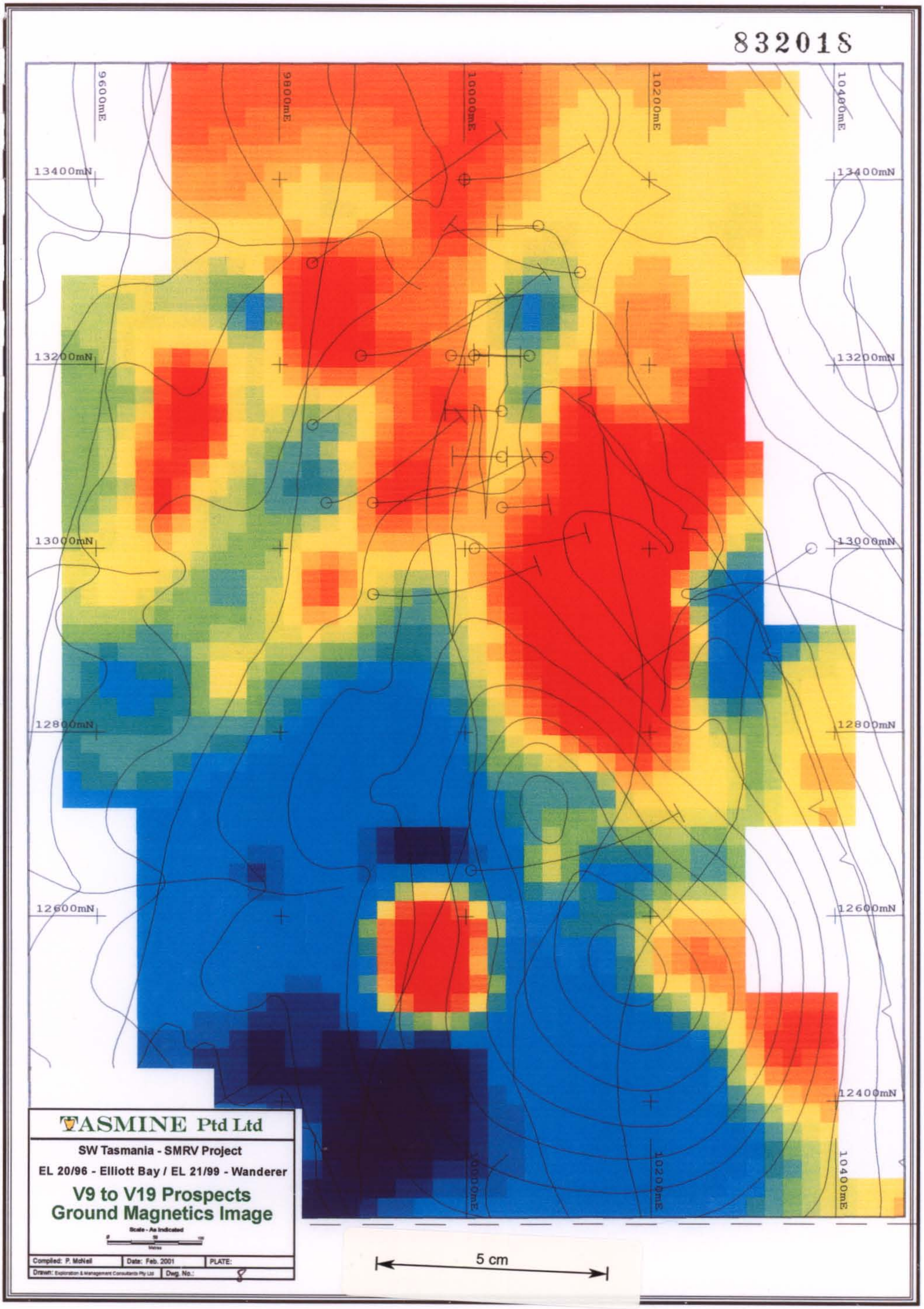
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TASMINE Pty Ltd
SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
V9 to V19 Prospects
Ground Magnetics Image
Scale - As Indicated
Metres
Compiled: P. McNeil
Date: Feb. 2001
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Drawn: Exploration & Management Consultants Pty Ltd
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5 cm

Voyager 19 / Wart Hill

An obvious target at Elliott Bay is the source of the high-grade massive sulphide occurrences at Voyager 19 (Figure 9). 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 (see Figure 10).

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.

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.

Voyager 24 and 30

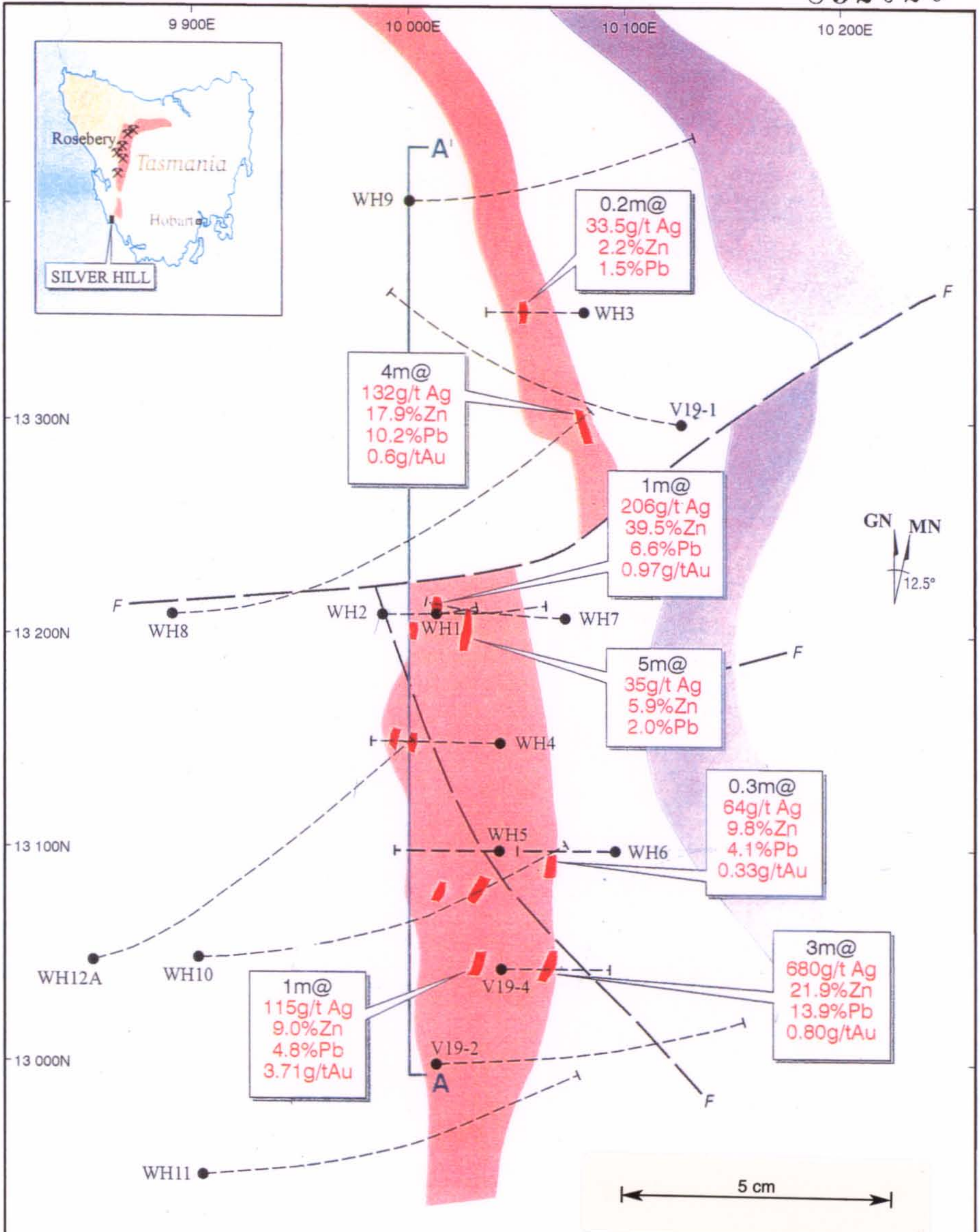
This area is located in the western sector of the license (south of Voyager 19) and is a very coherent zone of anomalous gold in both -80# silt and panned concentrates (see Figure 11). Gold is found in all creeks draining the Voyager 24 and 30 area. Panned concentrate samples taken by Geopeko contained 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 kilometres (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 under-tested.

832020



Rhyolitic quartz feldspar porphyry

Rhyolitic epiclastic breccias

Hematite volcaniclastic agglomerate

Alteration with high grade massive sulphide lens
assay results from surface outcrop and trench samples

Drill hole trace

TASMINE Pty Ltd

SW Tasmania - SMRV Project

EL 20/96 - Elliott Bay / EL 21/99 - Wanderer

Wart Hill (V19) Drill Results, Hole Locations & Geology

Scale - As Indicated

Compiled: P. McNeil	Date: Feb. 2001	PLATE:
Drawn: Exploration & Management Consultants Pty Ltd	Dwg. No.: 9	

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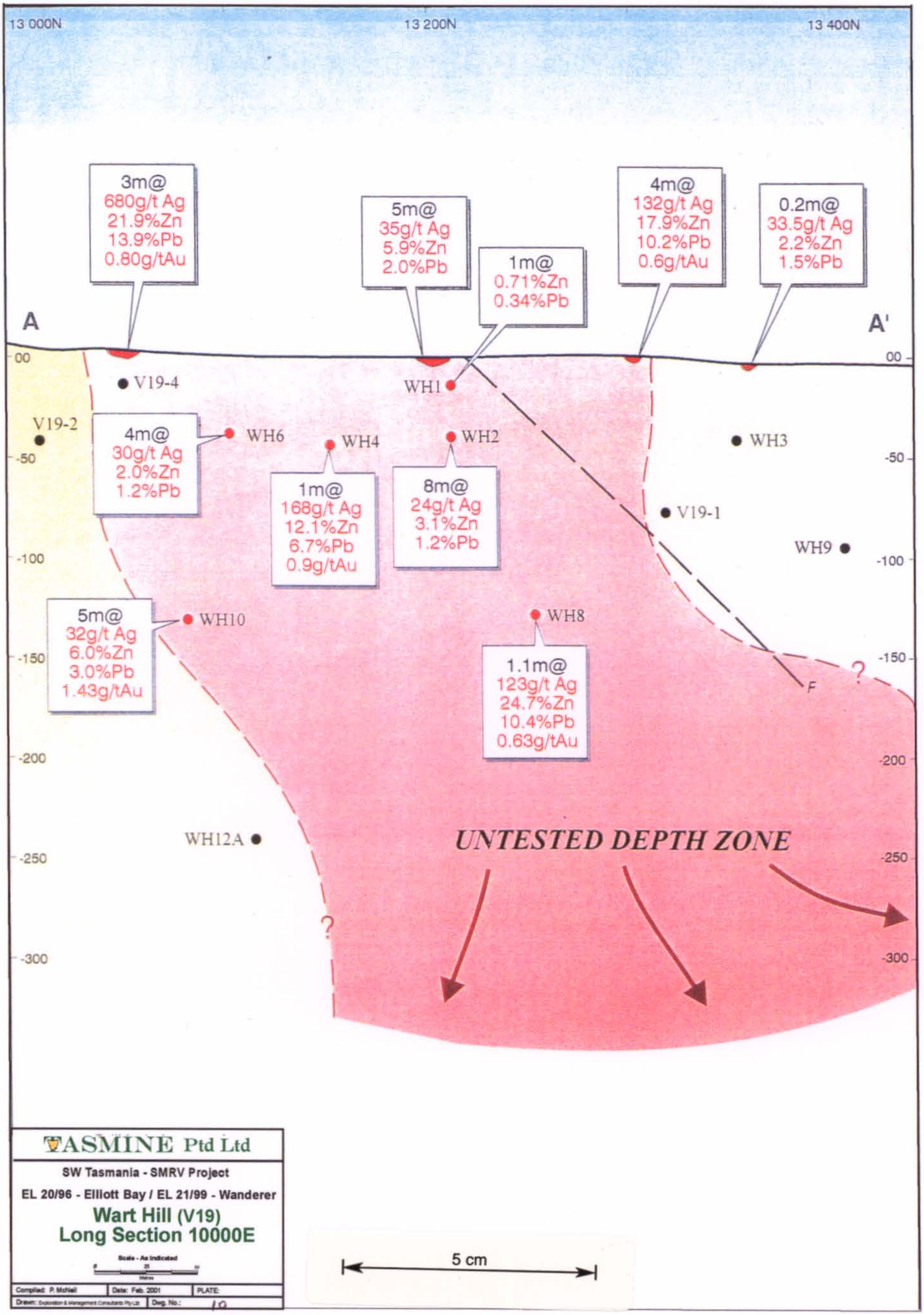
13 000N
13 200N
13 400N
A
A'
00
-50
-100
-150
-200
-250
-300
3m@
680g/t Ag
21.9%Zn
13.9%Pb
0.80g/tAu
5m@
35g/t Ag
5.9%Zn
2.0%Pb
1m@
0.71%Zn
0.34%Pb
4m@
132g/t Ag
17.9%Zn
10.2%Pb
0.6g/tAu
0.2m@
33.5g/t Ag
2.2%Zn
1.5%Pb
V19-4
WH1
V19-2
4m@
30g/t Ag
2.0%Zn
1.2%Pb
WH6
WH4
WH2
WH3
1m@
168g/t Ag
12.1%Zn
6.7%Pb
0.9g/tAu
8m@
24g/t Ag
3.1%Zn
1.2%Pb
V19-1
WH9
5m@
32g/t Ag
6.0%Zn
3.0%Pb
1.43g/tAu
WH10
WH8
1.1m@
123g/t Ag
24.7%Zn
10.4%Pb
0.63g/tAu
F
?
WH12A
UNTESTED DEPTH ZONE
?
TASMINE Pty Ltd
SW Tasmania - SMRV Project
EL 20/96 - Elliott Bay / EL 21/99 - Wanderer
Wart Hill (V19)
Long Section 10000E
Scale - As Indicated
25
Metres
Compiled: P. McNeil
Date: Feb. 2001
PLATE:
Drawn: Exploration & Management Consultants Pty Ltd
Dwg. No.: 10
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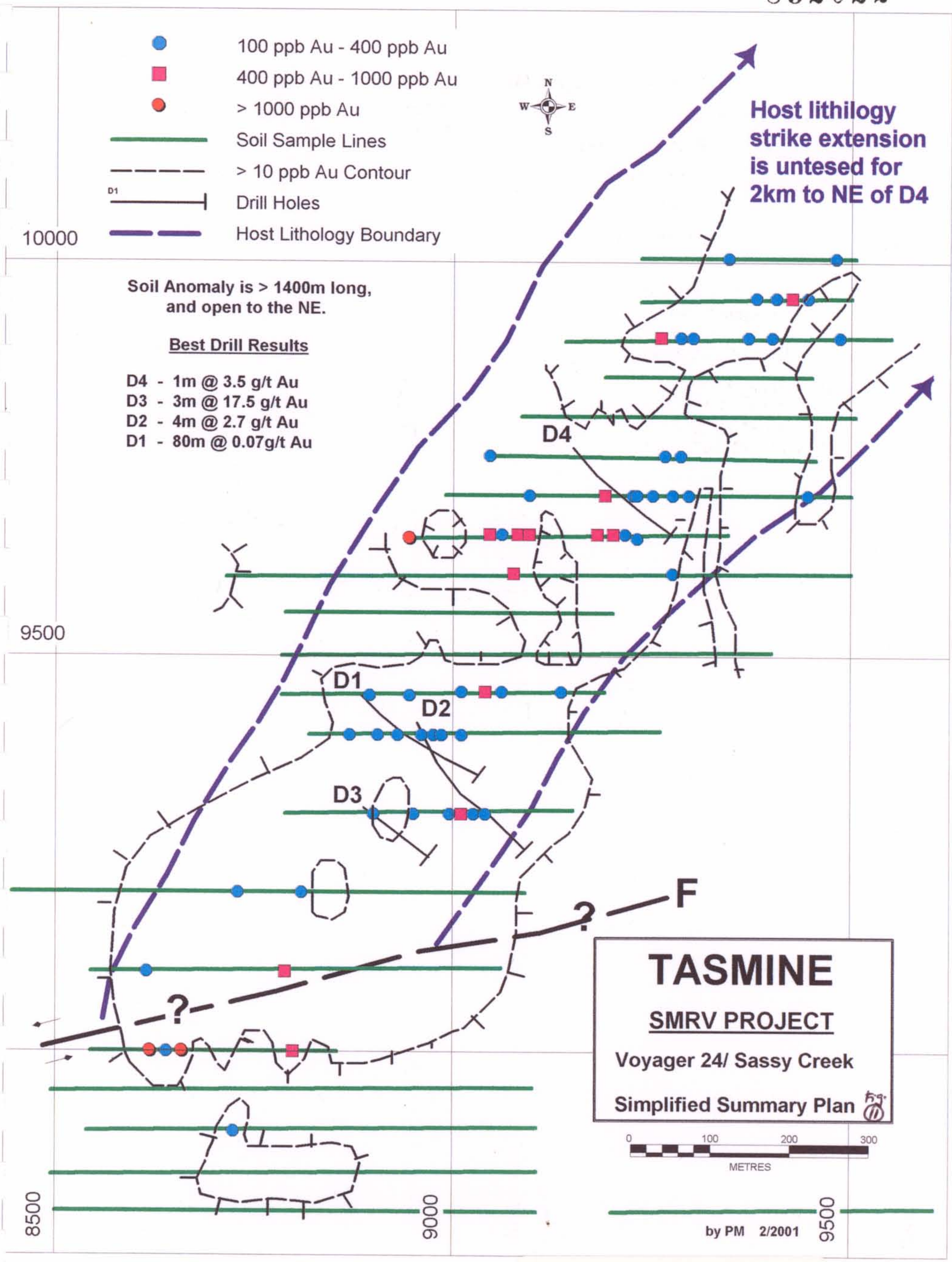
100 ppb Au - 400 ppb Au
400 ppb Au - 1000 ppb Au
> 1000 ppb Au
Soil Sample Lines
> 10 ppb Au Contour
D1
Drill Holes
Host Lithology Boundary
N
W
E
S
Host lithilogy strike extension is untesed for 2km to NE of D4
10000
Soil Anomaly is > 1400m long, and open to the NE.
Best Drill Results
D4 - 1m @ 3.5 g/t Au
D3 - 3m @ 17.5 g/t Au
D2 - 4m @ 2.7 g/t Au
D1 - 80m @ 0.07g/t Au
D4
9500
D1
D2
D3
F
?
?
TASMINE
SMRV PROJECT
Voyager 24/ Sassy Creek
Simplified Summary Plan
0
100
200
300
METRES
8500
9000
9500
by PM 2/2001

5 cm

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. The prospect was covered by the 1982-1983 IP survey and remapped.

Voyager 3 - Trend in South-East

The zone running N-N-E from V3/Drake Creek/Cowrie Beach in the south through Lewis River, V2/Old Lewis River and V12/North Lewis (Figure 12) to the Elliott Point Porphyry contact consists of a linear trend of the above prospects. The zone has potential for V.H.M.S. and/or gold mineralisation

The zone contains a large number of anomalous panned concentrate gold and -80# gold and arsenic in stream sediments.

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 0.47% Pb and 1.0% Zn . 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. 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 (Wilson, 1980).

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.

Gold Prospects in north-eastern Elliott Bay

The eastern side of the Elliott Bay tenement contains a large number of steams with anomalous gold in panned concentrates. The V3-V12 zone discussed earlier is one of these. Spatially, the large zone parallels and broadly corresponds to the contact between the Elliott Point Porphyry and the volcanics to the east.

A number of these anomalous creeks drain aeromagnetic anomalies and prospects. The anomalies/prospects will be discussed from north to south.

TASMINE SMRV PROJECT – Lewis River (V12) Soil / Rock Anomaly

(>900m long & open ended, striking to NE into untested AEM anomaly EB4)

832024

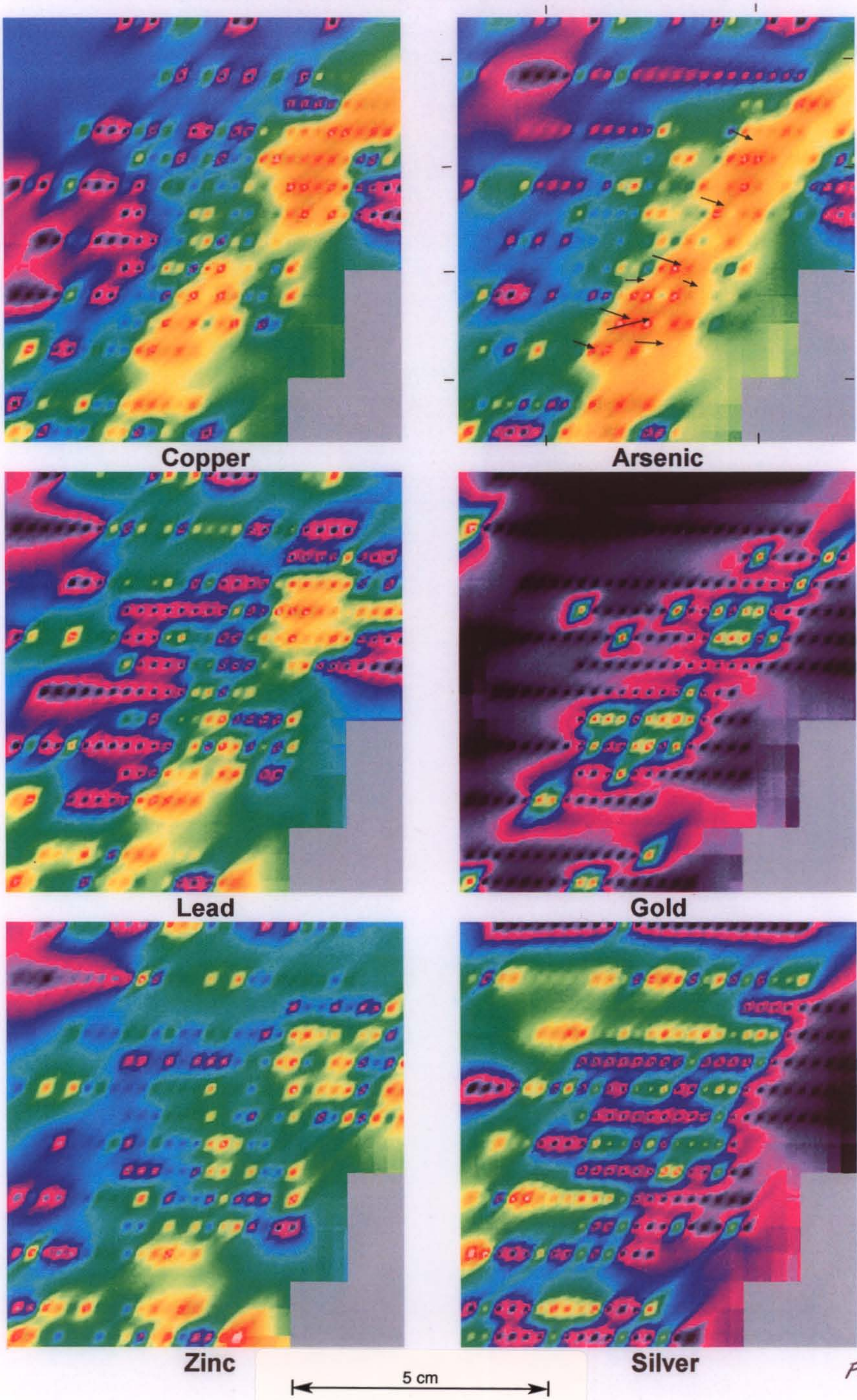

Fig 12

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. 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 and 456.1 and 4.24 ppm Au . 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.

Porphyry Dolerite Contact

A single pan concentrate of 230 ppm was obtained from a creek draining Jurassic dolerite near its contact with the porphyry. 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.

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). The source of the gold is unknown and there is potential to discover a gold deposit in this sector of the Elliott Bay license.

5.0 EXPLORATION COMPLETED

Exploration & Management Consultants Pty Ltd completed a data review and produced a Summary Report during the first year of the Elliott Bay – 20/96 license. A joint venture was then finalised with Fimiston Mining N.L., who drilled 2 holes at the Wart Hill (sulphide outcrop) Prospect.

The beginning of a digital database has been established and consists of (incomplete) geology, topography, creeks, tracks and geophysics. The digitising of geology over a significant proportion of the tenement has been completed with boundaries and rock types similar to that published by the Geol Survey of Tasmania, 1:25,000 Elliott Bay map sheet. Areas of significant vegetation (often associated with dominantly sedimentary lithologies) have been digitised from the 1:25,000 topographic sheets. The geophysics was re-evaluated by Fimiston and overlaid with a variety of geochemical and geological data sets (largely collected by previous workers).

During the present term, a review of the various data compilations was continued and attempts were made to locate another joint venture partner to fund exploration on the license.

ELA 21/99 was applied for in late 1999, in conjunction with McNeil Associates Pty Ltd, to cover all the prospective Mt Read volcanics between Low Rocky Point and Macquarie Harbour, encapsulate EL20/96 and enhance the company's regional ground position. The combined project is referred to as the SMRV Project (Southern Mount Read Volcanics). An agreement was reached with Macmin Ltd (subject to their shareholder approval) to combine EL 20/96 with El's 21/99 and 2/92 under the ownership of Tasmine Pty Ltd and proceed to an IPO to obtain exploration funding. It is hoped to list

Tasmine on the ASX (subject to Macmin Limited shareholder approval) and use funds from that IPO to advance exploration on the license by flying a detailed AEM survey and undertaking extensive drilling.

Billiton Exploration Australia re-processed the existing aeromagnetic data during the current term and reviewed the remaining geophysical data prior to declining to participate in a joint venture in the license at this point in time due to Corporate issues (Rio Algom takeover). Their review did not emphasise geology or geochemistry at all and their report is appended as Appendix 1. Plans were subsequently purchased from their geophysical contractor as digital versions and they are include in Appendix 2 on CD-ROM. The 1. Summary, 6. Data Processing, 7. Discussion and 8. Conclusions sections of Billiton's report are included below in the text of this report also.

1. SUMMARY

The Elliott Bay area in SW Tasmania is an area of high geological prospectivity, which has been explored over a long period of time utilising many geophysical surveys. Relatively recent magnetic, gravity and ground electromagnetic survey data have been reviewed in an attempt to locate any subtle targets and to make recommendations for future geophysical work.

The aeromagnetic data from a QUESTEM survey is of sub-optimal standard. Despite this, a number of isolated magnetic targets and zones of possible demagnetisation (alteration?) have been delineated and the data indicate potential for gold and tin mineralisation in addition to VMS mineralisation.

Ground magnetic data over two small prospects at or near Wart Hill show that the most significant anomaly has not been drill tested.

It is recommended that a new high quality combined magnetic/ radiometric survey be flown with a close line spacing to facilitate direct target detection of magnetite-pyrrhotite related mineralisation, demagnetised alteration zones, potassic alteration zones and lithological / structural mapping.

SIROTEM data over two small grids at or near Wart Hill have failed to locate the known massive sulphide mineralisation or locate any good bedrock conductor anomalies. Several very weak, 'late-time' features of doubtful veracity are recommended for follow up. The area is quite resistive and polarisation effects are prominent in the EM data.

Despite the lack of success with EM in the area to date, Hellyer-Rosebery-Que River type bodies are conductive, and accordingly high-powered, deep penetrating EM surveys are recommended to search for deep bedrock conductors. Large-scale reconnaissance moving loop surveys are the preferred option despite the difficulties of access.

The area has been flown with three different airborne EM surveys without success and although a modern more powerful survey would produce better results, the chances of success are not thought to be high.

It is recommended that any deep holes on the project area be reamed out if possible and logged with DHTEM and MMR. The same applies to any future holes. The possibility of using DHTEM/MMR in holes drilled at regular intervals along favourable stratigraphic horizons is suggested as an exploration strategy.

There is reasonably extensive coverage of IP over the known mineralisation in the Wart Hill area but only a few isolated grids elsewhere. Large-scale gradient array IP is suggested as an option for regional exploration elsewhere, however, this would be as slow and difficult as the TEM in the rugged, heavily vegetated areas. The depth of penetration would be much less than TEM but it would have the advantage of responding *to non-conductive, chargeable mineralisation and may identify areas of pyrite alteration, which could lead to VMS deposits.*

Petrophysical measurements indicate that the known massive sulphide deposits in the Mt Read Volcanics will produce a gravity anomaly if they are large enough (and/or shallow enough). Unfortunately no obvious gravity anomalies indicative of a substantial massive sulphide body have been recognized in the existing Mt Elliott gravity data although topographic corrections may improve the chances of recognition of subtle anomalies. The existing detailed gravity coverage is over a very small part of the prospective stratigraphy and the regional gravity data is too sparse to delineate a MS body. Accordingly it has been recommended that relatively detailed gravity be considered, possibly in conjunction with the proposed reconnaissance TEM surveys.

It is recommended that the large amount of historical geophysical data should be retrieved and incorporated into a GIS project.

DATA PROCESSING

6.1 General Comments:

SGC were provided with:

1. *SIROTEM Amira format files on floppy disk in local grid coordinates.*
2. *Ground magnetic data on floppy disk in local grid coordinates*
3. *Located aeromagnetic data as part of the QUESTEM survey.*
4. *Gravity data in AMG from the Tasmanian Mines Department*
5. *A 1:10 000 plan showing the relationship of the local grids to AMG and topography and mineralisation.*

In order to allow correlation of the ground magnetic and EM data with the other data sets, they were transformed to AMG. A simple translation was applied without rotation. The lack of rotation may have introduced a minor error of up a maximum of 15m, which is not significant for this exercise.

6.2 SIROTEM Data:

Profiles in linear and logarithmic format were plotted at 1:10 000 scale (Figures 4-18). Contour plans of the Channel 5, 10, 15 & 20 responses were made at 1:10 000 (Figures 19-22). The requested 1D-inversion processing was not possible because of the predominantly negative nature of the responses.

The field report for the SIROTEM (Appendix 1) refers to the southern block of data being from the 'East Camp Grid' and the northern block from the 'Wart Hill Grid'. It has been assumed that the data sets are actually both from the same overall grid, however, other grids exist and the southern block could be misplaced, although this is unlikely.

6.3 Aeromagnetic Data:

These data from a QUESTEM survey were processed and plotted as follows:

- *Total magnetic intensity (TMI) profiles at 1:10 000 & 1:25000 (Figures 23-24)*
- *First vertical derivative (FVD) profiles (with and without AGC) at 1:10 000 & 1:25000 (Figures 25-26)*
- *Total magnetic intensity (TMI) east shadowed (AGC) image plan at 1:10 000 & 1:25000 (Figures 27-28)*
- *First vertical derivative (FVD east shadowed image plan at 1:10 000 & 1:25000 (Figures 29-30)*

The data are relatively low quality for an aeromagnetic survey because of the low spatial resolution, high noise level and relatively poor flight path.

6.4 Ground Magnetic Data:

These data were filtered with a 3 point median filter, followed by a low-pass smoothing filter, and plotted as:

* *Total magnetic intensity (TMI) profiles at 1:10 000 (Figure 31)*
* *Total magnetic intensity (TMI) colour fill contours at 1:10 000 (Figure 32)*

6.5 Gravity Data:

These data were processed and plotted as follows:

* *Bouguer gravity colour-fill contours at 1:10 000 and 1:25000 (Figures 33-34)*
* *Residual gravity colour-fill contours at 1:10 000 and 1:25000 (Figures 35-36)*

Note that the Tasmanian Mines Dept data were labelled as 'Residual Gravity' but appeared to be 'Bouguer Gravity' and were treated as such.

6.6 Other Geophysical Data:

A series of plans from John Bishop's reports showing locations and details of various geophysical surveys were scanned and referenced in Mapinfo format to allow compilation and correlation with other data. Copies of some of these plans are included for reference.

7. DISCUSSION

7.1 General Comments:

The limited petrophysical measurements at Elliott Bay have quite sobering implications for detection of mineralisation by geophysical surveys if they can be considered representative. Essentially they mean:

* *Gravity surveys would work but the chances of detection would decrease rapidly with increasing depth to the mineralisation.*
* *Magnetic surveys will not work directly.*
* *Traditional TEM surveys are unlikely to work.*
* *IP surveys may work for shallow mineralisation.*

On the positive side, if we were to consider the petrophysical measurements at Rosebery, Que River and Hellyer, then:

* *Gravity surveys would work but the chances of detection would decrease rapidly with increasing depth to the mineralisation.*
* *Magnetic surveys will not work directly.*
* *Traditional TEM surveys will work, indeed Que River was an AEM discovery and Hellyer was a TEM discovery.*
* *IP surveys should work at least for mineralisation at shallow to moderate depths.*

It seems reasonable to also anticipate the Rosebery-Hellyer style of mineralisation in the project area rather than relying on a fixed model based on the two Elliott Bay rock samples. As a result EM, IP and gravity surveys are valid exploration tools. To date, magnetic surveys would seem to be of no value for delineating mineralisation directly. They are, however, valuable for interpreting structure, lithology and alteration, thus targeting prospective areas. Alteration zones around the mineralisation may be indicated by subtle magnetic lows. In addition, a different style of mineralisation containing magnetite and/or pyrrhotite may be present. Numerous VMS bodies in other environments have associated magnetite and or pyrrhotite.

7.2 SIROTEM:

The in-loop mode SIROTEM data is presented in profile form (Figures 4-18) and contour form (Figures 19-22). The responses are unusually low amplitude, reflecting the resistive nature of the area. They have decayed to noise levels by Channel 22 (8.62ms). QUESTEM and IP resistivity data confirm the resistive characteristics. The terms 'early, mid and late-time' using in the following discussion are relative, as by normal definition, most of the response is 'early-time'.

The transmitter current was 6 amps into a single-turn 100m x 100m loop. By modern standards, this is a relatively low dipole moment of 60 000 amp.m.turns. A more usual dipole moment these days is 25 amps into twin-turn loops giving 500 000 amp.m.turns, ie approximately 10 times the transmitted signal in the Elliott Bay surveys.

The few features interpreted from the SIROTEM data are annotated on the 1:10 000 and 1:25000 EM and IP summary plans (Figure 37-38). The dominant effect in the early to mid-time data is extensive areas of negative response as outlined on the plan. This is probably due to a polarisation effect of some sort. Comparison with historical dipole-dipole IP data shows some vague correlation in places but is not convincing. It is probably due to a rock type / weathering effect rather than being related to disseminated sulphides. A decay curve from one of these zones (Figure 39) shows the negative response decaying to zero with a power law response of –2.3.

Two cross-cutting northeast striking sinistral faults are inferred offsetting the zones of negative response.

There are no well defined late–time anomalous responses indicative of bedrock conductors. There is a zone (TEM-1) of elevated late time response on line 12150N but this looks to be rather doubtful data, particularly as there is no indication of it on adjacent lines. A decay curve from this zone (Figure 40) does show a very slow decay indicating a long time constant and thus a possible deep bedrock conductor but it must be stressed that this is a very low-level, doubtful response. Three other zones of even weaker, but vaguely anomalous late-time response are also outlined (TEM-2 to TEM-4). The earlier UTEM surveys over this area did not show anomalous responses correlating with the SIROTEM 'anomalies', thus raising more doubts about their validity. Being a fixed loop survey, there is a remote possibility that the UTEM could have been poorly coupled with a conductor.

The SIROTEM data do not show any obvious indications of bedrock conductors, however, there are some questionable anomalous zones possibly worth verifying.

7.3 Aeromagnetics:

The aeromagnetic data included as Figures 23-30 were collected as part of the QUESTEM AEM survey. The data quality is mediocre, low precision and resolution, irregular line spacing and ground clearance. However it does provide a reasonable overall picture of the geology and structure of the area.

Preliminary interpretations of the data are included as Figures 41 and 42. The Lower Palaeozoic-Proterozoic basement seems to consist of a series of distinct, elongate slices or blocks separated by northerly oriented, probably transcurrent fault systems. The magnetic stratigraphy shows evidence of large scale folding, with several fault bounded or disrupted, elongate anticlines (north closing) and synclines (south closing) being inferred from the magnetics. The northerly fault set appears to have been active during the deposition of the Owen Conglomerate. There is some evidence for thrust faulting-eg at the base of the Owen Conglomerate and at the interface between the Wart Hill felsic volcanics and the Western Epiclastics.

The granites intruded into the southern and eastern portion of the volcanic sequence appear to be syn- to post peak deformation.

The strongly magnetic (1000-1500nT), elongate units along the western side of the survey (Figure 28) correlate with gabbroic and or andesitic units within the Mainwaring Group and Western Epiclastics. Several similar magnitude anomalies within the prospective felsic volcanic sequence have been interpreted as andesitic flows or high level intrusives. Chlorite-magnetite assemblages mapped by Cyprus Minerals associated with these strongly magnetic zones would be consistent with andesitic lithologies, but could also be indicative of substantial magnetite generative hydrothermal alteration. Such alteration could be significant for either gold or volcanogenic massive sulphide systems. The bulk of the felsic volcanic sequence is typically non-magnetic, with minor weakly magnetic (100-200nT) flows. The granitic *intrusives are essentially non-magnetic, but locally may contain abundant relict magnetic volcanic material.*

In addition to the possible magnetic alteration zones mentioned above, several smaller scale, possible alteration features are evident in the aeromagnetic data. These include relatively short strike length magnetic zones and possible demagnetisation zones along elongate magnetic units. The short magnetic anomalies could be from Scuddles type pyrrhotitic VMS alteration. Possible alteration induced demagnetisation has been inferred at the Hellyer and Que River deposits. Neither type of possible alteration response is well defined in the QUESTEM magnetics. The short strike length anomalies could be fragments of normal, magnetic stratigraphy. The apparently demagnetised zones could reflect local terrain clearance anomalies.

The magnetics indicate that the mineralised felsic volcanic stratigraphy in the main prospect area has been quite strongly disrupted be faulting, with the N-W to NNW fault set the most prominent. Some of this faulting has been identified on the Geopeko and Cyprus geological maps. However, the magnetics suggests that the degree of fragmentation could be significantly higher than indicated on the geology plans. The known massive sulphides at Wart Hill are adjacent to what appears to be a strong fault zone along the margin of the Owen Conglomerate. Thus the original mineralised system could be have been strongly disrupted and fragmented. If the felsic volcanics-Owen Conglomerate contact is a thrust zone, continuations of the Wart Hill massive sulphide mineralization could be present at shallow depths beneath the south-western edge of the conglomerate.

The basic geological and structural picture inferred from the magnetics suggests that the area has reasonable potential for structurally controlled gold deposits, particularly around the nose of the granite emplaced into the southern section of the Wart Hill trend and along the larger structural corridors trending away from the granites. Skarns developed around the granites (eg the chlorite-magnetite zones) may be potential tin mineralization targets. Cyprus targeted the gold potential of the block during their exploration programme.

7.4 Ground Magnetics:

Extensive ground magnetic surveys were done by Geopeko and perhaps Cyprus. This data has not been recovered in digital form or reviewed. The data presented as Figures 31 and 32 are from a later series of surveys undertaken in conjunction with the moving loop SIROTEM surveys over the V-19 and V-29 grids. As expected for a felsic volcanic sequence, the overall magnetic response is subdued, with a range of about 100-150nT.

7.4.1. V-19 (Wart Hill) Grid:

The ~300m long, >100nT anomaly centred at ~5251250N 379650E is the most significant feature in the ground magnetic surveys. It is compatible with a shallow (~50m deep), pyrrhotitic concentration, possibly a small to medium sized massive sulphide system. The anomaly plots neatly between the Cyprus/Geopeko drilling, ie. it has probably not been tested. There is a possible weak, coincident SIROTEM anomaly (TEM-3). It is a reasonable but smallish target that should be relatively easy to evaluate.

Most of the other bullseye anomalies (± 100nT) are single line features that are either noise or from very short strike length geological sources. Most of the longer magnetic features appear to be fragments of narrow, sub-cropping, weakly magnetic stratigraphic units. They are probably not economically significant but some of them could be related to shallow, thin massive sulphides. If so, they should have been effectively tested by the various EM surveys.

The longer wavelength, deeper? response at ~5250250N, 379900E could be generated by a possible blind, magnetic massive sulphide target. Weak SIROTEM *anomaly TEM-1 overlaps this anomaly. DDH V19-5 has possibly tested the target zone.*

7.4.2 V-29 Grid:

The series of 50->100nT anomalies along the western side of the survey are mapping a fragmented, narrow, sub-cropping, NNE striking stratigraphic unit. This horizon does not correspond to the gravity anomalies noted in this area. These magnetic anomalies are probably not economically significant.

The longer wavelength anomaly in the SE corner of the V-29 is the northern end of a major magnetic stratigraphic unit.

7.5 Gravity:

Gravity data available for the Elliott Bay area consists of the Tasmanian Government regional survey [typically 1-2km station spacing] and three detailed surveys [Geopeko] over several of the massive sulphide prospects. Data from the detailed surveys is included in the Mines Dept. gravity database. John Bishop reviewed both the regional and detailed gravity data sets in some detail in 1988. The currently available regional gravity coverage is more extensive than that reviewed by Bishop; eg the gap in the coverage over the southern end of the prospective Mt. Read Volcanics trend has been filled. However, the coverage on the western side of the area, though improved, is still sparse, with very few readings over the Western Epiclastics and Mainwaring Group sequences. Thus the steep (easterly decreasing) gradient across the main areas of interest is poorly defined. This makes removal of the regional field difficult.

The character of the both the detailed and regional Bouguer gravity data (Figures 33 and 34) suggests that neither data set has been terrain corrected. The digital data obtained from the Mines Dept. consists of a single gravity reading plus geographic position for each station. Elevation data was not included. No survey specifications or processing information accompanied the digital data.

7.5.1 Regional Gravity:

The 1:25,000 scale residual gravity plan is included as Figure 36. No specific targets have been inferred from this data. The majority of the residual gravity highs appear to be stratigraphic in origin, or terrain related. The strong gravity highs along the western side of the area are mapping gabbroic and andesitic units within the Mainwaring Group. There is a poorly defined, weak to moderate amplitude gravity ridge associated with the mineralised felsic volcanic sequence, particularly the Wart Hill-V19 grid at the northern end of the trend. This ridge has only been partially covered by Geopeko's detailed surveys.

Targets selected by John Bishop from his manually generated residual gravity have been plotted on the 1:25,000 scale summary plan (Figure 42). These anomalies typically have 0.5 or 1mG amplitude. The overall reliability of these isolated highs is questionable. Bishop's residual gravity and the SGC generated residual (Figure 36) do not compare particularly well. One of Bishop's anomalies coincides with the western half of the V-9 detailed gravity grid. This anomaly is suspect since it corresponds to a sub-cropping felsic intrusive. Bishop's other residual gravity highs have not been followed up as gravity targets Most of these anomalies correspond to stratigraphic features on the SGC generated residual.

7.5.2 Detailed Gravity Surveys:

Bouguer and residual gravity contours for the detailed gravity surveys (V-9, V-19 [Wart Hill] & V-29 grids) are included as Figures 33 and 35. This data is quite noisy, probably reflecting the combination of local terrain effects and near surface density variations. Noise levels may be in the 0.05mG to 0.1mG range. Zones of elevated Bouguer or residual gravity are shown on the 1:10000 scale summary plan (Figure 41). Most of these are near surface, short strike length responses. They could *represent small, shallow massive sulphide lenses, but are more likely to be produced by near surface density variations that are not directly related to mineralization.*

No quantitative modelling of the detailed gravity data has been attempted by SGC. Basic modelling of the majority of these local gravity highs was included in John Bishop's 1988 report. This modelling did not incorporate terrain or near surface (regolith) effects. More robust and realistic modelling would require the inclusion of topography and preferably reasonable geological control. Neither was available for the current assessment.

Bishop's modelling demonstrated that the majority of the local gravity highs could be modelled with either broad, low density contrast, lithological sources or narrow, steeply dipping, massive sulphide type bodies, generally at relatively shallow depths (~50m). The majority of these possible massive sulphide scenarios don't appear to have been drill tested. However, the shallow, massive sulphide source options should have been adequately assessed by the various EM surveys completed over the area.

