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627001

GOLDFIELDS EXPLORATION

ACN 008 560 978

ANNUAL REPORT
DEC 1998 - DEC 1999

TASMANIAN GOLD PROJECT

EL 14/93

BASIN LAKE

MICROFILMED
FICHE No.015207-15

EL14/93 PT2
See folio 57

Vol 1 of 2

Text and Appendices

HELD BY: RENISON LIMITED

MANAGER & OPERATOR: RGC EXPLORATION PTY LTD

AUTHOR(s): Michael Vicary

14 December, 1999

PROSPECTS: Basin Lake, Tyndall Creek

MAP SHEETS:	**1:250,000:Tyndall** **Gormanston**	**1:100,000: Sophia** **Franklin**
GEOGRAPHIC COORDS	**Min East:380 000mE** **Min North: 5349 000mN**	**Max East: 382 000mE** **Max North:5357 000mN**

COMMODITY(s): Zn, Pb, Cu, Au, Ag

KEY WORDS: Basin Lake, Exhalative Massive Sulphide Deposits, Tyndall Group, Central Volcanic Sequence, Anthony Road Andesite

Distribution:

- **Goldfields Exploration Information Centre Reference:**
- **Goldfields Exploration Zeehan**

99_4411

SUMMARY

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EL 14/93 - Basin Lake is located approximately 8 km south of the Henty Mine. The target at Basin Lake is a gold rich volcanic hosted massive sulphide deposit developed at the contact between the Anthony Road Andesite and the Tyndall Group, a sequence of interbedded rhyolitic - dacitic volcaniclastic sediments and lavas. This contact is a proven exhalite horizon and hosts mineralisation at Henty, Howard's Anomaly and Comstock.

Re-evaluation of the geology in the south of the EL, has shown that there is a stratigraphically lower exhalite horizon developed at the contact between the Anthony Road Andesite and the underlying Central Volcanics Sequence. An extensive sericite - pyrite alteration zone within a quartz phyric rhyolite intrusion forms the footwall to exhalite horizon. This zone, the Basin Lake alteration zone has been intersected in three drill holes TYN011, TYN015 and BL001 and has a strike length of about 1 kilometre and a true thickness of between 75 and 135m. Massive carbonate horizons thicken away from areas of the most intense footwall alteration.

The EL is covered by extensive glacial deposits (up to 40m thick) and the geological interpretation is based on the results of subglacial diamond drilling, limited geological mapping and a Helimag survey.

The aim of the exploration program at Basin Lake is to test known exhalite horizons close to mineralising structures. Diamond drill core logging and geological mapping has been used to establish a detailed stratigraphy across each exhalite horizon. Rapid along strike changes in lithology, facies and unit thickness are considered to represent the influences of syn-volcanic faulting (growth faults) and the location of such faults is of primary importance as they are the potential pathways for mineralising fluids. The Great Lyell Fault, which longitudinally bisects the EL, was an active structure during Cambrian volcanism and several diamond drill holes have targeted the intersection of the exhalite horizon with the fault. The Helimag data suggests the presence of a series of E - W cross faults in the EL. Many of these faults have the potential to be mineralising structures.

A dipole-dipole survey is planned to cover the strike extent of the Basin Lake alteration zone. It is hoped that the survey will detect potential shallow drill targets beneath thick glacial cover.

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1. INTRODUCTION

EL 14/93 - Basin Lake was initially acquired by Renison Limited and was explored by RGC Exploration, both wholly owned subsidiaries of RGC Limited. Following the merger of Renison Limted with Westralian Sands to form the new company Iluka Resources, Goldfields Exploration Pty Ltd, once part of Renison Limited, became a separate company. Negotiations between Goldfields Exploration and Iluka for ownership of the Basin Lake EL are continuing. The licence is located in western Tasmania approximately 12 km north of Queenstown, and is situated on the flank of the Tyndall Range (Figure 1). It was granted on January 14, 1994 and initially had an area of 8 sq km. In January 1995 a further 3 sq km was incorporated into the EL making its present area 11 sq km. In January 1999, the EL underwent a 50% Partial Relinquishment. It has a current area of 6 sq km.

The major access to the EL is via the Anthony Road, approximately 12 km east of the junction with the Zeehan Highway. Access within the EL is provided by a vehicular track which follows a HEC powerline close to the western edge of the EL.

The vegetation consists predominantly of buttongrass plains and light tea tree scrub with some patches of medium eucalypt forest. The area has been extensively glaciated and except for a block of about 0.5 sq km in the north of the EL, the EL is covered by glacial moraine and outwash.

The area was acquired for its potential to host Rosebery style Cu-Pb-Zn-Ag and Henty style Au mineralisation.

2. TENURE

The EL comprises: Crown Land (Deferred Forest Land)
Crown Land
Land Vested in HEC.

A large portion of the EL is within the Tyndall Range Regional Reserve (Figure 1).

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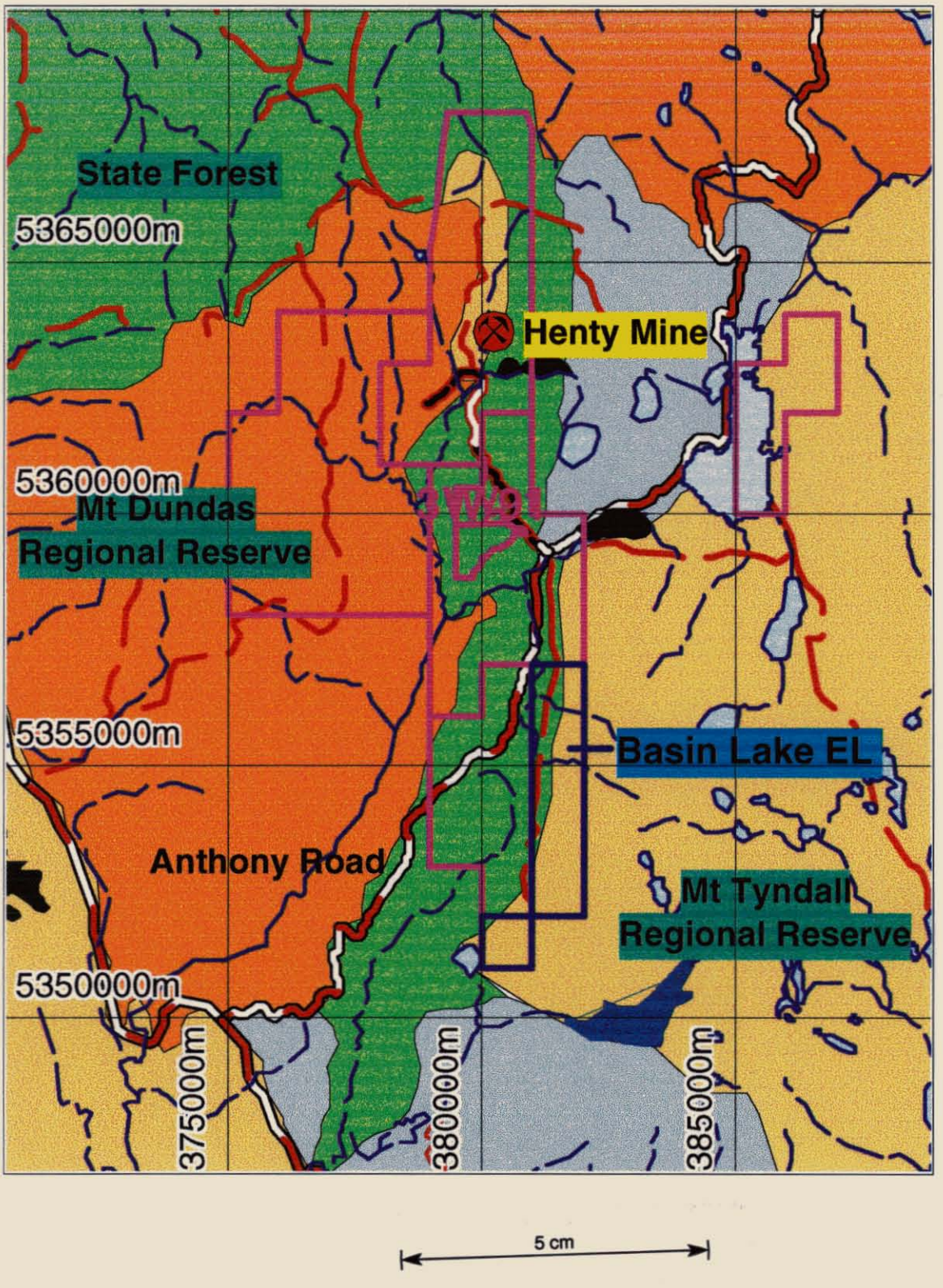
Figure 1 EL 14/93 Location Map and Land Tenure