V-9 GRID:
Bishop modelled the strongest local gravity anomalies. Noise levels in the line 11250N data are quite high. It contains two, ~ 0.1mG anomalies. Both have been modelled as shallow to moderate (<10m to ~50m) depth, short strike length (300m) basement blocks with low density contrast (0.1-0.15g/cc). On this basis, the anomalies are more likely to be mapping simple regolith variations and or lithological changes rather than significant massive sulphide accumulations.

Line 11350N contains has a well defined, 0.2mG anomaly, which has been modelled as both a lithological source (100m wide, 30m deep, 0.15g/cc contrast body) and as a narrow, massive sulphide source (20m wide, 300m long, 0.8g/cc contrast). This isolated, bullseye residual high does not appear to have been drill tested. However, the similar magnitude response at the southern edge of the grid may has been tested by drill hole V9-1.

V-19/ Wart Hill Grid:
The two anomalies analysed on this grid (a complex, ~0.35mG anomaly @~279900E on line 5251320N, and a ~0.25mG anomaly @~279600E 5250320N) have both been modelled as shallow (sub cropping), lithological sources. Both anomalies can be modelled using narrower, higher density, massive sulphide type sources. DDH V19/5 may have tested the more southerly anomaly. Stronger anomalies in the northern part of the grid (e.g. 5251000N @ ~279120E &~279850E) were not modelled by Bishop. DDH V19-3 may have tested the 5251000N 279850E anomaly. An elongate but weak residual gravity high over southern part of the known massive sulphide zone (near DDH V19-4) seems to be from a shallow, lithological/topographic source.

V-29 GRID:
The residual gravity from the V-29 survey does not look as interesting as either the V-9 or V-19 blocks. However, the Bouguer gravity has more character. John Bishop, concentrating on the peak Bouguer anomalies on the western half of the lines has modelled this data in some detail. Depending on how the background level is assigned, these could have amplitudes of ≥ 0.4mG. They have mostly been modelled as moderate depth (~50m), high contrast (0.5-0.8g/cc), massive sulphide type bodies with various orientations and thicknesses. The ostensibly stronger residual anomaly @ 5249020N 380300E has not been modelled. None of these anomalies appear to have been drill tested. The associate shallow massive sulphide potential has probably been down graded by the I.P. and EM coverage. However, Bishop noted some correlation with UTEM anomalies. He also commented on a massive sulphide lead isotope signature from this area.

7.6 Other Existing Electrical & Electromagnetic Surveys

Although the instructions for this review specifies only the SIROTEM, ground magnetic, aeromagnetic and gravity data, it is felt that some discussion of the *previous very extensive geophysical work is warranted as they are relevant to future recommendations. The known surveys are documented by John Bishop (Appendices 2-3) and the following information is from these reports:*

1975 BHP:
Helicopter EM (H-400) - 100 or so anomalies – not followed up.

1976 Geopeko:
Followed up H-400 EM anomalies.

1982-84 Geopeko:
Dipole-dipole IP survey (a=50m) over main VMS mineralisation area – some data doubtful. Covered 25 sq.km. with no good responses other than from graphitic shales. Several other small IP surveys over other prospects.

UTEM fixed loop TEM survey over main areas 'V9, V19, V29 & V29W' – 'data reasonably good'. John Bishop re-interpreted the data and could see no late-time anomalies. He did locate some 'pronounced' anomalies sourced at shallow depths which he thought were unlikely to be VMS related.

Miscellaneous Self Potential, TURAM and VLF surveys were carried out, apparently with no significant result.

1986 Cyprus:
DIGHEM survey of 700 line km @ 150m line spacing carried out over most prospective stratigraphy - numerous anomalies. Two overlapping surveys showed very poor correlation raising doubts about the integrity of either the flight path or the equipment. 17 anomalies finally selected for follow up. The best zone on the 'Spero River' sheet is in Tertiary gravels. The other anomalies were relatively poor. Max-min ground EM was used to follow up the DIGHEM anomalies – all were verified as poor surficial-type conductors.

1991:
QUESTEM Survey over entire project area. The data and interpretation is not part of this report but the results show that the area is predominantly resistive and few if any new targets were discovered. The rough terrain would have limited the effectiveness of such a fixed wing survey.

8. CONCLUSIONS AND RECOMMENDATIONS

This is an area of high geological prospectivity but over a long period of time, it has had extensive exploration utilising a large number of geophysical surveys. The easy ideas have been looked at and the logical geophysical techniques of the day have been applied. Future exploration will not be easy and will require significant commitment. The proposed target is an orebody of substantial size and if these exist in the area, they are likely to be deep or in less accessible areas not thoroughly explored to date. The most prospective rock sequences cover a total area of about 150 sq.km.

The entire tenement has been flown with several generations of aeromagnetic surveys including the data from the DIGHEM and QUESTEM surveys. By today's standards, all of these surveys are of relatively low resolution and quality. The DIGHEM data (which is probably not available in digital form) was flown at 150m line spacing, has poor visual location, and would have the relatively high noise levels associated with early DIGHEM surveys. The QUESTEM data is at 200m line spacing, also has quite poor flight path, is flown high (120m) and it is relatively noisy.

Several short strike length magnetic features indicated on Figures 41 and 42 have characteristics consistent with weakly to moderately magnetic massive sulphide mineralization. These should be thoroughly geologically and geophysically evaluated. The possible demagnetisation zones inferred from the magnetics also warrant further evaluation for similarities to the Hellyer and Que River alteration systems, and as possible epigenetic gold targets. The overall geological setting inferred from the *aeromagnetics suggests reasonable potential for epigenetic gold mineralization and, to a lesser extent, tin mineralization. It also suggests that the structural complexity of the area may have been underestimated during previous exploration campaigns.*

The ~300m long, >100nT anomaly centred at ~5251250N 379650E on the Wart Hill grid is the most significant anomaly identified in the ground magnetics. This anomaly plots neatly between the Cyprus/Geopeko drilling, and has probably not been adequately drill tested. It warrants further evaluation, but has probably been downgraded somewhat by the existing EM coverage.

It is recommended that a very high quality combined magnetic/ radiometric survey be flown using either a helicopter or a high performance fixed wing system such as Kevron's turbine-powered Cresco system. A line spacing of 50m – 80m is suggested with a flight height as low as the tree canopy safely allows (40m?). Although there is little evidence for magnetite or pyrrhotite associated with the mineralisation styles known in the area, the accurate mapping of structure and lithology would greatly improve the interpretation of target areas. Alteration may be manifested as subtle magnetic low zones due to magnetite destruction. Unexpected targets may also be generated from different styles of mineralisation. High quality radiometric surveys may help delineate areas of potassic alteration.

At least three airborne EM systems have been flown over the area. The entire tenement area has most recently been flown with QUESTEM and most of the more prospective areas have also been flown with DIGHEM. Since the time of these surveys, there have been improvements in instrumentation and processing, notably for the fixed wing systems. Unfortunately, the rugged topography will always limit the effectiveness of fixed wing surveys in much of the area. The existing surveys have, so far, failed to locate any significant bedrock conductors. Although a new AEM survey would produce better results, the chances of success cannot be rated high and accordingly it is difficult to recommend further airborne EM surveys.

Ground EM surveys (time domain and frequency domain) carried out to date have failed to convincingly locate the known mineralisation or any new mineralisation. The lack of success over the known mineralisation can be attributed to its poor conductivity as indicated by the petrophysical measurements and/or its small size.

The geological environment should be capable of hosting orebodies similar to Hellyer and Rosebery, both of which are significantly more conductive than the known Elliott Bay mineralisation. Accordingly, the lack of success so far does not negate the use of high-powered, deep penetrating EM surveys. This method, together with down-hole EM and MMR surveys, are the most effective geophysical techniques available to explore for deep massive sulphide mineralisation.

The TEM coverage to date is limited to two small areas in the Wart Hill vicinity. VLF, TURAM and Max-Min frequency domain surveys are more extensive but are highly inferior to modern TEM surveys and as such are not considered as adequate coverage. Fixed loop TEM surveys discovered Hellyer and also worked at Que River. The main disadvantage of fixed loop surveys is the requirement to predict the approximate dip and location of the mineralisation prior to discovery to allow good loop positioning. The moving loop method is preferred for reconnaissance exploration. A suggested EM exploration method aimed at locating new mineralisation would be reconnaissance TEM surveys using the In-Loop or Coincident Loop method with 200m x 200m transmitter loops, 200m station spacing and 400m line spacing over the most prospective stratigraphy. This would achieve deep penetration and if a conductive orebody of significant size is present, at least some readings should be anomalous. Any anomalous stations would warrant detailing. This large line and station spacing has been chosen to minimize cost. It is appreciated that much of the terrain is rugged and vegetated thus making surveying slow and difficult, and that lines would need to be cut over much of the area. The use of a coincident loop receiver rather than an in-loop receiver may be the best option because of the difficult access.

The very doubtful late-time anomalous TEM zones 1-4 at Wart Hill should be verified with repeat TEM surveys prior to any drilling.

There is no record of any down-hole EM or MMR logging. Despite the apparent poor conductivity of the known mineralisation, there may well be sufficient contrast to give a weak EM conductor response at depth. The down-hole MMR method will respond to very poor conductors in a resistive host rock and is a very worthwhile method to use in this environment. Also, as mentioned before, there is no reason that more conductive styles of mineralisation should not be present, possibly at depth.

It is strongly recommended that any deep holes on the project area be reamed out if possible and logged with DHTEM and MMR. The same applies to any future holes.

A possible exploration strategy using down-hole methods would be to use geological and magnetic data to interpret the most favourable stratigraphic positions for mineralisation, and then to drill deep holes (400m?) at say 400m intervals along the strike length of the target zones. If these are then logged with DHTEM/ MMR a search radius of up to 100m may be possible thus allowing detection of orebodies with strike lengths in excess of 200m.

There is reasonably extensive coverage of IP over the known mineralisation in the Wart Hill area but only a few isolated grids elsewhere. There are extensive areas of Mt Read Volcanics not covered by IP. Large-scale gradient array IP is an option for regional exploration, however, this would be slow and difficult in the more rugged, heavily vegetated areas to the north. The depth of penetration would be much less than TEM but it would have the advantage of responding to non-conductive, chargeable mineralisation. Such a survey may identify areas of pyrite alteration, which could then lead to VMS deposits. It should be appreciated that black shales in the area will respond to IP and complicate interpretation.

The petrophysical measurements show that the known massive sulphide deposits in the Mt Read Volcanics are dense and will produce a gravity anomaly if they are large enough (and/or shallow enough). The existing detailed gravity coverage at Elliott Bay is over a very small part of the prospective stratigraphy and the regional gravity data is too sparse to delineate a MS body. Although a large-scale reconnaissance gravity survey detailed enough to detect a MS body in this physically difficult environment is probably not a very attractive exploration strategy in isolation, it may have merit if combined with other methods. If a reconnaissance TEM survey is undertaken utilising the parameters discussed above, gravity readings could also be taken along the cut lines. This would increase the chances of success through the possible detection of a MS body that is too poorly conductive to be detected by the TEM survey. Terrain corrections to the gravity data would be critical. If digital terrain information is unavailable, the DTM data generated by the proposed detailed airborne survey may suffice.

No high priority, clear-cut, gravity anomalies indicative of a substantial massive sulphide body have been recognized in the existing gravity data. However, there is scope for a thorough re-assessment of this data. Quantitative modelling incorporating topography and better geological control may lead to the identification of subtle, longer wavelength responses from, blind, large, massive sulphide deposits. Topographic and near surface density variations effects do not appear to have been adequately catered for in the previous interpretations of this data. Additional gravity surveying could have a role to play in further massive sulphide exploration in the Elliott Bay area, complementing EM and detailed aeromagnetic surveys.

The large amount of historical geophysical data should be retrieved where possible and incorporated into a GIS project.

6.0 CONCLUSIONS

The Elliott Bay area covers a highly prospective and significantly under explored / under drilled part of the Mt Read Volcanics. The moderate quantity of largely surface and near surface exploration that has been completed within E20/96 has included relatively systematic geological mapping, geophysics and geochemistry, but the database can definitely be enhanced through more comprehensive exploration.

The sulphide occurrences at Wart Hill / Voyager 19 have not been traced to their source and this area plus the other prospective areas (V2, 3, 12, 17, 24, 29, 29W, 30, 31 and 33) have been retained as part of EL 20/96.

The geophysical review that was undertaken highlighted the need to have all existing geophysical data included in a GIS database and undertake additional gravity work.

7.0 EXPENDITURE STATEMENT

Statement of Expenditure for EL 20/96
12/4/00 – 11/4/2001
Elliott Bay

Geology	$6080
Geophysics	$15,825
Drilling	$0
Gerochemistry	$0
Gridding	$0
Feasibility	$0
Rehabilkoitation	$0
Other	$0
Admin	$2,000
Exploration Expenditure	**$23,905**

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E.L. 20/96 - Elliott Bay,

Southwestern Tasmania.

Annual Report 12/4/00 – 11/4/01

Appendix 1 : **Southern Geoscience Geophysical review**

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BILLITON EXPLORATION AUSTRALIA LIMITED
ELLIOTT BAY, TASMANIA
SIROTEM, MAGNETIC AND GRAVITY DATA REVIEW

B.L. CRAVEN & W.S. PETERS

MAY 2000

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APPENDIX 2: INTERPRETATION OF ELECTRICAL AND ELECTROMAGNETIC SURVEYS AT ELLIOTT BAY (EL 40/85) BY JOHN BISHOP OCT. 1986 23

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1. SUMMARY

The Elliott Bay area in SW Tasmania is an area of high geological prospectivity, which has been explored over a long period of time utilising many geophysical surveys. Relatively recent magnetic, gravity and ground electromagnetic survey data have been reviewed in an attempt to locate any subtle targets and to make recommendations for future geophysical work.

The aeromagnetic data from a QUESTEM survey is of sub-optimal standard. Despite this, a number of isolated magnetic targets and zones of possible demagnetisation (alteration?) have been delineated and the data indicate potential for gold and tin mineralisation in addition to VMS mineralisation.

Ground magnetic data over two small prospects at or near Wart Hill show that the most significant anomaly has not been drill tested.

It is recommended that a new high quality combined magnetic/ radiometric survey be flown with a close line spacing to facilitate direct target detection of magnetite-pyrrhotite related mineralisation, demagnetised alteration zones, potassic alteration zones and lithological / structural mapping.

SIROTEM data over two small grids at or near Wart Hill have failed to locate the known massive sulphide mineralisation or locate any good bedrock conductor anomalies. Several very weak, 'late-time' features of doubtful veracity are recommended for follow up. The area is quite resistive and polarisation effects are prominent in the EM data.

Despite the lack of success with EM in the area to date, Hellyer-Rosebery-Que River type bodies are conductive, and accordingly high-powered, deep penetrating EM surveys are recommended to search for deep bedrock conductors. Large-scale reconnaissance moving loop surveys are the preferred option despite the difficulties of access.

The area has been flown with three different airborne EM surveys without success and although a modern more powerful survey would produce better results, the chances of success are not thought to be high.

It is recommended that any deep holes on the project area be reamed out if possible and logged with DHTEM and MMR. The same applies to any future holes. The possibility of using DHTEM/MMR in holes drilled at regular intervals along favourable stratigraphic horizons is suggested as an exploration strategy.

There is reasonably extensive coverage of IP over the known mineralisation in the Wart Hill area but only a few isolated grids elsewhere. Large-scale gradient array IP is suggested as an option for regional exploration elsewhere, however, this would be as slow and difficult as the TEM in the rugged, heavily vegetated areas. The depth of penetration would be much less than TEM but it would have the advantage of responding to non-conductive, chargeable mineralisation and may identify areas of pyrite alteration, which could lead to VMS deposits.

Petrophysical measurements indicate that the known massive sulphide deposits in the Mt Read Volcanics will produce a gravity anomaly if they are large enough (and/or shallow enough). Unfortunately no obvious gravity anomalies indicative of a substantial massive sulphide body have been recognized in the existing Mt Elliott gravity data although topographic corrections may improve the chances of recognition of subtle anomalies. The existing detailed gravity coverage is over a very small part of the prospective stratigraphy and the regional gravity data is too sparse to delineate a MS body. Accordingly it has been recommended that relatively detailed gravity be considered, possibly in conjunction with the proposed reconnaissance TEM surveys.

It is recommended that the large amount of historical geophysical data should be retrieved and incorporated into a GIS project.

2. LIST OF FIGURES

	FIGURE	DESCRIPTION	SCALE
	1	Location Plan	~ 1:1 400 000
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	6	SIROTEM Line 10350N	1:10000
	7	SIROTEM Line 10550N	1:10000
	8	SIROTEM Line 10750N	1:10000
	9	SIROTEM Line 10950N	1:10000
	10	SIROTEM Line 11950N	1:10000
	11	SIROTEM Line 12150N	1:10000
	12	SIROTEM Line 12350N	1:10000
	13	SIROTEM Line 12550N	1:10000
	14	SIROTEM Line 12750N	1:10000
	15	SIROTEM Line 12950N	1:10000
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	17	SIROTEM Line 13350N	1:10000
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*	19	SIROTEM Ch.5 contour plan	1:10000
*	20	SIROTEM Ch.10 contour plan	1:10000
*	21	SIROTEM Ch.15 contour plan	1:10000
*	22	SIROTEM Ch.20 contour plan	1:10000
*	23	Aeromagnetic TMI Profiles	1:10000
*	24	Aeromagnetic TMI Profiles	1:25000
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*	27	Aeromagnetic TMI East shadowed Image Plan	1:10000
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*	29	Aeromagnetic TMI FVD East shadowed Image Plan	1:10000
*	30	Aeromagnetic TMI FVD East shadowed Image Plan	1:25000
*	31	Ground Magnetic TMI Profiles	1:10000
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*	37	Electromagnetics & IP Summary Plan – Wart Hill Area	1:10000
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	40	SIROTEM Decay Curve – Late Time Anomaly	
*	41	Magnetics & Gravity Summary Plan– Wart Hill Area	1:10000
*	42	Magnetics & Gravity Summary Plan - Regional	1:25000

* = MISSING

In addition to the above, copies of the following plans from John Bishop's reports are included for reference:

1986 Fig. 2	DIGHEM EM Anomalies & Max-Min Traverses	1:25000	NOT WITH REPORT
1986 Fig. 3	Dipole-dipole IP Chargeabilities	1:10000	
1986 Fig. 4	Dipole-dipole IP Resistivities	1:10000	
1986 Fig. 5	UTEM Interpretation	1:10000	
1986 Fig. 7	Areas recommended for further work	1:25000	
1987 Fig. 1	Geology & Prospects	1:25000	
1987 Fig. 2	Grid & DDH Locations	1:25000	
1987 Fig. 3	Magnetic Survey Coverage	1:25000	
1987 Fig. 4	IP Coverage & Anomalies	1:25000	
1987 Fig. 5	Resistivity Coverage & Anomalies	1:25000	
1987 Fig. 6	EM & SP Coverage & Anomalies	1:25000	
1987 Fig. 7	Geophysical Anomaly Compilation Plan	1:25000	
1988 Fig. 23	Wart Hill Geophysical Anomaly Compilation	1:10000	
1988 Fig. 24	V3-V12 Geophysical Anomaly Compilation	1:10000	

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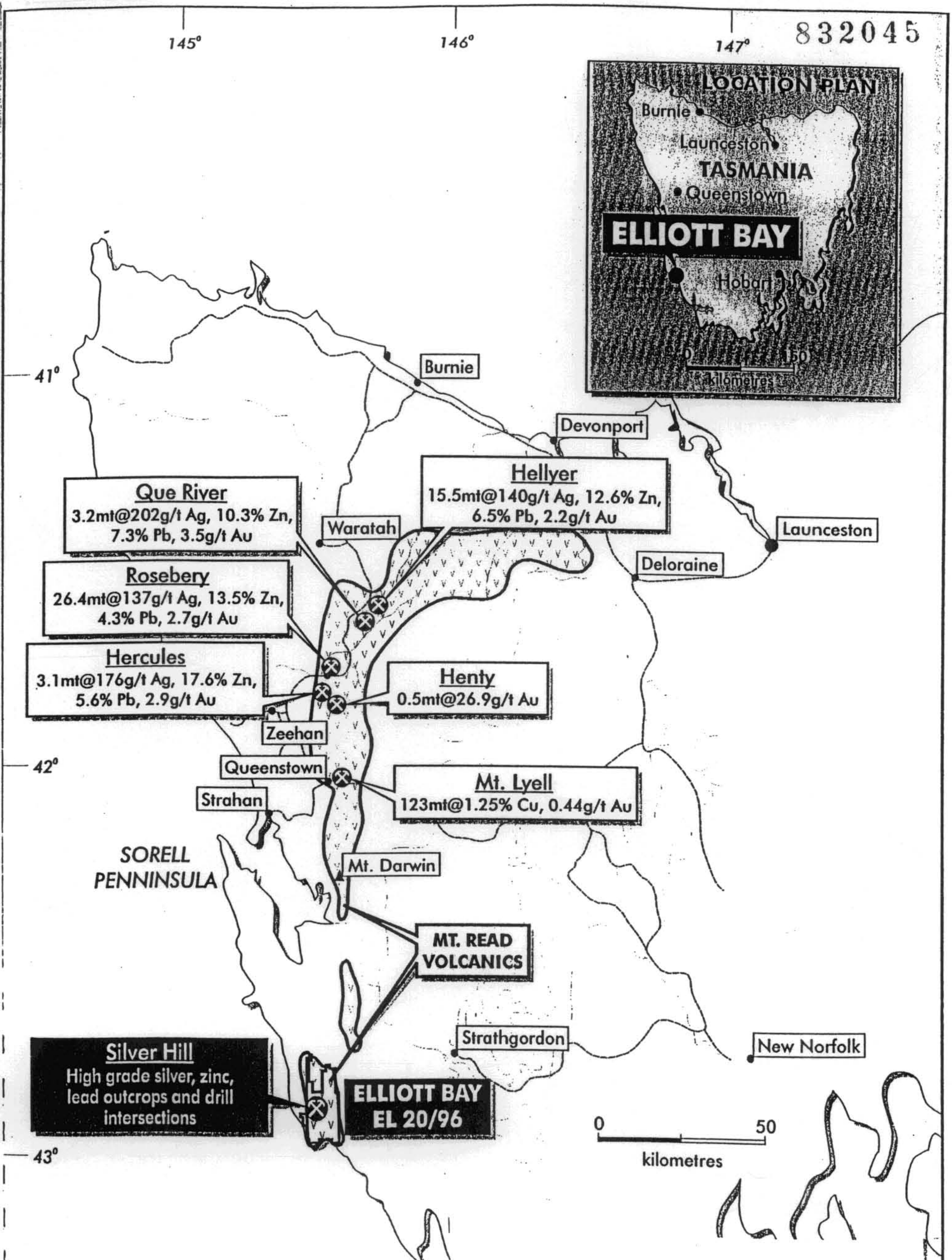

Figure 1:
Billiton Exploration Australia Ltd
Elliot Bay, Tasmania
Location Plan

3. INTRODUCTION

The Elliot Bay Project is located about 70km south of Strahan, Tasmania (Figure 1).

SGC has been requested to provide a brief report on the geophysical aspects of the project, specifically a reinterpretation of the SIROTEM, magnetic and gravity data sets using the latest processing techniques. Specific requests were:

1. Process SIROTEM data with a couple of 1D-inversion algorithms and attempt to identify previously missed subtle anomalies on the resulting CDI sections and, if possible, make depth estimates.

2. Reinterpret ground and airborne magnetic data to identify any subtle anomalies that could be related to a pyrrhotite and/or magnetite-rich VMS system.

3. Model gravity data to identify highs resulting from a massive sulphide body at depth, bearing in mind that an anomaly is likely be extremely subtle and difficult to differentiate from variations in the depth of weathering and topographic affects.

4. Make recommendations for further geophysical work at Elliot Bay and its vicinity.

There have been numerous geophysical surveys of many types over the area over the past 30 years, but the above surveys are the only digital data made available to SGC. Reference will be made to some of the other surveys where it is relevant. The aeromagnetic data are from a QUESTEM AEM survey but an analysis of the AEM data was not requested.)

John Bishop of Mitre Geophysics in Tasmania kindly loaned SGC two reports. These contain good summaries of geophysical work on the project up until 1988 and are included as Appendices 2 & 3. Much of the following discussion is derived from these reports.

The data have been assessed in both a detailed context (1:10 000) and a regional context (1:25 000)

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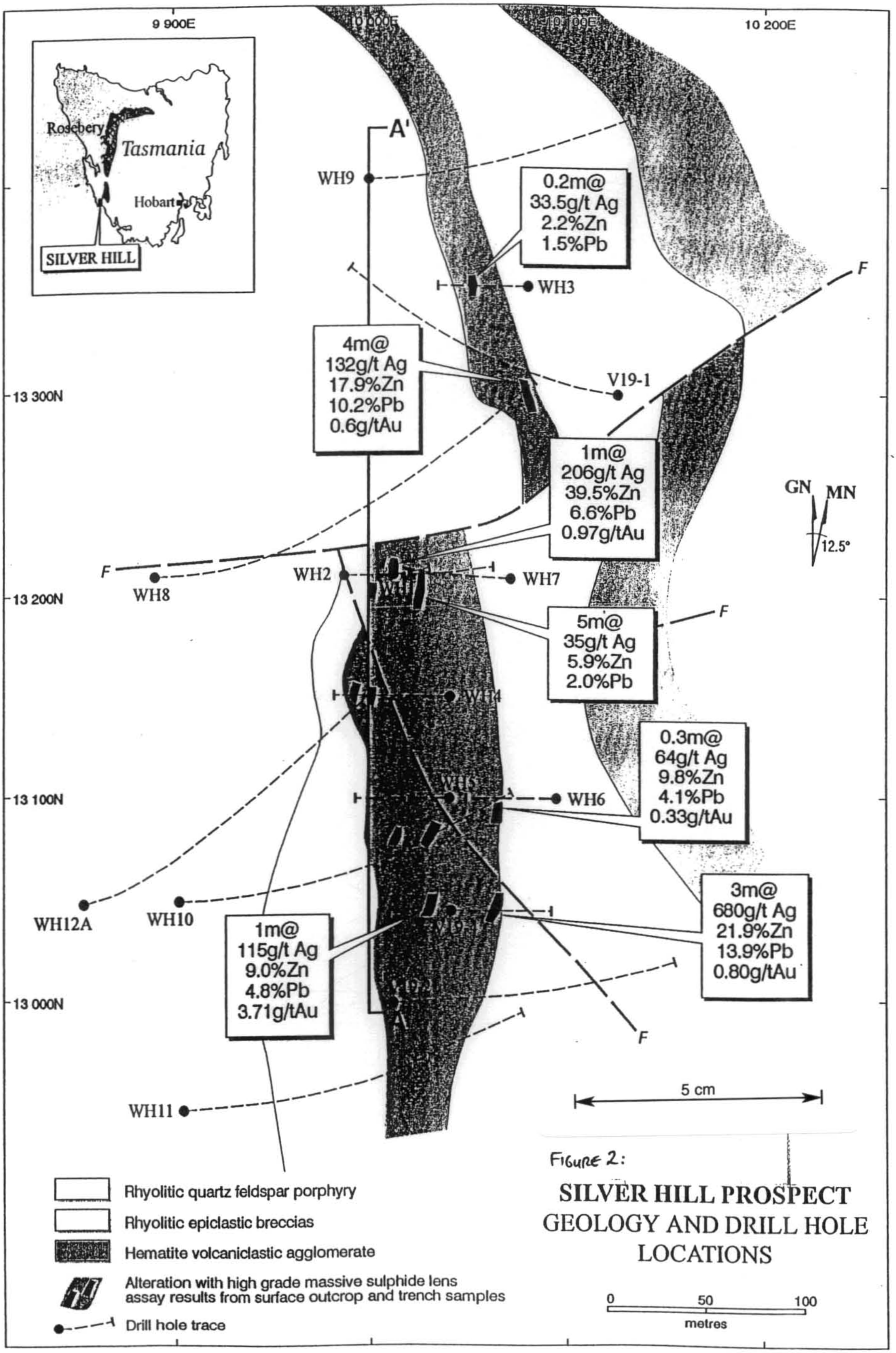

FIGURE 2:

SILVER HILL PROSPECT
GEOLOGY AND DRILL HOLE LOCATIONS

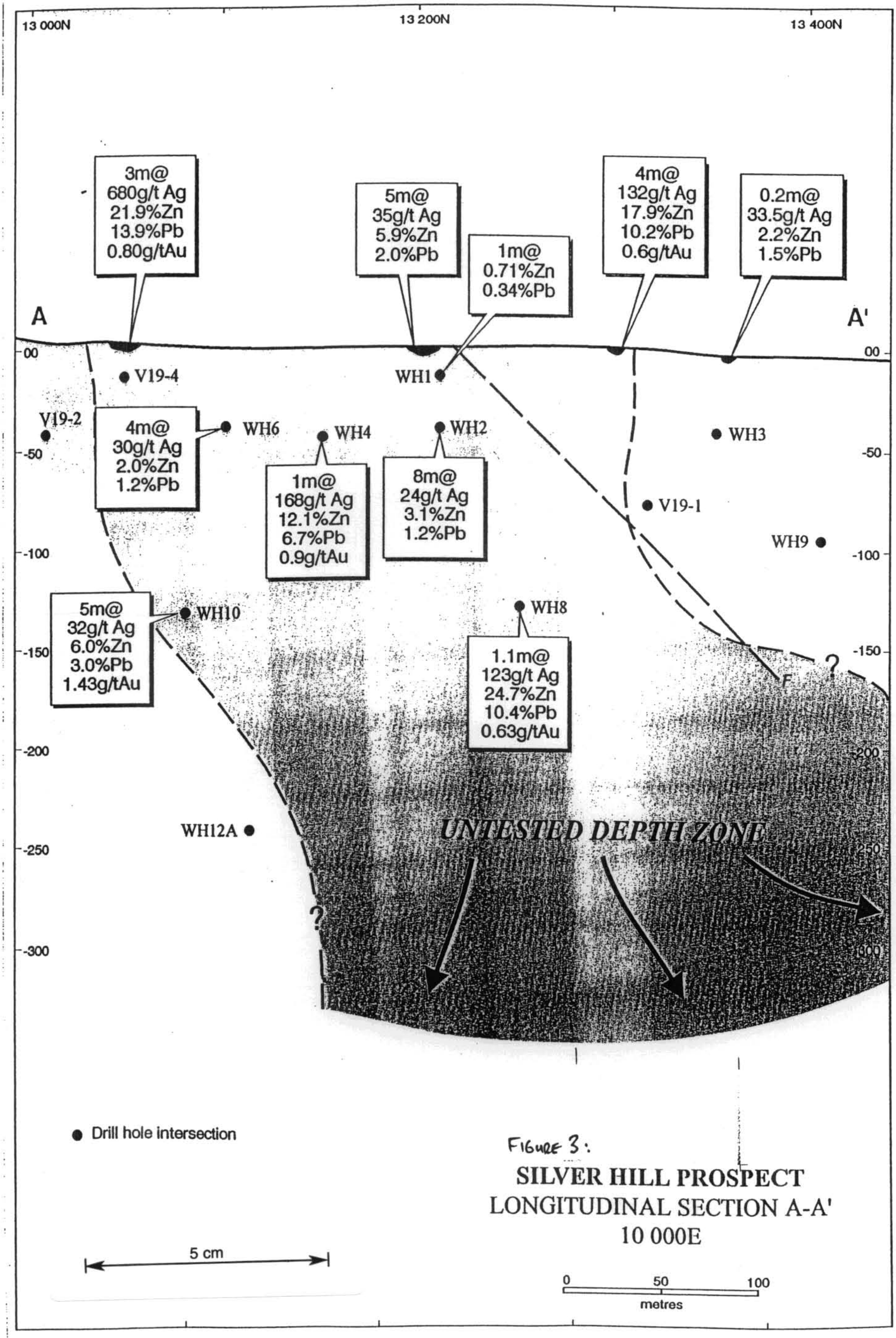

FIGURE 3:

SILVER HILL PROSPECT
LONGITUDINAL SECTION A-A'
10 000E

4. GEOLOGY, MINERALISATION AND PETROPHYSICAL MEASUREMENTS

Elliot Bay contains the southernmost occurrence of the highly prospective Cambrian Mt Read Volcanics, which host VMS base metal and gold deposits at Hellyer, Rosebery, Que River, Hercules, Henty, and Mt Lyell to the north (Figure 1).

Several pods of high-grade massive sulphides have been located in the Wart Hill (aka Silver Hill) area within a belt of north-south striking pyroclastics correlating with the 'Central Belt' of the Mt Read Volcanics in the Queenstown area. These rocks, the Lewis River Volcanics, occupy the central and eastern parts of the area. In the north-central section, they are overlain by Late Cambrian and Ordovician sediments, On the western flank there are basic Cambrian volcanics and sediments. The regional strike is north-south and the rocks are interpreted to face and dip steeply to the west. Black shales occur in the sedimentary sequences.

The primary exploration target is a polymetallic volcanogenic massive sulphide (VMS) deposit. A secondary target is a volcanic-hosted gold deposit.

The geology and drill holes at Wart Hill in plan and long section form are summarised in Figures 2 & 3 (Fimiston Mining Plans).

Petrophysical measurements at Rosebery, Que River and Hellyer show that the mineralisation is:

1. Chargeable
2. Moderately conductive
3. Dense
4. Non-magnetic

Thus IP, gravity and EM surveys would be appropriate to explore for these types of orebodies.

The two samples of massive sulphides tested at Elliot Bay are:

1. Weakly chargeable
2. Very weakly conductive
3. Non-magnetic
4. Dense

This makes them relatively difficult geophysical targets for all techniques with the possible exception of gravity. It is not known how representative these two samples were.

5. SURVEY DETAILS

5.1 SIROTEM Survey:

- Contractor: Solo Geophysics
- Date: March-April 1995
- Equipment: SIROTEM 111, SATX & RVR
- Array: In Loop 100m x 100m TX
- Current: 6.1 amps
- Line Spacing: 200m
- Station Spacing: 50m

A field report is included as Appendix 1.

5.2 Aeromagnetic Survey:

- Contractor: Aerodata Holdings
- Date: March 1991
- Equipment: Cesium Scintrex V201
- Sample Interval: 25m
- Line Spacing: 200m
- Terrain Clearance: 120m
- Line Direction: 090-270 degrees

This was collected as part of a QUESTEM AEM Survey

5.3 Ground Magnetic Survey:

- Contractor: Plutonic Resources?
- Date: 1995
- Equipment: ?
- Sample Interval: 20m
- Line Spacing: 100m
- Line Direction: 090-270 degrees

5.4 Gravity Survey:

- Contractors: Tasmanian Mines Dept & Geopeko
- Date: 1982
- Station Spacing: 25m (Detail), 1-2km (Regional)
- Line Spacing: 100m (Detail)
- Line Direction: 090-270 degrees, 100-280 degrees (Detail)

6. DATA PROCESSING

6.1 General Comments:

SGC were provided with:

1. SIROTEM Amira format files on floppy disk in local grid coordinates.
2. Ground magnetic data on floppy disk in local grid coordinates
3. Located aeromagnetic data as part of the QUESTEM survey.
4. Gravity data in AMG from the Tasmanian Mines Department
5. A 1:10 000 plan showing the relationship of the local grids to AMG and topography and mineralisation.

In order to allow correlation of the ground magnetic and EM data with the other data sets, they were transformed to AMG. A simple translation was applied without rotation. The lack of rotation may have introduced a minor error of up a maximum of 15m, which is not significant for this exercise.

6.2 SIROTEM Data:

Profiles in linear and logarithmic format were plotted at 1:10 000 scale (Figures 4-18). Contour plans of the Channel 5, 10, 15 & 20 responses were made at 1:10 000 (Figures 19-22). The requested 1D-inversion processing was not possible because of the predominantly negative nature of the responses.

The field report for the SIROTEM (Appendix 1) refers to the southern block of data being from the 'East Camp Grid' and the northern block from the 'Wart Hill Grid'. It has been assumed that the data sets are actually both from the same overall grid, however, other grids exist and the southern block could be misplaced, although this is unlikely.

6.3 Aeromagnetic Data:

These data from a QUESTEM survey were processed and plotted as follows:

- Total magnetic intensity (TMI) profiles at 1:10 000 & 1:25000 (Figures 23-24)
- First vertical derivative (FVD) profiles (with and without AGC) at 1:10 000 & 1:25000 (Figures 25-26)
- Total magnetic intensity (TMI) east shadowed (AGC) image plan at 1:10 000 & 1:25000 (Figures 27-28)
- First vertical derivative (FVD east shadowed image plan at 1:10 000 & 1:25000 (Figures 29-30)

The data are relatively low quality for an aeromagnetic survey because of the low spatial resolution, high noise level and relatively poor flight path.

6.4 Ground Magnetic Data:

These data were filtered with a 3 point median filter, followed by a low-pass smoothing filter, and plotted as:

- Total magnetic intensity (TMI) profiles at 1:10 000 (Figure 31)
- Total magnetic intensity (TMI) colour fill contours at 1:10 000 (Figure 32)

6.5 Gravity Data:

These data were processed and plotted as follows:

- Bouguer gravity colour-fill contours at 1:10 000 and 1:25000 (Figures 33-34)
- Residual gravity colour-fill contours at 1:10 000 and 1:25000 (Figures 35-36)

Note that the Tasmanian Mines Dept data were labeled as 'Residual Gravity' but appeared to be 'Bouguer Gravity' and were treated as such.

6.6 Other Geophysical Data:

A series of plans from John Bishop's reports showing locations and details of various geophysical surveys were scanned and referenced in Mapinfo format to allow compilation and correlation with other data. Copies of some of these plans are included for reference.

7. DISCUSSION

7.1 General Comments:

The limited petrophysical measurements at Elliott Bay have quite sobering implications for detection of mineralisation by geophysical surveys if they can be considered representative. Essentially they mean:

- Gravity surveys would work but the chances of detection would decrease rapidly with increasing depth to the mineralisation.
- Magnetic surveys will not work directly.
- Traditional TEM surveys are unlikely to work.
- IP surveys <u>may</u> work for shallow mineralisation.

On the positive side, if we were to consider the petrophysical measurements at Rosebery, Que River and Hellyer, then:

- Gravity surveys would work but the chances of detection would decrease rapidly with increasing depth to the mineralisation.
- Magnetic surveys will not work directly.
- Traditional TEM surveys will work, indeed Que River was an AEM discovery and Hellyer was a TEM discovery.
- IP surveys should work at least for mineralisation at shallow to moderate depths.

It seems reasonable to also anticipate the Rosebery-Hellyer style of mineralisation in the project area rather than relying on a fixed model based on the two Elliot Bay rock samples. As a result EM, IP and gravity surveys are valid exploration tools. To date, magnetic surveys would seem to be of no value for delineating mineralisation directly. They are, however, valuable for interpreting structure, lithology and alteration, thus targeting prospective areas. Alteration zones around the mineralisation may be indicated by subtle magnetic lows. In addition, a different style of mineralisation containing magnetite and/or pyrrhotite may be present. Numerous VMS bodies in other environments have associated magnetite and or pyrrhotite.

7.2 SIROTEM:

The in-loop mode SIROTEM data is presented in profile form (Figures 4-18) and contour form (Figures 19-22). The responses are unusually low amplitude, reflecting the resistive nature of the area. They have decayed to noise levels by Channel 22 (8.62ms). QUESTEM and IP resistivity data confirm the resistive characteristics. The terms 'early, mid and late-time' using in the following discussion are relative, as by normal definition, most of the response is 'early-time'.

The transmitter current was 6 amps into a single-turn 100m x 100m loop. By modern standards, this is a relatively low dipole moment of 60 000 amp.m.turns. A more usual dipole moment these days is 25 amps into twin-turn loops giving 500 000 amp.m.turns, ie approximately 10 times the transmitted signal in the Elliott Bay surveys.

The few features interpreted from the SIROTEM data are annotated on the 1:10 000 and 1:25000 EM and IP summary plans (Figure 37-38). The dominant effect in the early to mid-time data is extensive areas of negative response as outlined on the plan. This is probably due to a polarisation effect of some sort. Comparison with historical dipole-dipole IP data shows some vague correlation in places but is not convincing. It is probably due to a rock type / weathering effect rather than being related to disseminated sulphides. A decay curve from one of these zones (Figure 39) shows the negative response decaying to zero with a power law response of –2.3.

Two cross-cutting northeast striking sinistral faults are inferred offsetting the zones of negative response.

There are no well defined late–time anomalous responses indicative of bedrock conductors. There is a zone (TEM-1) of elevated late time response on line 12150N but this looks to be rather doubtful data, particularly as there is no indication of it on adjacent lines. A decay curve from this zone (Figure 40) does show a very slow decay indicating a long time constant and thus a possible deep bedrock conductor but it must be stressed that this is a very low-level, doubtful response. Three other zones of even weaker, but vaguely anomalous late-time response are also outlined (TEM-2 to TEM-4). The earlier UTEM surveys over this area did not show anomalous responses correlating with the SIROTEM 'anomalies', thus raising more doubts about their validity. Being a fixed loop survey, there is a remote possibility that the UTEM could have been poorly coupled with a conductor.

The SIROTEM data do not show any obvious indications of bedrock conductors, however, there are some questionable anomalous zones possibly worth verifying.

7.3 Aeromagnetics:

The aeromagnetic data included as Figures 23-30 were collected as part of the QUESTEM AEM survey. The data quality is mediocre, low precision and resolution, irregular line spacing and ground clearance. However it does provide a reasonable overall picture of the geology and structure of the area.

Preliminary interpretations of the data are included as Figures 41 and 42. The Lower Palaeozoic-Proterozoic basement seems to consist of a series of distinct, elongate slices or blocks separated by northerly oriented, probably transcurrent fault systems. The magnetic stratigraphy shows evidence of large scale folding, with several fault bounded or disrupted, elongate anticlines (north closing) and synclines (south closing) being inferred from the magnetics. The northerly fault set appears to have been active during the deposition of the Owen Conglomerate. There is some evidence for thrust faulting-eg at the base of the Owen Conglomerate and at the interface between the Wart Hill felsic volcanics and the Western Epiclastics.

The granites intruded into the southern and eastern portion of the volcanic sequence appear to be syn- to post peak deformation.

The strongly magnetic (1000-1500nT), elongate units along the western side of the survey (Figure 28) correlate with gabbroic and or andesitic units within the Mainwaring Group and Western Epiclastics. Several similar magnitude anomalies within the prospective felsic volcanic sequence have been interpreted as andesitic flows or high level intrusives. Chlorite-magnetite assemblages mapped by Cyprus Minerals associated with these strongly magnetic zones would be consistent with andesitic lithologies, but could also be indicative of substantial magnetite generative hydrothermal alteration. Such alteration could be significant for either gold or volcanogenic massive sulphide systems. The bulk of the felsic volcanic sequence is typically non-magnetic, with minor weakly magnetic (100-200nT) flows. The granitic intrusives are essentially non-magnetic, but locally may contain abundant relict magnetic volcanic material.

In addition to the possible magnetic alteration zones mentioned above, several smaller scale, possible alteration features are evident in the aeromagnetic data. These include relatively short strike length magnetic zones and possible demagnetization zones along elongate magnetic units. The short magnetic anomalies could be from Scuddles type pyrrhotitic VMS alteration. Possible alteration induced demagnetization has been inferred at the Hellyer and Que River deposits. Neither type of possible alteration response is well defined in the Questem magnetics. The short strike length anomalies could be fragments of normal, magnetic stratigraphy. The apparently demagnetized zones could reflect local terrain clearance anomalies.

The magnetics indicate that the mineralized felsic volcanic stratigraphy in the main prospect area has been quite strongly disrupted be faulting, with the N-W to NNW fault set the most prominent. Some of this faulting has been identified on the Geopeko and Cyprus geological maps. However, the magnetics suggests that the degree of fragmentation could be significantly higher than indicated on the geology plans. The known massive sulphides at Wart Hill are adjacent to what appears to be a strong fault zone along the margin of the Owen Conglomerate. Thus the original mineralized system could be have been strongly disrupted and fragmented. If the felsic volcanics-Owen Conglomerate contact is a thrust zone, continuations of the Wart Hill massive sulphide mineralization could be present at shallow depths beneath the south-western edge of the conglomerate.