3. PREVIOUS EXPLORATION - (Modified from Donaldson, 1993)

Exploration prior to 1983 is discussed comprehensively by Fitzgerald in Purvis et al 1983 and is presented below.

The first detailed exploration of Basin Lake was carried out by Pickands Mather between 1965 and 1971. Following an initial reconnaissance, they gridded the Mt Read Volcanics-Owen Conglomerate contact for some eleven miles north of the Mt Lyell Mine Lease and surveyed this using a dipole-dipole IP array. The strongest anomaly was located north east of Basin Lake over an area covered by glacial moraine. Two vertical holes (BL801 and BL802) were drilled to test this anomaly, the second being abandoned before reaching target. Pickands Mather ran a Turam EM survey over this zone following the inconclusive drilling, and delineated a linear anomaly just west of the IP anomaly. The response was attributed to pyritic black shales intersected in the upper part of BL801. They carried out no further work here, partly it appears because of serious drilling problems in penetrating the thick glacial over-burden.

The northern part of the Basin Lake area was covered by dipole-dipole IP surveys in 1967-68 over the East Tyndall grid, within Mt Lyell's E.L. 9/66. Two anomalous zones were outlined and two drill targets were identified. These anomalies were resurveyed by gradient array IP in 1973-74 which reaffirmed the drill target in the north western zone. In-fill grids were cut and resurveyed by gradient array IP in the following year which detailed the north west zone into five anomalies. One of these was tested by hole TYN002 drilled in 1975, but subsequent reinterpretation indicates that the anomaly has not been explained. Costeaning and a second drill hole, were recommended to test other anomalies within this zone but the program was not carried out because of budget restrictions at the time.

The rest of the Basin Lake area was pegged by Mt Lyell in 1971 as part of E.L. 41/71 but gridding and detailed exploration did not commence until 1974. The grid was initially mapped and surveyed by gradient array IP and magnetics. Primary anomalies were followed-up by soil geochemistry and infill IP surveys, and two holes (BL001 and 002) were completed in 1978 in the vicinity of the Pickands Mather drillholes. The holes intersected minor base metal mineralisation in a felsic tuffaceous sequence.

Following the results of testing at Howard's Anomaly to the north, the area was further evaluated for possible extensions to the zone. Additional dipole-dipole IP, magnetic and soil geochemistry surveys were carried out and two holes (BL003 and 004) were drilled in 1981.

The most significant result to date at Basin Lake was the discovery in BL004 of a strongly altered and pyritic sequence of epiclastics enclosing a lens of massive pyrite up to 2.5m thick. However, base metal values were low. Additional dipole-dipole IP and Genie EM surveys were carried out in 1982, along with reassaying of drill core and sulphidic outcrops for gold. Work completed after the writing of the summary above includes the drilling of two diamond drill holes and a geophysical

review. BL005 was drilled in 1984 to test the southern extension of the massive pyrite and an IP anomaly, results were negative. The other drill hole was drilled by the Mines Department in 1984 (Corbett, 1985) at the Leech Hill sericite-pyrite alteration zone and intersected minor base metal sulphide in altered andesitic volcanics (Fitzgerald and Pease, 1985).

During the 1985 to 1986 season some mapping was undertaken as well as UTEM and SIROTEM geophysical surveys. These surveys along with previous geophysical data outlined three anomalies that required follow-up work. Results for the Bradshaws Road and Leech Hill pyrite zone were discouraging (Fitzgerald and Cartwright, 1986).

In the following season, 1986/87, minor mapping, drilling and downhole EM surveys were undertaken. Drill holes TYN004 and TYN005 did not intersect any significant mineralisation and downhole EM surveys of TYN004, TYN005 and BL004 indicated that no new significant conductors were present. It was concluded that, although the Basin Lake area had been extensively covered by geophysical surveys and that the diamond drilling was quite widely spaced, it was difficult to identify any further targets for further investigation (Fitzgerald, 1987). The lease covering the Basin Lake area was relinquished in 1987.