The basic geological and structural picture inferred from the magnetics suggests that the area has reasonable potential for structurally controlled gold deposits, particularly around the nose of the granite emplaced into the southern section of the Wart Hill trend and along the larger structural corridors trending away from the granites. Skarns developed around the granites (eg the chlorite-magnetite zones) may be potential tin mineralization targets. Cyprus targeted the gold potential of the block during their exploration programme.

7.4 Ground Magnetics:

Extensive ground magnetic surveys were done by Geopeko and perhaps Cyprus. This data has not been recovered in digital form or reviewed. The data presented as Figures 31 and 32 are from a later series of surveys undertaken in conjunction with the moving loop Sirotem surveys over the V-19 and V-29 grids. As expected for a felsic volcanic sequence, the overall magnetic response is subdued, with a range of about 100-150nT.

7.4.1. V-19 (Wart Hill) Grid:
The ~300m long, >100nT anomaly centred at ~5251250N 379650E is the most significant feature in the ground magnetic surveys. It is compatible with a shallow (~50m deep), pyrrhotitic concentration, possibly a small to medium sized massive sulphide system. The anomaly plots neatly between the Cyprus/Geopeko drilling, ie. it has probably not been tested. There is a possible weak, coincident Sirotem anomaly (TEM-3). It is a reasonable but smallish target that should be relatively easy to evaluate.

Most of the other bullseye anomalies (± 100nT) are single line features that are either noise or from very short strike length geological sources. Most of the longer magnetic features appear to be fragments of narrow, sub-cropping, weakly magnetic stratigraphic units. They are probably not economically significant but some of them could be related to shallow, thin massive sulphides. If so, they should have been effectively tested by the various EM surveys.

The longer wavelength, deeper? response at ~5250250N, 379900E could be generated by a possible blind, magnetic massive sulphide target. Weak SIROTEM anomaly TEM-1 overlaps this anomaly. DDH V19-5 has possibly tested the target zone.

7.4.2 V-29 Grid:
The series of 50->100nT anomalies along the western side of the survey are mapping a fragmented, narrow, sub-cropping, NNE striking stratigraphic unit. This horizon does not correspond to the gravity anomalies noted in this area. These magnetic anomalies are probably not economically significant.

The longer wavelength anomaly in the SE corner of the V-29 is the northern end of a major magnetic stratigraphic unit.

7.5 Gravity:

Gravity data available for the Elliott Bay area consists of the Tasmanian Government regional survey [typically 1-2km station spacing] and three detailed surveys [Geopeko] over several of the massive sulphide prospects. Data from the detailed surveys is included in the Mines Dept. gravity database. John Bishop reviewed both the regional and detailed gravity data sets in some detail in 1988. The currently available regional gravity coverage is more extensive than that reviewed by Bishop; eg the gap in the coverage over the southern end of the prospective Mt. Read Volcanics trend has been filled. However, the coverage on the western side of the area, though improved, is still sparse, with very few readings over the Western Epiclastics and Mainwaring Group sequences. Thus the steep (easterly decreasing) gradient across the main areas of interest is poorly defined. This makes removal of the regional field difficult.

The character of the both the detailed and regional Bouguer gravity data (Figures 33 and 34) suggests that neither data set has been terrain corrected. The digital data obtained from the Mines Dept. consists of a single gravity reading plus geographic position for each station. Elevation data was not included. No survey specifications or processing information accompanied the digital data.

7.5.1 Regional Gravity:

The 1:25,000 scale residual gravity plan is included as Figure 36. No specific targets have been inferred from this data. The majority of the residual gravity highs appear to be stratigraphic in origin, or terrain related. The strong gravity highs along the western side of the area are mapping gabbroic and andesitic units within the Mainwaring Group. There is a poorly defined, weak to moderate amplitude gravity ridge associated with the mineralized felsic volcanic sequence, particularly the Wart Hill-V19 grid at the northern end of the trend. This ridge has only been partially covered by Geopeko's detailed surveys.

Targets selected by John Bishop from his manually generated residual gravity have been plotted on the 1:25,000 scale summary plan (Figure 42). These anomalies typically have 0.5 or 1mG amplitude. The overall reliability of these isolated highs is questionable. Bishop's residual gravity and the SGC generated residual (Figure 36) do not compare particularly well. One of Bishop's anomalies coincides with the western half of the V-9 detailed gravity grid. This anomaly is suspect since it corresponds to a sub-cropping felsic intrusive. Bishop's other residual gravity highs have not been followed up as gravity targets Most of these anomalies correspond to stratigraphic features on the SGC generated residual.

7.5.2 Detailed Gravity Surveys:

Bouguer and residual gravity contours for the detailed gravity surveys (V-9, V-19 [Wart Hill] & V-29 grids) are included as Figures 33 and 35. This data is quite noisy, probably reflecting the combination of local terrain effects and near surface density variations. Noise levels may be in the 0.05mG to 0.1mG range. Zones of elevated Bouguer or residual gravity are shown on the 1:10000 scale summary plan (Figure 41). Most of these are near surface, short strike length responses. They could represent small, shallow massive sulphide lenses, but are more likely to be produced by near surface density variations that are not directly related to mineralization.

No quantitative modelling of the detailed gravity data has been attempted by SGC. Basic modelling of the majority of these local gravity highs was included in John Bishop's 1988 report. This modelling did not incorporate terrain or near surface (regolith) effects. More robust and realistic modelling would require the inclusion of topography and preferably reasonable geological control. Neither was available for the current assessment.

Bishop's modelling demonstrated that the majority of the local gravity highs could be modelled with either broad, low density contrast, lithological sources or narrow, steeply dipping, massive sulphide type bodies, generally at relatively shallow depths (~50m). The majority of these possible massive sulphide scenarios don't appear to have been drill tested. However, the shallow, massive sulphide source options should have been adequately assessed by the various EM surveys completed over the area.

V-9 GRID:

Bishop modelled the strongest local gravity anomalies. Noise levels in the line 11250N data are quite high. It contains two, ~ 0.1mG anomalies. Both have been modelled as shallow to moderate (<10m to ~50m) depth, short strike length (300m) basement blocks with low density contrast (0.1-0.15g/cc). On this basis, the anomalies are more likely to be mapping simple regolith variations and or lithological changes rather than significant massive sulphide accumulations.

Line 11350N contains has a well defined, 0.2mG anomaly, which has been modelled as both a lithological source (100m wide, 30m deep, 0.15g/cc contrast body) and as a narrow, massive sulphide source (20m wide, 300m long, 0.8g/cc contrast). This isolated, bullseye residual high does not appear to have been drill tested. However, the similar magnitude response at the southern edge of the grid may has been tested by drill hole V9-1.

V-19/ Wart Hill Grid:
The two anomalies analysed on this grid (a complex, ~0.35mG anomaly @~279900E on line 5251320N, and a ~0.25mG anomaly @~279600E 5250320N) have both been modelled as shallow (sub cropping), lithological sources. Both anomalies can be modelled using narrower, higher density, massive sulphide type sources. DDH V19/5 may have tested the more southerly anomaly. Stronger anomalies in the northern part of the grid (e.g. 5251000N @ ~279120E &~279850E) were not modelled by Bishop. DDH V19-3 may have tested the 5251000N 279850E anomaly. An elongate but weak residual gravity high over southern part of the known massive sulphide zone (near DDH V19-4) seems to be from a shallow, lithological/topographic source.

V-29 GRID:
The residual gravity from the V-29 survey does not look as interesting as either the V-9 or V-19 blocks. However, the Bouguer gravity has more character. John Bishop, concentrating on the peak Bouguer anomalies on the western half of the lines has modeled this data in some detail. Depending on how the background level is assigned, these could have amplitudes of ≥ 0.4mG. They have mostly been modelled as moderate depth (~50m), high contrast (0.5-0.8g/cc), massive sulphide type bodies with various orientations and thicknesses. The ostensibly stronger residual anomaly @ 5249020N 380300E has not been modelled. None of these anomalies appear to have been drill tested. The associate shallow massive sulphide potential has probably been down graded by the I.P. and EM coverage. However, Bishop noted some correlation with UTEM anomalies. He also commented on a massive sulphide lead isotope signature from this area.

7.6 Other Existing Electrical & Electromagnetic Surveys

Although the instructions for this review specifies only the SIROTEM, ground magnetic, aeromagnetic and gravity data, it is felt that some discussion of the previous very extensive geophysical work is warranted as they are relevant to future recommendations. The known surveys are documented by John Bishop (Appendices 2-3) and the following information is from these reports:

1975 BHP:
Helicopter EM (H-400) - 100 or so anomalies – not followed up.

1976 Geopeko:
Followed up H-400 EM anomalies.

1982-84 Geopeko:

Dipole-dipole IP survey (a=50m) over main VMS mineralisation area – some data doubtful. Covered 25 sq.km. with no good responses other than from graphitic shales. Several other small IP surveys over other prospects.

UTEM fixed loop TEM survey over main areas 'V9, V19, V29 & V29W' – 'data reasonably good'. John Bishop re-interpreted the data and could see no late-time anomalies. He did locate some 'pronounced' anomalies sourced at shallow depths which he thought were unlikely to be VMS related.

Miscellaneous Self Potential, Turam and VLF surveys were carried out, apparently with no significant result.

1986 Cyprus:
DIGHEM survey of 700 line km @ 150m line spacing carried out over most prospective stratigraphy - numerous anomalies. Two overlapping surveys showed very poor correlation raising doubts about the integrity of either the flight path or the equipment. 17 anomalies finally selected for follow up. The best zone on the 'Spero River' sheet is in Tertiary gravels. The other anomalies were relatively poor. Max-min ground EM was used to follow up the DIGHEM anomalies – all were verified as poor surficial-type conductors.

1991:
QUESTEM Survey over entire project area. The data and interpretation is not part of this report but the results show that the area is predominantly resistive and few if any new targets were discovered. The rough terrain would have limited the effectiveness of such a fixed wing survey.

8. CONCLUSIONS AND RECOMMENDATIONS

This is an area of high geological prospectivity but over a long period of time, it has had extensive exploration utilising a large number of geophysical surveys. The easy ideas have been looked at and the logical geophysical techniques of the day have been applied. Future exploration will not be easy and will require significant commitment. The proposed target is an orebody of substantial size and if these exist in the area, they are likely to be deep or in less accessible areas not thoroughly explored to date. The most prospective rock sequences cover a total area of about 150 sq.km.

The entire tenement has been flown with several generations of aeromagnetic surveys including the data from the DIGHEM and QUESTEM surveys. By today's standards, all of these surveys are of relatively low resolution and quality. The DIGHEM data (which is probably not available in digital form) was flown at 150m line spacing, has poor visual location, and would have the relatively high noise levels associated with early DIGHEM surveys. The QUESTEM data is at 200m line spacing, also has quite poor flight path, is flown high (120m) and it is relatively noisy.

Several short strike length magnetic features indicated on Figures 41 and 42 have characteristics consistent with weakly to moderately magnetic massive sulphide mineralization. These should be thoroughly geologically and geophysically evaluated. The possible demagnetization zones inferred from the magnetics also warrant further evaluation for similarities to the Hellyer and Que River alteration systems, and as possible epigenetic gold targets. The overall geological setting inferred from the aeromagnetics suggests reasonable potential for epigenetic gold mineralization and, to a lesser extent, tin mineralization. It also suggests that the structural complexity of the area may have been underestimated during previous exploration campaigns.

The ~300m long, >100nT anomaly centred at ~5251250N 379650E on the Wart Hill grid is the most significant anomaly identified in the ground magnetics. This anomaly plots neatly between the Cyprus/Geopeko drilling, and has probably not been adequately drill tested. It warrants further evaluation, but has probably been downgraded somewhat by the existing EM coverage.

It is recommended that a very high quality combined magnetic/ radiometric survey be flown using either a helicopter or a high performance fixed wing system such as Kevron's turbine-powered Cresco system. A line spacing of 50m – 80m is suggested with a flight height as low as the tree canopy safely allows (40m?). Although there is little evidence for magnetite or pyrrhotite associated with the mineralisation styles known in the area, the accurate mapping of structure and lithology would greatly improve the interpretation of target areas. Alteration may be manifested as subtle magnetic low zones due to magnetite destruction. Unexpected targets may also be generated from different styles of mineralisation. High quality radiometric surveys may help delineate areas of potassic alteration.

At least three airborne EM systems have been flown over the area. The entire tenement area has most recently been flown with QUESTEM and most of the more prospective areas have also been flown with DIGHEM. Since the time of these surveys, there have been improvements in instrumentation and processing, notably for the fixed wing systems. Unfortunately, the rugged topography will always limit the effectiveness of fixed wing surveys in much of the area. The existing surveys have, so far, failed to locate any significant bedrock conductors. Although a new AEM survey would produce better results, the chances of success cannot be rated high and accordingly it is difficult to recommend further airborne EM surveys.

Ground EM surveys (time domain and frequency domain) carried out to date have failed to convincingly locate the known mineralisation or any new mineralisation. The lack of success over the known mineralisation can be attributed to its poor conductivity as indicated by the petrophysical measurements and/or its small size.

The geological environment should be capable of hosting orebodies similar to Hellyer and Rosebery, both of which are significantly more conductive than the known Elliott Bay mineralisation. Accordingly, the lack of success so far does not negate the use of high-powered, deep penetrating EM surveys. This method, together with down-hole EM and MMR surveys, are the most effective geophysical techniques available to explore for deep massive sulphide mineralisation.

The TEM coverage to date is limited to two small areas in the Wart Hill vicinity. VLF, Turam and Max-Min frequency domain surveys are more extensive but are highly inferior to modern TEM surveys and as such are not considered as adequate coverage. Fixed loop TEM surveys discovered Hellyer and also worked at Que River. The main disadvantage of fixed loop surveys is the requirement to predict the approximate dip and location of the mineralisation prior to discovery to allow good loop positioning. The moving loop method is preferred for reconnaissance exploration. A suggested EM exploration method aimed at locating new mineralisation would be reconnaissance TEM surveys using the In-Loop or Coincident Loop method with 200m x 200m transmitter loops, 200m station spacing and 400m line spacing over the most prospective stratigraphy. This would achieve deep penetration and if a conductive orebody of significant size is present, at least some readings should be anomalous. Any anomalous stations would warrant detailing. This large line and station spacing has been chosen to minimize cost. It is appreciated that much of the terrain is rugged and vegetated thus making surveying slow and difficult, and that lines would need to be cut over much of the area. The use of a coincident loop receiver rather than an in-loop receiver may be the best option because of the difficult access.

The very doubtful late-time anomalous TEM zones 1-4 at Wart Hill should be verified with repeat TEM surveys prior to any drilling.

There is no record of any down-hole EM or MMR logging. Despite the apparent poor conductivity of the known mineralisation, there may well be sufficient contrast to give a weak EM conductor response at depth. The down-hole MMR method will respond to very poor conductors in a resistive host rock and is a very worthwhile method to use in this environment. Also, as mentioned before, there is no reason that more conductive styles of mineralisation should not be present, possibly at depth.

It is strongly recommended that any deep holes on the project area be reamed out if possible and logged with DHTEM and MMR. The same applies to any future holes.

A possible exploration strategy using down-hole methods would be to use geological and magnetic data to interpret the most favourable stratigraphic positions for mineralisation, and then to drill deep holes (400m?) at say 400m intervals along the strike length of the target zones. If these are then logged with DHTEM/ MMR a search radius of up to 100m may be possible thus allowing detection of orebodies with strike lengths in excess of 200m.

There is reasonably extensive coverage of IP over the known mineralisation in the Wart Hill area but only a few isolated grids elsewhere. There are extensive areas of Mt Read Volcanics not covered by IP. Large-scale gradient array IP is an option for regional exploration, however, this would be slow and difficult in the more rugged, heavily vegetated areas to the north. The depth of penetration would be much less than TEM but it would have the advantage of responding to non-conductive, chargeable mineralisation. Such a survey may identify areas of pyrite alteration, which could then lead to VMS deposits. It should be appreciated that black shales in the area will respond to IP and complicate interpretation.

The petrophysical measurements show that the known massive sulphide deposits in the Mt Read Volcanics are dense and will produce a gravity anomaly if they are large enough (and/or shallow enough). The existing detailed gravity coverage at Elliott Bay is over a very small part of the prospective stratigraphy and the regional gravity data is too sparse to delineate a MS body. Although a large-scale reconnaissance gravity survey detailed enough to detect a MS body in this physically difficult environment is probably not a very attractive exploration strategy in isolation, it may have merit if combined with other methods. If a reconnaissance TEM survey is undertaken utilising the parameters discussed above, gravity readings could also be taken along the cut lines. This would increase the chances of success through the possible detection of a MS body that is too poorly conductive to be detected by the TEM survey. Terrain corrections to the gravity data would be critical. If digital terrain information is unavailable, the DTM data generated by the proposed detailed airborne survey may suffice.

No high priority, clear-cut, gravity anomalies indicative of a substantial massive sulphide body have been recognized in the existing gravity data. However, there is scope for a thorough re-assessment of this data. Quantitative modelling incorporating topography and better geological control may lead to the identification of subtle, longer wavelength responses from, blind, large, massive sulphide deposits. Topographic and near surface density variations effects do not appear to have been adequately catered for in the previous interpretations of this data. Additional gravity surveying could have a role to play in further massive sulphide exploration in the Elliott Bay area, complementing EM and detailed aeromagnetic surveys.

The large amount of historical geophysical data should be retrieved where possible and incorporated into a GIS project.

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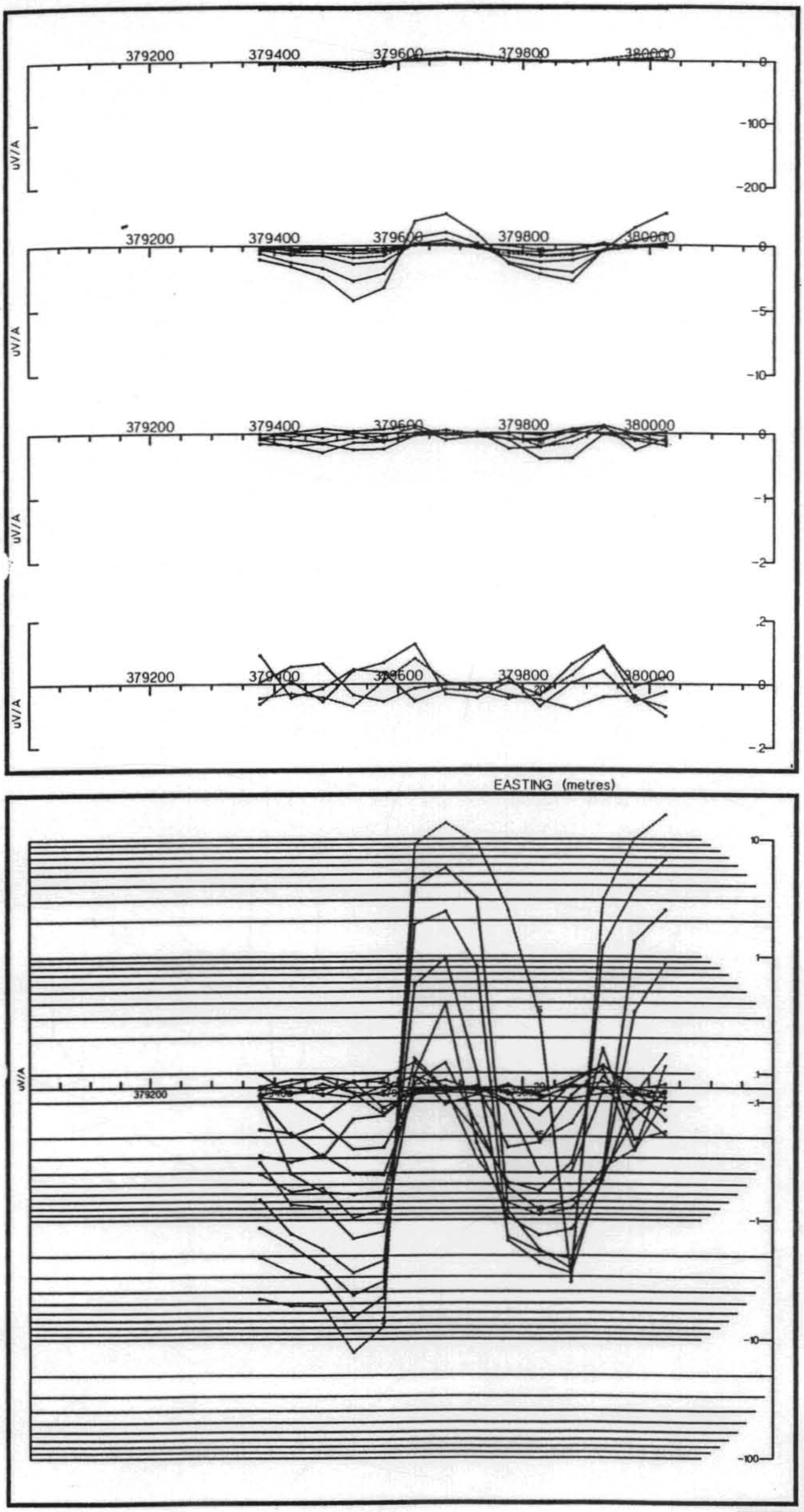

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13	1.625
14	2.025
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27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION : PLUTONIC
DATE : APRIL 1995
CONFIGURATION : IN LOOP
LOOP SIZE : 100 METRES
READING INT : 50 METRES
LINE SPACING : 200 METRES
INSTRUMENT : SIROTEM MK 3
NO. CHANNELS : UP TO 22

PROCESSING : SOUTHERN GEOSCIENCE
SUPERVISION : W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT
LINE 5248315N 9950N

FIG. 4

Date : 09-05-2000

Figure :

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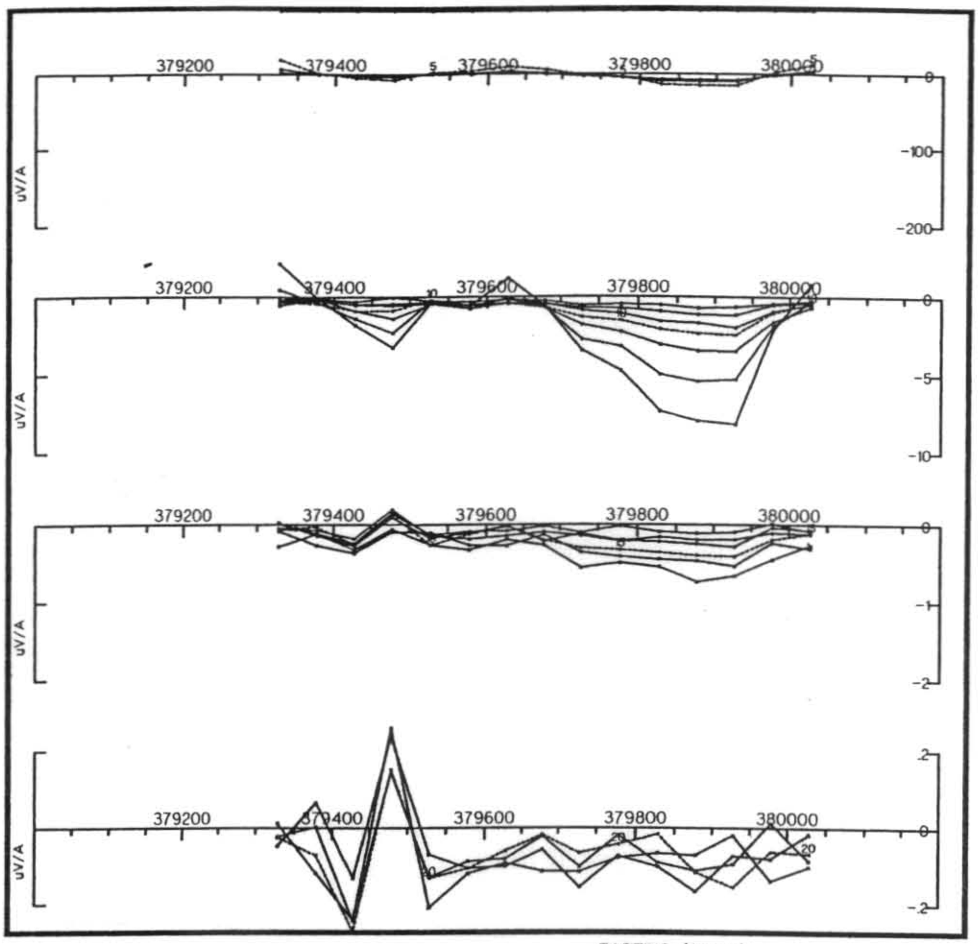

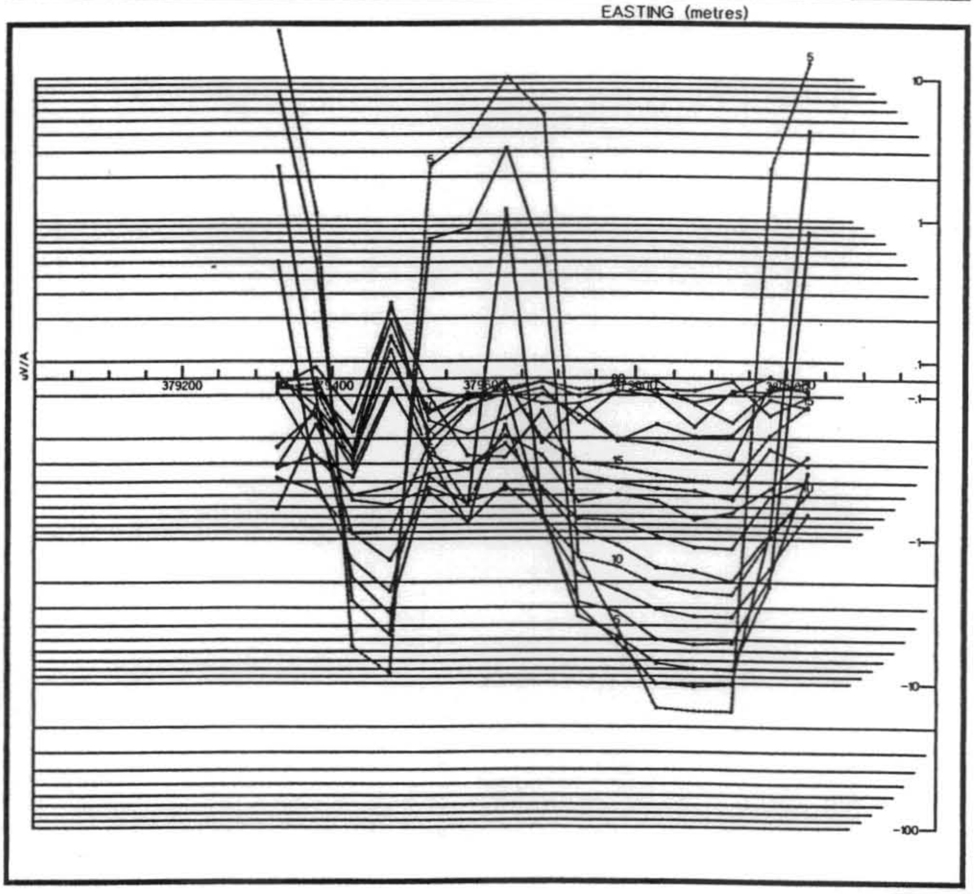

Ch.	Msec.
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2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.525
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

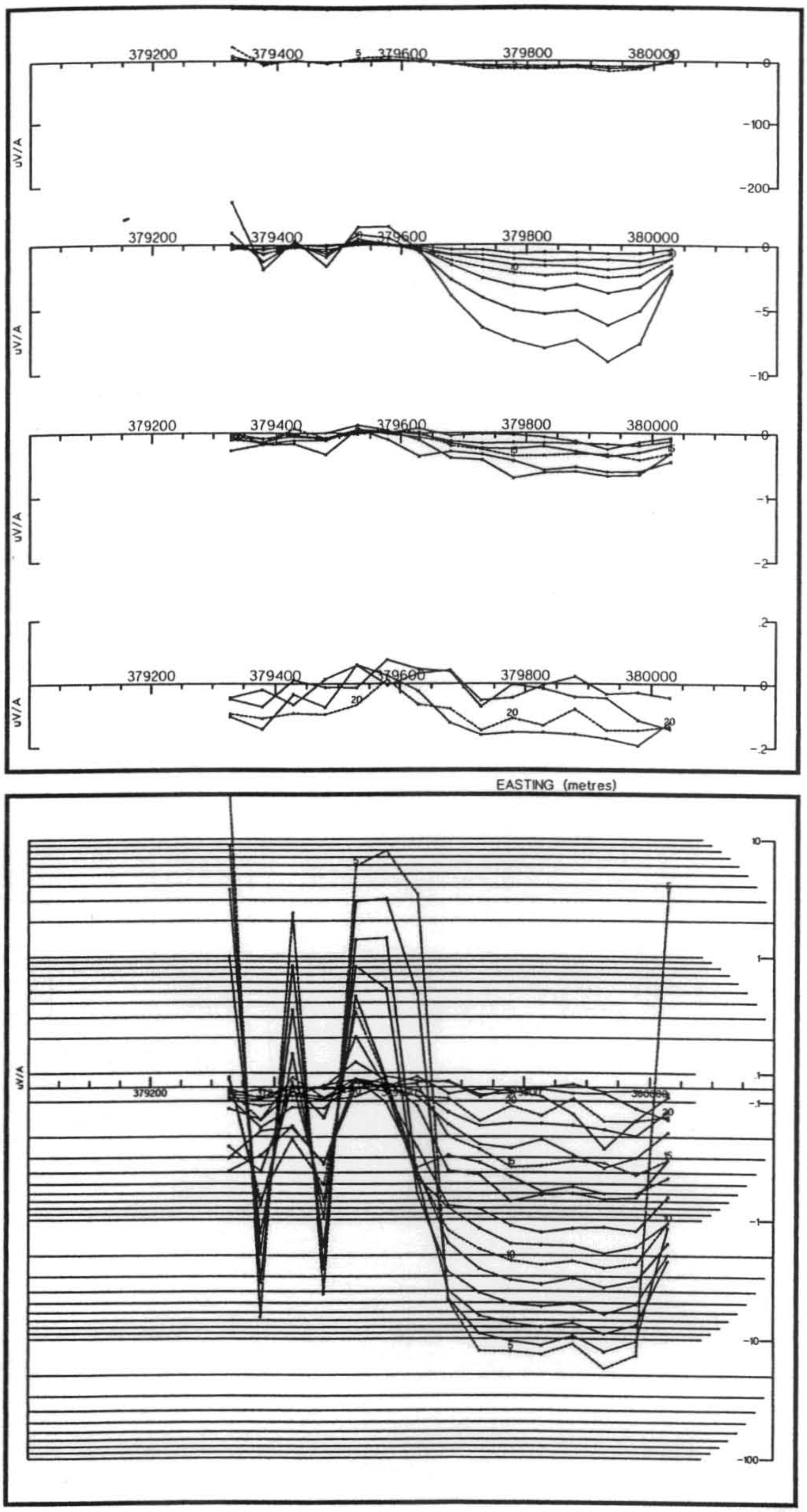
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG.5 LINE 5248515N 10150N

Date : 09-05-2000 | Figure :

832065



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

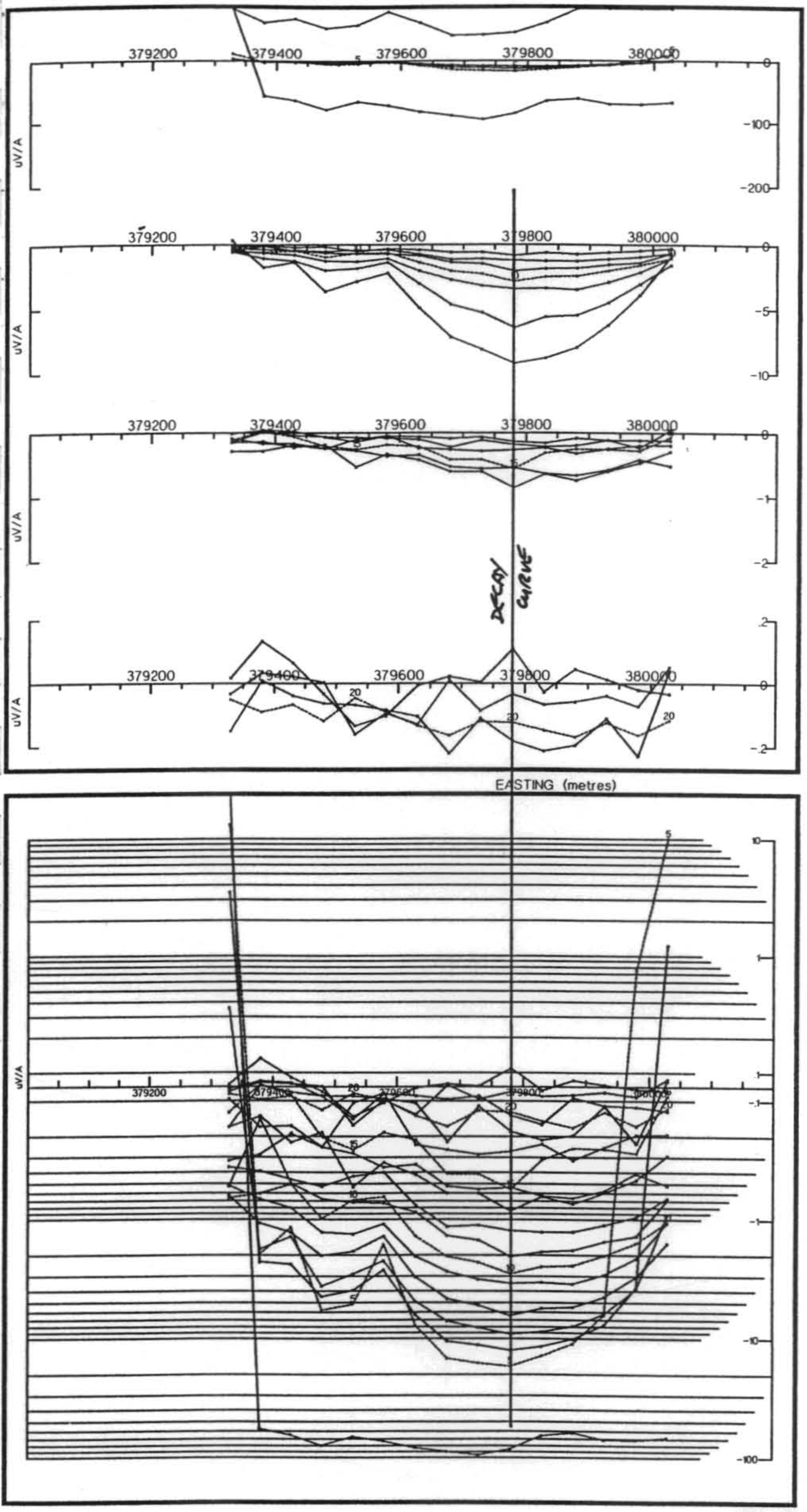
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT
LINE 5248715N

FIG. 6 10350N

Date : 09-05-2000 Figure :

832066



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

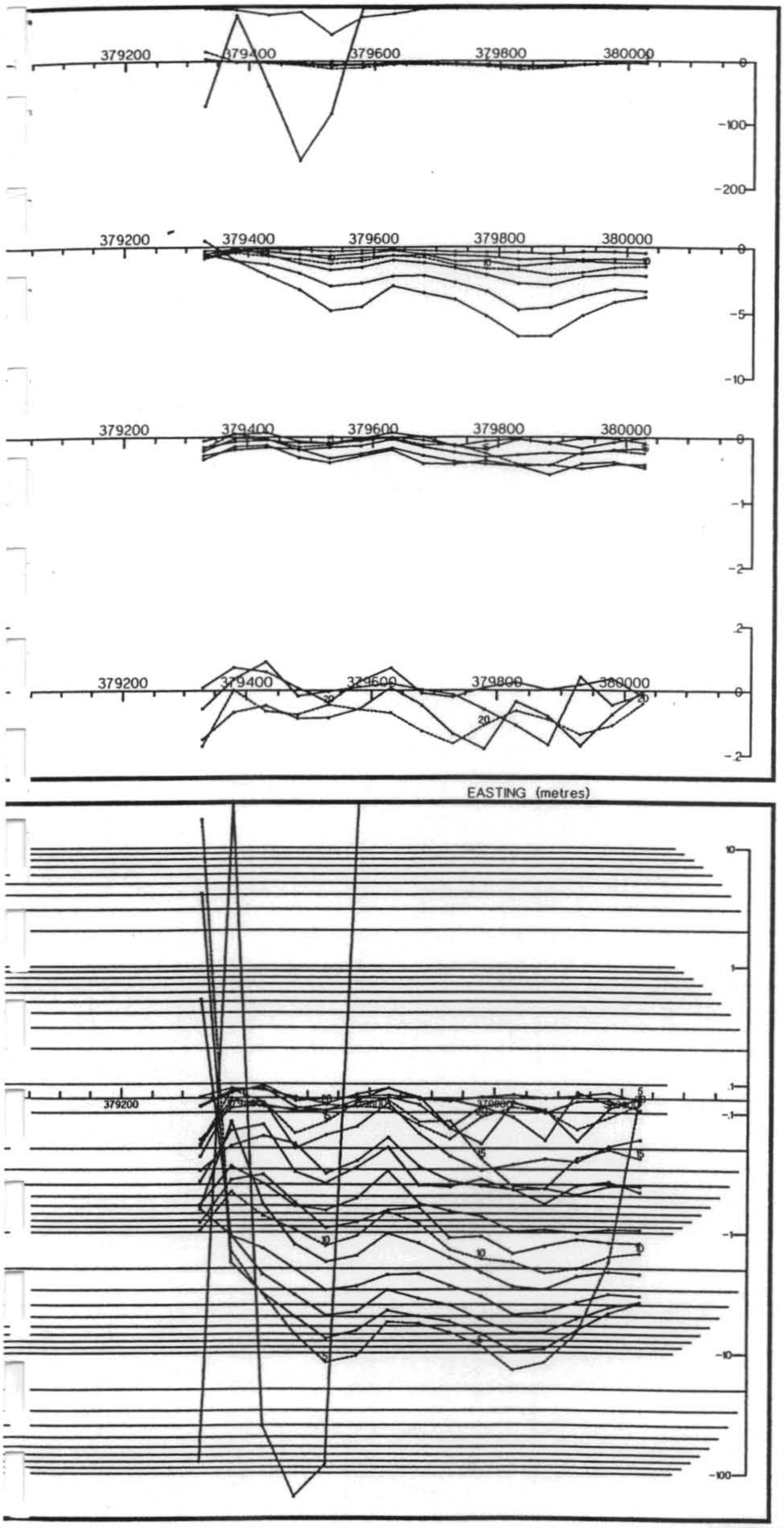
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 7 LINE 5248915N 10550N

Date : 09-05-2000 | Figure :

832067



Ch.	Msec
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SPECIFICATIONS

N	PLUTONIC
	APRIL 1995
.TION	IN LOOP
SIZE	100 METRES
G INT	50 METRES
NG	200 METRES
T	SIROTEM MK 3
ELS	UP TO 22
G	SOUTHERN GEOSCIENCE
N	W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

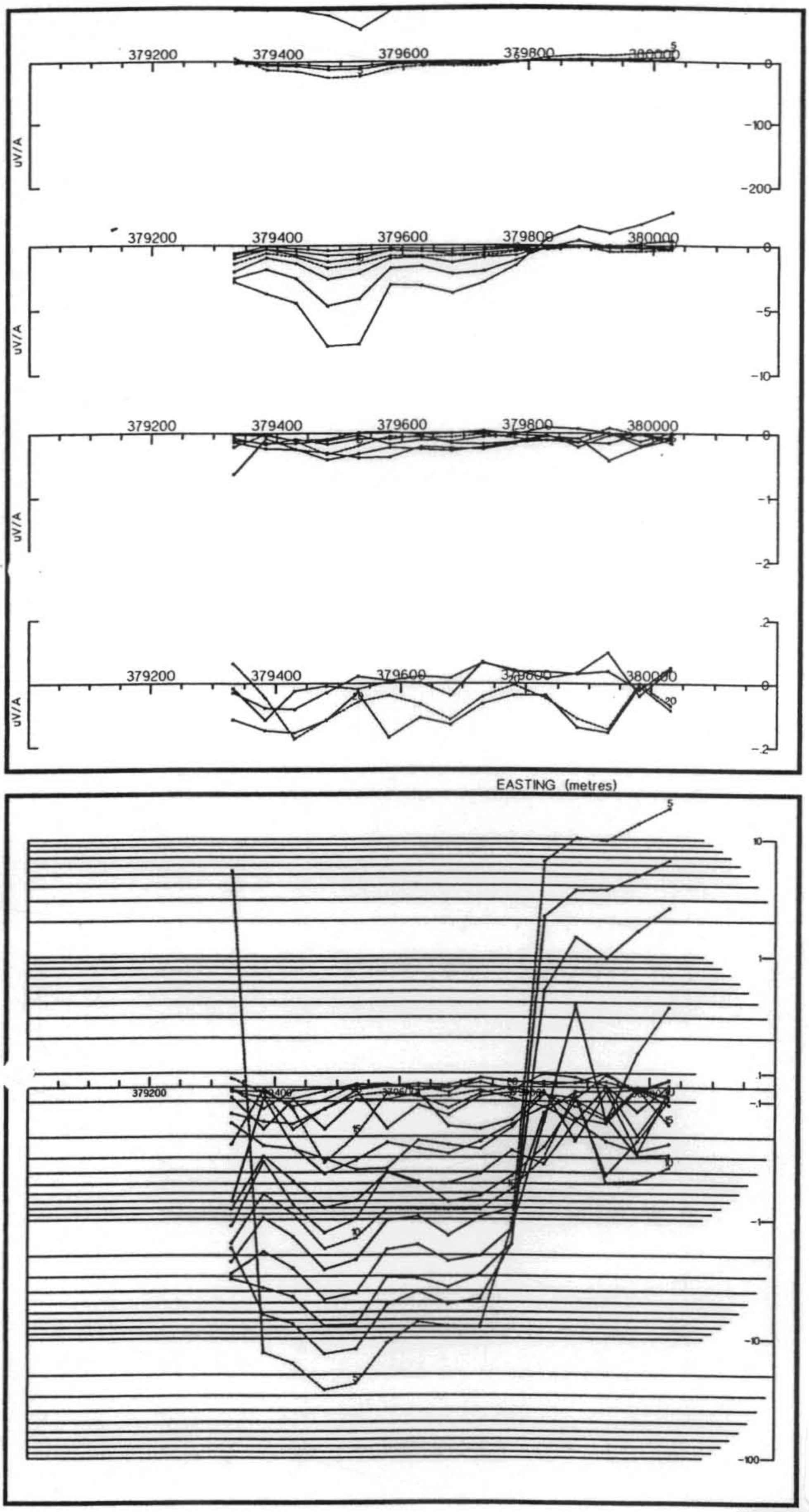
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT
LINE 5249115N

FIG. 8. 10750N

Date : 09-05-2000 | Figure :

832068



Ch	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

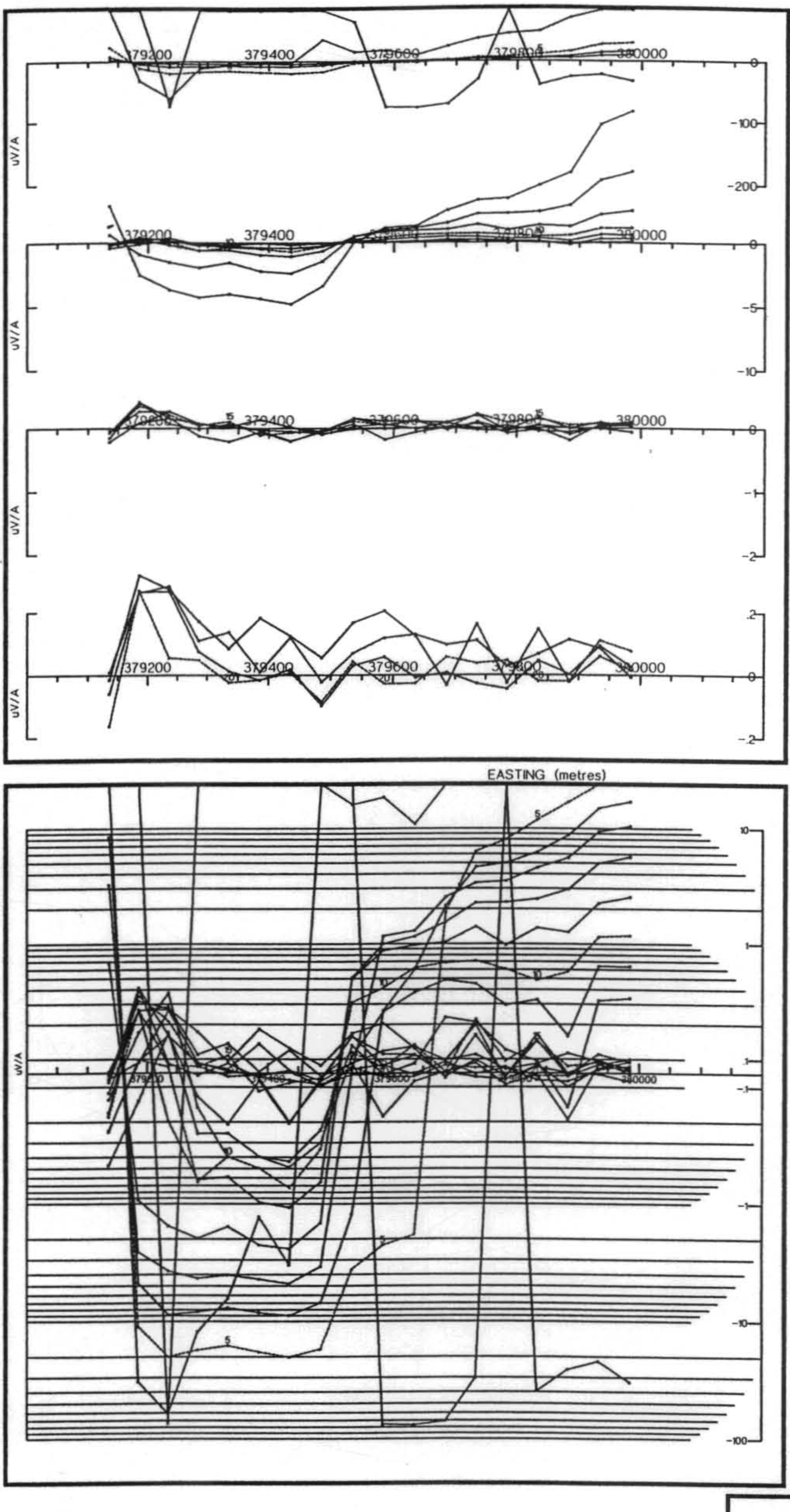
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG.9 LINE 5249315N 10950N

Date : 09-05-2000 | Figure :

832069



Ch.	Msec
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

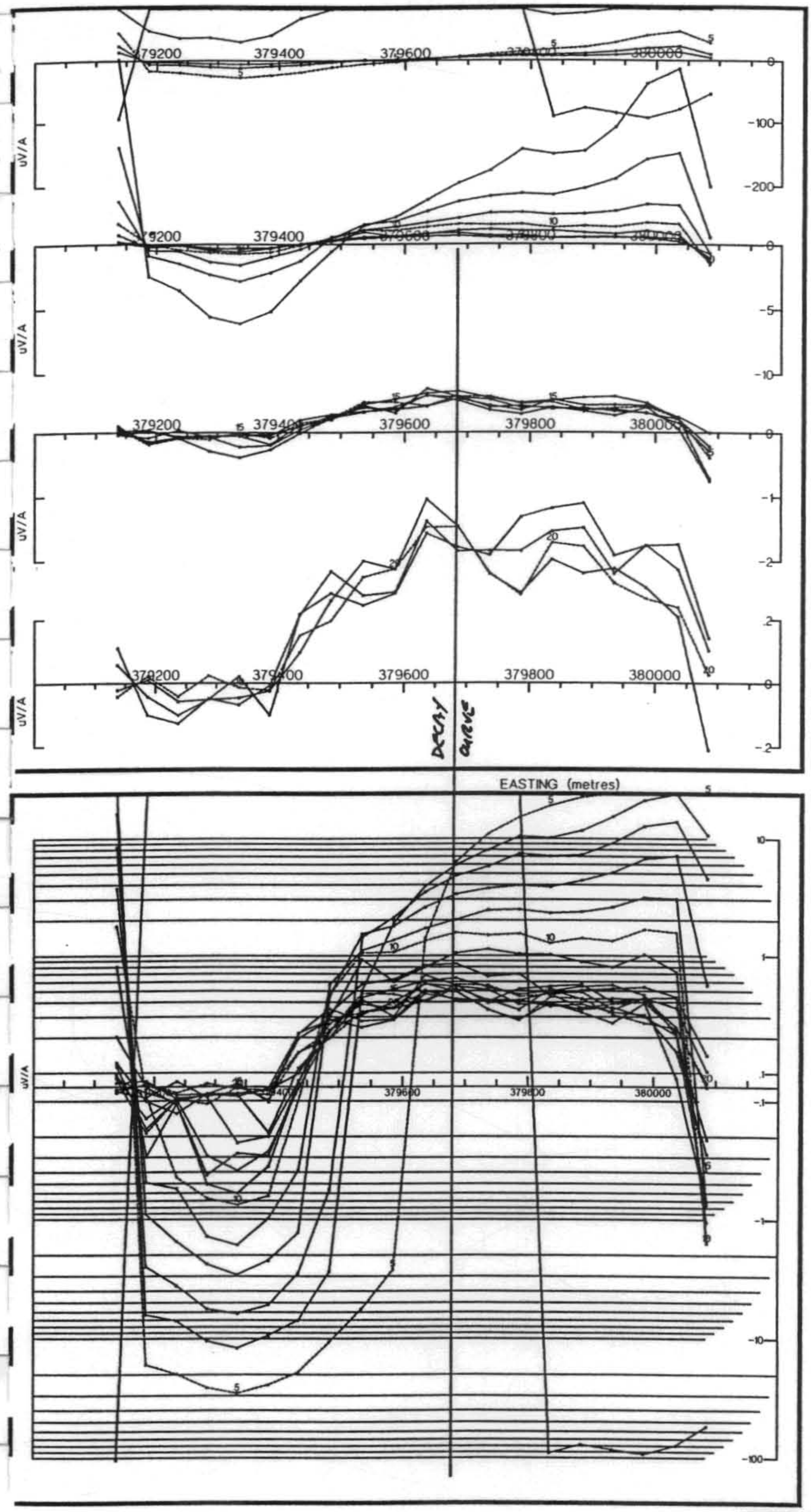
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 10 LINE 5250320N 11950N

Date : 09-05-2000 | Figure :

832070



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

URVEY SPECIFICATIONS

CQUISITION	: PLUTONIC
ATE	: APRIL 1995
ONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
INE SPACING	: 200 METRES
NSTRUMENT	: SIROTEM MK 3
D. CHANNELS	: UP TO 22
ROCESSING	: SOUTHERN GEOSCIENCE
UPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

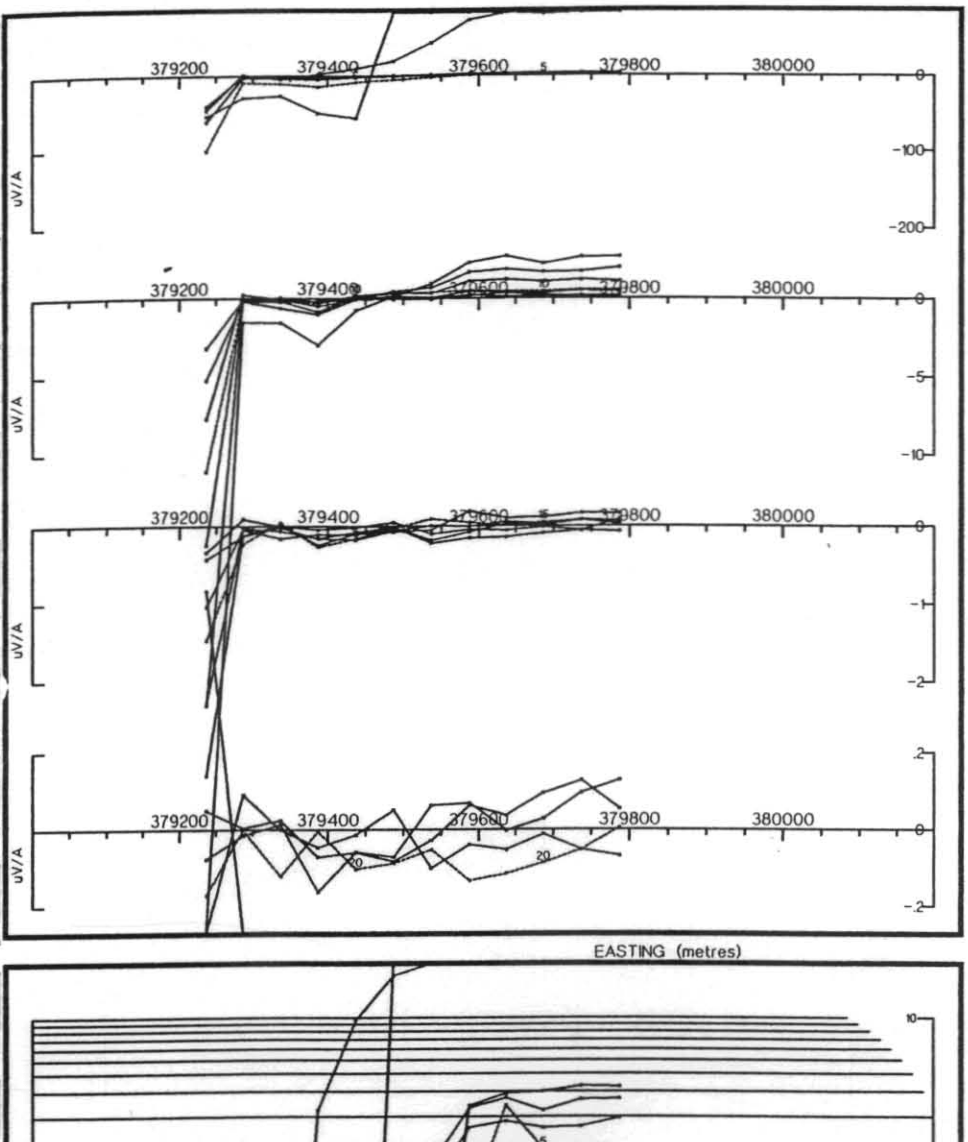
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT
LINE 5250520N

FIG. 11 12150N

Date : 09-05-2000 | Figure :

832071



Ch	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION : PLUTONIC
DATE : APRIL 1995
CONFIGURATION : IN LOOP
LOOP SIZE : 100 METRES
READING INT : 50 METRES
LINE SPACING : 200 METRES
INSTRUMENT : SIROTEM MK 3
NO. CHANNELS : UP TO 22

PROCESSING : SOUTHERN GEOSCIENCE
SUPERVISION : W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

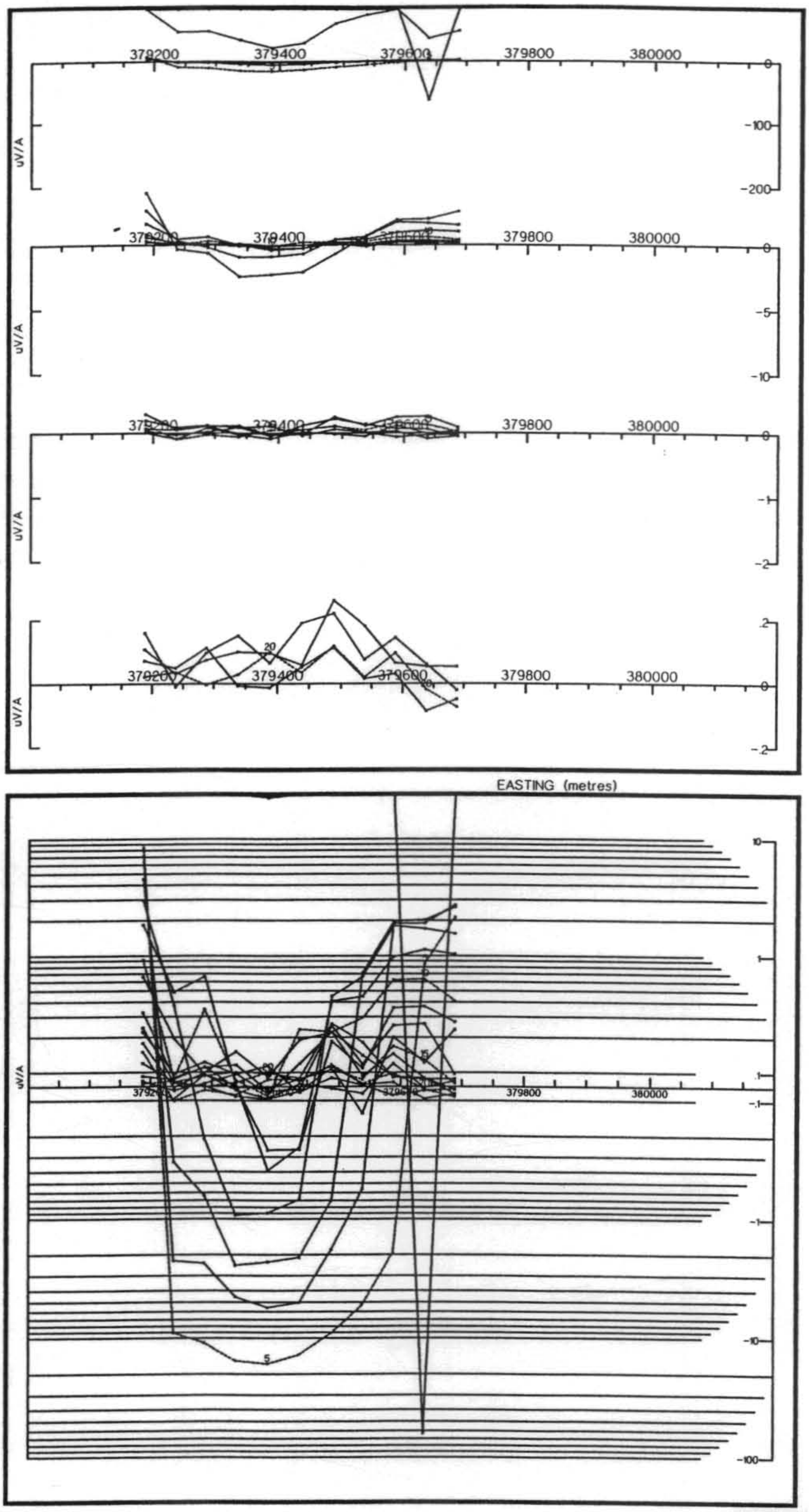
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 12 LINE 5250720N 12350N

Date : 09-05-2000 Figure :

832072



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

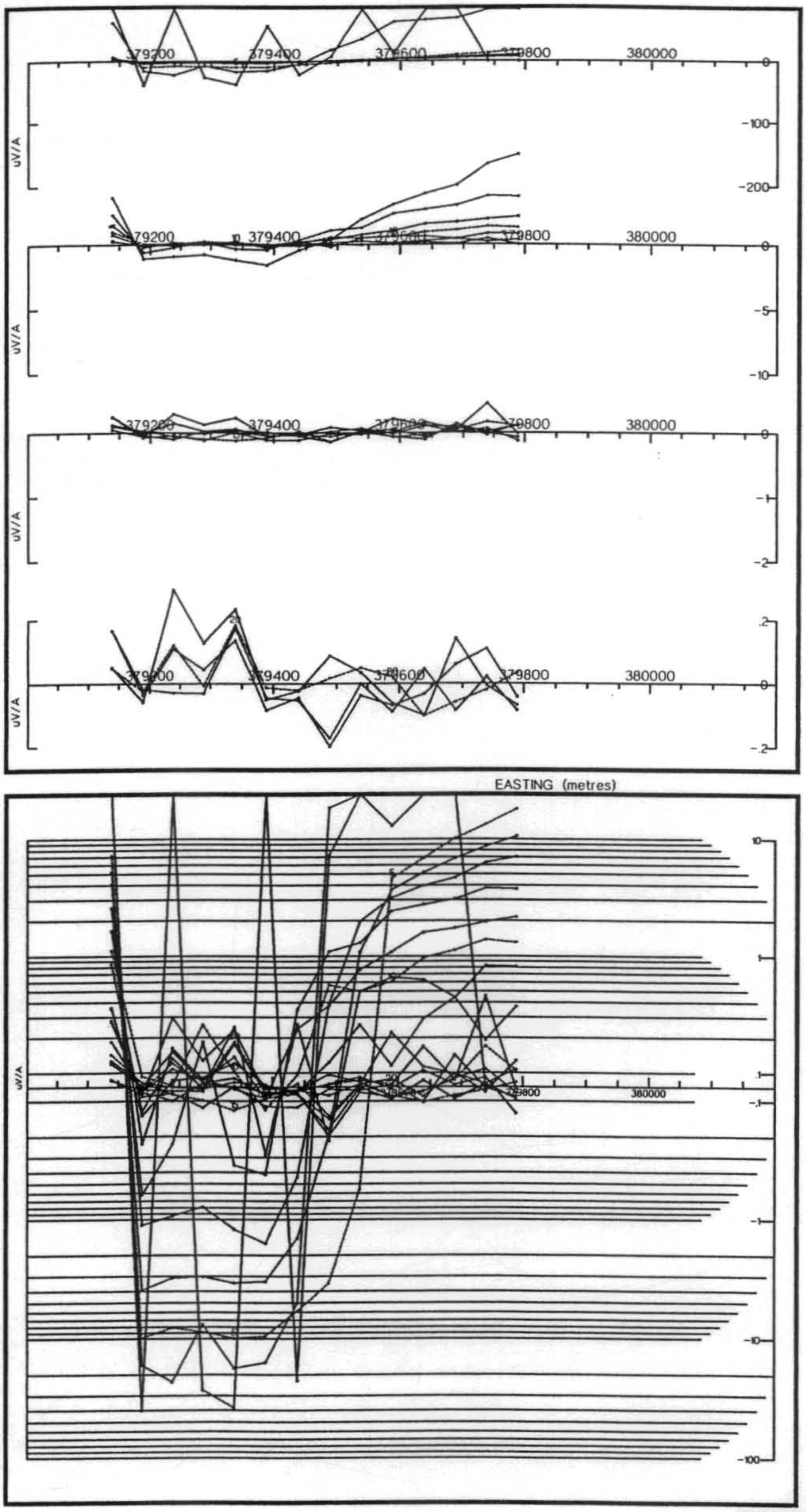
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 13. LINE 5250920N 12550N

Date : 09-05-2000 | Figure :

832073



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

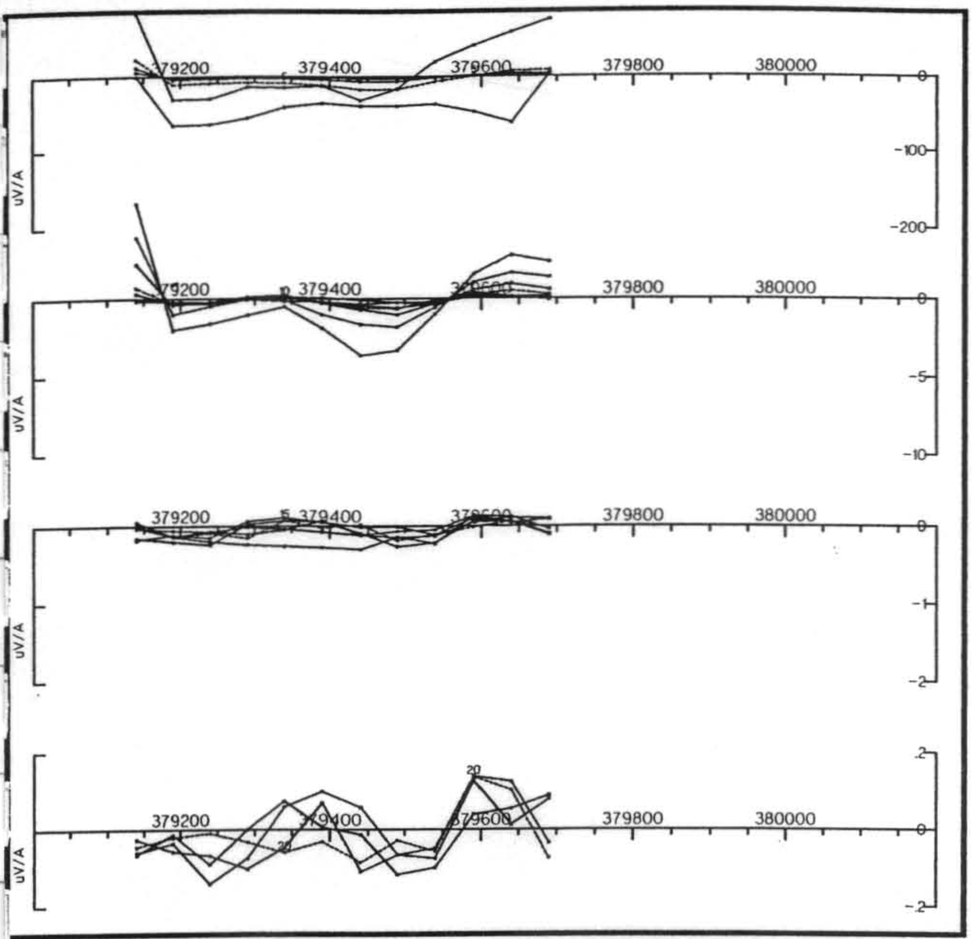
0 200 400
Scale 1 : 10000

SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 14 LINE 5251120N 12750N

Date : 09-05-2000 | Figure :



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
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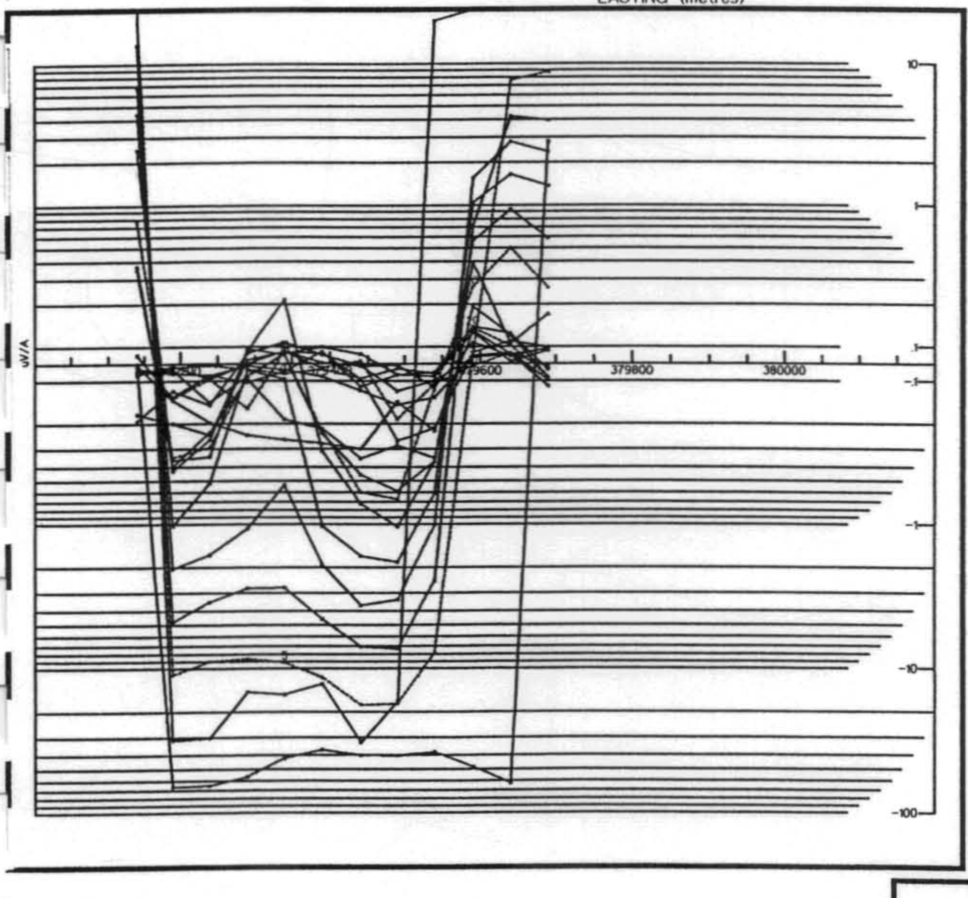
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825



5 cm

URVEY SPECIFICATIONS

CQUISITION	: PLUTONIC
ATE	: APRIL 1995
ONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
INE SPACING	: 200 METRES
STRUMENT	: SIROTEM MK 3
D. CHANNELS	: UP TO 22
ROCESSING	: SOUTHERN GEOSCIENCE
UPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT

GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT

VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

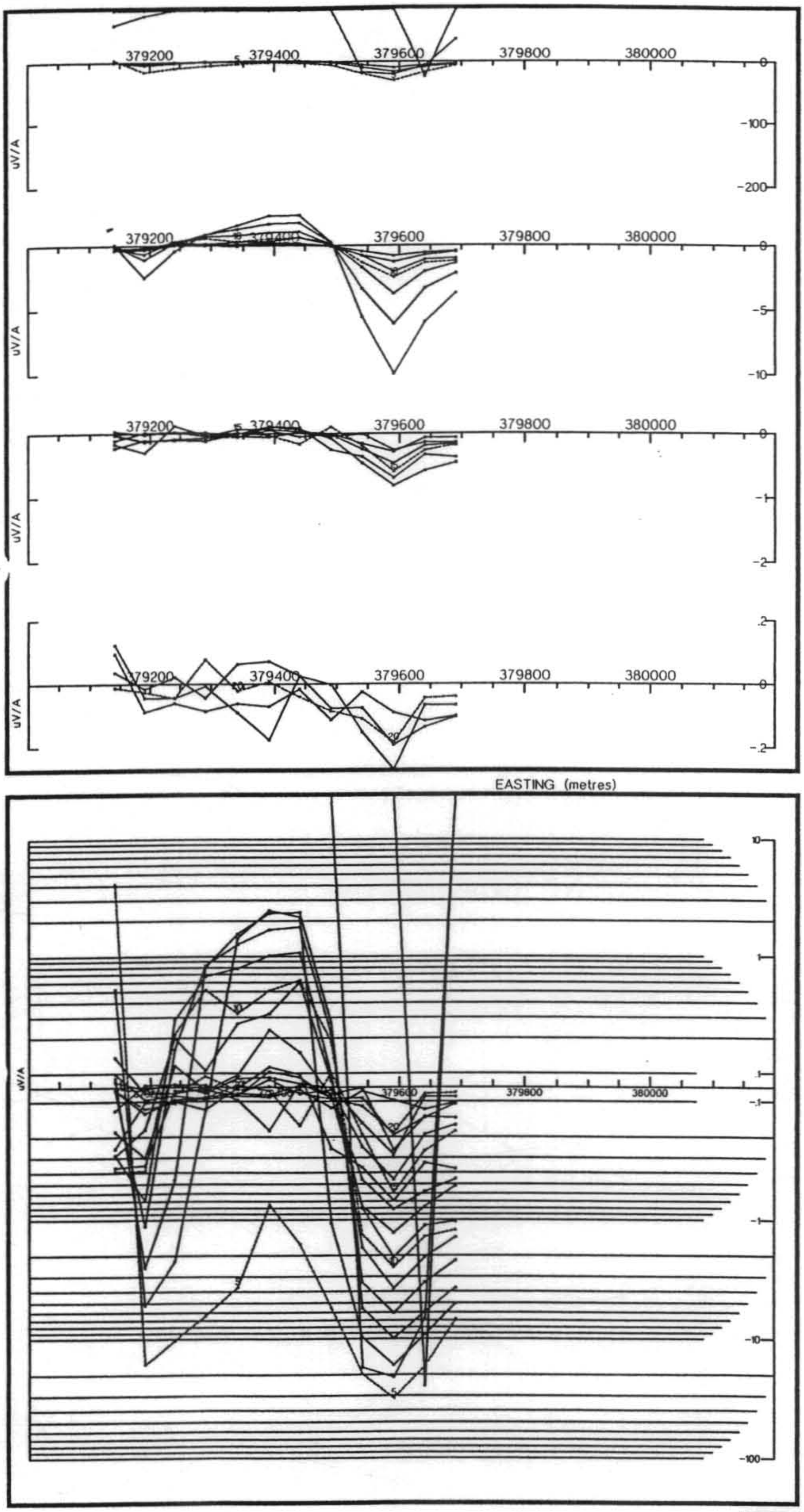
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 15 LINE 5251320N 12950N

Date : 09-05-2000 | Figure :

832075



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

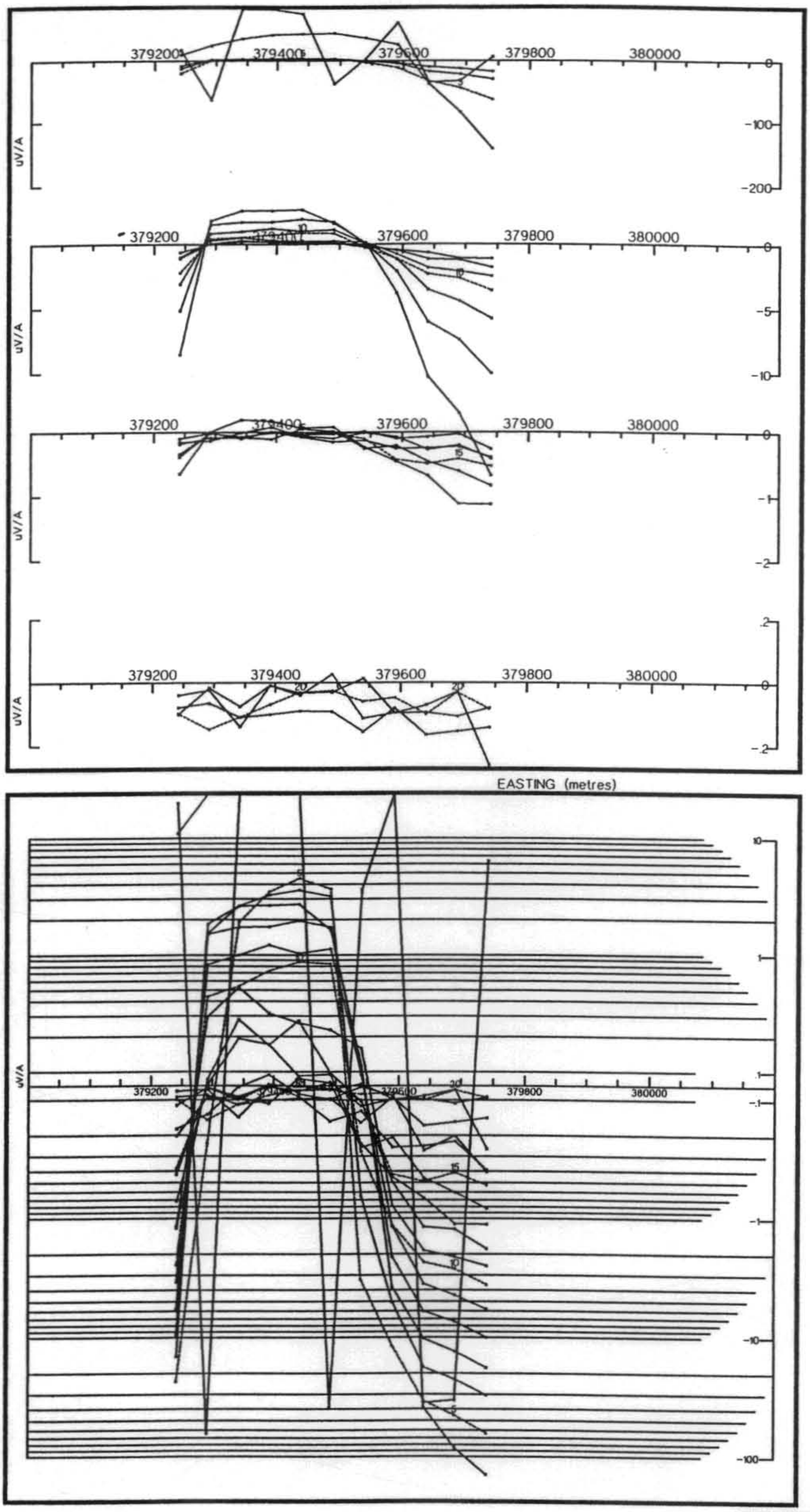
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 16 LINE 5251520N 13150N

Date : 09-05-2000 Figure :

832076



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

SURVEY SPECIFICATIONS

ACQUISITION	: PLUTONIC
DATE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
LINE SPACING	: 200 METRES
INSTRUMENT	: SIROTEM MK 3
NO. CHANNELS	: UP TO 22
PROCESSING	: SOUTHERN GEOSCIENCE
SUPERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

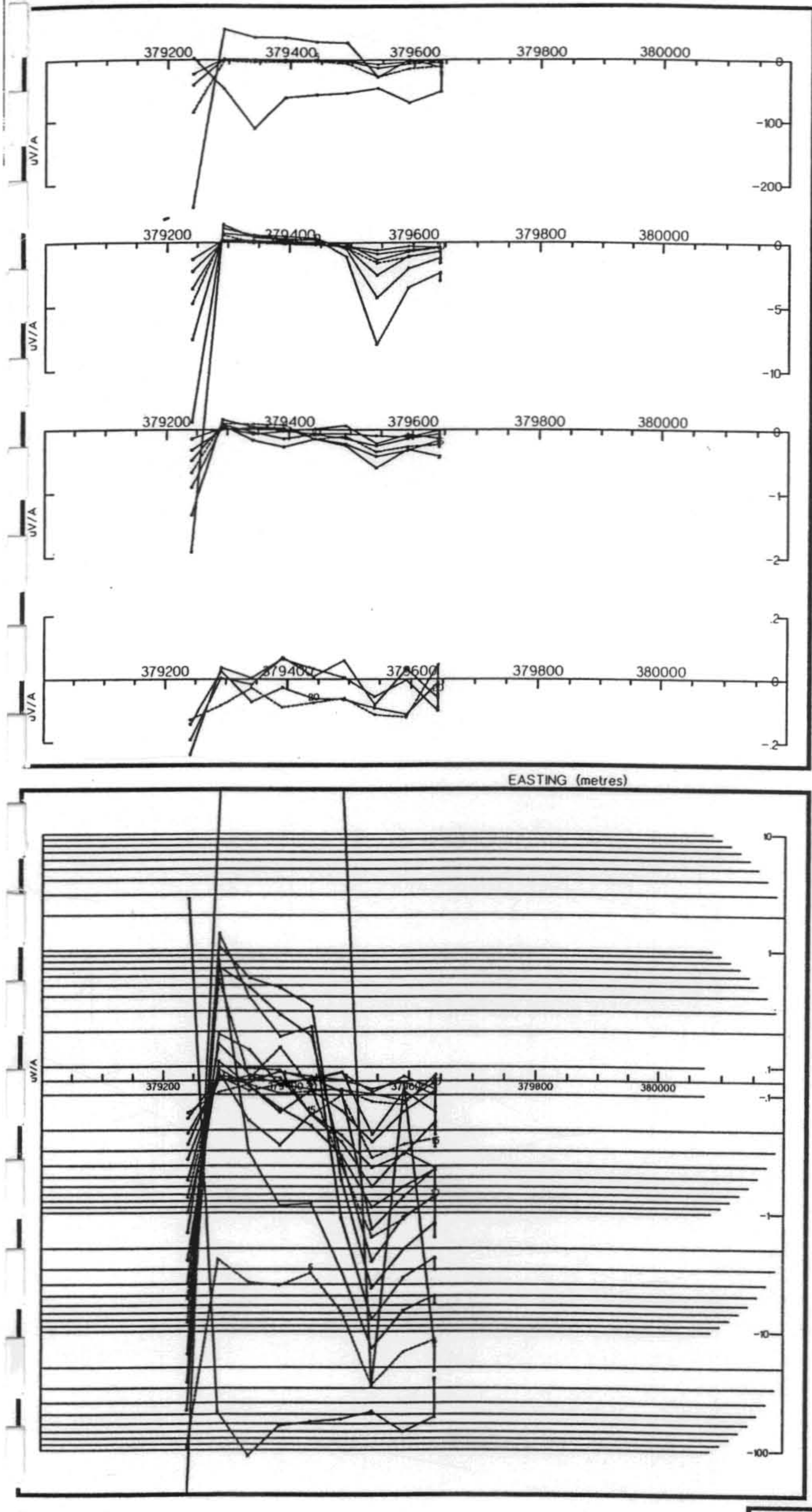
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT
LINE 5251720N

FIG. 17 13350N

Date : 09-05-2000 | Figure :

832077



Ch.	Msec.
1	.05
2	.1
3	.15
4	.2
5	.275
6	.375
7	.475
8	.575
9	.727
10	.925
11	1.125
12	1.325
13	1.625
14	2.025
15	2.425
16	2.825
17	3.424
18	4.225
19	5.025
20	5.825
21	7.025
22	8.625
23	10.225
24	11.825
25	14.225
26	17.425
27	20.625
28	23.825
29	28.625
30	35.025
31	41.425
32	47.825
33	57.425
34	70.225
35	83.025
36	95.825
37	115.025
38	140.625
39	166.225
40	191.825

5 cm

URVEY SPECIFICATIONS

QUISITION	: PLUTONIC
TE	: APRIL 1995
CONFIGURATION	: IN LOOP
LOOP SIZE	: 100 METRES
READING INT	: 50 METRES
E SPACING	: 200 METRES
TRUMENT	: SIROTEM MK 3
. CHANNELS	: UP TO 22
OCESSING	: SOUTHERN GEOSCIENCE
PERVISION	: W.S. PETERS

PLOT SPECIFICATIONS

UPPER PLOT
GROUPED PLOTS
VERTICAL SCALE LINEAR

LOWER PLOT
VERTICAL SCALE LOGARITHMIC
HORIZONTAL SCALE LINEAR

0 200 400
Scale 1 : 10000

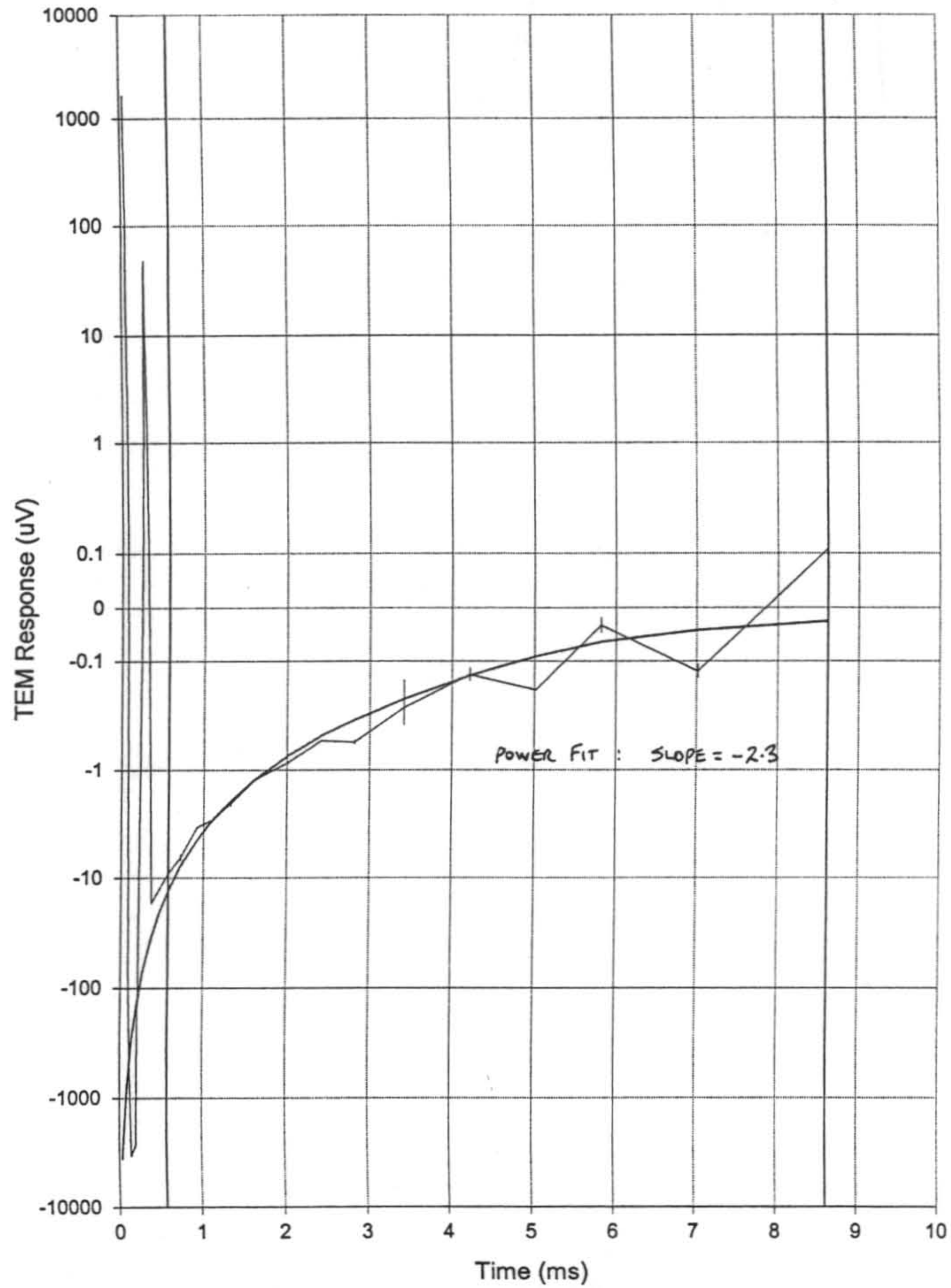
SOUTHERN GEOSCIENCE CONSULTANTS

BILLITON EXPLORATION AUST. LTD.
SILVER HILL, ELLIOT BAY
TASMANIA
IN LOOP TEM SURVEY
PROFILES OF Z COMPONENT

FIG. 1B LINE 5251920N 13550N

Date : 09-05-2000 | Figure :

832078



DECAY ANALYSIS RESULT

Decay	: Line: 10550N,Station: 10250
Time Constant	: Unknown ms
RMS Error	: 8.21%
Start Window	: 8,0.575
End Window	: 22,8.625

5 cm

Billiton Australia

Elliot Bay SIROTEM

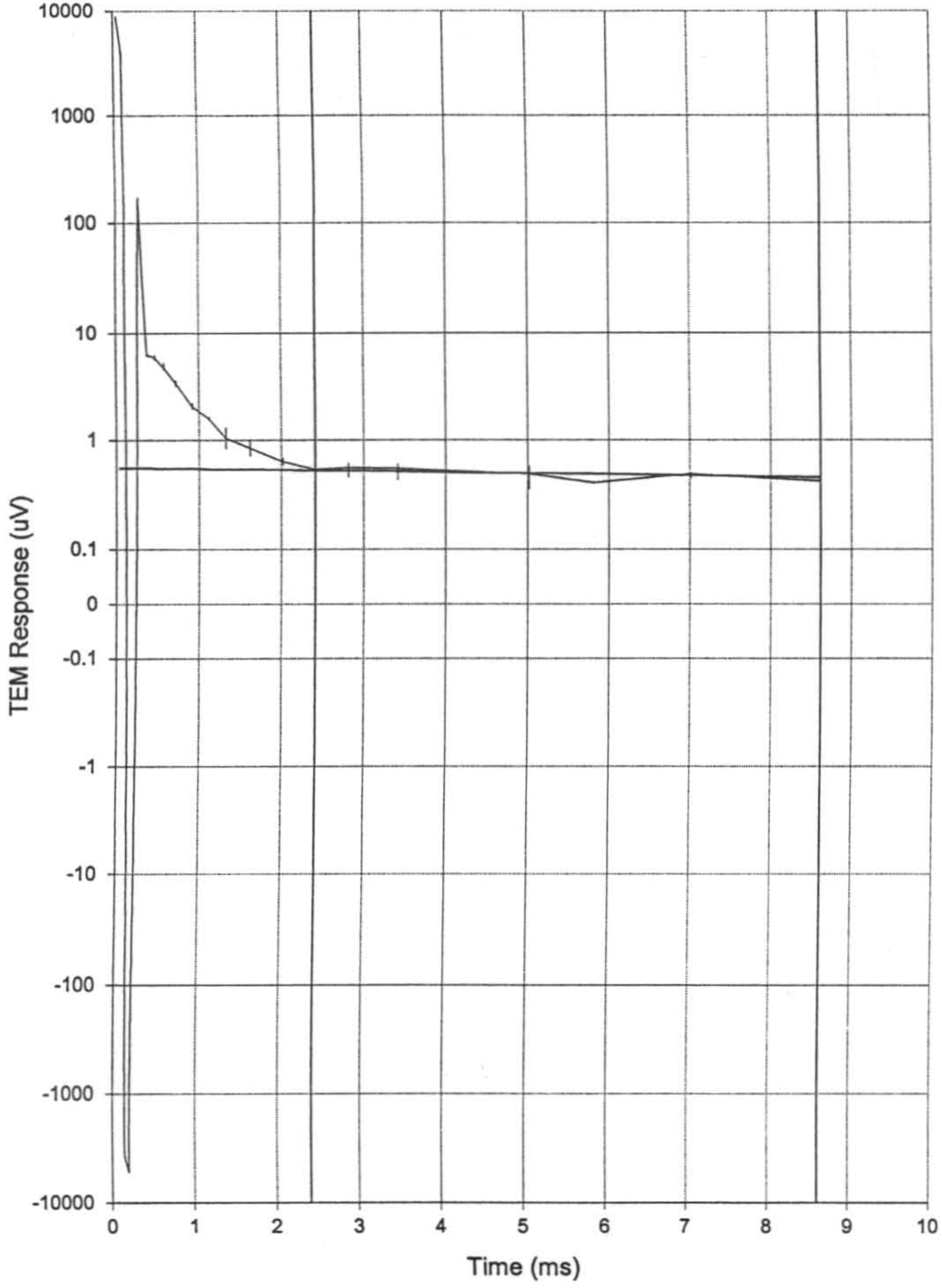
EM DECAY

Line 10550N

Station 10250

Drawn:	Date:
Job No. :	FIG. 39

832079



DECAY ANALYSIS RESULT

Decay	: Line: 12150N,Station: 10150
Time Constant	: 40.66 ms
RMS Error	: 2.63%
Start Window	: 15,2.425
End Window	: 22,8.625

5 cm

Billiton Australia

Elliot Bay SIROTEM

EM DECAY

Line 12150N

Station 10150

Drawn:	Date:
Job No. :	FIG. 40

APPENDIX 1: SIROTEM FIELD REPORT

832081

REPORT

SOLO GEOPHYSICS & CO. FIELD REPORT

Client: Plutonic Resources
Area: Elliot Bay, Tasmania
Grids: Wart Hill
Survey Type: Sirotem Moving Loop
Period: 16th March to 3rd April 1995
Crew: Brian Rau, Boyd Ward, Marcel VanLochem
Equipment: Sirotem Mark III and SATX, RVR, cables, wet weather gear.
Vehicle: Walking and client ATV bike

16th March
Travel Adelaide via Melbourne to Wynyard airport.
Met client at airport and collected luggage.
Hertz rental car with client, travel to Zeehan, Heemskirk Motor Inn.