The ground within EL 14/93 was held by an Aberfoyle - Billiton Joint Venture as EL 103/87 from 1987 until it was relinquished in April 1993. Work done included limited geological mapping, a limited ground magnetics and CSAMT survey on lines 349000N - 353000N, a gravity survey on line 350200N, and a six loop 59 line km UTEM survey (Richardson, 1993). Diamond drill hole BLD 89-3 was drilled to test a CSAMT anomaly adjacent to the Great Lyell Fault. The hole was collared in a sequence of rhyolitic to dacitic lavas and volcaniclastics (Tyndall Group) and intersected the Great Lyell Fault at 358.6m. A base metal poor alteration zone with disseminated pyrite was intersected from 130 to 230m and was considered to be the source of the CSAMT anomaly. The downhole EM survey of BLD 89-3 by Billiton indicated the presence of an off hole conductor centred around 210m. The hole was later resurveyed by Aberfoyle and the anomaly confirmed. However revaluation of the data suggested that it may be due to a surface conductor tested by drillhole BL002 and no further work was recommended.

EL 14/93 was acquired by RGC after a successful tender for ETA 323. The EL was granted on the 14th January 1994.

The work completed by RGC Exploration / Goldfields Exploration since acquiring EL 14/93 - Basin Lake in 1994 is summarised in the following table:-

Summary of exploration completed in EL 14/93 – Basin Lake

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000
General	1:5000 Mapping				50% Relinquishment	Geological Review
	1:1000 Mapping					
	Relog old holes		Relog old holes			
Drilling	TYN006 TYN007 TYN008	TYN009 TYN010 TYN011 TYN012	TYN013 TYN014 TYN015	TYN016		
Geochemistry						
AAS + FAgold	50 Samples	315 Samples	407 Samples	43 Samples	9 Samples	
NAA			7 Samples	11 Samples	9 Samples	
XRF				11 Samples	9 Samples	
ICP			7 Samples			
Other						3 XRD samples
Isotopes			8 C-O Isotopes	6 C-O Isotopes 6 Sulphur Isotopes 5 Lead Isotopes		
Geophysics	TYN006 + 7 DHEM	TYN008 – 12 DHEM		TYN013, 14 + 16 DHEM		Reprocess CSAMT data
	Ground Magnetic Survey	SP Survey		BLD89-3 DHEM		Dipole-dipole inversions
		Helimag Survey				

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4. WORK COMPLETED

In the period January 1999 - January 2000 the work completed in EL 14/93 - Basin Lake includes the following:-

1) DHEM survey of TYN016,
2) 3 Samples analysed by XRD,
3) Reprocessing of Billiton CSAMT data,
4) Inversion of several lines of old Dipole-Dipole data
5) Revision of Geological Interpretation.

5. RESULTS

5.1 XRD Mineralogy

Three samples from the TYN011 - TYN015 sericite pyrite alteration zone were submitted to AMDEL for XRD analysis. The aim was to identify the major phyllosilicate phase present in each sample.

The samples are:-

Sample	Hole	Depth
T44987	TYN011	426.0m
T44988	TYN011	431.5m
T44989	TYN015	580.0m

An additional three samples from Mt Julia were also analysed.

The results suggest that all three samples from the Basin Lake EL contain muscovite/sericite as the main phyllosilicate phase. Minor pyrophyllite was present in T44989.

The presence of pyrophyllite is intriguing. It is a common mineral associated with hydothermal alteration from low pH (3-4) fluids at temperatures between 200 - 250°C. It has recently been recognised at Western Tharsis by Huston and Kamprad (1998) in a halo surrounding the cooper ore body. If the presence of pyrophyllite is indicative of proximal alteration then further investigation of the TYN011 - TYN015 alteration zone should be made.

A brief report by AMDEL is included as Appendix 1.

5.2 GEOPHYSICS

5.2.1 TYN016 DHEM Survey

A DHEM survey of TYN016 was conducted by Outer Rim Exploration Services using a Crone Pulse EM system in February 1998. This information was omitted from the 1997/98 Annual Report (Vicary, 1998a).

No anomalies attributed to massive sulphide bodies were detected from the survey. Some minor anomalies can be explained by the presence of glacial deposits from 0 - 58.3m and weakly pyritic black siltstones from 224.6 - 268.8m.

A detailed technical report is presented in Appendix 2.

5.2.2 CSAMT Data Reprocessing

5.2.2.1 CSAMT Technical Report

A CSAMT survey was conducted over the Basin Lake EL by Billiton 1989-90 (Creagh and Hungerford, 1990). Only limited parts of this survey received full evaluation. In association with concurrent exploration in the adjacent Anthony EL it was decided to reprocess and model the Billiton data using several recent techniques unavailable at the time of the Billiton survey.

A technical report by Chris Dauth is presented in Appendix 3. This report was prepared shortly before Chris's departure to serve as background information to Mike Asten, of Flagstaff Geo-Consultants who was contracted to oversee the proposed processing and modelling of the Billiton CSAMT data.

5.2.2.2 Inversion Trials

To assess the best method of reprocessing the existing CSAMT data from the Anthony EL, Mike Asten was asked to process three trial lines using a variety of techniques. A short report of this study is presented in Appendix 4.

5.2.2.3 Review of Billiton CSAMT Data

A report on the reprocessing of the Billiton CSAMT Data is presented in Appendix 5. Several recommendations presented in this report will be evaluated in the 1999-2000 field season.

5.2.3 Dipole-Dipole Inversions

The reprocessing of the CSAMT data showed that there is a lack of detail in near surface data. To investigate the potential use of dipole-dipole IP inversion to give greater resolution between the depth 0 to 300m below surface, several line of old dipole-dipole IP data from the Basin Lake and Anthony ELs were reprocessed by Mike Asten.

A detailed report is presented in Appendix 6 (Volume 2).

In general, the results suggest the inversion of dipole-dipole IP data is a highly effectual exploration technique. In contrast to gradient array IP data it has the ability to see anomalies beneath glacial cover up to 100m thick. In areas where there are

multiple anomaly sources (e.g. black siltstone and massive pyrite near BL004) the technique has been able to clearly discriminate individual anomalies. Such anomalies are undetected by other geophysical methods (e.g. gradient array IP, UTEM, and Sirotem).

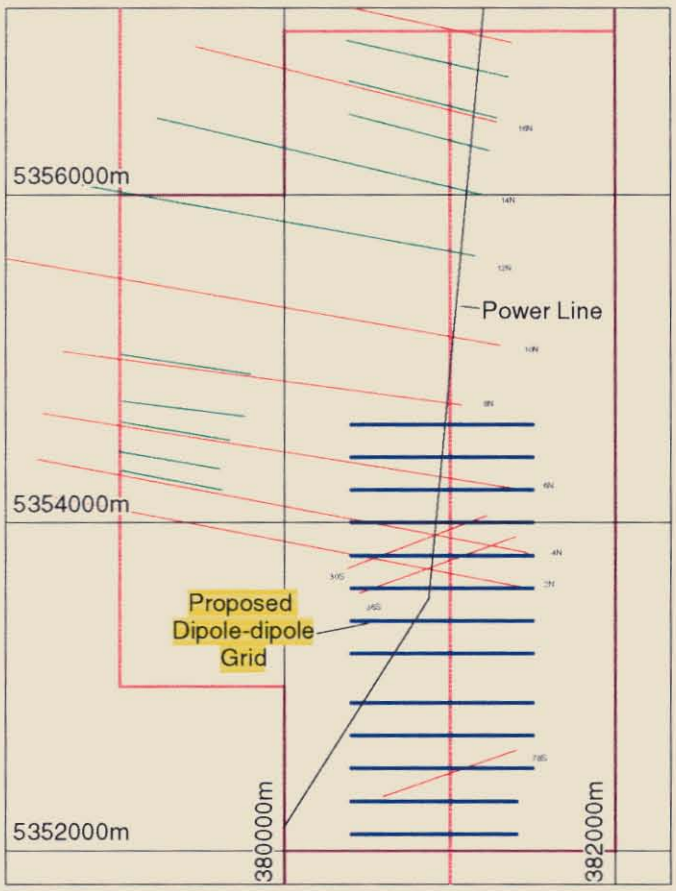
5.2 Geology

The geological interpretation of the Basin Lake EL was modified by Richard Hill as part of a review of the geology of the Anthony EL (Hill and Vicary, 1999). Geological maps at 1:5000 scale are presented as Plans 1 and 2.