17th March
Standby Zeehan, travel to Strahan with all luggage.
Return trip to Zeehan to collect survey gear sent separately by Ansett. Collected gear and took to Strahan.
Aircraft and helicopter in Wynyard, not available to take us to camp. Stored gear at BP garage in Strahan, returned to Zeehan.
Due to delay hire car rental extended to transport crew to Strahan.

18th March
Standby Zeehan, weather not suitable for flying to survey area.
Plane and helicopter could not leave Wynyard, too much low cloud.
Intermittent showers at Zeehan.
Due to delay hire car rental extended to transport crew to Strahan.
Solo crew took day off

19th March
Standby Zeehan, weather not suitable for flying to survey area.
Plane and helicopter travel via Zeehan to Strahan.
Due to delay hire car rental extended to transport crew to Strahan.
Helicopter makes a trip to recover crew from field.
Hire car taken up the coast and then to Hobart by retrieved field crew.
Due to extra useage of hire car beyond one day, costs transferred to client for extras.
Solo crew took day off

20th March
Standby Zeehan, weather not suitable for flying to survey area.
Travel to Strahan and load gear into plane, too much low cloud return to Zeehan.

21st March
Standby Zeehan, weather not suitable for flying to survey area.

22nd March
Elliot Bay Area
Wart Hill Grid.
Standby Zeehan, weather not suitable for flying to survey area.
Late afternoon a goer.
Travel from Zeehan to Strahan by car, aircraft to Moores Valley, and then helicopter to Wart Hill, east camp base. Arrive on dark.

23rd March
Elliot Bay Area
Wart Hill Grid.
Gear ferried from Moores Valley by helicopter to East Camp base.
Walk out to grid, line on Wart Hill
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10,

voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.
Tested current settings, 11 amps too high on early voltage channels.
Reduced to 6.2 amps

Line 11950N from 9650E to 9700E
packed gear back to camp, late afternoon showers.
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

24th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid,
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10,
voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 11950N from 9700E to 10500E
moved across to next line, thick bush on slope of hill
Line 12150N from 10600E to 10300E
packed gear back to camp, late afternoon showers.
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

25th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid,
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10,
voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 12150N from 10300E to 9650E
moved gear over to next line
Line 12350N from 9750E to 10300E
packed gear back to camp, late afternoon showers.
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

26th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid, line on Wart Hill
Move gear to start of next line 12550N at 10200E
Collect cables and RVR, move to first loop 10150E to 10250E

Line 12550N from 10200E to 10050E
decays seem more conductive, gear getting wet???
Thick wattle scrub on button grass, steep slopes, wet and difficult.
1/2 day survey
Lousy day heavy rain frequently too difficult to continue
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10,
voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs
LW today

27th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid, line on Wart Hill
100m moving loops at 50m moves
Line 12550N cont, nice day no rain.
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10,
voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 12550N from 10050E to 9700E
Line 12750N from 9650E to 10300E
Moved to next line 12950N at 9200E
packed gear back to camp, late afternoon showers.

Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs
LW today

28th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid, line on Wart Hill
100m moving loops at 50m moves
Nice day no rain.
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 12950N from 10200E to 9650E
Line 13150N from 9650E to 10200E
Line 13350N from 10200E to 9750E
packed gear back to camp,
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs
LW today

29th March
Elliot Bay Area
Wart Hill Grid.
Walk out to grid, line on Wart Hill heavy rain in morning.
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 13550N from 9750E to 10150E
Line 12550N from 10150E to 10100E repeats after rain
Moved to next line 10950N at 9850E
packed gear back to camp,
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

30th March
Elliot Bay Area
East Camp Grid.
Too wet to work today, heavy rain, hail, snow on hills.

31st March
Elliot Bay Area
East Camp Grid.
Walk out to grid, hail in morning, rest of day nice but cold.
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 10950N from 9750E to 10550E
Line 10750N from 9750E to 10550E
Line 10550N from 9750E to 10550E
packed gear back to camp,
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

1st April
Elliot Bay Area
East Camp Grid.
Another lousy wet day, late start, 1/2 day standby
Walk out to grid,
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 10350N from 9750E to 10550E
packed gear back to camp,
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

1st April
Elliot Bay Area
East Camp Grid.

Another lousy wet day, late start, 1/2 day standby
Walk out to grid,
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 10150N from 9750E to 10550E
packed gear back to camp,
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs

2nd April
Elliot Bay Area
East Camp Grid.
Nice day, showers only
Walk out to grid,
100m moving loops at 50m moves
Survey settings, 22 channels composite, 1024 stacks at gain x1, x10, voltage 24 volts, 6.1 amps, TOT 135us, battery supply via SATX.

Line 10150N from 9750E to 10550E
Line 9950N from 9750E to 10550E
Loops laid using grid line BRGS, i.e. magnetic poles less 13 degs
packed gear back to camp, end of survey
dried out all gear and packed up for helicopter transport out.
Completed all outstanding plots at 1:2500 and 1:5000 scales.

Summary:
Mobilization / Demobilization: March 16, April 3,
Standby waiting grid transport March 17,20,21,
Standby Rain, March 1/2 of 23, 1/2 of 26,30,
Travel March 22,
Survey: March 1/2 of 23, 25,1/2 of 26, 27,28,29,31
April 1,2
Days off March 18,19,

for Solo Geophysics,

Brian Rau.

□

APPENDIX 2: Interpretation of Electrical and Electromagnetic Surveys at ELLIOTT Bay (EL 40/85) by John Bishop Oct. 1986

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832086 (OF)

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

INTERPRETATION OF ELECTRICAL AND ELECTROMAGNETIC SURVEYS AT ELLIOTT BAY (E.L. 40/85).

for

Cyprus Minerals Australia Company

by

Dr J.R. Bishop

CM/MG86/07
Oct., 1986

832087

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Exploration Targets and Geological Setting	4
Exploration History	5
Survey Details	6
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LIST OF TABLES AND FIGURES

Table 1. Petrophysical Measurements of V19 samples. p. 13

Table 2. Summary of Recommendations. p. 14

* Figure 1. Geology and prospect location plan (1:25,000 scale).

* Figure 2. Dighem EM anomalies and location of Maxmin traverses (1:25,000 scale).

* Figure 3. Contours of averaged chargeabilities (1:10,000 scale).

* Figure 4. Contours of averaged resistivities (1:10,000 scale).

* Figure 5. UTEM interpretation (1:10,000 scale).

Figure 6. A comparison of overlapping sections of the Sorell and Elliott Bay Dighem surveys.

* Figure 7. Areas recommended for further work.

* = MISSING

Figures referred to, but not included in this report.

Dighem EM, resistivity, magnetic and enhanced magnetic maps for Elliott Bay (1:10,000 scale).

IP and resistivity pseudosections (1:5,000 scale).

Maxmin profiles (1:5,000 scale).

UTEM profiles (1:5,000 scale).

Geology of Wart Hill area, E.L. 27/76 (1:10,000 scale).

SUMMMARY

A Dighem survey over the northern section of E.L. 40/85 has not produced any responses of prime interest, however a number of anomalous zones have been chosen for follow up. Similarly, examination of IP and UTEM surveys carried out for Geopeko in the Wart Hill area has not lead to any VMS targets, but the results may assist a gold exploration program.

Despite these negative findings, Elliott Bay is still a highly prospective area. Large regions with favourable lithologies remain ungridded and little explored. It is recommended that these areas be covered by gradient array IP surveys to look for zones of alteration.

INTRODUCTION

E.L. 40/85 (Elliott Bay) covers the southern section of the highly mineralised Mt Read Volcanics which form a long, arcuate belt across western Tasmania. The licence is held by Cyprus Minerals who are managing the exploration program with Poseidon as a joint venture partner.

Elliott Bay is a remote area within the Southwest Conservation Area. Access is by aeroplane to a landing strip in the north of the licence or, since much of the lease is open button-grass, by helicopter. A disused track to the lighthouse at Low Rocky Point runs through the area and Cyprus used a four wheel motorcycle along this track during the 1985/86 field season, to ferry gear to the campsites. Poor weather for seven or eight months of the year usually restricts field work to the summer season.

A Dighem survey was carried out over the northern section of the licence for the joint venture partners in January, 1986. This report evaluates the results of that survey and the follow-up field work using the Maxmin electromagnetic (EM) system. It also comments on the induced polarisation (IP) and UTEM surveys undertaken for the previous licence-holders, Geopeko.

EXPLORATION TARGETS AND GEOLOGICAL SETTING

The prime target is for a polymetallic volcanogenic massive sulphide (VMS) body, similar to those found at the Rosebery and Hellyer mines. The prospectivity of the Elliott Bay licence has been considerably enhanced by the discovery, by Geopeko, of two small pods of such sulphides.

A secondary target is for a volcanic-hosted gold deposit. Although there are no type deposits within the Mt Read Volcanics, an area anomalously high in gold has been defined within E.L. 40/85 and other exploration companies are having some encouragement elsewhere in the belt.

Geophysical surveys over Rosebery, Que River and Hellyer and petrophysical measurements of samples, have shown these ores to have similar properties. They are not magnetic, but they are chargeable, dense and good, though not excellent, conductors. Testing of two samples from the Elliott Bay sulphides indicates that deposits with rather less desirable geophysical properties may occur here. The results, given in Table 1, are much less chargeable and only weakly conductive. Although only two specimens have been measured, the results are in agreement with detailed IP surveys which were carried out by Geopeko over both pods.

The sulphide pods occur within a belt of north-south striking pyroclastics which have been classified as direct correlates of the 'Central Belt' of the Cambrian Mt Read Volcanics in the Queenstown area. These rocks, the Lewis River Volcanics, occupy the central and eastern parts of the licence. In the north-central section, they are overlain by a syncline of Late-Cambrian (Tyndall Group) and Ordovician sediments. On the western flank of the licence there are basic Cambrian volcanics of the Mainwaring Group and sediments correlated with the 'Western Sequence' of the Mt Read Volcanics (see Figure 1). Thus the regional strike is approximately north-south, with the rocks interpreted to face, and dip steeply, to the west. Black shales occur in both the Tyndall Group and Western Sequence and these may give rise to IP &/or EM responses.

EXPLORATION HISTORY

The Elliott Bay area was first held by Mt Lyell and EZ (the LEE syndicate) in the 1950's and early 1960's, as part of their large southwest exploration licence. They flew an aeromagnetic survey over the area and may have done some ground work at Elliott Bay, but no search has been made for any record of this.

The area was next held by BHP as part of E.L. 13/65. In 1975, Geoex carried out a helicopter-borne EM and magnetic survey using the McPhar H-400 system for BHP, who dropped the ground before following up the 100 or so anomalies defined by the survey.

The ground was picked up by Geopeko (as E.L. 27/76). Initially, they followed up the airborne EM and magnetic anomalies defined by the H-400 survey, as well as investigating several old workings. During the 1981/82 field seasons, two small, high-grade Pb-Zn-Ag lenses were discovered during a soil geochemistry survey. A large area of anomalous gold in stream sediments was also defined.

In 1982/83, a dipole-dipole IP survey and c-horizon soil geochemistry program covered the altered rocks around the VMS deposits. No good targets were defined by this survey and in the 1983/84 season, the exploration program concentrated on the potential of the gold zone, with disappointing results. The results of the IP survey are further discussed later in this report. During the next field season, a UTEM survey was carried out over several of the better prospects covered by the IP survey, to explore to greater depths (ie, say 150m to 250m compared to 50m to 100m for the IP). No obvious VMS targets were defined by this survey, but a detailed interpretation is given below.

Apart from the areas covered in detail by the IP, UTEM and geochemistry, Geopeko have looked at a number of other prospects, apparently in isolation (a total of 35 'Voyager' prospects; V1 to V36, with no V13). That is, there are no maps showing a synthesis of their work. It is recommended later in this report that such a compilation be carried out by Cyprus. Several of the prospects showed interesting results and some of these were recommended for further investigation by Geopeko's geologists.

Cyprus' first field season started in March, 1986 following the Dighem survey in January. Work consisted of Maxmin surveys along reconnaissance lines to locate anomalies picked from a preliminary interpretation of the Dighem results (Bishop, 1986). These lines were also soil sampled and geologicallly mapped. The traverses covered are shown in Figure 2 and a report on the work is given by Jones (1986). The Maxmin results are also discussed below.

SURVEY DETAILS

DIGHEM

The Dighem survey was carried out in January, 1986. It covered about 700 line-kms, using a nominal line spacing of 150m and a nominal terrain clearance of 30m. The system used coaxial and coplanar coils at ~900Hz and coplanar coils at 7200Hz. A Geometrics G813 magnetometer monitored the total magnetic field. Flight line positioning was done from strip film only (no navigation systems) and recovery was apparently difficult over the largely featureless (and forested) western side of the licence (see later coments).

The usual Dighem maps of EM anomalies; apparent resistivity (assuming a uniform earth); magnetics and high-pass filtered magnetics were produced on photo-mosaic bases at 1:10,000 scale (see Kilty, 1986). The location of the EM anomalies is shown in Figure 2 of this report. Only responses interpreted as bedrock conductors have been differentiated here. For the more detailed classifications, the reader is referred to the original Dighem maps.

MAXMIN

Location of the preliminary Dighem anomalies was carried out using the Maxmin EM system. The planned traverses were surveyed with compass, tape and clinometer and flagged at horizontally corrected 25m intervals. The % inclination for each 25m interval was recorded and this data was then used to slope-correct the Maxmin readings.

The survey was carried out with the coils horizontal (ie, vertical axes) at a 100m spacing. Three frequencies, 3555; 888 & 222Hz, were read at 25m station spacings. The results have been presented as profiles at 1:5,000 in Jones (1986).

INDUCED POLARISATION

The survey was carried out by Geopeko during the 1982/83 field season. Two different IP receivers were used: an IPR-11 and an IPR-8. The latter instrument was used in the more inaccessible areas. For plotting, the decay between 510 and 1050msecs was used for the IPR-11 results (channel 6+7) and for the IPR-8, the decay between 650 and 1170msecs (channel 232): both measuring a 2 second on, 2 second off square wave pulse. For both receivers a dipole-dipole array was used with a 50m dipole spacing, read to n=6 and a line separation of 200m (with some infill lines). Sumpton (in Herrmann, 1983) found that channel 232 on the IPR-8 gave a chargeability reading about 3 times the plotted IPR-11 value and the contours in Figure 3 tend to confirm this conversion factor. The resistivities (Figure 4) are instrument independant.

There are a number of areas where the IP data is of doubtful quality (eg, isolated 'diagonals' of high numbers; negative values) and Sumpton (in Herrmann, 1983) noted that the IPR-11 did "suffer moisture related problems". A repeat survey was carried out over one apparently interesting response (line 11400N; Herrmann and Sumpton, 1984) and different, non-anomalous, results were obtained.

The data have been presented by Geopeko as pseudosections in book form; one book of chargeabilities and a second one of resistivities, both at 1:5,000 scale. Those sections considered anomalous, are shown in Herrmann (1983). Geopeko also produced 1:10,000 scale plans with most of the pseudosections shown (data from the few 100m infill lines are missing).

UTEM

The survey was carried out by Lamontagne Geophysics in March, 1984 for Geopeko. A total of four loops, each 800m x 1600m were used for the survey. One loop covered V19; two loops covered the area immediately to the south (V29 & V29W) and the fourth loop covered V9, further to the south again (see Figure 5). A station spacing of 25m was used with line spacings of 100m or 200m. Only the vertical component was measured, using a frequency of 26Hz.

Data quality was reasonably good with some noise towards the ends of the 1000m+ lines. Some lines on loop 1 apparently suffered from a (?)'sync' problem with the early-time channels having large offsets. The data appears as 1:5,000 scale profiles in Herrmann and Sumpton (1984).

INTERPRETATION

DIGHEM

The Dighem survey was designed to cover the northern section of the licence which was largely unexplored. The survey was split into two halves, east and west of the Mt Osmund syncline.

A preliminary interpretation, from the analog records, was carried out at the completion of the survey. All possible anomalies were noted under three classifications. Those responses which had in-phase excursions on the 900Hz channels were given the highest grade (#A); those with in-phase excursions on the 7200Hz were classed as intermediate (#B); while those with out-of-phase on 7200Hz only, were given the lowest grading (#C). These results are given in Jones (1986). Only two #A responses were located over the Lewis River Volcanics and these were in close proximity to the conductive Tertiary gravels in the north-east corner of the survey. A large number of #B and #C grade responses were picked over the Volcanics on the eastern side of the syncline with a considerably fewer number on the western side. This preliminary interpretation formed the basis of the first season's field work which located several weak conductors (see later, under Maxmin). The follow up of the 'preliminary anomalies' was not completed, but the areas have been superceded by the prospects recommended below.

The final Dighem results were delivered in July; difficulty in flight line location being blamed for the long delay. Some idea of the accuracy of the survey can be obtained by comparing the results with those from the adjacent Sorell survey. Figure 6 compares the EM responses in one area of overlap. Some of the differences in the results can perhaps be ascribed to improvements in instrumentation, but the poor correspondence between the two EM maps is certainly cause for concern. These differences were being discussed with Dighem Ltd at the time of writing this report.

The survey recorded a large number of weak, low amplitude responses which were mostly interpreted as being due to surficial sources (Kilty, 1986). Very few responses were interpreted as being due to bedrock conductors and those that were, are mostly of small amplitude thus making the interpretation less certain. (Thus it is also possible that some of the low amplitude responses interpreted as being due to surficial sources, may in fact be caused by bedrock conductors.) Several of the interpreted bedrock responses are outside of the E.L. boundary, but these lie either within E.L. 37/83* or in the narrow strip of vacant ground between the two licences, thus all anomalies are dealt with in this report.

A total of 17 anomalies or zones of anomalies have been picked for follow up. The strongest response lies on the 'Spero River' sheet. Although geophysically the best response and given priority '1', the northern section of the zone may coincide with the edge of the conductive Tertiary gravels and the whole zone may be within the Tyndall Group, which is usually regarded as a less prospective unit of the Mt Read Volcanics.

The remaining anomalies are geophysically much poorer, but most are in more favourable locations. Kilty (1986) suggests (weakly conducting and magnetic) sulphides as a cause for only one

---

* Cyprus Minerals is a joint venture partner in E.L. 37/83 and manages the exploration program there.

response and this is a possible ('X') anomaly. For the other bedrock conductors, geologic contacts are mostly suggested. Nevertheless, some of these should be followed up. The anomalies to be further investigated are listed in Table 2 and shown in Figure 7 with numbering in order of priority.

The Dighem survey has also produced some detailed aeromagnetic maps with 5nt contouring. There is little response on the eastern side of the syncline, but on the western side, the relatively non-magnetic and little explored acid volcanics can be distinguished from the more basic rocks*.

MAXMIN

Following the preliminary interpretation of the Dighem results, a number of zones were chosen for follow up. The Maxmin system was used to try and locate the Dighem responses on the ground and it was largely successful. Ten areas were picked and labelled in order of priority (see Figure 2), however a geographical approach was taken for the field program, starting from the northeast corner.

A total of 15 lines were surveyed with Maxmin, which covered prospects 1, 2 & 7. On most lines there was a good correspondence with the interpreted Dighem responses. However all of the Maxmin responses were small amplitude, out-of-phase, local anomalies indicating surficial zones of low resistivity. Most of these lines were also surveyed with a magnetometer and soil sampled. Some high base-metal values were obtained, but since no geophysical target has been defined, these will not be immediately followed up. Some further work; eg, a fixed loop EM survey, giving a deeper penetration, could be carried out if the geology was considered favourable.

INDUCED POLARISATION

Geopeko carried out this survey, which covered about 25 sq km of "favourable lithologies" to try and locate a VMS deposit buried to 100m or less from the surface. The results were rather disappointing; no good, well defined responses were obtained away from the graphitic shales. The data was integrated with geochem and geology and by 'over-interpreting', a total of 60 anomalies were defined by Geopeko. Three of these were recommended for drilling of which only one was largely based on the IP: this was at 9400E/ 11400N. Since this anomaly included some suspect data, the line was resurveyed and no results of interest were recorded by the repeat survey.

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* One of the reasons for the overlap between the Sorell and Elliott Bay Dighem surveys, was to allow merging of the magnetic data from these two surveys but so far, this has not been done.

To give an over-view of the results, Geopeko presented the results as 'stacked pseudosections' at 1:10,000 scale. Coloured in, this gives some appreciation of the response levels. However for this report, the data has been averaged as described by Fraser (1981), which makes the data readily amenable to contouring (assuming a factor of 3 for the difference between the two types of IP receivers).

Figure 3 shows a fairly uniform chargeability contour plan. The high values at the northwestern corner are due to black shales at both ends of the lines. The V19 massive sulphides occur in this region, but cause only a gentle widening of the lowest (5msec) contour. The anomalous zone in the centre of the survey (lines 10,000N to 11,000N) is also ascribed to black shales within the Tyndall Group at the southern end of the Mt Osmund syncline. The 5+msec values in the southwest quarter of the survey overlie a granitic intrusion and dacitic lavas and tuffs. This last unit is host to the V24 gold mineralisation, however the chargeabilities may be largely due to black shales in this area (Large, 1985). Certainly the results do not appear to correlate with the V24 mineralisation. However in the southeast quadrant, they do appear to define an interesting elongate feature partially enclosing the V9 prospect.

UTEM

No formal interpretation of the UTEM survey was produced by Geopeko. Herrmann and Sumpton (1984) stated that "the results of the survey were on the whole disappointing, with no conductors being detected which are likely to relate to massive sulphide mineralisation".

A detailed interpretation of the UTEM survey has been carried out here. This was deemed necessary since a buried, possibly poor conductor would give only a subtle response. The results are given in Figure 5. The responses were picked independant of the geology and location and apart from the black shales, the most pronounced anomalies do occur in the vicinity of the V19 sulphides. However, since only shallow depths are indicated (30-40m & ~50m, assuming line sources, for responses at 10025E/13200N and 10100E/13400N respectively) and since there were no corresponding anomalies from either of Geopeko's gravity or IP surveys, the sources are unlikely to be massive sulphides.

Pronounced anomalies were also interpreted on the two southernmost lines of the V9 grid, as was pointed out by Herrmann and Sumpton (1984). Again shallow causes were indicated (<30m) and since there were no corresponding IP anomalies, a VMS deposit is an unlikely source. However these two anomalies, at 10975E/7600N and 11600E/7800N, are within a zone of elevated chargeabilities and being coincident with a mapped fault, the area may have potential for a structurally controlled gold deposit. Being on the southernmost lines, the zone is open to the south.

Pronounced anomalies are of course not necessarily those associated with ore deposits. A subtle response, preferably extending out to late times is a more likely target. No responses were picked extending out to late times, but given enough geological encouragement, some of the responses shown in Figure 5 could be recommended for drilling, on the assumption that the source had properties similar to those listed in Table 1.

CONCLUSIONS AND RECOMMENDATIONS

The Dighem survey has defined one good anomalous zone, located in an area of possible interest and a number of poor anomalies in areas of definite interest. A list of those anomalies chosen for ground follow up is given in Table 2 in order of priority.

Geopeko's semi-regional IP survey covered an area of alteration around known mineralisation. No VMS targets have been defined from this evaluation of the data, but a resistive zone may extend the V24 gold belt and the V9 chargeability zone may also be of interest for gold. Similarly, no drill targets have been recommended following the integration of the UTEM survey, but several responses lie within the V9 grid and may have structural relevance for gold.

A strong recommendation is made for a compilation of all of Geopeko's geophysical and geochemical data onto a series of 1:25,000 maps. This would permit a proper evaluation of the considerable amount of data gathered by the company and, most importantly, highlight those areas with prospective lithology which have received little attention or which showed early promise, but which were by-passed for apparently more promising areas.

Given the low percentage of outcrop within the licence, it is suggested that a gradient array IP survey may be the best way of rapidly evaluating the large areas of acid volcanics not examined by Geopeko. Whilst little depth penetration would be achieved, the survey should respond to pyritised 'host horizons' and thus considerably reduce the area of prospective ground to be explored. It is also possible that such a survey, in conjunction with a soil geochemistry program, would discover a relatively shallow deposit, such as occurs at V19.

The limited petrophysical measurements of the V19 samples have suggested that resistive bodies with low chargeability may constitute an economic target. Such bodies would be more difficult to find than the expected 'typical' west coast VMS deposit and a quite different exploration approach would be required. It is recommended that further measurements be made of the V19 mineralisation and if the results are confirmed and V19 type bodies are considered to be an attractive target, then some effort should be expended to determine why V19 is different and whether much larger bodies with similar properties are likely to occur.

J R Bishop
Oct., 1986.

832098

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Table 1

Petrophysical Measurements

The measurements were made on two hand-sized massive sulphide samples taken from a costean at Voyager 19.

SAMPLE No.	DENSITY t/m^3	MAGNETIC SUSCEPTIBILITY $x\ 10^{-6}$ cgs units	CONDUCTIVITY @ 2.5MHz S/m	RESISTIVITY @ 0.1Hz ohm-m	IP EFFECT P.F.E. 0.1-1.0Hz	IP EFFECT Phase 0.1Hz
26/1a	4.39	20	negligible	1.9	0	0
26/1b	4.51	20	"	0.8	2	16
26/2a	3.74	20	"	(face 1) 632	16	104
				(face 2) 805	14	71
26/2b	3.30	20	"	72	10	37

Measurements were made at the University of Sydney's petrophysical laboratory in July, 1986.

Electrical measurements were made using 4 electrodes on the sample surface.

Table 2

Summary of Recommendations

(A)

Follow up of Dighem anomalies.
(listed below in order of priority)

(1) 20031F-20040F-20050D-20060F-20070D-20080D-20090C.
20040H & 20050XB.

(2) 20120B-20130A-20140A-20150B-20160C-20170B-20180C-20192B-20200A-20210B-20221C.

(3) 20140B-20150C-20160D.

(4) 20180D-20192C.

(5) 20210D-20221D.

(6) 20440B-20451XB.

(7) 20230XD-20240D-20251XD.

(8) 20390A-20400B-20410A-20421A.

(9a) 20700A-20710B-20720B-20731B-20740A-20750D.
(9b) 20800B-20810A-20820B-20830C-20840XD.

(10) 20810XA-20820XB.

(11) 20760A-20770B-20780C-20790C.

(12) 30740C-30750C-30760C-30770C-30770XA-30780E-30790B-30800A-30810A-30820D-30830B.

(13) 30820E-30830C.

(14) 30900D-30910C-30920C.

(15) 30910A-30920B-30930A.

(16) 30540B-30550A-30560B-30570A.

(17) 30540A.

(B)

Down-hole EM surveys down any open holes at V19 and possibly at other prospects. The economics of reaming out blocked holes should also be examined.

Summary of Recommendations (continued).

(C)

A compilation of all of Geopeko's geophysical and geochemical data onto 1:25,000 scale maps.

(D)

Regional gradient array IP surveys over prospective lithologies not gridded by Geopeko. The exact areas to be determined from (C) above.

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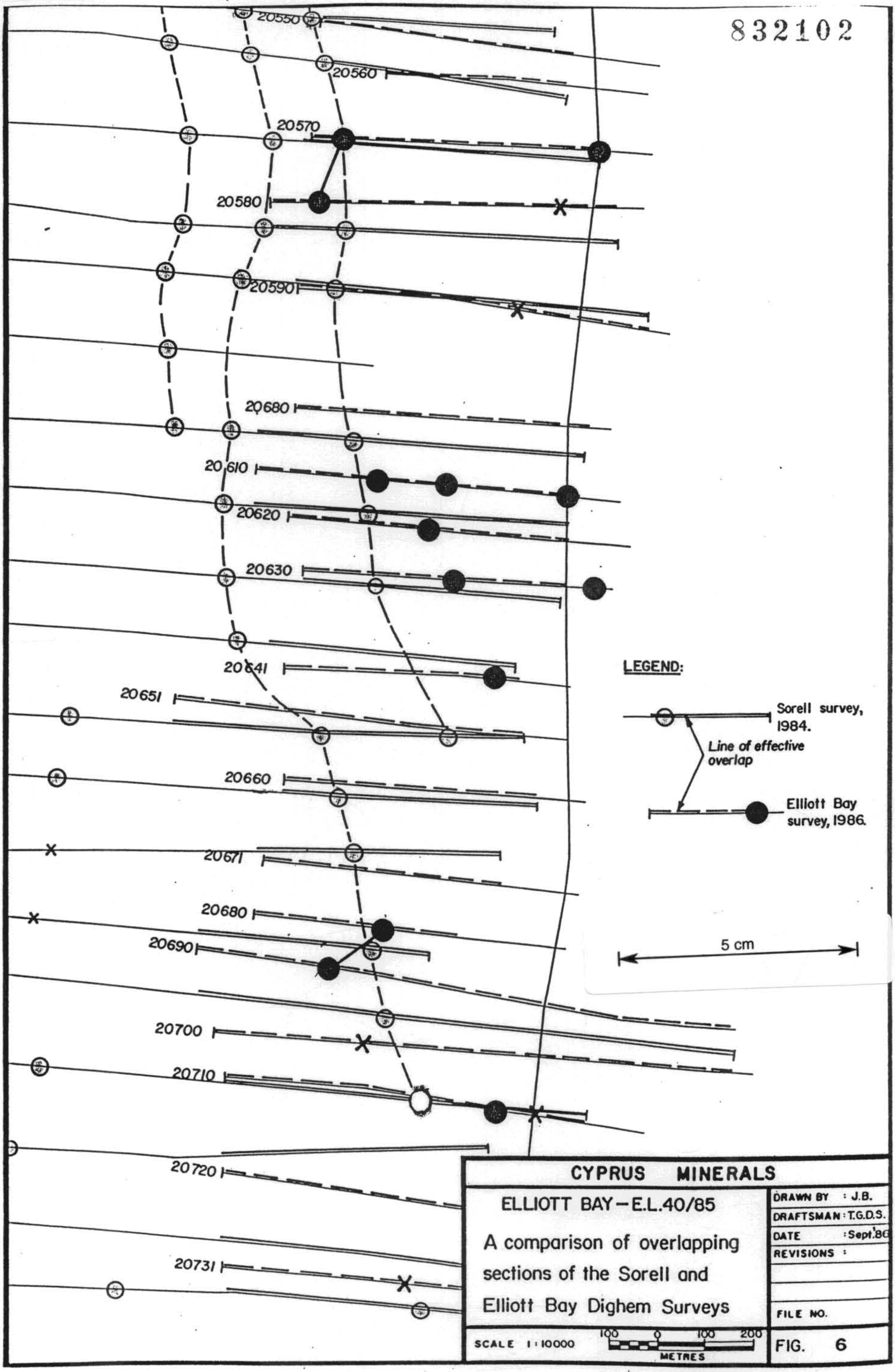
20550
20560
20570
20580
20590
20680
20610
20620
20630
20641
20651
20660
20671
20680
20690
20700
20710
20720
20731
LEGEND:
Sorell survey, 1984.
Line of effective overlap
Elliott Bay survey, 1986.
5 cm
CYPRUS MINERALS
ELLIOTT BAY – E.L. 40/85
A comparison of overlapping sections of the Sorell and Elliott Bay Dighem Surveys
DRAWN BY : J.B.
DRAFTSMAN : T.G.D.S.
DATE : Sept. 86
REVISIONS :
FILE NO.
SCALE 1:10000
100 0 100 200
METRES
FIG. 6

APPENDIX 3: A Compilation of Geophysical Surveys carried out at ELLIOTT Bay (EL 27/76) by John Bishop Jan. 1988

832104

MITRE GEOPHYSICS PTY LTD
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BUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

A COMPILATION OF GEOPHYSICAL SURVEYS CARRIED OUT AT ELLIOTT BAY (E.L. 27/76).

for

Cyprus Minerals Australia Company

by

Dr J.R. Bishop

CM/MG87/11
Jan., 1988

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* = MISSING

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* = MISSING

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SUMMARY

The Elliott Bay area of south-west Tasmania is a remote, but highly prospective region for base and precious metals hosted by Cambrian volcanics. Prior to Cyprus' tenure, the area was held by Geopeko who defined thirty six prospects. These were mostly regarded as separate entities by Geopeko who produced no overall synthesis of their several years work in the area, a considerable portion of which involved geophysics. This was partly due to the discovery of some small, but high-grade massive sulphide pods in the Wart Hill area and some promising gold assays from stream sediments further to the south. The immediate areas around these two finds absorbed much of Geopeko's exploration effort with a concomitant reduction in work on the remaining prospects. One aim of this report has been to compile all of the geophysical data onto a digital data base which will enable the results to be presented at any desired scale. For this report, they have been plotted at 1:25,00 scale which shows the whole licence on one sheet. A second aim has been to evaluate the results. This has been done having regard to Cyprus' subsequent work which has emphasised gold rather than Geopeko's prime target of a massive sulphide deposit. Recommendations include the investigation of a number of aeromagnetic anomalies to determine their potential for gold and further evaluation of prospects V29 and V9 for base metal deposits in the light of some gravity modelling. Completion of the regional gravity coverage in the south of the E.L., plus some detailed profiles is recommended to confirm possible anomalies. A summary of all recommendations is given in Table 1.

INTRODUCTION

E.L. 40/85 (Elliott Bay), held under joint agreement by Cyprus Minerals and Poseidon Ltd, encompasses the ground explored by Geopeko Ltd under E.L. 27/76. Geopeko expended a considerable effort on this E.L. before their licence expired in 1985. They defined 36 separate prospects of varying interest: from very weak airborne EM anomalies over swamps, to pods of high-grade massive sulphide. Bishop (1986) commented that Geopeko had only looked at these prospects in isolation; ie, there were no maps showing a synthesis of their work. This report attempts to overcome that deficiency for the geophysical surveys and to identify areas deserving further investigation.

The data, presented in this report as a series of 1:25,000 scale maps, has been placed onto a digital data base. Thus results from any area within the E.L. can be extracted and plotted to a desired scale.

EXPLORATION TARGETS

E.L. 40/85 has been pegged over the southern end of the Cambrian Mt Read Volcanics. The initial target for Cyprus (who are managing the exploration program) was for a volcanogenic massive sulphide (VMS) deposit similar to those which occur within the same belt of rocks further to the north (eg, Rosebery or Hellyer). Following the 1986/87 field season, the exploration emphasis has swung to gold. Torrey et al (1987) have stated that gold at Elliott Bay may be expected to occur in the following styles:- (1) within structurally associated quartz-chlorite-pyrite-tourmaline zones near the margins of intrusions; (2) within quartz-gossan zones associated with magnetite-chlorite alteration at granite margins; (3) as stratabound replacement of coarse pyroclastic units; (4) in quartz veins; (5) as alluvial gold in the (thin) cover of Tertiary gravels; (6) in VMS deposits. Geophysics may be of assistance in locating the first type of deposit by helping to define the structure; eg, with magnetics &/or VLF. Magnetics would also be used to search for the second style. IP may be applicable for replacement deposits if the gold is associated with disseminated sulphides, but this may not occur. The piezoelectric exploration method is the only geophysical technique for finding quartz veins (type no. 4), but it is not yet developed for routine use. If alluvial deposits, (type no. 5) are an attractive target, geophysical methods such as gravity or seismic could help locate the areas of thickest cover. The expected geophysical responses to volcanogenic deposits (type no. 6) have been described in Bishop (1986). Description of the geology at Elliott Bay is given in Torrey et al (1987).

EXPLORATION HISTORY

The Elliott Bay area was first held by Mt Lyell and EZ (the LEE syndicate) in the 1950's and early 1960's, as part of their large southwest exploration licence. But none of their work has been compiled for this report. The area was next held by BHP as part of E.L. 13/65. They relinquished the ground soon after flying an EM survey (using the HEM-400 system) over the region.

The area was then pegged (as E.L. 27/76) by Geopeko, who initially followed up the airborne EM and magnetic anomalies defined by the H-400 survey as well as investigating several old workings. During the 1981/82 field seasons, two small, high-grade Pb-Zn-Ag lenses were discovered during a soil geochemistry survey. A large area of anomalous gold in stream sediments was also defined. In 1982/83, a dipole-dipole IP survey and c-horizon soil geochemistry program covered the altered rocks around the VMS deposits. No good targets were defined by this survey and in the 1983/84 season, the exploration program concentrated on the potential of the gold zone, with disappointing results. Also during that season, a UTEM survey was carried out over several VMS prospects. Again, no drill targets were defined.

The evaluation of Geopeko's work in this report has been carried out in the light of the subsequent exploration. Cyprus have had two field seasons at Elliott Bay. In 1985/86, a Dighem survey was flown over the northern section of the licence and a number of anomalies were followed up with no targets defined (Jones, 1986). In 1986/87 more Dighem anomalies were unsuccessfully followed up, but interesting results were obtained from two zones carrying anomalous gold (Torrey et al, 1987).

The results from the aeromagnetic and regional gravity surveys carried out for the Tasmanian Mines Department's 'Mt Read Volcanics Project' in 1985/86 have also been included in this report.

SURVEY DETAILS

Geopeko named each of their prospects within E.L. 27/76 a 'Voyager' prospect and these were numbered chronologically. With no V13 and counting V29W as a separate entity, there are a total of 36 prospects. The positions of these are shown on a geological base on Figure 1 and the original reason for each prospect's existence is listed on the side of that figure. Copies of Geopeko's original prospect summaries are also appended to this report.

In the early years of exploration, Geopeko's geophysical surveys were mainly magnetics and VLF as first pass methods, with IP for more detailed work. SP and a modified Turam (EM) system were also used. Later exploration made more use of IP and gravity, with UTEM being used for deep exploration over the massive sulphide pods and adjacent areas. The results from these surveys have been compiled on to a series of 1:25,000 scale figures:-

(1) Prospect location and geology

(2) All grid lines and DDH locations

(3) Coverage of ground magnetics

(4) IP coverage and anomalies

(5) Resistivity coverage and anomalies

(6) EM and SP coverage and anomalies

All of these results have been combined onto one sheet and the Mines Dept's regional work has also been included:-

(7) Geophysical anomaly compilation

(8) Aeromagnetic contours

(9) Interpreted magnetic linears

(10) Regional gravity contours

(11) Residual gravity contours.

All of Geopeko's data has been re-examined for this report. In most cases an 'anomaly' has been defined rather generously; ie as a response above the background level. The main exception is the regional dipole-dipole IP survey where the results have been averaged, thus smoothing out isolated anomalies. In some instances anomalies originally defined by Geopeko have been down graded and ignored. The results of the ground magnetics could not be usefully presented at 1:25,000 scale, however the coverage is shown and the references for each of the prospects are listed. The IP coverage consists of a number of isolated dipole-dipole surveys; gradient array over individual prospects; and the regional 'Wart Hill' dipole-dipole survey. The anomalies for the first have been presented as bars; the results (ie not only the anomalies) for the second as contours; and for the third, the anomalous 'Fraser' contours (Fraser, 1981). A similar treatment has been given to the resistivity. The EM results consist of VLF and UTEM, there being no anomalies from the Turam. The VLF responses are shown as contours or as bars. The UTEM anomalies are shown as bars with zones shown as a continuous line. The very few SP anomalies are indicated on Figure 6 as dots. Geopeko carried out a considerable amount of gravity surveying at Elliott Bay. This data has been incorporated into the State Mines Dept's data base and the locations are shown on Figure 10.

GEOPHYSICAL EVALUATION

MAGNETICS

The magnetics shown in this report is the data from the 1985

Mines Dept survey (Figure 8). Also shown are 'linears' interpreted from processed images of that survey (Figure 9). (These images are in the form of slides, now held by the Mines Dept.) Geopeko investigated several of the anomalies defined by the 1975 airborne EM/magnetic survey flown for BHP. Targets included discrete anomalies within the volcanics as possible sites for VMS deposits and on the margins of the (Cambrian) granites for skarns. Geopeko down-graded these prospects with their follow up exploration, however Torrey et al (1987) have revived interest in one prospect, as well as investigating a number of other magnetic anomalies for their possible gold content. Specifically, six magnetic anomalies were looked at during the 1986/87 field season. These are labelled on Figure 8, with '#0' Torrey et al's 'Porphyry Dolerite Contact' and #1 to #5 as labelled in their report.

Torrey et al (1987) recommended that no further work be carried out on four of the anomalies, but suggested that further investigations be carried out on #1 and #3. (The latter was identified as V15 by Geopeko, however they apparently did no work over it.) Torrey et al (1987) note that anomaly #3 lies over Cambrian granite and suggest that the source "appears to be the contact between the granite and the rhyolite tuffs". Although the site of their surveys is at the junction of two linears (Figure 9), the bulk of the aeromagnetic anomaly is positioned some 500m to the north (Figure 8). I suggest that any further work include investigation of the main anomaly.

There are a number of other magnetic anomalies of potential interest: seven have been labelled on Figure 8 as @6 to @12 and these are listed below (not in order of priority).

@6 lies between 2 linears on the Lewis River and can perhaps be readily evaluated by looking at geochem values from any sampling already carried out there[1].

@7 lies within a 'cocked hat' of linears, over undifferentiated volcanics to the east of V22.

@8 is Geopeko's V17. The only work done on this prospect was magnetics and base metal assaying of soil samples. Its proximity to the 'gold prospects' V24 and V33 suggests that it also should be sampled for precious metals.

@9 is Geopeko's V16. This is a large area of alteration which has had little geophysics (regional magnetics and some VLF). Jones (1986) quotes anomalous gold in streams.

@10 is Geopeko's V14, which is a prominant anomaly on a well-defined linear within the Elliott Bay Porphyry. Geopeko

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[1] A compilation of Geopeko's geochemistry in a similar fashion to the geophysics would considerably enhance the usefulness of both sets of data.

located the anomaly with some ground follow up (Figure 3) and ascribed the anomaly to disseminated magnetite in chloritic quartz-feldspar porphyry (see Appendix 2). They apparently carried out no geochemical sampling.

@11 is Geopeko's V6, which was investigated for skarn related to the Rocky Point Granite. Although apparently unsuccessfully sampled for gold by Geopeko, it has the attributes of the second gold model described above and has been described by Torrey et al (1987) as having potential.

@12 is Geopeko's V5. This is similar to @11 and thus should also hold some interest for Cyprus as a potential gold deposit.

It is relevant to note here under the magnetics section, the structural interpretations carried out by Leaman (1986) on the aeromagnetic data. In particular, Leaman has suggested that the Precambrian rocks to the north-west of Elliott Bay on the Sorell Peninsula are shallow 'rafts' overlying Cambrian Volcanics. If correct, this hypothesis suggests much larger areas of interest on Tasmania's west coast, depending upon the thickness of overburden. A detailed structural interpretation of the magnetics and gravity is required in the Wart Hill region to help determine whether the sulphide pods in this area have been transported from a 'parent' deposit.

INDUCED POLARISATION

IP was regularly used by Geopeko on their prospects, employing both gradient and dipole-dipole arrays. These surveys culminated in a large and detailed exploration of the Wart Hill area using a 50m dipole-dipole array. The IP compilation sheet (Figure 4) shows the results from this survey as contours, with anomalies from all the other dipole-dipole array surveys as 'bars'. Gradient array results are also shown as contours. Most of the Wart Hill data was collected using an IPR11 and the values recorded (in msecs) were about one third that of an IPR8, which was the instrument used for most, if not all, of the other surveys. (Data collected with an IPR8 in the north-west corner of the Wart Hill survey has been divided by three to produce the contours shown in Figure 4.) All possible anomalies from the Wart Hill survey were integrated with geochemistry and any other results (Herrmann, 1983), however few targets were defined and none are considered to be drill targets without further upgrading.

Although there appear to be no out-standing IP anomalies to be tested, it was suggested by Bishop (1986) that regional gradient array IP surveys should be carried out over "prospective lithologies not gridded by Geopeko" and in particular, those areas covered with a veneer of Tertiary gravels. The compilation carried out for this report shows the gaps in Geopeko's coverage and

Torrey et al (1987) have identified three areas of interest from the 1986/87 field work (Zones 1 & 2, the latter consisting of two geologically similar, but geographically quite separate, areas). From Torrey et al's work and this compilation of Geopeko's data, the area south from the Lewis River Prospect through to the coast is one area which could usefully be surveyed with regional IP, with possibly others to the north of the Prospect within Torrey et al's Zone 1. In Appendix 1, it is noted that dipole-dipole IP might provide drill targets for gold mineralisation at V30. However for most other areas, such as to the east of V34, more information would be required before recommending such surveys.

The test IP surveys over the massive sulphide pods (Herrmann and Sumpton, 1984) together with the results of limited petrophysical testing (Bishop, 1986), indicate that the V19 mineralisation is much more resistive and has a lower chargeability than the similar grade, but much larger, deposits to the north. It is a moot point whether economic-sized deposits with these physical characteristics should be expected, or whether more 'normal' values would be recorded from such bodies. If the former, then some of the subtle anomalies recorded by Geopeko and at present rejected would assume more importance. Or, more pertinently, that the areas 'written off' due to the lack of an IP response, would still be regarded as prospective. However it seems reasonable to expect that an economic sized body would contain zones of conductive mineralisation (eg, a copper-rich zone) and would be associated with a significant volume of pyritic alteration such as occurs at all of the West Coast base-metal mines. Thus EM and IP should be appropriate techniques.

RESISTIVITY

The resistivity compilation (Figure 5) shows all of the Wart Hill results (as contours), but only the less resistive responses from the other dipole-dipole surveys (shown as bars). The one feature of potential interest seen in the resistivity results, is the resistive zone over the V24 gold prospect. The resistivity contours suggest that this zone of (?)silicified alteration extends some 900m to the north east beyond DDH V24/4. Similar observations could possibly be made over other gold prospects, given a similar coverage.

ELECTROMAGNMETICS

Several of the Voyager prospects were originally EM anomalies defined by the HEM-400 survey flown for BHP. Some of these have not been located (eg, V4), however none of the responses recorded by this survey were particularly promising and no follow up is recommended for any of the airborne EM anomalies in their own right. However, this assessment may change in some future evaluation and the (approximate) positions of all of the HEM-400 anomalies have been included on Figure 6. Much of the rest of the

'EM and SP' plan shows the results of VLF surveys. Where Geopeko have produced the Fraser filtered data (Fraser, 1969), this data has been shown. Elsewhere, responses have been shown as small 'blocks' (with both representations given for V3 and V12). The majority of the VLF responses are probably due to faults, geologic contacts or graphitic shales, with others possibly due to conductive overburden or topographic effects. However the massive sulphide pods at V19 do coincide with anomalous VLF zones.

Geopeko modified a Scintrex Turam system so that the ground was energised by a moving coil, rather than the usual large fixed loop. This instrument (referred to as Moving Source Turam or MST in Geopeko reports) does not appear to have been an unqualified success and I have not recognised any significant anomalies in the data and none have been marked on Figure 6. The figure does however show a number of anomalies from UTEM surveys carried out over parts of the Wart Hill area considered by Geopeko to be most prospective for a buried VMS deposit (the UTEM looking deeper, and with better resolution, than the IP survey). Although a number of moderate amplitude anomalies were defined, these were from shallow sources with short time constants: no drillable targets were defined. However some of the anomalous zones may be be useful for defining structure; particularly on the gold prospects. It is suggested that V9, which has a magnetic anomaly located on the margin of a (micro)granite intrusion and UTEM responses which overlap and parallel the Osmund Fault may be such a site. The strongest UTEM responses are on the southernmost lines, suggesting an extension to the south.

Geopeko have not carried out any down-hole EM (DHEM) surveys at Elliott Bay. Such surveys, which give an effective search radius of at least 100m for economic sized massive sulphide bodies, would have been particularly useful at V19. It is suggested that the cost-effectiveness of reaming out one or more of the V19 holes be examined. Certainly any further holes at V19 should be surveyed with this technique.

SELF POTENTIAL

The only significant SP results were obtained on V12 where a 170mv anomaly was recorded. Two drill holes (DDH's V12/3 & V12/5) sited to test this anomaly intersected only minor amounts of vein mineralisation, which failed to adequately explain the size of the anomaly. Although a large body of massive sulphide at shallow depth now appears unlikely to be the source (Large (1981) suggests a sudden change in the water table), this prospect still has potential for a buried VMS deposit. And although Cyprus are now concentrating on the area's gold potential, it is recommended that DHEM surveys be carried out down any drill-holes on V12.

GRAVITY

The Mines Dept's regional Bouguer gravity data for Elliott Bay, is given in Figure 10. The detailed surveys over V9, V19 and V29 are from previous Geopeko work, the results of which have been reprocessed and added to the Mines Dept's data base. The contours show a strong gradient (increasing to the west) and a residual map (Figure 11) has been produced by subtracting a (hand drawn) regional. This plan shows several anomalies; some possibly artefacts of the contouring, others better (though poorly) defined by two or three points. The anomaly to the north of V19 is of particular interest: others, include one immediately to the south of the Waterloo Creek Prospect and one coincident with V9. The residual contours also suggest two highs at the southern limit of the coverage; one in Torrey et al's (1987) Zone 1, the other in Zone 2. The former is an area with VMS, as well as gold, potential and it is suggested that the regional gravity coverage be completed here. (The southern section of the lease was apparently not surveyed because of the difficulty in finding helicopter landing sites.)

Figure 12 shows that the residual anomaly to the north of V19 is very poorly defined. Detailed surveying is required here before any comment can be made about a possible source. The residual high over V9 was investigated by taking (straight line) regionals out of Geopeko's detailed profiles. This was done for lines 11250N and 11350N and some preliminary modelling was carried out to see whether a dense, buried body of significant size was a possible source. The profile for line 11250 shows noisy data with no definite anomaly (Figure 13) and low density contrasts (of 0.1 and 0.15t/c.m.) provide approximate fits to the observed profile. Line 11350 has a well defined anomaly; a shallow (27m), low contrast (0.15t/c.m.) body (more mafic volcanics(?)) is a likely source (Figure 14a), but a small buried body of high density contrast (0.8t/c.m.) also fits the observed data (Figure 14b).

V19 is, of course, a prospect of particular interest and Geopeko have carried out some very detailed gravity here. This data is shown in Figure 15 with the residual values on Figure 16. This latter figure also shows the approximate positions of the two main massive sulphide pods: neither coincides with a gravity anomaly. A residual profile across the more northerly pod shows very noisy data (Figure 17) with little potential for another, laterally displaced deposit. A profile across the southern pod (Figure 18) shows a high to the east, but this is readily explained by a subcropping slightly denser rock type. A profile across the (relatively) broad high in the south-east corner (Figure 19) shows a ~0.25mgal anomaly which again, can be explained by a moderately shallow (31m), low contrast (0.1t/c.m.) body (with a negative contrast body beyond the eastern end of the line; not modelled). Figure 19 also shows the section of DDH V19/5 which was drilled to test a "broadly coincident chargeability-geochemical zone (Wilson et al, 1982). Between these last two profiles, on line 5,250,920N, Geopeko drilled V19/3 to test a gravity high coinciding "with the main zone of hydrothermal alteration" (Wilson et al, 1982) with disappointing results. Thus there do not appear to be any V19 gravity anomalies which can be recommended as drill targets.

V29 has been suggested as a possible site for massive sulphides, based on lead isotope data (Gulson et al, 1987). Three profiles of residual gravity indicate that high contrast bodies (of 0.8t/c.m.) at depths of 50m to 70m, could account for the* reasonably smooth anomalies. These sources (Figures 20, 21 & 22) can be correlated with UTEM anomalies (Figure 6), however the presence of dense, (poorly) conductive sulphides within 50m of the surface would appear to be negated by the lack of any IP responses from the Wart Hill IP survey. Nevertheless a more detailed evaluation of this prospect is recommended.

CONCLUSIONS AND RECOMMENDATIONS

The considerable amount of geophysical data collected by Geopeko at Elliott Bay has been compiled here to show what methods have been applied over which prospects and to better illustrate the areas of favourable lithologies left unexplored. Since the data has been digitally processed and stored, results from any area may now be presented at any desired scale. The anomaly plots define structural trends and in some cases, zones of possible ore host horizons. The coloured compilation (Figure 7) clearly shows those areas which have received the greatest attention and, the least. Much of Geopeko's work has been concentrated around Wart Hill and a 1:10,000 scale coloured compilation of this area is given in Figure 23. Similar treatment has been given to the region between V3 and V12 which is considered to be prospective for massive sulphides, as well as containing possible gold deposits (Figure 24). The work is somewhat limited in that similar treatment was not given to Geopeko's geochemical data. It was not expected that an evaluation of the data would reveal any untested drill targets, however further work has been recommended on a number of prospects. General recommendations are given in Appendix 1 and specific details are listed in Table 1.

The emphasis on gold exploration has renewed interest in the magnetic anomalies at Elliott Bay; some of these were originally designated 'gold' prospects by Geopeko, but further investigation is recommended for V5, V6, V9, V14, V15, V16 & V17. Where VLF or UTEM data exists for these prospects, this may be used to define faults and determine structural trends (eg, V9). Two aeromagnetic anomalies not considered by Geopeko but recommended here for follow up, have been labelled @6 and @7 on Figure 8. Gold has already been located at several non-magnetic prospects (eg, V12, V24) and other geophysical methods may assist their definition. A resistive zone would appear to extend V24 to the north-east beyond DDH 24/4 and a dipole-dipole IP survey is suggested for target delineation at V30.

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* The two alternatives given in Figures 21a & b illustrate the non-uniqueness of the modelling. However reasonable drill targets can be produced with further input from geology, geochemistry and other geophysical results.

Poor outcrop and the presence of Tertiary gravels over parts of the lease have considerably hindered the search for alteration and favourable lithologies. It is therefore recommended that semi-regional gradient array IP surveys be carried out over areas ungridded by Geopeko, but thought by Cyprus to have potential. Such surveys should serve to locate any pyritised zones which may be host horizons for gold or base-metals. Areas to the north and south of the Lewis River Prospect; ie, V12 to V3 probably have the highest priority.

There is still considerable potential for a base-metal deposit at Elliott Bay. The V2-V12 area has not been adequately tested for a buried VMS deposit and a fixed loop TEM survey (eg, UTEM) is recommended over this area. DHEM surveys should be carried out down any holes drilled for massive sulphides and in gold prospects such as V12, where there is also considered to be a possibility of massive sulphides. .If cost-effective, consideration should also be given to surveying down reamed out holes at V19 where the surface geophysics suggests that there is no sulphide deposit of significant size in the top 100-150m. An alternative hypothesis for the V19 massive sulphide pods is that they may have been transported some distance from their source (Wilson et al, 1982). Detailed structure at V19 (and elsewhere on the lease) appears to be poorly understood. It is suggested that further study of the gravity and magnetic data could assist a structural interpretation which might point towards a location for a parent body of sulphide for the V19 mineralisation.

Gravity modelling of data from V29 and V9 has indicated that massive sulphides are a possible source of residual anomalies, although this conclusion is not supported by the results of electrical surveys. (More detailed modelling, integrated with the geology, is needed if a drill target is required here.) Completion of the regional gravity coverage in the southern part of the lease is recommended to confirm possible anomalies in prospective areas between V2 & V3 and between V5 & V6. Gravity anomalies on the residual contour map should be surveyed in detail if considered prospective from other criteria; for example, the high to the north of V19.

It would require little effort to add the results of Cyprus' surveys to these compilation sheets. If the same treatment were given to the considerable volume of geochemical data, the combined plans would provide a ready reference of work completed at Elliott Bay.

J.R. Bishop
Jan., 1988.

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Table 1

SUMMARY OF RECOMMENDATIONS

MAGNETICS

Further investigation of the following Voyager aeromagnetic anomalies: V5, V6, V9, V14, V15, V16 & V17, is recommended since these have not been thoroughly explored for gold by Geopeko. Only V9 has been covered by detailed ground magnetic surveys. V14 has minimal coverage, as has V15 (#3 of Torrey et al, 1987). Other prospects may have sufficient coverage, depending upon encouragement from the geochemistry. Further work should include: determining whether the anomaly has been adequately defined by the ground magnetics and evaluating the location and quality of any gold assaying carried out by Geopeko. VLF (carried out on most Geopeko prospects) will usually help determine structure. Also recommended for investigation for gold, are two aeromagnetic anomalies not recognised by Geopeko but associated with intersecting magnetic linears. These are labelled as @6 and @7 on Figure 8. Ground magnetics and soil sampling will be required for these prospects.

INDUCED POLARISATION

Gradient array IP surveys are recommended over ungridded and poorly mapped areas of (presumed) favourable lithologies to locate potential host horizons for both gold and base-metal mineralisation. Specifically, the area between V3 in the south to V12 in the north is recommended.

Dipole-dipole IP surveys may provide drill targets for gold prospects with associated disseminated sulphide. V30 may be one such prospect (?).

Investigation of the apparent north-east extension to the V24 gold prospect, as defined by the resistivity high is recommended.

ELECTROMAGNETICS

UTEM survey (or similar) of the V2 - V12 area to explore for a buried VMS deposit.

DHEM surveys to be carried out down any hole where massive sulphides may occur; eg, at V12 which is primarily a gold prospect, but which has VMS potential.

Investigate the feasibility of reaming out holes at V19 for DHEM surveys.

Table 1 (cont.)

GRAVITY

Completion of the regional coverage in the south of the E.L., to confirm two possible anomalies within prospective zones and detailed surveying of selected residual highs; eg, to the north of V19.

Further evaluation of the geology and geochemistry of V29 and V9 in the light of the gravity modelling. (Note that drill targets should not be determined from the preliminary, illustrative modelling given in this report.)

An integrated interpretation of the aeromagnetic and gravity data to help define structure and possible displacement in the region around V19.

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APPENDIX 1

PROSPECT DESCRIPTIONS

A brief summary of each prospect is given here. Those of possible further interest have been marked with an asterisk (*).

*V1: Old workings (Penders).

Originally worked to locate economic concentrations of copper mineralisation, it has been identified by Torrey et al (1987) as being in a favourable environment next to a granite margin and containing anomalous gold. The "significant Turam" anomalies defined on this grid are not of interest.

*V2: Old workings (Lewis River).

This area has also been identified by Torrey et al (1987) as part of an anomalous gold zone. Drilling by Geopeko (6 holes) defined an area of anomalous base metals. The recommended extension of the grid to the north (Strickland and Herrmann, 1980) was never made, nor were the attempted extensions to the IP completed. This area appears to still hold potential for a (buried) VMS deposit.

*V3: Old workings (Drake Creek).

This is a southern continuation of the V2 geology and it has a similar (base metal) potential.

V4: AEM anomaly no. 18.

The AEM anomaly was not located, but no further work is warranted*.

*V5: Aeromagnetic anomaly.

The source of the anomaly has been ascribed to disseminated magnetite in the volcanics at a granite margin and of no further interest to Geopeko. However it has the attributes of Torrey et al's (1987) second gold model and thus it retains some potential for Cyprus.

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* Follow up of any HEM-400 anomalies, even those outside the area covered by the Dighem survey, is probably not now warranted.

* V6: Aeromagnetic anomaly.

This is similar to V5 and has been recognised by Torrey et al (1987) to have potential for a gold deposit.

V7: Aeromagnetic anomaly.

Investigation by Geopeko defined a broad anomaly with no anomalous geochemistry. Large (1981) suggested disseminated magnetite within the volcanics as the probable source and no further work has been carried out.

V8: Anomalous tin in stream sediments.

Tin is not one of Cyprus' present targets at Elliott Bay, nor is there a model for an economic deposit which readily fits the known geology.

*V9: Aeromagnetic anomaly plus alteration.

This area has been thoroughly tested with IP, UTEM and gravity and appears to have little potential for VMS. The magnetic anomaly is located on the margin of a (micro)granite intrusion and together with strong UTEM anomalies at the south of the grid which overlap and parallel the Osmund Fault, the area fits the first of Torrey et al's (1987) gold models.

*V10: Anomalous base metals in stream sediments.

IP surveys over anomalous soil geochemistry failed to define targets. However the prospect lies within the area of favourable geology between V3 and V12.

V11: AEM anomaly no. 7.

The AEM anomalies have been approximately positioned from old plans and AEM no. 7 should be encompassed by the VLF traverses (Figure 6). No significant results were obtained.

*V12: Anomalous base metals in stream sediments.

This area also produced very high gold values in follow up rock chips (to 265g/t) and is one of the prime areas recommended for follow up by Torrey et al (1987). Drilling by Geopeko for a VMS deposit has revealed narrow veins of disseminated mineralisation. However the good structure defined by the VLF has not been tested by any of the five holes. It is recommended that the VLF (Figure 9) be integrated with the soil geochemistry when planning drill targets. (The magnetics is generally flat and trends are not discernible.) This area still has untested potential for a buried VMS deposit and DHEM surveys are recommended down any holes drilled for gold.

*V14: Aeromagnetic anomaly.

This discrete anomaly, within the porphyry on the eastern edge of the E.L., lies on a magnetic linear. It is suggested that the anomaly be located on the ground and soil sampled.

*V15: Aeromagnetic anomaly.

This prospect was identified, but not followed up by Geopeko. It is discussed in Torrey et al (1987) as Magnetic Anomaly #3 (although their figure 33 suggests that only the south east corner of the anomaly has been defined) and recommended for further work. V15 is located at the junction of two cross cutting magnetic linears and is a potential gold target. (Torrey et al (1987) quote values to .03g/t.)

*V16: Aeromagnetic anomaly plus anomalous base metals.

This is a large area of alteration which has had little geophysics (regional magnetics and partial VLF coverage). Jones (1986) quotes anomalous gold in streams.

*V17: Aeromagnetic anomaly.

The only work done on this prospect has been magnetics and base metal assaying of soil samples. The proximity of the area to V24 and V33 suggests that it should also be sampled for gold.

*V18: Out cropping sulphides.

This prospect, which returned values to 1% Cu (as bornite) has not been gridded and has only been tested by three rock chips.

*V19: Alteration plus high-grade pods of massive sulphide.

IP, UTEM and gravity surveys have failed to define targets on this prospect and a significant sized massive sulphide body within 150m of the surface is considered to be unlikely. For deeper exploration, consideration should be given to reaming out Geopeko's deeper DDH's for DHEM surveys.

V20: Anomalous base metals in stream sediments.

This area was resurveyed by Cyprus in the 1985/86 season with no encouragement.

V21: Extension of V1.

No significant results were obtained from the VLF & SP or geochemistry. (The description of V21 in Jones '86 (Table 1) is apparently in error. AEM anomalies, given as the reason for the prospect, are in the area but are not mentioned in the prospect description (Large, '81). Nor have I found any reference to Turam surveys.)

V22: Area of alteration.

Covered by the regional IP survey (with no significant results for a VMS deposit) but not by the detailed Wart Hill gravity or UTEM.

V23: Out cropping mineralisation.

Minor copper mineralisation in dolomitic shales, which was not followed up.

*V24: Anomalous gold.

A resistive area coincides with the area of anomalous gold and extends it further to the north. The four lines of magnetics are mostly flat and show no trends. (Trends may become apparent from a detailed and accurate survey.) VLF is recommended to help delineate any structural control. Wilson et al (1981) refer to gold within the black shales: this does not appear to be mentioned in later reports.

V25: Anomalous tungsten in streams.

Not gridded and not followed up.

V26: AEM & aeromagnetic anomalies.

Follow up with geochemistry produced no significant results.

V27: Weakly anomalous base metals in stream sediments.

This area lies at the northern end of a zone of sericite-quartz alteration defined by Torrey et al (1987), but no follow up work was done by Geopeko.

V28: Anomalous gold.

The gold was attributed to flooding of the Mainwaring River and was not followed up.

*V29: Anomalous base metals to the south of V19.

Defined as a potential site for VMS by lead isotope work (Gulson et al, 1987). Residual gravity highs associated with poor UTEM responses, but no coincident IP anomalies. This prospect has not been drilled.

*V29W: Anomalous gold.

Strong VLF responses define a complex structure. Integration of these results with geochem (plus IP) may produce drill targets.

*V30: Anomalous gold and base metals.

Integrate VLF and magnetics (clear responses) with (?)gold geochemistry. Dipole-dipole IP may provide drill targets.

*V31: Outcropping base metal mineralisation.

This prospect has been covered by magnetics and very regional VLF. It is located on the prominant Copper Creek Fault and may be prospective for gold.

*V32: Favourable stratigraphy.

Apart from some rock chip sampling providing anomalous base metal values, this area has had little attention. A regional gradient array IP survey is recommended over this area to map out areas of alteration.

*V33: Anomalous base metals to the north of V19.

Drilling of eastern IP anomalies revealed zone of weak mineralisation. This is a favourable area not covered by UTEM or detailed gravity. (The prospect sheet in the appendix states that VLF has been done here, however the data has not been sighted and it is not mentioned in Jones, 1986.)

V34: Favourable stratigraphy.

There are no worthwhile responses from the regional dipole-dipole IP, nor is there any gravity anomaly in the Mines Dept's regional survey.

*V35: Anomalous gold in stream sediments.

Geopeko did not follow up these results.

V36: Anomalous copper in stream sediments.

Geopeko did not follow up these results.

APPENDIX 2

GEOPEKO'S PROSPECT SUMMARIES

(V15 & V36 are missing)

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GEOPEKO

PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

STYLE OF MINERALIZATION Cu-W CHEMICAL SEDIMENT

PROSPECT VOYAGER 1

LOCATION 377300mE 524200mN

DEFINITION OLD WORKINGS (PENDERS PROSPECT) ON TWO PARALLEL ZONES OF PYRITE/ MAGNETITE MINERALIZATION

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	6 sq.km	INITIAL GRID OF 4 N-S
	GRID ORIENTATION	TRUE NORTH	LINES USED FOR RECON.
	LINE SPACING	200 metres	IN 76/77
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO 200 RIG	PEAK VALUES OF 55ppm Cu
	No. of samples	318	80ppm Pb + 140ppm Zn
	Horizon sampled	C	ON NORTHERLY EXTENSION
	Elements assayed for	Cu Pb Zn Ag Mn Fe Ba Sn	OF MAGNETITE LODE
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK SAMPLES	HIGHEST 1% Cu, 650ppm
	No. of samples		Pb + 3020ppm Zn
	Elements assayed for	Cu Pb Zn Ag Mn Fe Cd As	Sn Au
GEOLOGY	Area mapped	6 sq.km	
	Scale used	1:5000	
	Geologist	C.D. STRICKLAND	
GEOPHYSICS	I.P. Gradient Array	line km	RECON. VLF SP + IP IN 76/77
	Dipole-Dipole	11.15 line km	
	S.P.	line km	
	Magnetics	17.6 line km	MAGNETICS + IP COVER V5
	Station spacing	25 metres	AS WELL
	E.M. V.L.F.	1.75 line km	1.0km OF SCHLUMBERGER
	Turam (M.S.T.)		VERTICAL ELECTRICAL
	Gravity No. of stations		SOUNDING
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	53.5 metres	2 HOLES 220ppm W IN MAGNETITE?CHLORITE

Summary DRILLING OF MAG. + GEOCHEM. ANOM. SUPPORT STRATIFORM STYLE OF MINERALIZATION WITH CHEMICAL SEDIMENTS

Sgd. T. Pemberton

Date 19-5-82

Reports PROGRESS REPORTS: STRICKLAND (1977, 1978, 1979) MUDGE (1977, 1978)

Updates

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GEOPEKO

PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 2

LOCATION 384250E 5245050N

DEFINITION LEWIS RIVER PROSPECT - OLD TRENCHING + PITS

STYLE OF MINERALIZATION STRATIFORM Pb Zn Ag

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	1.3	sq.km	RECON. GRID OF 1.35km
	GRID ORIENTATION	TRUE NORTH		IN 76/77
	LINE SPACING	200	metres	
	INFILL GRIDDING			
GEOCHEMISTRY	SOIL SAMPLING			
	Method	JACRO 200 RIG		RECON. 76/77-3 SAMPLES
	No. of samples	234		GOOD ANOM. 77/78.
	Horizon sampled	C		N-S ANOM - DRILLED IN
	Elements assayed for	Cu Pb Zn Ag Mn Fe Ba Sn		79/80
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped	1.5	sq.km	RECONN. IN 76/77 + 80/81
	Scale used	1:5000		TRACE MINER ZONE 400m
	Geologist	C.D. STRICKLAND		N-S + 5cm TO 2m WIDE
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole-Dipole	4.2	line km	1km SCHLUMBERGER
	S.P.	1.4	line km	VERTICAL ELECTRICAL
	Magnetics	4.6	line km	SOUNDING
	Station spacing	25	metres	
	E.M. V.L.F.	2.6	line km	
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling	196.05	metres	9m 1.61%Pb .24%Zn 21.2g/t Ag
	Jacro A.Q. Holes	202.35	metres	6 HOLES BAD RECOVERY

Summary SIDERITE RICH HORIZON WITH PYRITE CHALCOPYRITE + GALENA IN FAVOURABLE ENVIRONMENT WITH PYROCLASTICS + VOLCANIC LITHOLOGIES

Sgd. *[signature]*

Date 9/6/82

Updates

Reports STRICKLAND (1978, 79, 80)
LARGE (1981), MUDGE (1978)

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GEOPEKO

PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 3

LOCATION 383000mE 5242000mN (AMG

DEFINITION OLD PROSPECT DRAKES CREEK Cu, Zn MINERALIZATION

STYLE OF MINERALIZATION STRATIFORM Cu, Pb, Zn

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	6.3 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	100 metres	
	INFILL GRIDDING	NIL	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO 200	WELL DEFINED Cu, Pb and
	No. of samples	270	Zn BEDROCK
	Horizon sampled	C HORIZON	ANOMALIES WITH PEAK
	Elements assayed for	Cu, Pb, Zn	VALUES OF 1300ppm
	STREAM SAMPLING		47000ppm and 10000ppm respectively
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	CONDUCTIVETY (H20)	VALUES CONTOURABLE
	No. of samples	270 JACRO HOLES	PEAK VALUE OF 0.55 MILLIOHS/CM 9900N 8775E
	Elements assayed for		
GEOLOGY	Area mapped	6.3 sq.km	AREA RE-MAPPED 1980
	Scale used	1:2500	VOLCANIC SUCCESSION ONLY
	Geologist	CDS, RRL, PH.	NO SEDIMENTS RECOGNIZED
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole - Dipole	5.4 line km	
	S.P.	1.3 line km	NO SIGNIFICANT ANOMALIES
	Magnetics	12 line km	400m SPACED RECONNAISSANCE
	Station spacing	50? 25? metres	GRID LINES ONLY
	E.M. V.L.F.	6.5 line km	TWO ANOMALOUS ZONE LOCATED
	Turam (M.S.T.)	LINES 9600N 9800N	NO SIGNIFICANT RESPONSE
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	201.0 metres	1.28%Zn IN CHLORITIC TUFF
	Jacro A.Q. Holes	61.2 metres	UNIT OVER 1m - 0.37% Zn/8/m

Summary POOR OUTCROP ON GRID VERY GOOD Cu, Pb, Zn ANOMALIES AND IP ZONES. DRILL HOLE TESTED IP TARGET ONLY. FURTHER WORK REQUIRED.

Sgd. P. Hutson

Date 9.6.82

Reports MUDGE 1978, 1979, STRICKLAND 1979, 1980 WILSON ET AL 1981

Updates

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A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY
PROSPECT VOYAGER 4
LOCATION 381800E 5244700N
DEFINITION GEOEX (1975) AIRBORNE EM ANOMALY NO 18

STYLE OF MINERALIZATION Cu Pb Zn Ag Au
MASSIVE SULPHIDES

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	76/77 RECON. 2 LINES
	GRID ORIENTATION		100m APART 1.65km ORIEN
	LINE SPACING	metres	067° MAG
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		SAMPLED DURING 76/77
	No. of samples		REGIONAL PROGRAMME.. NO
	Sample density		ANOM ON GRID AREA BUT TO
	Elements assayed for		S + 600m N
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	1:10000 sq.km	QUARTZ-FELDSPAR PORPHRHY
	Scale used		LAVAS PREDOMINATE IN
	Geologist	C.D. STRICKLAND	THE AREA
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	1.65 line km	NO ANOMALY
	Station spacing	metres	
	E.M. V.L.F.	1.65 line km	INCONCLUSIVE RESULTS
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary THE AIRBORNE EM ANOMALY WAS NOT LOCATED.
STREAM SEDS. TO N + S GEOCHEM INTERESTING

Sgd. J. Pemberton
Date 9/6/82

Reports STRICKLAND 76/77 77/78

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 5

LOCATION 378400N 5242800N

DEFINITION MAGNETIC ANOMALY FROM 1975 AIRBORNE SURVEY

STYLE OF MINERALIZATION SKARN RELATED TO LOW ROCKY POINT GRANITE

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	RECONN. GRID 3.05km in
	GRID ORIENTATION		76/77. 77/78 V1 GRID
	LINE SPACING	metres	ENCOMPASSED V5
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	sq.km	MAPPED AS PART OF V1 IN
	Scale used		77/78
	Geologist		
GEOPHYSICS	I.P. Gradient Array	line km	76/77 RECON MAGNETICS +
	Dipole-Dipole	line km	VLF. V1 GEOPHYSICS IN
	S.P.	line km	77/78 COVERED V5
	Magnetics	line km	COINCIDENT MAG. + IP
	Station spacing	metres	ANOMALY DRILLED IN 78/79
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	48.4 metres	2 HOLES

Summary DRILLING SHOWED V5 IS ON THE CONTACT OF THE GRANITE + VOLCANICS WITH DISSEMINATED MAGNETITE IN THE VOLCANICS. THE MAG. ANOM CROSSCUTS THE CONTACT.

Sgd. J Pemberton

Date 9/6/82

Updates

Reports

STRICKLAND (1977,78,79)

MUDGE IP + MAGNETOMETER SURVEY V1+V5

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A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 6

LOCATION 380300E 5243800N

DEFINITION AEROMAGNETIC ANOMALY FROM 1975 GEOEX SURVEY

STYLE OF MINERALIZATION SKARN RELATED TO LOW ROCKY POINT GRANITE?

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	4.7 LINE KM sq.km	76/77 - 800m LINE AT
	GRID ORIENTATION	TRUE NORTH	090° MAG
	LINE SPACING	100 metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	HAND AUGER	NO SIGNIFICANT ANOMALY
	No. of samples	16	
	Horizon sampled	C	
	Elements assayed for	Cu Pb Zn Fe W Sn	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK SAMPLES	ANOM. Cu (.14%) Pb (430ppm)
	No. of samples	9	+ Au (740ppb) FROM A
	Elements assayed for	Cu Pb Zn Fe Ag Au Sn W Ba	GOSSANOUS TUFF
GEOLOGY	Area mapped	sq.km	MAG. ANOM. EXPLAINED BY
	Scale used	1:10000	DYKE LIKE BODY ±10m WIDE
	Geologist	R. LARGE	ON W CONTACT GRANITE
GEOPHYSICS	I.P. Gradient Array	line km	IT IS A MAGNETIC QUARTZ
	Dipole-Dipole	line km	BRECCIA
	S.P.	line km	
	Magnetics	2.55 line km	PLUS A TRAVERSE ALONG
	Station spacing	25 metres	LEWIS RIVER
	E.M. V.L.F.	2.95 line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary THE MAG. ANOM. IS REGARDED AS HAVING LITTLE POTENTIAL. A TUFF HORIZON ON THE EASTERN SIDE OF THE GRANITE HAS THE ANOMALOUS Cu Pb Zu VALUES

Sgd. J. Robertson

Date 9/6/82

Reports STRICKLAND 76/77, 77/78

LARGE 79/80

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

PROSPECT VOYAGER 7

LOCATION 378000E 5244000N

DEFINITION AIRBORNE MAGNETIC ANOMALY FROM 1975 GEOEX SUREY

STYLE OF MINERALIZATION UNKNOWN

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	7.5 LINE	sq.km	V7 JOINS UP WITH V21
	GRID ORIENTATION	TRUE NORTH		& THE GEOPHYS. TREAT
	LINE SPACING	200	metres	AREA AS ONE
	INFILL GRIDDING			
GEOCHEMISTRY	SOIL SAMPLING			
	Method	JACRO 200 RIG		NO SIGNIFICANT ANOMALY
	No. of samples	59		
	Horizon sampled	C		
	Elements assayed for	Cu, Pb, Zn, Fe, Sn, W, Au		
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped	± .4	sq.km	LIMITED OUTCROP
	Scale used	1:2500		QUARTZ FELDSPAR
	Geologist	C.D. STRICKLAND		CRYSTAL TUFFS
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole-Dipole		line km	
	S.P.	5.8	line km	V7 & V21
	Magnetics	11.05	line km	V7 & V21
	Station spacing	25	metres	
	E.M. V.L.F.	12.56	line km	V7 & V21
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary THE MAG. ANOM. IS REGARDED AS RESULTING FROM ±5% DISSEMINATED MAGNETITE. NO FURTHER WORK.

Sgd. J. Pemberton

Date 21/5/82

Reports PROGRESS REPORT E.L. 27/76 BY R.R. LARGE 1979/80

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

PROSPECT VOYAGER 8 TIN STUDY

LOCATION 384500m E 5242500m N

DEFINITION TIN IN -80 MESH REGIONAL STREAM SEDIMENT IN SOUTH OF E.L.

STYLE OF MINERALIZATION ALLUVIAL OR GRANITE RELATED TIN MINERAL-IZATION

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	REGIONAL STUDY IN SOUTH OF
	GRID ORIENTATION		E.L. AT 1:10000
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	BULK SAMPLES OF HEAVY MINERALS	
	No. of samples	8	
	Horizon sampled	DOWN TO C	
	Elements assayed for	Sn	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method	3 PITS AND 3 TRENCHES	
	No. of samples	19 & 6	
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	AUGER HOLES	
	No. of samples	162	
	Elements assayed for	Sn	
GEOLOGY	Area mapped	±40 sq.km	MAPPED RECENT ALLUVIAL
	Scale used	1:10000	DEPOSITS
	Geologist	K. BURLINSON	
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary TIN IN STREAM SEDIMENTS DERIVED FROM RECENT ALLUVIAL DEPOSITS OF SAND & QUARTZITE PEBBLES. THE ULTIMATE SOURCE OF THE TIN IS PROBABLY THE PRECAMBRIAN TO THE EAST. NO ECONOMIC CONCENTRAT- OF TIN WERE FOUND IN THE E.L.

Sgd. [illegible]

Date 21/5/82

Updates

Reports TIN AT ELLIOTT BAY-TASMANIA E.L. 27/76 BY K. BURLINSON PROGRESS REPORT E.L. 27/76-76/77+77/78 BY C.D. STRICKLAND

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 9

LOCATION 380 500E 5246500N

DEFINITION AEROMAGNETIC ANOMALY ALTERATION ZONE

STYLE OF MINERALIZATION DISSEMINATED-MASSIVE Cu-Au STRATIFORM Cu-Pb-Zn

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	1·2 sq.km	
	GRID ORIENTATION	11° 36' TRUE N	
	LINE SPACING	100 metres	
	INFILL GRIDDING	50m INFILL OVER MAGNETIC ANOMALY AND Pb-Zn ANOMALY	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO	COPPER SOIL ANOMALY WITH
	No. of samples	718	VALUES OF 200-2400ppm Cu
	Horizon sampled	C HORIZON	SIGNIFICANT Pb-Zn SOIL
	Elements assayed for	Cu, Pb, Zn, Ag, Fe, Mn	ANOMALY ON E CENTRAL PART OF GRID
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK CHIP SAMPLING	ANOMALOUS Cu, Pb, Zn
	No. of samples	13	
	Elements assayed for	Cu, Pb, Zn, Fe, Ag, Au,	Sn, W, Ba
GEOLOGY	Area mapped	1.2 sq.km	EXTENSIVE AREAS OF CHLORITE-
	Scale used	1:2500	PYRITE AND SERICITE ALTERATION
	Geologist	R.R. LARGE P.A. WILSON	WIDE VARIETY OF ROCK TYPES ADJACENT TO GRANITE CONTACT
GEOPHYSICS	I.P. Gradient Array	16.20 line km	
	Dipole-Dipole	4.90 line km	EXCELLENT IP CHARGEABLE ZONE ON NE OF GRID
	S.P.	line km	
	Magnetics	16.20 line km	BROAD 1300NT ANOMALY
	Station spacing	25 metres	DEEP SOURCE
	E.M. V.L.F.	12.80 line km	
	Turam (M.S.T.)	–	
	Gravity No. of stations	332	
	Station spacing	25 metres	
DRILLING	Diamond drilling 2	359 metres	
	Jacro A.Q. Holes 1	60 metres	BANDED MAGNETITE IN TUFFS

Summary Pb-Zn ANOMALY ADJACENT TO MAGNETIC ANOMALY NEEDS TESTING

Sgd. P. Wilson

Date 9.6.82

Reports LARGE (1981) WILSON (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

PROSPECT VOYAGER 10

LOCATION 385000mE 5244000m N

DEFINITION ANOM. STREAM SEDS IN 77/78 REGIONAL EVALUATION V10 IS SOUTH OF V2

STYLE OF MINERALIZATION STRATIFORM Pb-Zn-Cu

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	1 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	200 metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	POWER AND HAND AUGER	79 SAMPLES BY HAND
	No. of samples	247	MARKED DIFFERENCE.
	Horizon sampled	C	BETWEEN TWO SAMPLE
	Elements assayed for	Cu, Pb, Zn	COLLECTION METHODS
	STREAM SAMPLING		NOTICED IN RESULTS
	Method		REGIONAL PROGRAMME HAD
	No. of samples		ANOMALOUS GEOCHEMISTRY
	Sample density		(Cu Pb + Zn) TWO
	Elements assayed for		ANOMALOUS N-S ZONES
	COSTEAN SAMPLING		OBTAINED IN C HORIZON 'SAMPLING'
	Method		HIGHEST VALUES WERE 460
	No. of samples		+640 Cu, 1600 + 3900 Pb,
	Sampling spacing		740 + 1900Zn in ppm
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	1 sq.km	PROVED NOT A S EXTENSION
	Scale used	1:2500	OF V2 EPICLASTIC SEDS
	Geologist	C.D. STRICKLAND	PYROCLASTICS + FLOWS
GEOPHYSICS	I.P. Gradient Array	line km	PREDOMINATE
	Dipole-Dipole	5.5 line km	SUGGESTION OF A POLARIZABLE
	S.P.	0.52 line km	SOURCE TO THE WEST OF THE GRID
	Magnetics	4.6 line km	
	Station spacing	25 metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary NO FURTHER WORK RECOMMENDED. SOIL GEOCHM IS ENCOURAGING BUT CONFUSED BY DIFFERENT METHODS.

Sgd. [signature]

Date 21/5/82

Reports PROGRESS REPORT E.L. 27/76-V10-C.D. STRICKLAND

PROGRESS REPORT E.L. 27/76-79/80 R.R. LARGE

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

STYLE OF MINERALIZATION UNKNOWN

PROSPECT VOYAGER 11

LOCATION 378300E, 5242100N

DEFINITION 1975 GEOEX AIRBORNE EM ANOMALY TO THE EAST OF VOYAGER 1.

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	3.1	sq.km	RECON. GRID CUT IN
	GRID ORIENTATION	TRUE NORTH		76/77. REGRIDDED AS
	LINE SPACING	200	metres	PART OF VOYAGER 1 IN
	INFILL GRIDDING			77/78
GEOCHEMISTRY	SOIL SAMPLING			
	Method			
	No. of samples			
	Horizon sampled			
	Elements assayed for			
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped		sq.km	REGIONAL MAP 1:5000
	Scale used	1:10000		SCALE WHEN MAPPED
	Geologist	C.D. STRICKLAND		AS PART OF VOYAGER 1
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole-Dipole		line km	
	S.P.		line km	
	Magnetics		line km	READ IN 77/78
	Station spacing		metres	
	E.M. V.L.F.	3.1	line km	NOISY DATA
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary EM ANOMALY INTERPETED AS A CONTACT EFFECT OF THE LOW ROCKY CAPE GRANITE + THE VOLCANICS

Sgd. T. Barton

Date 1/2/82

Reports STRICKLAND 77/78.