6. RECOMMENDATIONS

1. The inversion of historical dipole-dipole data has proved a highly successful exploration method. It is recommended that a dipole-dipole survey should be conducted over Basin Lake alteration zone (figure 2). The survey should be conducted on grid lines 200m apart with 100m dipoles.

Figure 2. Proposed dipole-dipole survey



2. Diamond drilling should be used as follow-up to any untested anomaly detected by the dipole-dipole IP survey.

3. Any drill hole should be surveyed by DHEM upon completion.

8. REFERENCES

627014

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627015

Appendix 1

XRD Mineralogy Report

627016

amdel

MINERAL CHEMISTRY

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ACN 009 076 555

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Facsimile (08) 8234 0321

Mr Michael Vicary
Goldfields Exploration Pty Ltd
PO Box 62
ZEEHAN TAS 7469

FINAL ANALYSIS REPORT

Your Order No: T1602/1605 0638

Our Job Number : 9AD0088

Sample rec'd : 14/01/99

Results reported : 28/01/99

No. of samples : 6

Report comprises a cover sheet and pages 1 to 1

Approved Signature:

for
Alan Ciplys
Manager - Mineral Chemistry

Report Codes:
N.A. - Not Available.
L.N.R. - Listed But Not Received.
I.S. - Insufficient Sample.

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

amdel

627017

X-RAY DIFFRACTION ANALYSIS OF SAMPLES

1. INTRODUCTION

Six core samples were submitted by Mr Michael Vicary of Goldfields Exploration Pty Ltd for identification of the main phyllosilicate phase of each sample by X-ray diffraction analysis.

2. PROCEDURE

A portion of each sample was pulverised in a mortar and pestle and the pulverised material examined by X-ray diffraction.

3. RESULTS

The major phyllosilicate in all six samples is muscovite. The X-ray diffraction traces of samples T44987, T44988 and T44989 have broader peaks than the X-ray diffraction traces of samples T4490, T44991 and T44992 including slightly lower crystallinity and possibly a finer grain size for the first three samples (possibly approaching sericite). In all samples except for T44989 muscovite is the only phyllosilicate detected by X-ray diffraction. Sample T44989 also contains low levels of pyrophyllite.

Appendix 2

TYN016 DHEM Survey

APPENDIX

627019

OUTER RIM Report on
DHEM survey results

Copied from RGC Exploration Internal Report No. 2317-9801c

627020

RGCE Info Centre
P19455

2317-9801c

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ACN 059 220 192

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100% Australian Owned

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RGC EXPLORATION PTY LTD
INFORMATION CENTRE

Volume 1 of 3

Client	:	RGC Exploration Ltd
Prospect	:	Tyndall Creek and White Spur.
Area	:	Zeehan, Tas.
Survey	:	Borehole PEM Survey
Survey Period	:	2nd to 10th February 1998.
Operator	:	Brett Rankin.

DAILY LOG: RGC Exploration Limited - February, 1998

DATE	COMMENTS	CHARGES
31-01-98	Travelled from Melbourne to Burnie.	
	½ Mob. day	$ 275.00
01-02-98	Travelled from Burnie to Zeehan, arriving approximately midday. Contacted Chris Dauth from RGC to discuss the program. RGC was not ready for us to start work today so we caught up with paper work from the previous job.	
	½ Mob. day	$ 275.00
	½ Office day	N/C
02-02-98	Arrived in the field on the Tyndal Creek Grid at 7.45am. Dummied TC-16 to 25m - the hole was blocked by what appeared to be a pinched section in the poly pipe. We relocated to the White Spur Grid and dummied WSP-8 to the end of the hole. We laid out Loop #1 and logged all three components to 380m. We then laid out Loop #10 and departed from the field at 7.00pm.	
	SURVEY PARAMETERS:	
	Loop #1 :475 x 400m 376575E; 5361000N: 376540E; 5360730N 376925E; 5360720N: 377000E; 5361000N	
	Current :16 Amps Time Base :20 ms Ramp Time :0.5ms Sync :Cable	
	Hole No. **:WSP-8** 376812E, 5360560N Depth :380m Channels :31 Components :Z,X,Y	
	1 Survey day	$1250.00
	1 Field Assist. day	$ 180.00
03-02-98	Arrived in the field at 7:30am and dummied WSP-7 to the end of the hole. The dummy cable snapped at approx. 400m while recovering the dummy probe but it was retrieved. We surveyed all three components on WSP-7 to 590m (EOH) using Loop #1. We left the field at 5.30pm.	
	SURVEY PARAMETERS:	
	Loop #1 :475 x 400m 376575E; 5361000N: 376540E; 5360730N 376925E; 5360720N: 377000E; 5361000N	

Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-7**
376772E, 5361160N
Depth :590m
Channels :31
Components :Z,X,Y

1 Survey day $1250.00
1 Field Assist. day $ 180.00

04-02-98 Arrived in the field at 7:50am, connected Loop #10 and surveyed all three components on WSP-7 to 590m. We then recovered the cable, moved to WSP-8 and surveyed the Z component to 220m using loop #10. We then moved to hole WSP-9 where we recovered the dummy probe (Brett had dummied the hole by hand earlier in the day) and relocated to the Tyndal Creek grid. We re-dummied TYN-16, this time successfully - had to stretch the poly pipe to remove the kink. We left the field at 6.15pm.

SURVEY PARAMETERS:

Loop #10 :800 x 325m
376250E; 5361400N: 376250E; 5360600N
376525E; 5360600N: 376575E; 5361000N
376575E; 5361400N
Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-7**
376772E, 5361160N
Depth :590m
Channels :36
Components :Z,X,Y

Hole No. **:WSP-8**
376812E, 5360560N
Depth :220m
Channels :36
Components :Z

1 Survey day $1250.00
1 Field Assist. day $ 180.00

05-02-98 Arrived in the field at 8:45am. Returned to WSP-8 and completed logging the Z and X-Y components to 380m (EOH)

using Loop #10. We reconnected Loop #1, moved to WSP-9 and logged the Z component to 260m. We also recovered loop #10. It rained from approximately 11:00 to the end of the day - very damp indeed. We left the field at 5.15pm.

SURVEY PARAMETERS:

Loop #10	:800 x 325m
	376250E; 5361400N: 376250E; 5360600N
	376525E; 5360600N: 376575E; 5361000N
	376575E; 5361400N
Current	:16 Amps
Time Base	:20 ms
Ramp Time	:0.5ms
Sync	:Cable
Hole No.	**:WSP-8**
	376812E, 5360560N
Depth	:380m
Channels	:31
Components	:Z,X,Y
Loop #1	:475 x 400m
	376575E; 5361000N: 376540E; 5360730N
	376925E; 5360720N: 377000E; 5361000N
Current	:16 Amps
Time Base	:20 ms
Ramp Time	:0.5ms
Sync	:Cable
Hole No.	**:WSP-9**
	377065E, 5360560N
Depth	:260m
Channels	:31
Components	:Z

1 Survey day	$1250.00
1 Field Assist. day	$ 180.00

06-02-98 Arrived in the field at 8:15am. We completed reading the Z component on WSP-9 to 495m (EOH) using Loop #1. We laid out Loop #9 while reading the X-Y components on WSP-9 to 385m using Loop #1. Unfortunately, a low battery stopped play at 4:15pm so we packed up and returned to the motel to dump the data.

SURVEY PARAMETERS:

Loop #1	:475 x 400m
	376575E; 5361000N: 376540E; 5360730N
	376925E; 5360720N: 377000E; 5361000N
Current	:16 Amps

Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-9**
377065E, 5360560N
Depth :495m
Channels :31
Components :Z,X,Y

1 Survey day $1250.00
1 Field Assist. day $ 180.00

07-02-98 Arrived in the field at 8:15am and completed reading the X-Y components on WSP-9 from 385m to 495m (EOH) using Loop #1. We connected to Loop #9 and relogged the Z component on WSP-9 to 495m and the X-Y to 210m. Loop #1 was recovered whilst the logging was in progress. Unfortunately we were unable to complete the hole as the receiver registered low battery voltage. We had to stop at 4.30pm. We ordered new batteries from Townsville to hopefully solve the problem. It rained today from 11:00am.