LARGE 79/80 ✓

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

PROSPECT VOYAGER 12

LOCATION 385000mE 5246000mN

DEFINITION ANOMALOUS Cu Pb +Zn IN REGIONAL STREAM SEDIMENTS

STYLE OF MINERALIZATION EPIGENETIC Au-Ag VEIN

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	± 0.8	sq.km	
	GRID ORIENTATION	TRUE NORTH		
	LINE SPACING	100	metres	
	INFILL GRIDDING			
GEOCHEMISTRY	SOIL SAMPLING			
	Method	-80 MESH HAND AUGER		PEAK VALUES 290ppm Cu,
	No. of samples	291		Cu, 660ppm Pb +285ppm Zn.
	Horizon sampled	C		SPOTTY IRREGULAR RESULTS
	Elements assayed for	Cu, Pb, Zn		
	STREAM SAMPLING			
	Method	-80 MESH		REGIONAL PROGRAM HAD
	No. of samples			ANOM. UP TO 105ppm Cu,
	Sample density			820ppm Pb +80ppm Zn
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method	ROCK CHIPS		BEST VALUES 0.36%Cu,
	No. of samples	25		0.68%Pb, 0.70%Zn
	Elements assayed for	Cu, Pb, Zn, Ag, As, Au		440gm/tAg + 265gm/tAu
GEOLOGY	Area mapped	±0.8	sq.km	LOCATED GOSSANOUS OUTCROPS
	Scale used	1:2500		RELATED TO MINOR VEINLETS
	Geologist	W. HERRMANN		
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole-Dipole	3.6	line km	ANOM COINCIDENT SP + VLF
	S.P.	7.1	line km	ANOM OF 170m V
	Magnetics	0.9	line km	LINE 300S
	Station spacing	12.5	metres	
	E.M. V.L.F.	7.1	line km	ANOM COINCIDENT WITH IP
	Turam (M.S.T.)			+ SP ANOM.
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling	163.65	metres	MINOR MINERALIZED VEINS
	Jacro A.Q. Holes	186	metres	4 HOLES ± 50% RECOVERY

Summary MINERALIZATION IS LOCALIZED TO SMALL STRUCTURALLY CONTROLLED FRACTURES + VEINS, SURFACE ENRICHMENT IN GOSSANS OF Cu Pb Zn Ag & Au

Sgd. T. [signature]

Date 1/6/82

Reports GEOPHYSICAL SURVEYS-VOYAGER 12-ELLIOTT BAY BY S.T. MUDGE 1979. PROGRESS REPORT E.L. 27/76 79/80 BY R.R. LARGE

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76

PROSPECT VOYAGER 14

LOCATION 387700mE 5244500mN

DEFINITION AIRBORNE MAGNETIC ANOMALY

STYLE OF MINERALIZATION UNKNOWN

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	2.1 Line km	RECONNAISSANCE GRID
	GRID ORIENTATION	MAG. NORTH	
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	sq.km	REGIONAL SCALE
	Scale used	1:10000	DISSEMINATED MAGNETITE
	Geologist		IN CHL. QFB PORPHYRY
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	2.1 line km	
	Station spacing	12.5 metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary SPIKY GROUND ANOMALIES RELATED TO LOCAL PARTICLES OF DISSEMINATED MAGNETITE

Sgd. J. Ranbert

Date 9/6/82

Reports LARGE (1981).

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 16

LOCATION CENTRED ON AMG 5248500mN

DEFINITION AREA OF COINCIDENT Pb/Zn STREAM SOIL GEOCHEM AND MAGNETICS

STYLE OF MINERALIZATION ROSEBERY STYLE STRATIFORM Pb-Zn-Cu

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	1.6 x 1.2	sq.km	
	GRID ORIENTATION	MAG NORTH BASE LINE/EW LINES		
	LINE SPACING	400	metres	
	INFILL GRIDDING	100m NW CORNER (REDUCED AREA)		
GEOCHEMISTRY	SOIL SAMPLING	ORIGINAL AREA	REDUCED AREA	
	Method	POWER AUGER	POWER AUGER	ROCK HAVE HIGH Zn BACKGROUND
	No. of samples	126	165	TWO STRONG
	Horizon sampled	C	C	Pb/Zn SOIL ANOMALIES
	Elements assayed for	Cu Pb Zn Fe Ag Mn		HAVE BEEN OUTLINED
	STREAM SAMPLING	ORIGINAL AREA	REDUCED AREA	
	Method	-80MESH PAN CON.	-80MESH +80MESH	
	No. of samples	15	5	VISIBLE FINE GOLD IN
	Sample density	$7/km^2$	$10/km^2$	10 PANS. Zn upto 3300ppm
	Elements assayed for	Cu Pb Zn Ag Au Fe Sn W		
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method	ROCK CHIP		
	No. of samples	7		
	Elements assayed for	Cu Pb Zn Ag Fe Mn As Au		
GEOLOGY	Area mapped	1.6x1.2 1.0x0.4	sq.km	
	Scale used	1:10000 1:2500		
	Geologist	POLTOCK BROS. R. PERRING		
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole-Dipole		line km	
	S.P.		line km	
	Magnetics	9.7	line km	
	Station spacing	12.5	metres	
	E.M. V.L.F.	4.0	line km	
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary AREA OF STRONG Pb/Zn SOIL GEOCHEMISTRY WITH COINCIDENT MAGNETIC ANOMALY WITH RHYOLITIC TUFF OF HUDSON RIVER VOLCANICS

Sgd. [signature]

Date 3rd June 1982

Reports LARGE (1981) POLTOCK(1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

832144

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY E.L. 27/76
PROSPECT VOYAGER 17
LOCATION 378000mE 5250000mN
DEFINITION AIRBORNE MAGNETIC ANOMALY

STYLE OF MINERALIZATION UNKNOWN

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	800m LINE sq.km	
	GRID ORIENTATION	E-W	
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	HAND AUGER	WEAK ANOMALY OVER
	No. of samples	36	MAGNETIC ANOMALY .
	Horizon sampled	C	
	Elements assayed for	Cu Pb Zn + Fe	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	sq.km	
	Scale used		
	Geologist		
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	0.8 line km	BROAD + WEAK (250m +
	Station spacing	metres	200nT)
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary NO FURTHER WORK PLANNED

Sgd. T Pemberton

Date 9/6/82

Reports LARGE, (1981) ✓

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 18

LOCATION MOUTH OF COPPER CREEK

DEFINITION OUTCROPPING DISSEMINATED COPPER MINERALIZATION

STYLE OF MINERALIZATION CHALCOPYRITE-PYRITE IN DOLOMITE WITHIN BASIC VOLCANICS

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK SAMPLING	UPTO 0.98%Cu AS BORNITE
	No. of samples	3	+ CHALCOPYRITE WITH
	Elements assayed for	Cu Pb Zn Fe Au Sn W	MINOR PYRITE WITHIN DOLOMITE
GEOLOGY	Area mapped	sq.km	BEDS IN THE VERIDAN POINT
	Scale used	1:10000	BASIC VOLCANICS
	Geologist		
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary THIS PROSPECT INDICATES THE POTENTIAL OF THE BASIC VOLCANICS TO THE NORTH (MAINWARING GROUP)

Sgd. J. Paslat

Date 9/6/82

Reports LARCE (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 19

LOCATION 379700E 525800N [illegible]

DEFINITION ALTERATION ZONE

STYLE OF MINERALIZATION STRATIFORM

Cu Pb Zn Ag (Au)

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	2.34 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	100 metres	
	INFILL GRIDDING	50m SPACING 11800-12200N	10000-10500E
GEOCHEMISTRY	SOIL SAMPLING	13000-13400N 9950-10200E	
	Method	JACRO HAND AUGER	GOOD Pb-Zn ANOMALIES
	No. of samples	750 160	N OF WART HILL UPTO
	Horizon sampled	C 1-2m DEPTH	10% COMBINED Pb-Zn
	Elements assayed for	Cu Pb Zn Ag Fe	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING	8 COSTEANS	
	Method	CHANNEL SAMPLES	BEDDED MASSIVE SULPHIDE
	No. of samples	175	MINERALIZATION LOCATED
	Sampling spacing	CONTINOUS 1m	IN 3 COSTEANS
	Elements assayed for	Cu Pb Zn Ag Fe Au Ba	
	OTHER SAMPLING		
	Method	ROCK CHIP	
	No. of samples		
	Elements assayed for	Cu Pb Zn Ag Fe Ba Au Sn	W
GEOLOGY	Area mapped	2.34 sq.km	
	Scale used	1:2500	
	Geologist	W. HERRMANN	
GEOPHYSICS	I.P. Gradient Array	21 line km	
	Dipole-Dipole	4.0 line km	
	S.P.	2.8 line km	
	Magnetics	24 line km	FLAT MAGNETIC CHARACTER
	Station spacing	12.5 metres	FEW PEAKS OF 100nT
	E.M. V.L.F.	24 line km	
	Turam (M.S.T.)	1.8 LINE KM	NO SIGNIFICANT RESPONSE
	Gravity No. of stations	1250	DETECTED DENSITY
	Station spacing	25 metres	DISTRIBUTION IN AREA BUT
DRILLING	Diamond drilling	883 metres	NO SIGNIFICANT DISCRETE
	Jacro A.Q. Holes	metres	BODIES. NO SIGNIFICANT

INTERSECTED MINERALIZATION

Summary VOLCANOGENIC MASSIVE SULPHIDES, PODIFORM IN NATURE GOOD POTENTIAL FOR DEEP OREBODY

Sgd. R Wilson

Date 9.6.82

Updates

Reports LARGE (1981)

WILSON et al (1981)

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 20

LOCATION WANDERER RIVER

DEFINITION 5259300N 384500E (AMG

ZONE OF ANOMALOUS Pb/Zn STREAM GEOCHEMISTRY IN WANDERER RIVER TUFF AND HUDSON RIVER VOLCANICS

STYLE OF MINERALIZATION ROSEBERY STYLE STRATIFORM

Pb Zn Cu

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	2x1.5 sq.km	
	GRID ORIENTATION	TRUE NORTH BASE LINE/	E-W LINES
	LINE SPACING	400 metres	
	INFILL GRIDDING	NIL	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO/POWER AUGER	BROAD Pb/Zn SOIL
	No. of samples	330	ANOMALIES BEST ASSAY
	Horizon sampled	C HORIZON	RESULTS 2400ppm Zn
	Elements assayed for	Cu Pb Zn Ag Fe	2.25%Pb 20.5ppm Ag
	STREAM SAMPLING		
	Method	-80 MESH STREAM SED.	WEAK ANOMALIES, MAXIMUM
	No. of samples	60	55ppm Pb 80ppm Zn
	Sample density	1 per $2km^2$	
	Elements assayed for	Cu Pb Zn Ag Fe Sn W	
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK CHIP	
	No. of samples	29	
	Elements assayed for	Cu Pb Zn Ag Au Ba Mn Fe	GALENA IN FOLIATED
GEOLOGY	Area mapped	~~2x1.5~~ 3 sq.km	ARGILLITE 1500ppm Pb
	Scale used	1:10000	1500ppm Zn HUDSON RIVER
	Geologist	R.J. PERRING	VOLCANICS MOSTLY QUARTZ
GEOPHYSICS	I.P. Gradient Array	line km	BIOTITE PORPHYRITIC LAVA
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	7.4 line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary STRONG SOIL Pb/Zn GEOCHEMISTRY DEFINED 1981-82 AT CONTACT BETWEEN HUDSON RIVER VOLCANICS AND WANDERER RIVER TUFFS

Sgd. [signature]

Date [handwritten]

Reports ELLIOTT BAY 1979/80 LARGE MARCH 1981

ELLIOTT BAY 1981-82 TO BE PREPARED

Updates

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 21

LOCATION 377000E 5245000N

DEFINITION NORTHWARD STRIKE OF VOYAGER 1

STYLE OF MINERALIZATION Cu IN CHEMICAL SEDIMENTS

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	2.5	sq.km	
	GRID ORIENTATION	TRUE NORTH		
	LINE SPACING	200	metres	
	INFILL GRIDDING	7.9 LINE KM		OVER EXTENSION TO V1 MAG
GEOCHEMISTRY	SOIL SAMPLING			
	Method	JACRO 200 RIG + HAND AUGER		NO SIGNIFICANT ANOMALY
	No. of samples	57 (POWER) 17 (HAND)		
	Horizon sampled	C		
	Elements assayed for	Cu Pb Zn Fe		
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped	2.5	sq.km	
	Scale used	1:2500		
	Geologist	C.D. STRICKLAND		
GEOPHYSICS	I.P. Gradient Array		line km	
	Dipole - Dipole		line km	
	S.P.	5.8	line km	V21 + V7
	Magnetics	11.05	line km	V21 + V7 MAGNETITE
	Station spacing	25	metres	CHLORITE OUTCROP OVER MAG
	E.M. V.L.F.	12.56	line km	ANOMALY
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary NARROW MAG ANOM CAUSED BY MAGNETITE BEARING CHEMICAL SEDIMENT (V1) SMALL SIZE + LACK GEOCHEM

Sgd. J. Parbeck

Date 9/6/82

Reports R. LARGE (1981)

Update

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 22

LOCATION 381000E 5249500N

DEFINITION AREA OF HYDROTHERMALLY ALTERED PYROCLASTIC ROCKS

STYLE OF MINERALIZATION STRATIFORM Cu Pb Zn

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	1.44 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	200 metres	
	INFILL GRIDDING	SOUTHERN PART 100m INTERVALS 10200N-10800N	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO POWER AUGER	TWO GEOCHEMICAL ANOMALIES
	No. of samples	(74) (274)	300x100m WITH PEAK
	Horizon sampled	C	VALUES OF 1000-2000ppm
	Elements assayed for	Cu Pb Zn Ag Fe	Pb + Zn
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING	ROCK CHIP SAMPLING	
	Method	ROCK CHIP SAMPLES	ANOMALOUS Cu Pb Zn Ag
	No. of samples	43	Au VALUES IN SOME SAMPLES
	Elements assayed for	Cu Pb Zn Ag Fe Mn	(Au Sn W)
GEOLOGY	Area mapped	1.44 sq.km	ZONE OF INTENSE HYDROTHERMAL
	Scale used	1:2500	ALTERATION POSSIBLE VENT
	Geologist	DENNIS MOORE	AREA LOCATED
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	13.60 line km	FLAT MAGNETIC CHARACTER
	Station spacing	12.5 metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Javro A.Q. Holes	metres	

Summary Pb-Zn GEOCHEMICAL ANOMALIES CORRESPOND TO LOW-LYING AREAS STRATIGRAPHICALLY ABOVE CHLORITIC ALTERATION ZONE

Sgd. [signature] Wilson.

Date 6.2.82

Reports LARGE 1980, WILSON ET AL 1981

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

832150

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 23

LOCATION 376120E 5245550N

DEFINITION MINOR COPPER MINERALIZATION IN DOLOMITIC SILTSTONES

STYLE OF MINERALIZATION STRATIFORM

Cu

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	OUTCROP CHANNEL SAMPLES	BACKGROUND VALUES OF
	No. of samples	23-5m SAMPLES	150ppm Cu PEAK VALUE OF
	Elements assayed for	Cu Pb Zn Fe	1300ppm
GEOLOGY	Area mapped	GEOLOGICAL sq.km	VERIDIAN POINT BASIC
	Scale used	TRAVERSE ONLY	VOLCANICS AND SHALES
	Geologist	C. STRICKLAND	
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary LOW COPPER CONTENT OF DOLOMITIC SHALES NO FURTHER WORK RECOMMENDED

Sgd. [illegible]

Date 6.6.82

Reports LARGE (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

832151

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY
PROSPECT VOYAGER 24
LOCATION CENTRED ON AMG 5248000N/379000E
DEFINITION AREA OF ANOMALOUS STREAM SOIL AND ROCK GEOCHEMISTRY

STYLE OF MINERALIZATION QUARTZ Au-Ag ASSOCIATION
RHYOLITE Au-Ag ASSOCIATION

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	1.3 x 1.0 sq.km	
	GRID ORIENTATION	TRUE NORTH/E-W LINES	
	LINE SPACING	100 metres	
	INFILL GRIDDING	NIL	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	HAND AUGER	TWO CONTOURABLE WEAK Pb-Zn
	No. of samples	383	ANOMALIES DEFINED
	Horizon sampled	B HORIZON	NUMBER OF Au SOIL
	Elements assayed for	Cu Pb Zn Au	ANOMALIES
	STREAM SAMPLING		
	Method	-80# and PAN CON	PAN CONS FROM LOWER
	No. of samples	17	GERARD CREEK ASSAYED 86 & 99ppm
	Sample density	12 PER km^2	Au COARSE VISIBLE GOLD
	Elements assayed for	Cu Pb Zn Ag Au Sn W	IN SAMPLES
	COSTEAN SAMPLING	COSTEAN 1 BLACKSHALE COSTEAN C2	
	Method	BACKHOE BACKHOE	GRAB SAMPLES FROM COSTEAN 1
	No. of samples	12 5	ASSAYED 4.01ppm Au and
	Sampling spacing	2m channel 1m channel	1.25ppm Au
	Elements assayed for	Cu Pb Zn As Ag Au Fe	
	OTHER SAMPLING	BANK SAMPLING	
	Method	ROCK CHIP	Qtz FLOAT IN CREEK
	No. of samples	19	ASSAYED 5.9ppm Au
	Elements assayed for	Cu Pb Zn Ag Au Mn Fe As	(POSSIBLE CONTAMINATION)
GEOLOGY	Area mapped	1.3 x 1.0 sq.km	
	Scale used	1:2500	
	Geologist	R.R. LARGE	
GEOPHYSICS	I.P. Gradient Array	ONE line km	
	Dipole-Dipole	ONE line km	
	S.P.	ONE line km	
	Magnetics	1.9 line km	
	Station spacing	25 metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	281.15 metres	
	Jacro A.Q. Holes	metres	

Summary TUFFS & AGGLOMERATES ANOMALOUS IN GOLD, CONCENTRATION IN QUARTZ VEINS. COARSE GOLD IN RHYOLITE TUFFS

Sgd. [signature]

Date [handwritten]

Reports LARGE (1981)
WILSON ET. AL. (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 25

LOCATION 384600E 5250400N ✓

DEFINITION ANOMALOUS TUNSTEN, Pb-Zn IN STREAMS

STYLE OF MINERALIZATION TUNSTEN-SULPHIDE SKARN?

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method	-80 MESH	70-100ppm W ASSOCIATED
	No. of samples	15	WITH MODERATE Pb, Zn
	Sample density	15 per sq km	ANOMALIES
	Elements assayed for	Cu, Pb, Zn, Sn, W, Fe, Au	
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	PANNED CONCENTRATE	320-160ppm W IN PAN CON.
	No. of samples		SAMPLES
	Elements assayed for		
GEOLOGY	Area mapped	RECONNAISSANCE sq.km	FINE GRAINED, FOLIATED
	Scale used	ONLY	CHLORITIC QUARTZ CRYSTAL
	Geologist		TUFFS
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary SOURCE OF W NOT LOCATED, NO AIRBORNE MAGNETIC ANOMALY (SKARN) SO LOW PRIORITY

Sgd. [signature]

Date 9.6.82

Reports LARGE (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 26

LOCATION 375500E 5251500N

DEFINITION AIRBORNE EM/MAG ANOMALIES IN MAINWARING GROUP

STYLE OF MINERALIZATION Cu DOLOMITE TYPE

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	0.80 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	400 metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	MATE POWER AUGER	BACKGROUND AND THRESHOLD
	No. of samples	127	Cu VALUES OF 1000ppm AND
	Horizon sampled	C	340ppm RESPECTIVELY
	Elements assayed for	Cu Pb Zn Ag Fe Mn Sn W	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	0.80 sq.km	BASIC VOLCANICS CHLORITIC
	Scale used	1:2500	PHYLLITES
	Geologist	R. POLTOCK	
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	1.20 line km	FLAT MAGNETIC CHARACTER
	Station spacing	12.5 metres	WEST OF SHARP SPIKEY ANOMALOUS ZONE INDICATIVE
	E.M. V.L.F.	line km	OF BASIC VOLCANICS
	Turam (M.S.T.)	COMMENCED BUT ABANDONED	- EQUIPMENT PROBLEMS
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q Holes	metres	

Summary NO SIGNIFICANT GEOCHEMICAL ANOMALIES, EM SURVEY NOT YET COMPLETED

Sgd. R Wilson.

Date 9.6.82

Reports LARGE (1981) WILSON ET AL (1981) POLTOCK (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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GEOPEKO

PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 27

LOCATION 385000E 5253500N

DEFINITION ANOMALOUS DRAINAGE GEOCHEMISTRY
WEAK AEM ANOMALY

STYLE OF MINERALIZATION STRATIFORM
Pb Zn Cu

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING	(SHEET 4)	
	Method	-80MESH	THRESHOLD VALUES OF
	No. of samples		30ppm Pb and 35ppm Zn
	Sample density	c20 per sq km	FEW ANOMALIES UPTO 60ppm
	Elements assayed for	Cu Pb Zn Ag Fe Mn	Zn and 45ppm Pb
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	30 sq.km	HUDSON RIVER
	Scale used	1:10000	VOLCANICS ADJACENT TO
	Geologist	JOHN STOCKLEY	PORPHYRY CONTACT
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary NO OUTCROP IN VICINTY OF ANOMALIES NO FURTHER WORK UNDERTAKEN

Sgd. R Whitson

Date 9.6.82

Reports LARGE (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

GEOPEKO

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 28

LOCATION 378000E 5258000N

DEFINITION ANOMALOUS GOLD IN SOIL SAMPLES CYPRESS CREEK TRACK

STYLE OF MINERALIZATION VEIN STYLE STOCK WORK PORPHYRY OR ALLUVIAL GOLD

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	RECONNAISSANCE LINE OF
	GRID ORIENTATION		SAMPLING ONLY APPROX.
	LINE SPACING	metres	E-W ALONG THE TRACK
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	MATE POWER AUGER	TWO SAMPLES FURNISHED
	No. of samples	90	VALUES OF 0.7 AND
	Horizon sampled	B/C	0.28ppm Au RESPECTIVELY
	Elements assayed for	Cu Pb Zn Ag Fe Au	
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING	INFILL GEOCHEMISTRY	
	Method	JACRO	MAXIMUM VALUE OF
	No. of samples	23x12.5m CENTRES	0.03ppm Au
	Elements assayed for	Cu Pb Zn Ag Fe Au	
GEOLOGY	Area mapped	LINE TRAVERSE sq.km	ACID VOLCANICS
	Scale used	1:2500 PROFILE	VOLCANIC SANDSTONES
	Geologist	R. POLTOCK W. HERRMANN	PYRITIC SILTSTONES
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary ANOMALOUS GOLD THOUGHT TO BE PRESENT IN THE A/B HORIZONS RELATED TO FLOOD LEVELS OF RIVER

Sgd. P. Wilson

Date 9.6.82

Reports POLTOCK (1981) WILSON ET AL (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

GEOPEKO

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PROSPECT SUMMARY SHEET

AREA: ELLIOTT BAY

PROSPECT: VOYAGER 29

LOCATION: 380000E 5249000N

DEFINITION: ANOMALOUS Pb-Zn Ag SOIL GEOCHEMISTRY SOUTH OF V19

STYLE OF MINERALIZATION: STRATIFORM Pb Zn Ag

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	1.6	sq.km	50m INFILL GRIDDING
	GRID ORIENTATION	TRUE NORTH		10300-10600N (9900-10100E)
	LINE SPACING	200	metres	
	INFILL GRIDDING	100m SPACING 10800-10000N		
GEOCHEMISTRY	SOIL SAMPLING			
	Method	JACRO		Pb Zn Ag ANOMALIES
	No. of samples	553		IN SOUTHERN AND SW
	Horizon sampled	C		PART OF GRID LOCALLY UP
	Elements assayed for	Cu Pb Zn Ag Fe		to 6.6% Pb & Zn
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method	BACKHOE		MINERALIZATION
	No. of samples	50		LOCATED IN MOST
	Sampling spacing	1m		COSTEANS
	Elements assayed for	Cu Pb Zn Ag Fe		
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped	1.6	sq.km	FLAT AREA VERY LITTLE
	Scale used	1:2500		OUTCROP QUARTZ PORPHYRY
	Geologist	W. HERRMANN		AND LITHIC TUFFS
GEOPHYSICS	I.P. Gradient Array	3.6	line km	CHARGEABLE ZONE 10600N
	Dipole-Dipole	2.8	line km	BROAD CHARGEABLE ZONE
	S.P.	2.8	line km	
	Magnetics	12.40	line km	FLAT MAGNETIC PROFILES
	Station spacing	12.5	metres	
	E.M. V.L.F.	12.40	line km	
	Turam (M.S.T.)			
	Gravity No. of stations	200		NUMBER OF INTERESTING
	Station spacing	25	metres	ANOMALIES DEFINED
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary: AREA OF LOW RELIEF WITH EXCELLENT Pb-Zn SOIL GEOCHEMISTRY WITH COINCIDENT GRAVITY IP ZONES

Sgd. [signature]

Date 9.6.82

Reports: WILSON ET AL (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 29W

LOCATION SE CORNER 379475E 5248325N

DEFINITION Au ANOMALY IN PAN CON ADJACENT TO Pb Zn ANOMALIES ON V29

STYLE OF MINERALIZATION Cu Pb Zn Ag MASSIVE SULPHIDE (STRATIFORM) VEIN PORPHYRY Au

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	2.16 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	200 metres	
	INFILL GRIDDING	3 LINES OF 100m CENTRED	ON 10000E 10500N
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO + HAND HELD POWER	AUGER
	No. of samples	436	ANOMALY ADJACENT TO V29
	Horizon sampled	C	Pb Zn GRAVITY + IP
	Elements assayed for	Cu Pb Zn Ag Fe	ANOMALY
	STREAM SAMPLING		
	Method	-80 MESH + PAN CON	1980 SURVEY Au + W
	No. of samples	25	ANOMALOUS
	Sample density	11.5 per sq km	
	Elements assayed for	Cu Pb Zn (-80 MESH) Au	Sn W (PAN CON)
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	FOLLOW UP PAN CON (1982)	ANOMALOUS AU CORRELATES
	No. of samples	15	WITH HIGHER BACKGROUND
	Elements assayed for	Au Sn W	IN PYROCLASTICS
GEOLOGY	Area mapped	2.16 sq.km	
	Scale used	1:2500	
	Geologist	J. PEMBERTON	
GEOPHYSICS	I.P. Gradient Array	line km	SEE V29
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	12.6 line km	
	Station spacing	12.5 metres	
	E.M. V.L.F.	10.8 line km	
	Turam (M.S.T.)		
	Gravity No. of stations	61	V29
	Station spacing	25 metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary ANOMLOUS GEOCHEMISTRY ADJACENT TO V29 ANOMALY CENTRED ON 10500N 10000E

Sgd. J. Pemberton

Date 9/6/82

Reports 1981/82 REPORT (in prep)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

GEOPEKO

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 30

LOCATION 5246000N 379000E AMG

DEFINITION AREA OF ANOMALOUS STREAM SOIL AND ROCK GOLD GEOCHEMISTRY ANOMALOUS SOIL AND ROCK BASE METAL GEOCHEMISTRY

STYLE OF MINERALIZATION Au - QTZ ASSOCIATION; Au - RHYOLITE ASSOC.; ROSEBERY MASSIVE SULPHIDES

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	1km x 1km sq.km	
	GRID ORIENTATION	TRUE NORTH BASELINE/E-W LINES	
	LINE SPACING	200 metres	
	INFILL GRIDDING	100m + 50m	
GEOCHEMISTRY	SOIL SAMPLING		
	Method	JACRO RIG	A NUMBER OF STRONG Pb/Zn
	No. of samples	380	ANOMALIES DEFINED.
	Horizon sampled	C HORIZON	HIGHEST Pb 5200ppm/Zn
	Elements assayed for	Cu Pb Zn Fe As Ag Au	5900 Au 1.2ppm
	STREAM SAMPLING		
	Method	-80 MESH/PAN CON	PAN CON RESULTS UPTO
	No. of samples	13	101ppm. COARSE GOLD
	Sample density	13 per sq km^2	IN MOST SAMPLES. Sn UPTO
	Elements assayed for	Cu Pb Zn Au Sn W Ag	885ppm IN PAN CON SAMPLE
	COSTEAN SAMPLING	COSTEAN PITS(5)	
	Method	BACKHOE BACKHOE	20cm WIDE QTZ VEIN
	No. of samples	11 12	EXCAVATED PIT 3 CRAB
	Sampling spacing	2m CHANNEL CRAB SAMP.	SAMPLES ASSAYED 2.8% Pb
	Elements assayed for	Cu Pb Zn Ag Au As Fe Ba Sn W	7.75% Zn 108ppm Ag
	OTHER SAMPLING		
	Method	ROCK CHIP	ANOMALOUS GOLD IN QTZ
	No. of samples	16	VEINS UPTO 495ppb
	Elements assayed for	Cu Pb Zn Ag Au Fe Mn As Sn W	
GEOLOGY	Area mapped	1.0 x 1.0 sq.km	VERY POOR OUTCROP
	Scale used	1:2500	LOCATED PORPHYRITIC
	Geologist	R.J. PERRING	MICROGRANITE
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	1.5 line km	4 IP ANOMALIES
	S.P.	1.0 line km	
	Magnetics	13.1 line km	400nT ANOMALY
	Station spacing	12.5 metres	
	E.M. V.L.F.	13.1 line km	2 VLF ANOMALIES
	Turam (M.S.T.)		
	Gravity No. of stations	1 LINE KM	
	Station spacing	25 metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary VOLCANICS + GRANITE ANOMALIES IN BASE METALS. TUFFS AND QTZ VEINS ANOMALOUS IN Au. GALENA + SPHALERITE MINZ IN QTZ VEIN.

Reports WILSON et al (1981)

Sgd. [signature]

Date 9th Feb 1982

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 31

LOCATION S.E. CORNER - 379000E 5250150E

DEFINITION Pb + Zn MINERALIZATION OUTCROPPING IN Cu CREEK

STYLE OF MINERALIZATION Pb Zn Ag Au VEIN STYLE RELATED TO Cu CREEK LINEAMENT

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	3.36	sq.km	
	GRID ORIENTATION	TRUE NORTH		
	LINE SPACING	400	metres	
	INFILL GRIDDING			
GEOCHEMISTRY	SOIL SAMPLING			
	Method	HAND HELD POWER AUGER		
	No. of samples	275		
	Horizon sampled	C		
	Elements assayed for	Cu Pb Zn Ag Fe		
	STREAM SAMPLING			
	Method	-80 MESH + PAN CON		-80 MESH ANOMALOUS
	No. of samples	18		IN Pb + Zn DOWN LENGTH
	Sample density	5.4 per sq km		OF Cu CK.
	Elements assayed for	Cu Pb Zn Sn W Au		
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method	5m CHIP SAMPLES		BEST RESULTS 4.45%
	No. of samples	65		COMBINED Pb Zn + 18gm Ag
	Elements assayed for	Cu Pb Zn Ag		
GEOLOGY	Area mapped	3.36	sq.km	ALONG GRID LINES +
	Scale used	1:2500		Cu CK.
	Geologist	J. PEMBERTON		
GEOPHYSICS	I.P. Gradient Array		line km	ATTEMPTED BUT FAILED DUE
	Dipole-Dipole		line km	TO STEEP SLOPES DOWN
	S.P.		line km	TO Cu CK.
	Magnetics	5.9	line km	
	Station spacing	12.5	metres	
	E.M. V.L.F.	5.9	line km	
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary SILICIFICATION Pb Zn Ag As MINERALISATION AS VEINS ADJACENT TO Cu CK LINEAR

Sgd. J. Pemberton

Date 9/6/82

Reports PROGRESS REPORT E.L. 27/76 1980-81 FIELD SEASON ✓

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 32

LOCATION 384000E 5243000N

DEFINITION FAVOURABLE STRATIGRAPHY BETWEEN V3 + V10

STYLE OF MINERALIZATION STRATIFORM Pb-Zn-Cu

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method		
	No. of samples		
	Sample density		
	Elements assayed for		
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method	ROCK CHIP	UPTO 910ppm Cu 165ppm Pb
	No. of samples	3	115ppm Zn + 5.5ppm Ag
	Elements assayed for	Cu Pb Zn Ag	
GEOLOGY	Area mapped	sq.km	REGIONAL MAPPING
	Scale used	1:10000	
	Geologist	P. HEITHERSAY	
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary FURTHER WORK DEPENDANT ON REBUILDING OF LEWIS RIVER BRIDGE. GOOD POTENTIAL.

Sgd. J. Parbelor

Date 9/6/82

Reports WILSON ET.AL. (1981)

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 33

LOCATION 10000E 13800N - 379500E 5252150N

DEFINITION NORTHERLY EXTENSION OF VOYAGER 19

STYLE OF MINERALIZATION Cu Pb Zn Ag Au VOLCANOGENIC MASSIVE SULPHIDE

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	2.08 sq.km	
	GRID ORIENTATION	TRUE NORTH	
	LINE SPACING	200 metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method	HAND HELD POWER AUGER	3.3%Pb + Zn with 66gmAg
	No. of samples	379	STRATABOUND ANOM. N-S
	Horizon sampled	C	OF HIGH POINT
	Elements assayed for	Cu Pb Zn Ag Fe Ba As	(cost two over Pb Zn anom)
	STREAM SAMPLING		
	Method	-80 MESH + PAN CON	SE + E OF AREA ALONG
	No. of samples	7	PLEASANT CREEK - NO
	Sample density		ANOMALY
	Elements assayed for	Cu Pb Zn Sn W Au	
	COSTEAN SAMPLING		
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	2.08 sq.km	
	Scale used	1:2500	
	Geologist	JOHN PEMBERTON	
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	8.4 line km	
	Station spacing	12.5 metres	
	E.M. V.L.F.	8.4 line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary Pb Zn Ag ANOMALY IN BLACKSHALES AND SMALLER ANOMALY IN CHLORITIC CRYSTAL TUFF.

Sgd. J. Pemberton

Date 9/6/82

Reports WILL BE REPORTED ON IN 1981-82 REPORT

Updates

A Division of Peko-Wallsend Operations Ltd - Devonport

GEOPEKO

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PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY
PROSPECT VOYAGER 34
LOCATION 381000E 5251000N
DEFINITION AREA ON E OF OSMUND SYNCLINE
FAVOURABLE STRATIGRAPHY

STYLE OF MINERALIZATION STRATIFORM
Cu Pb Zn Ag

Work Completed		Details		Significant Results
GRIDDING	GRID DIMENSIONS	1.60	sq.km	
	GRID ORIENTATION	TRUE NORTH		
	LINE SPACING	200	metres	
	INFILL GRIDDING	NONE		
GEOCHEMISTRY	SOIL SAMPLING			
	Method	JACRO		Pb-Zn ANOMALIES IN NE OF
	No. of samples	330		GRID UPTO 0.8% COMBINED
	Horizon sampled	C HORIZON		
	Elements assayed for	Cu Pb Zn As Fe		Pb/Zn
	STREAM SAMPLING			
	Method			
	No. of samples			
	Sample density			
	Elements assayed for			
	COSTEAN SAMPLING			
	Method			
	No. of samples			
	Sampling spacing			
	Elements assayed for			
	OTHER SAMPLING			
	Method			
	No. of samples			
	Elements assayed for			
GEOLOGY	Area mapped	1.60	sq.km	QUARTZ PORPHYRITIC LAVAS
	Scale used	1.2500		AND TUFFS UNCONFORMABLE
	Geologist	D. MOORE		OVERLAIN BY TYNDAL
GEOPHYSICS	I.P. Gradient Array		line km	EPICLASTICS
	Dipole-Dipole		line km	
	S.P.		line km	
	Magnetics	4.10	line km	FLAT MAGNETIC CHARACTER
	Station spacing	12.5	metres	
	E.M. V.L.F.		line km	
	Turam (M.S.T.)			
	Gravity No. of stations			
	Station spacing		metres	
DRILLING	Diamond drilling		metres	
	Jacro A.Q. Holes		metres	

Summary GOOD Pb-Zn ANOMALIES AND FAVOURABLE GEOLOGY HIGH POTENTIAL FOR V19 STYLE MINERALIZATION

Sgd. [signature]

Date 9.6.82

Reports

Updates

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A Division of Peko-Wallsend Operations Ltd - Devonport

GEOPEKO

PROSPECT SUMMARY SHEET

AREA ELLIOTT BAY

PROSPECT VOYAGER 35

LOCATION 377300mE 5253500mN

DEFINITION DRAINAGE ANOMALIES IN THE MAINWARING RIVER

STYLE OF MINERALIZATION UNKNOWN

Work Completed		Details	Significant Results
GRIDDING	GRID DIMENSIONS	sq.km	
	GRID ORIENTATION		
	LINE SPACING	metres	
	INFILL GRIDDING		
GEOCHEMISTRY	SOIL SAMPLING		
	Method		
	No. of samples		
	Horizon sampled		
	Elements assayed for		
	STREAM SAMPLING		
	Method	-80 MESH	REGIONAL STREAM SEDIMENT
	No. of samples		SURVEY IN MAINWARING RIVER
	Sample density	Cu Pb Zn Fe Mn Ag Au Sn W	BY POLTOCK BROS.
	Elements assayed for		TWO ANOMALOUS Au VALUES
	COSTEAN SAMPLING		OF 290 + 740ppb Au
	Method		
	No. of samples		
	Sampling spacing		
	Elements assayed for		
	OTHER SAMPLING		
	Method		
	No. of samples		
	Elements assayed for		
GEOLOGY	Area mapped	sq.km	
	Scale used		
	Geologist		
GEOPHYSICS	I.P. Gradient Array	line km	
	Dipole-Dipole	line km	
	S.P.	line km	
	Magnetics	line km	
	Station spacing	metres	
	E.M. V.L.F.	line km	
	Turam (M.S.T.)		
	Gravity No. of stations		
	Station spacing	metres	
DRILLING	Diamond drilling	metres	
	Jacro A.Q. Holes	metres	

Summary PART OF THE NORTHERLY EXTENSION OF THE V24 GOLD ANOMALY

Sgd. T. Ponbarton

Date 9/6/82

Reports PROGRESS REPORT E.L. 27/76, 80/81, P.WILSON

Updates

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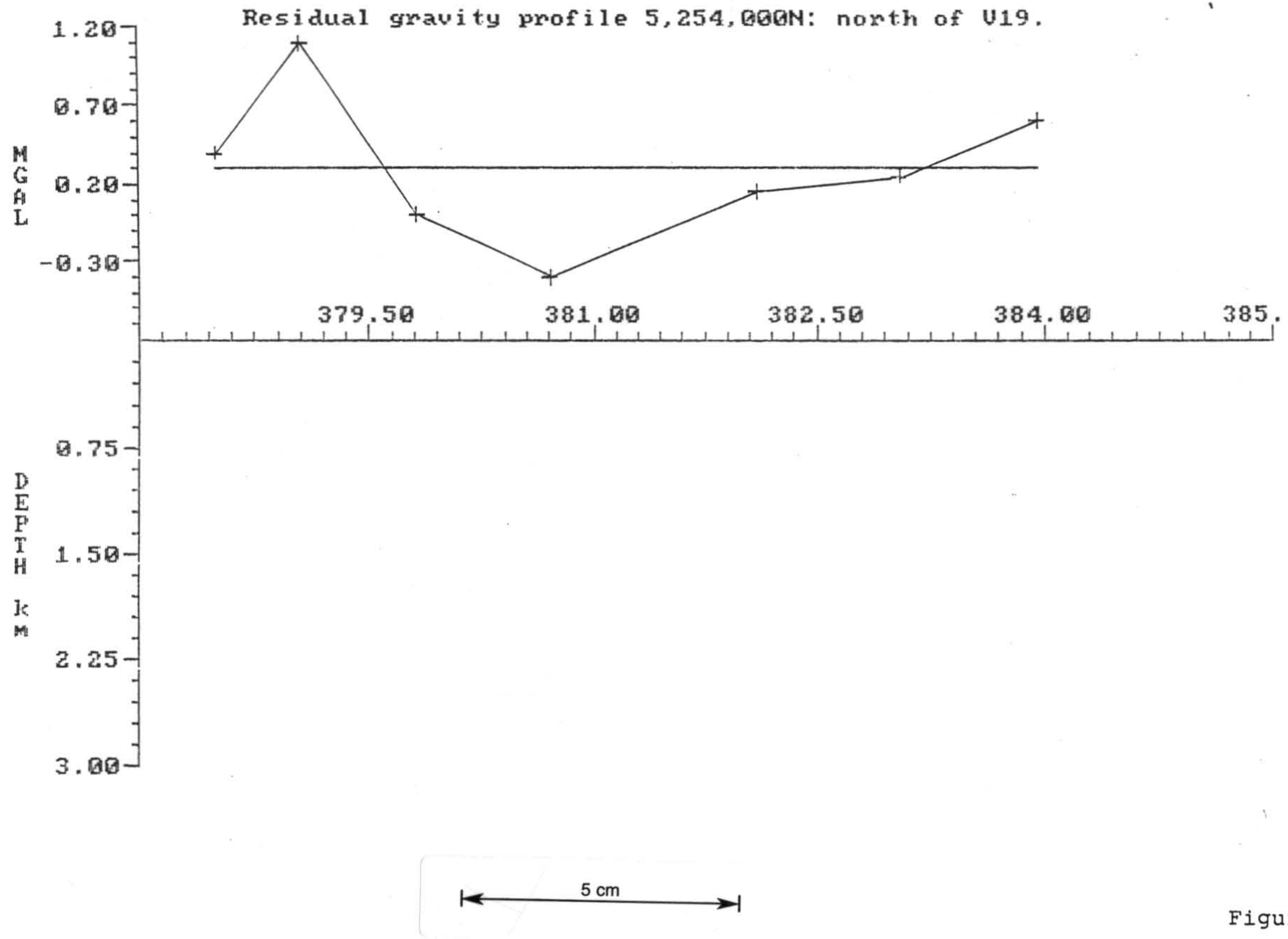
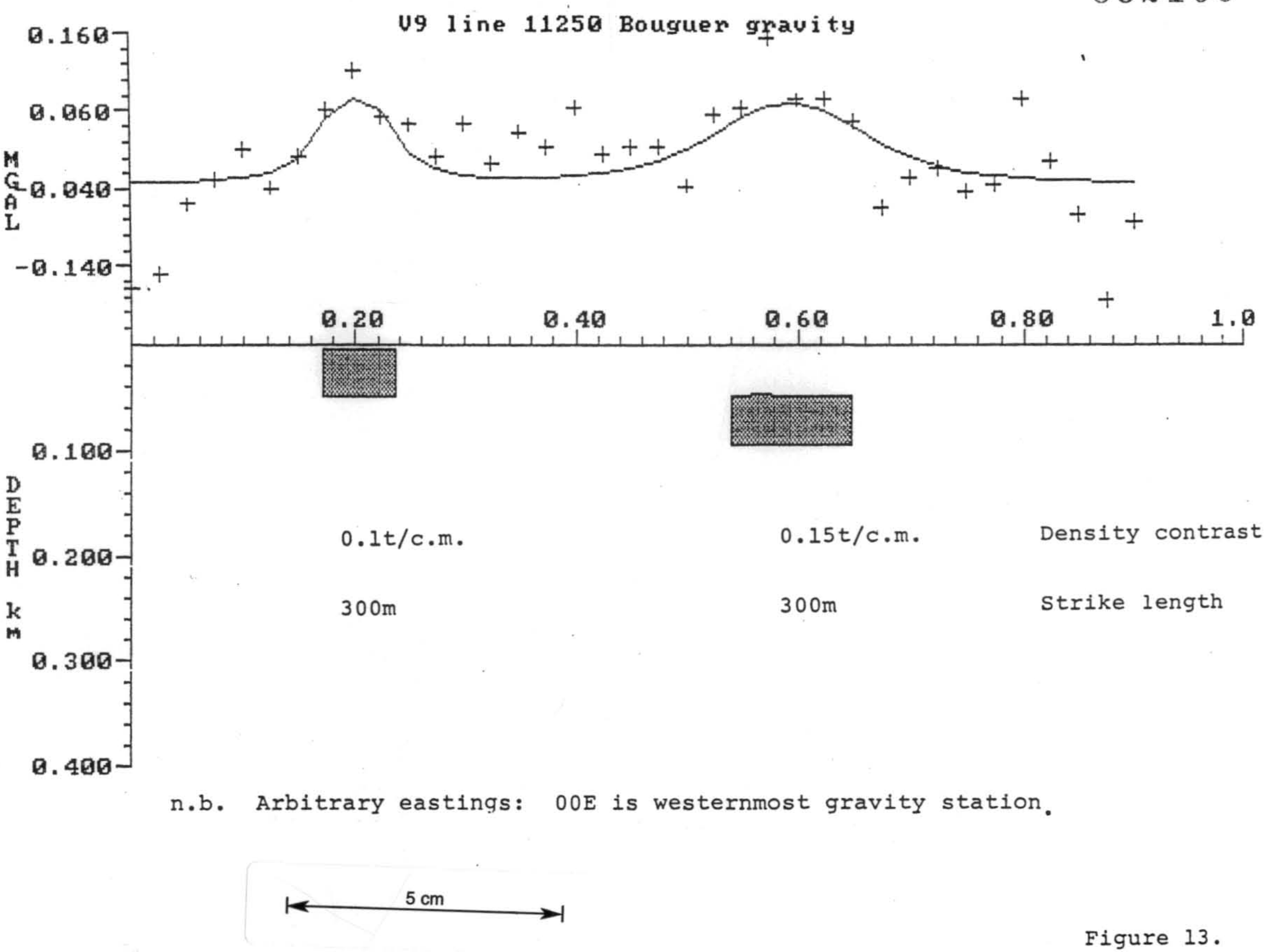


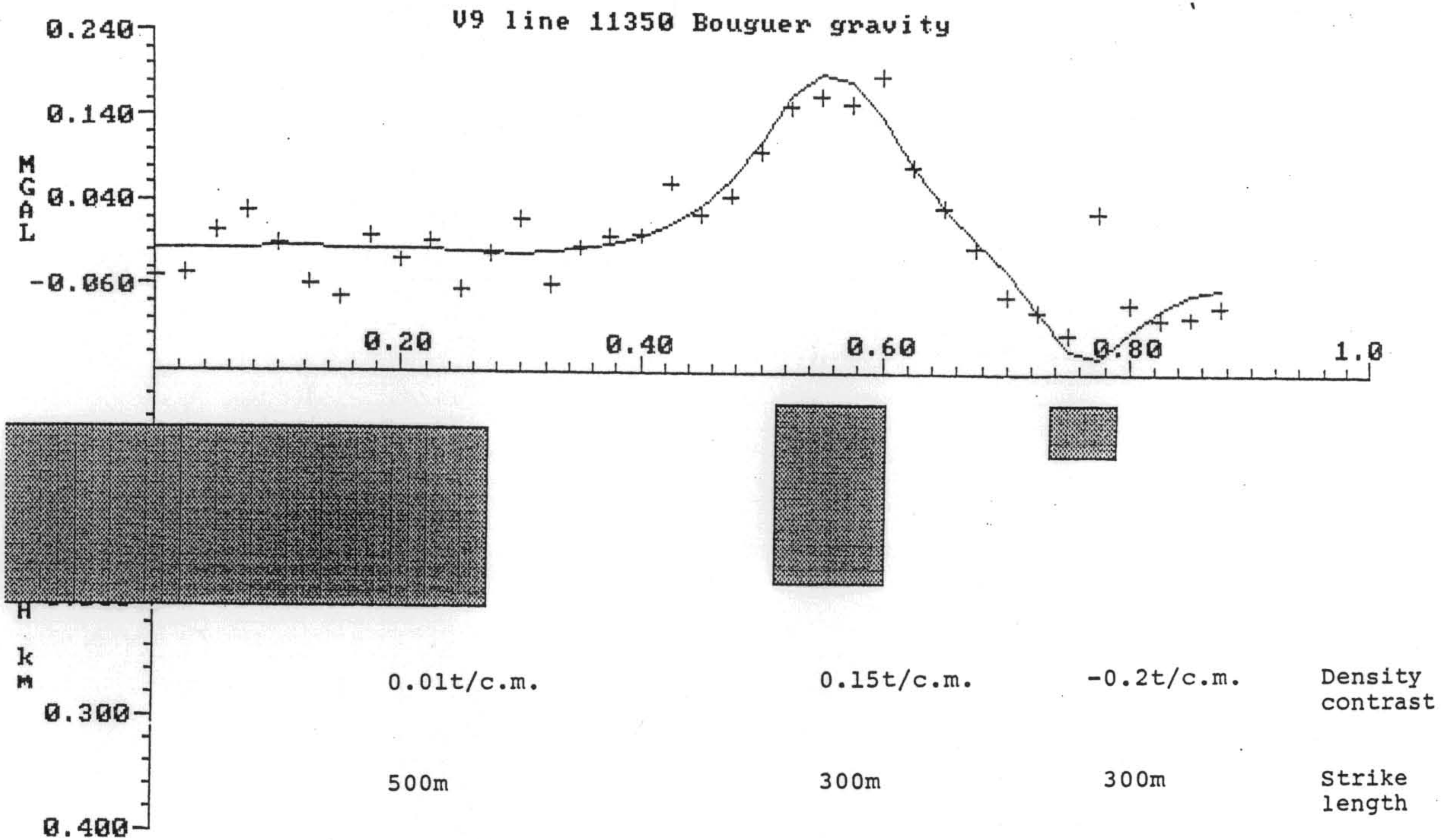
Figure 12.

832165



n.b. Arbitrary eastings: 00E is westernmost gravity station.

Figure 13.



n.b. Arbitrary eastings: 00E is westernmost gravity station.

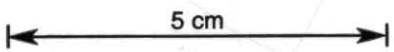
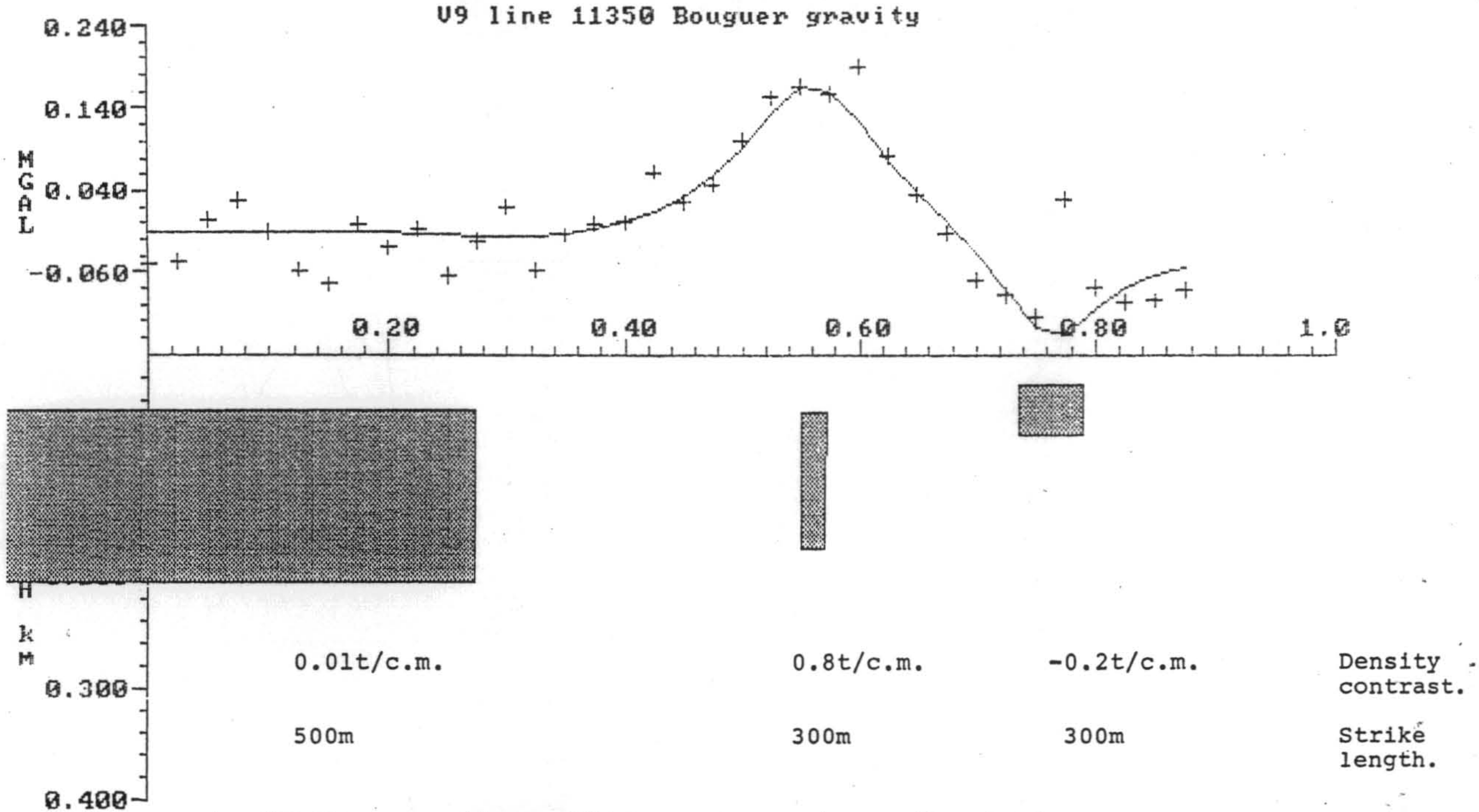


Figure 14a.



n.b. Arbitrary eastings: 00E is westernmost gravity station.

5 cm

Figure 14b.

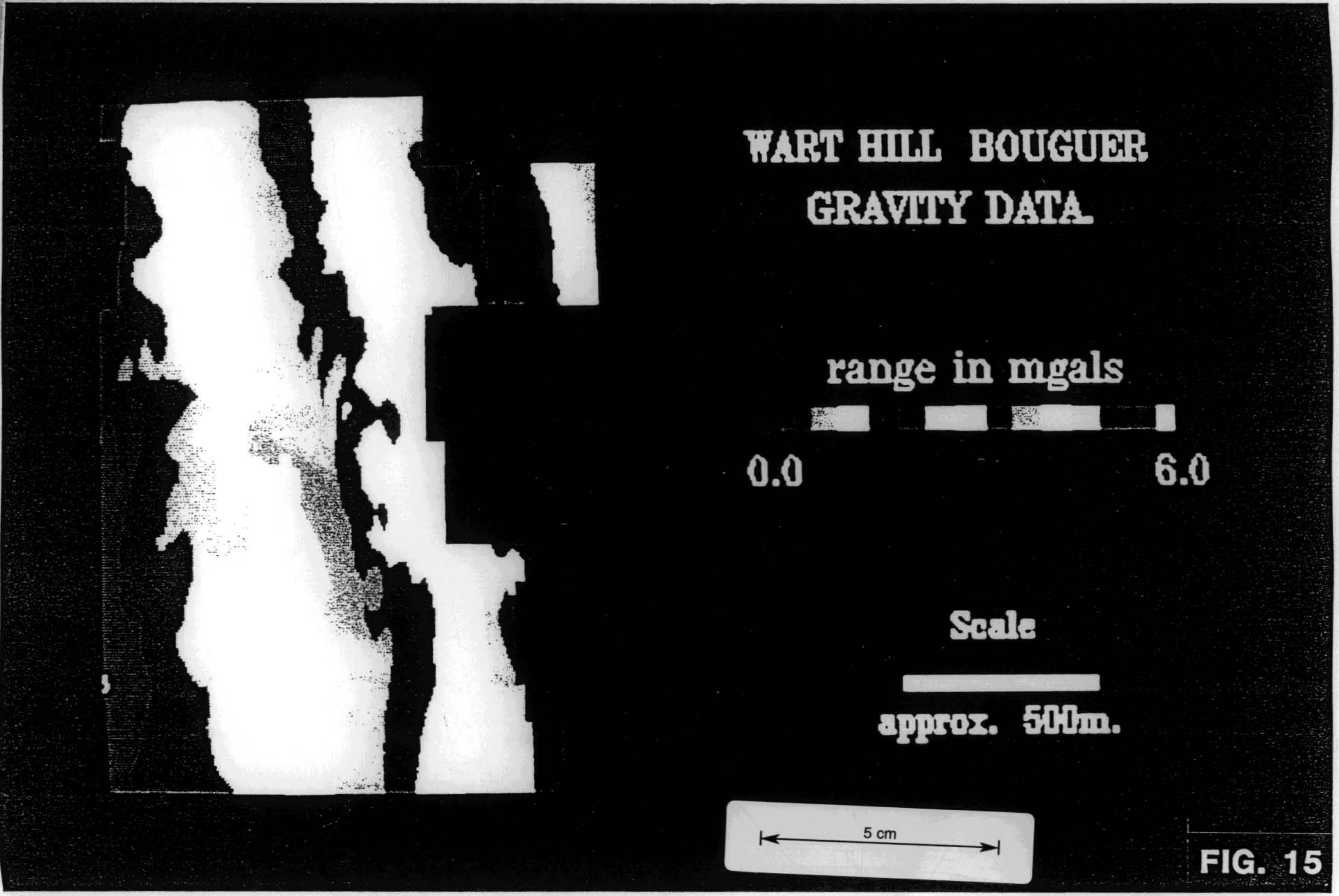

WART HILL BOUGUER
GRAVITY DATA
range in mgals
0.0
6.0
Scale
approx. 500m.
5 cm

FIG. 15

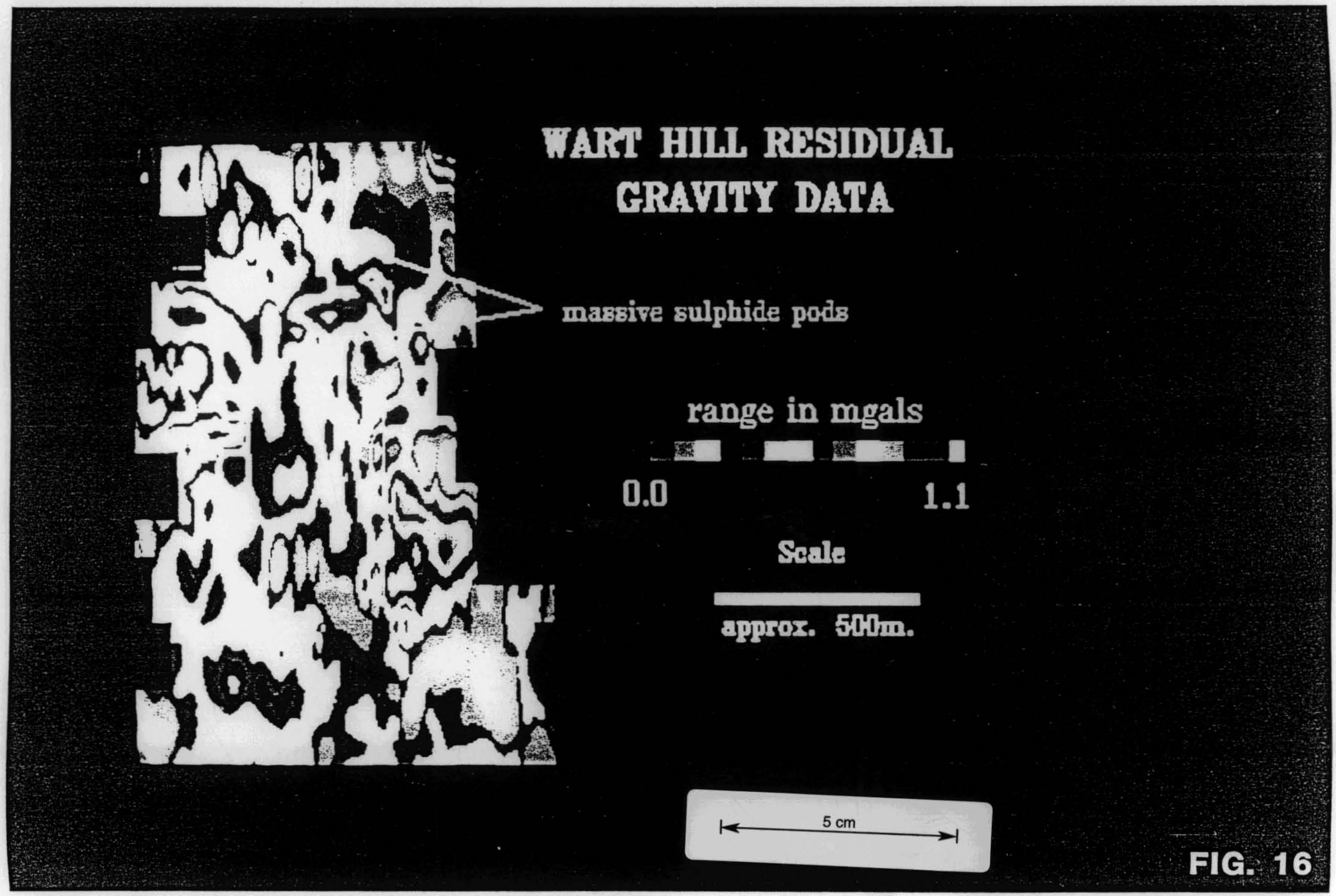

WART HILL RESIDUAL
GRAVITY DATA
massive sulphide pods
range in mgals
0.0
1.1
Scale
approx. 500m.
5 cm

FIG. 16

832170

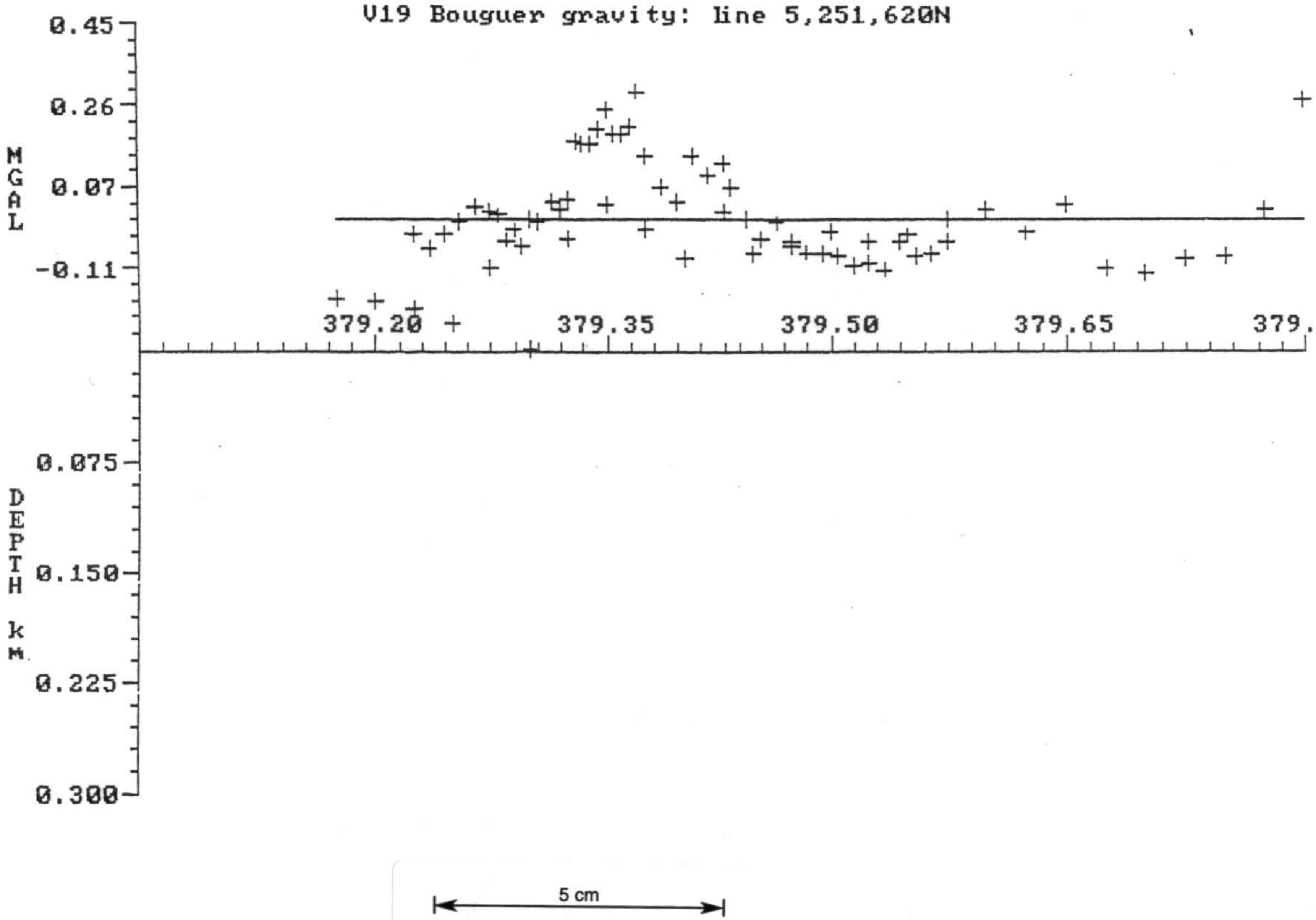


Figure 17.

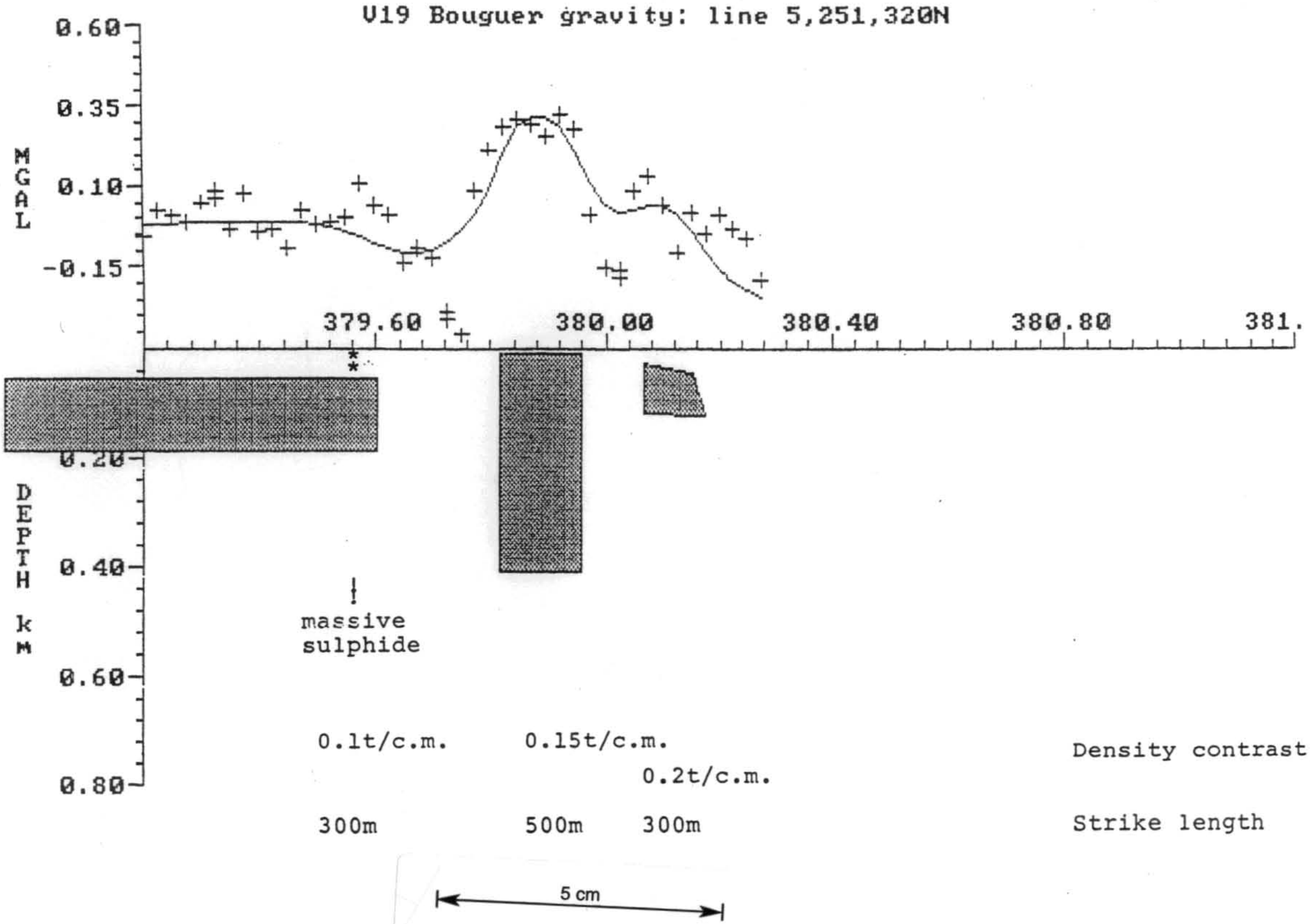

V19 Bouguer gravity: line 5,251,320N
0.60
0.35
0.10
-0.15
MGAL
379.60
380.00
380.40
380.80
381.
0.20
0.40
0.60
0.80
DEPTH km
massive
sulphide
0.1t/c.m.
0.15t/c.m.
0.2t/c.m.
Density contrast
300m
500m
300m
Strike length
5 cm

Figure 18.

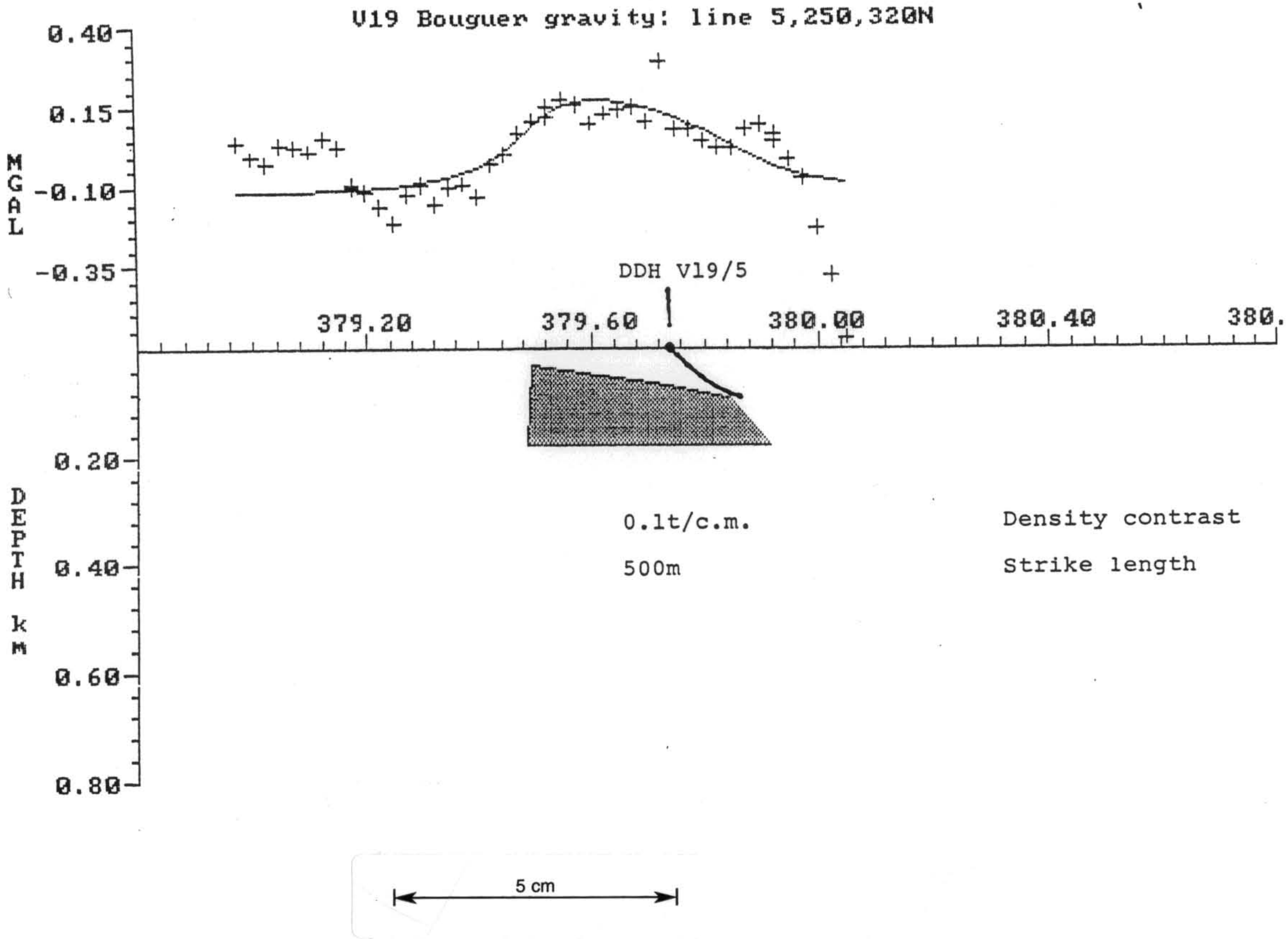

V19 Bouguer gravity: line 5,250,320N
0.40
0.15
-0.10
-0.35
MGAL
DDH V19/5
379.20
379.60
380.00
380.40
380.
0.20
0.40
0.60
0.80
DEPTH km
0.1t/c.m.
Density contrast
500m
Strike length
5 cm

Figure 19.

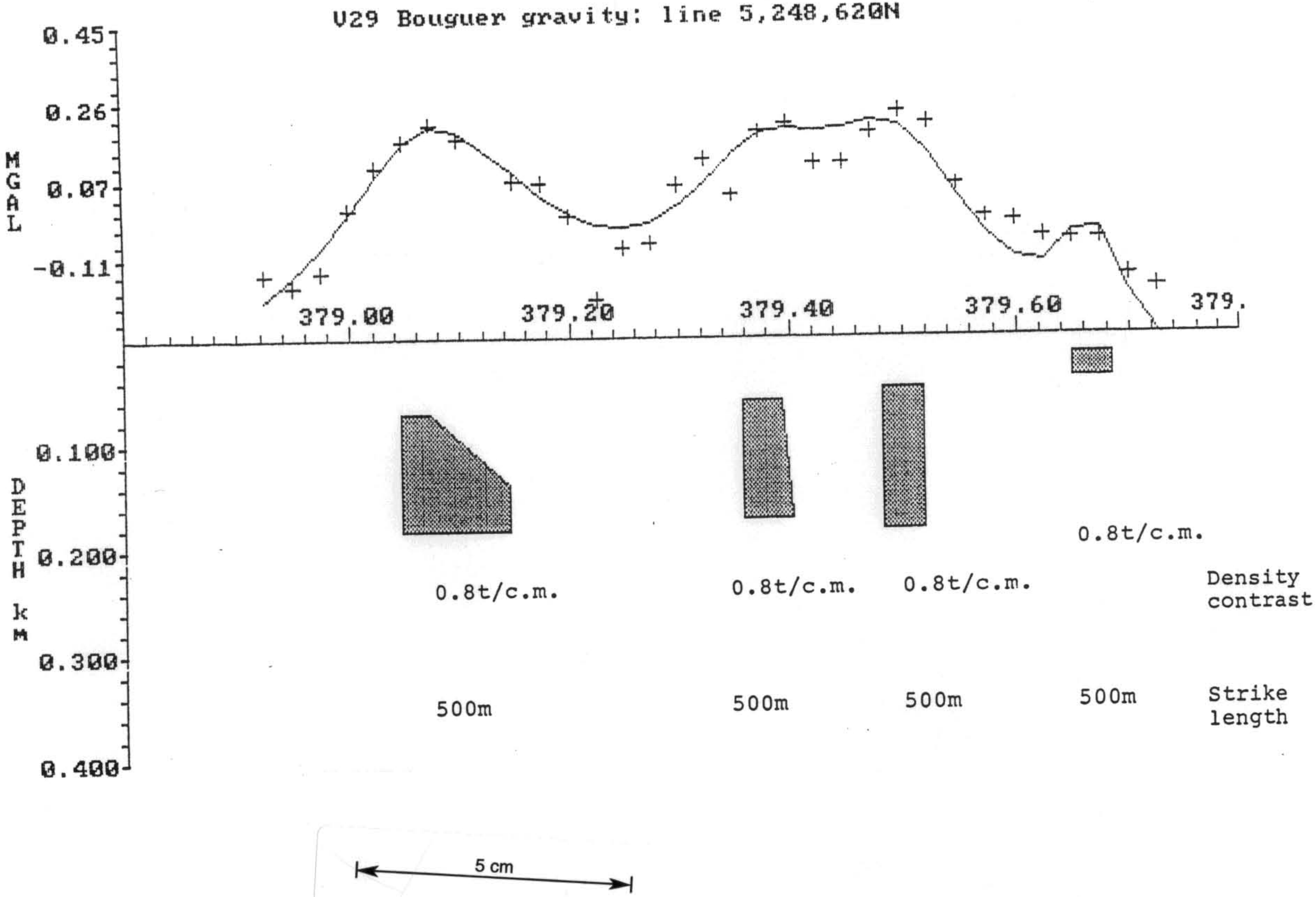

V29 Bouguer gravity: line 5,248,620N
MGAL
0.45
0.26
0.07
-0.11
379.00
379.20
379.40
379.60
379.
DEPTH km
0.100
0.200
0.300
0.400
0.8t/c.m.
0.8t/c.m.
0.8t/c.m.
0.8t/c.m.
Density contrast
500m
500m
500m
500m
Strike length
5 cm

Figure 20.

832174

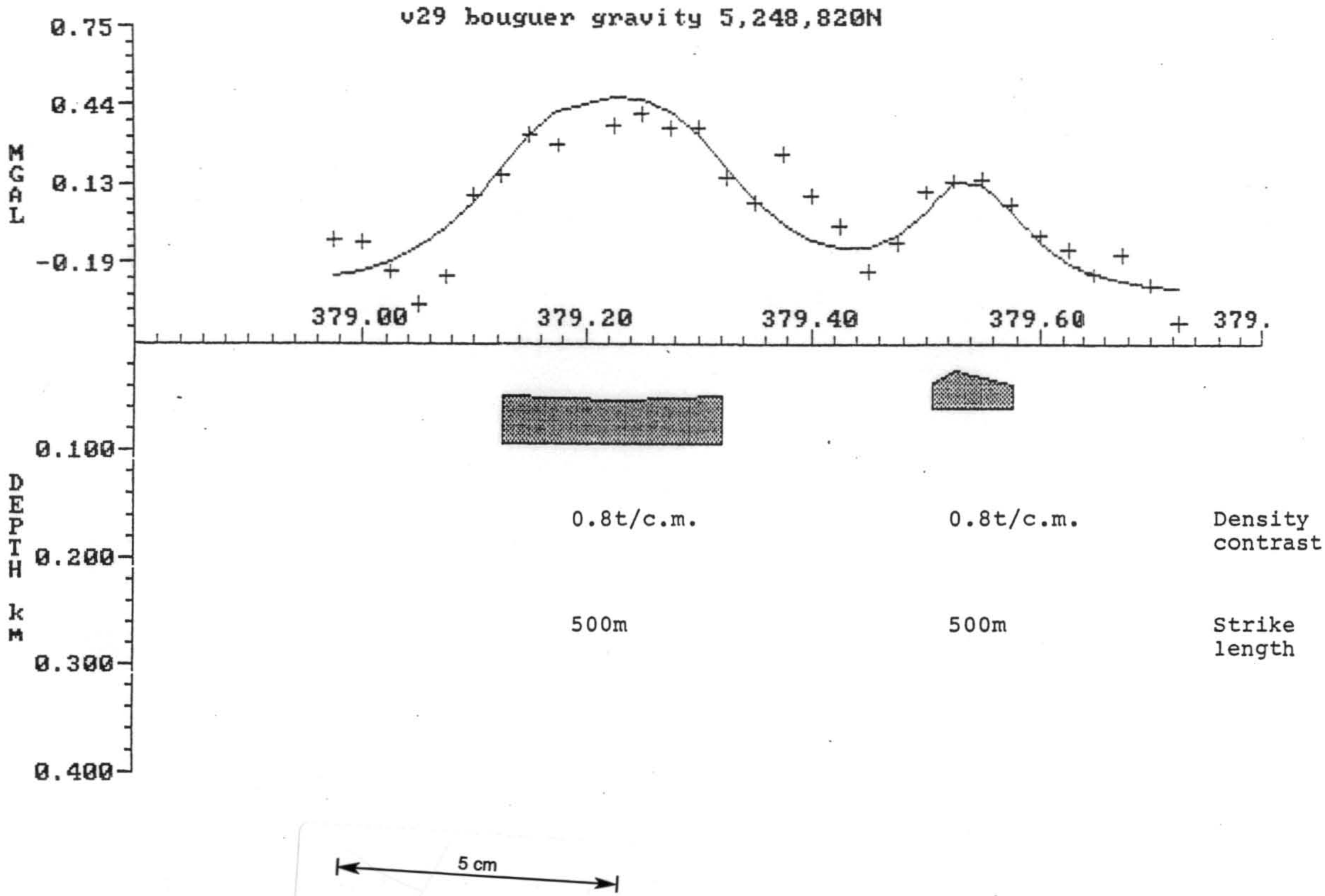


Figure 21a.

832175

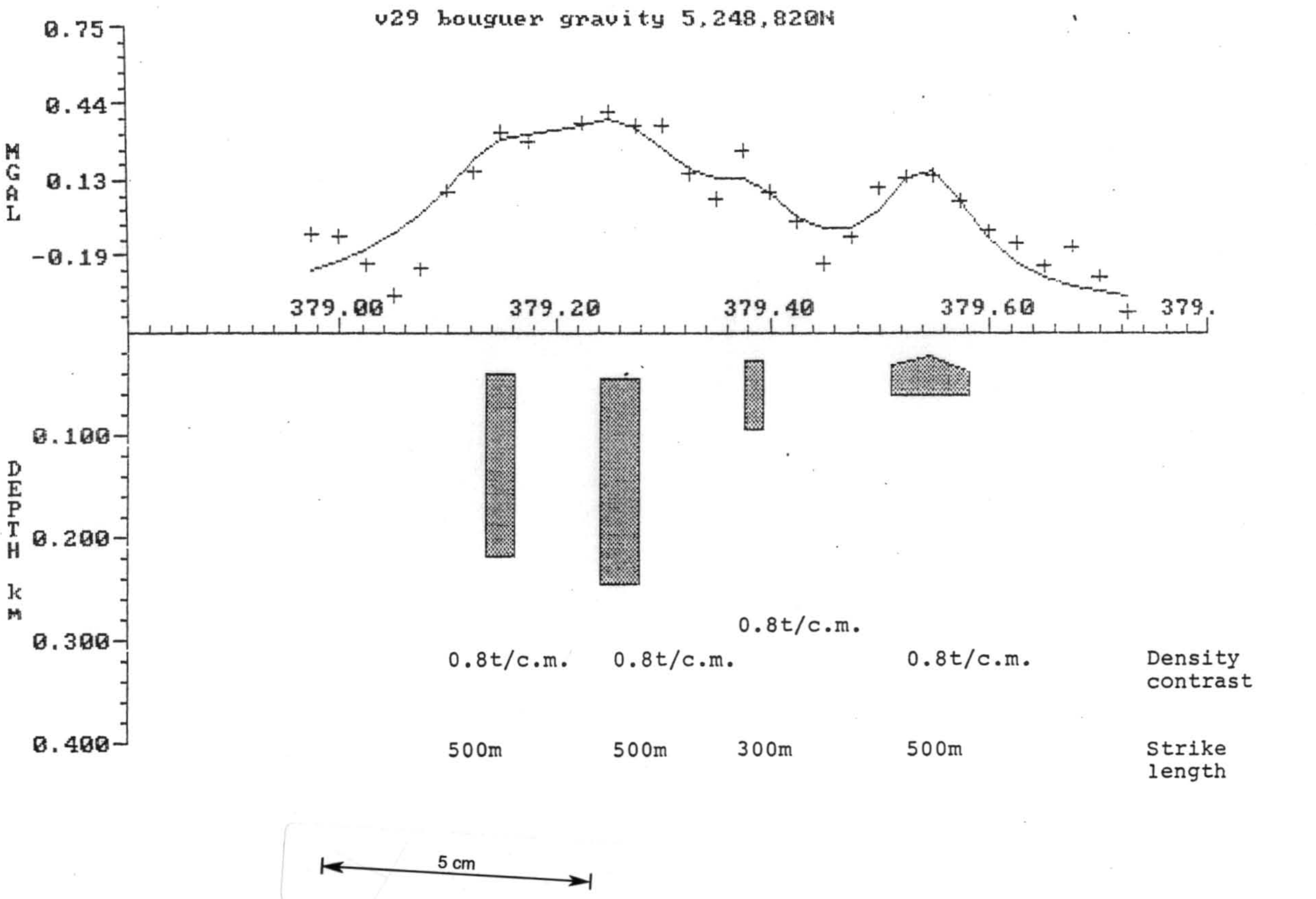


Figure 21b.

832176

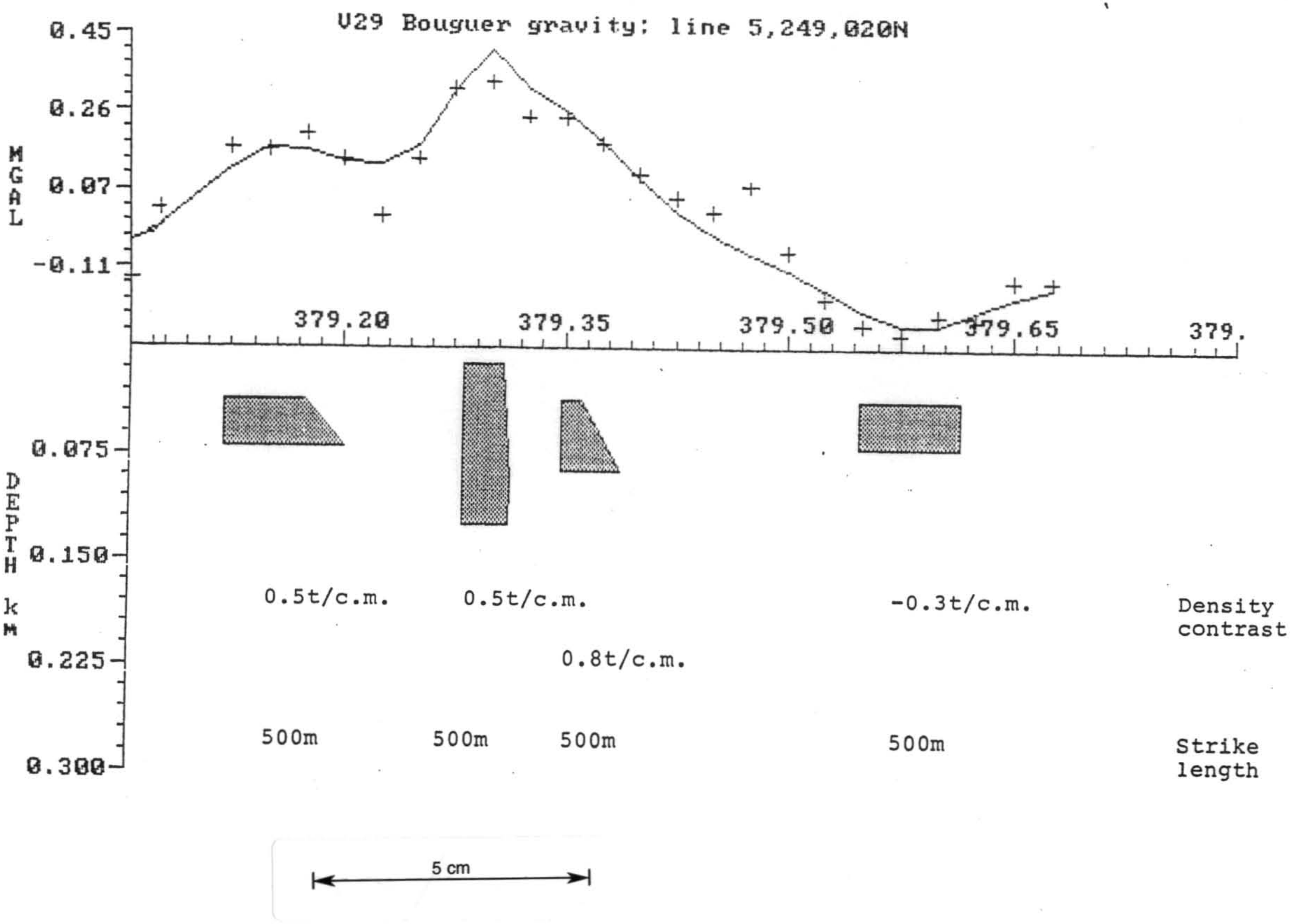


Figure 22.

832177

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Appendix 2 : **CD-ROM**

Structure **Tasmine Report**
Mapinfo Interpretation Plans
Mapinfo Tiffs
Plotfiles
SGC Report