SURVEY PARAMETERS:

Loop #1 :475 x 400m
376575E; 5361000N: 376540E; 5360730N
376925E; 5360720N: 377000E; 5361000N
Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-9**
377065E, 5360560N
Depth :495m
Channels :31
Components :X,Y

Loop #9 :530 x 400m
376540E; 5360730N: 376525E; 5360200N
376925E; 5360200N: 377065E; 5360559N
Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-9**
377065E, 5360560N
Depth :495m
Channels :31

Components :Z,X,Y

1 Survey day $1250.00
1 Field Assist. day $ 180.00

8-02-98 Out to the field at 8:45am. Heavy rain in the morning meant we had to check the level of some of the creeks before beginning work to establish whether the water levels were rising or falling during the day. We read the X-Y components on WSP-9 from 210 to 495m using Loop #9. We packed up and relocated to the Tyndall Creek grid (access to WSP-11 was impossible due to rising water levels in one of the creeks). We set up and logged the X-Y components on TYN-016 from 20 to 440m (EOH) using Loop #16. The rain continued throughout the day and we finished up at 5.15pm.

SURVEY PARAMETERS:

Loop #9 :530 x 400m
376540E; 5360730N: 376525E; 5360200N
376925E; 5360200N: 377065E; 5360559N
Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:WSP-9**
377065E, 5360560N
Depth :495m
Channels :31
Components :X,Y

Loop #16 :400 x 400m
380100E; 5352150N: 379960E; 5351770N
380350E; 5351630N: 380470E; 5352010N
Current :16 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. **:TYN-016**
380555E, 5351680N
Depth :437m
Channels :31
Components :Z

1 Survey day $1250.00
1 Field Assist. day $ 180.00

09-02-98 Travelled to another client for a mine induction, then returned to Zeehan, picked up the equipment and arrived in the field at 12.30pm. We surveyed the X-Y components on TYN-016

from 20 to 437m (EOH) using Loop #16. We packed up and travelled across to the White Spur grid. The creek was now safe to cross so we dropped the equipment off at the WSP-11 site at 6.00pm and returned to Zeehan.

SURVEY PARAMETERS:

Loop #16	:400m x 400m
	380100E; 5352150N: 379960E; 5351770N
	380350E; 5351630N: 380470E; 5352010N
Current	:16 Amps
Time Base	:20 ms
Ramp Time	:0.5ms
Sync	:Cable
Hole No.	**:TYN-016**
	380555E, 5351680N
Depth	:437m
Channels	:31
Components	:X,Y

½ Induction day	N/C
½ Survey day	$ 625.00
½ Field Assist. day	$ 90.00

10-02-98 Out to the field by 8:00am and dummied WSP11 to 290m (EOH). We surveyed the Z and X-Y components on WSP-11 to 290m using Loop #11 and recovered Loop #9 whilst the hole was being surveyed. We then recovered Loop #11 with the help of the RGC field assistants, finishing up at 4.40pm.

SURVEY PARAMETERS:

Loop #11	:400 x 400m
	376250E; 5362600N: 376250E; 5362200N
	376675E; 5362200N: 376650E; 5362600N
Current	:16 Amps
Time Base	:20 ms
Ramp Time	:0.5ms
Sync	:Cable
Hole No.	**:WSP-11**
	376520E, 5362540N
Depth	:290m
Channels	:31
Components	:Z,X,Y

1 Survey day	$1250.00
1 Field Assist. day	$ 180.00

11-02-98 Dropped the data off to Chris, said our farewells and drove to the next job.

½ Mob. day	N/C

627027

APPENDIX

627028

CRONE PULSE EM SYSTEM

SYSTEM DESCRIPTION

The Crone Pulse EM system is a time domain electromagnetic method (TDEM) that utilizes an alternating pulsed primary current with a controlled shut-off and measures the rate of decay of the induced secondary field across a series of time windows during the off-time. The system uses a transmit loop of any size or shape. A portable power source feeds a transmitter which provides a precise current waveform through the loop. The receiver apparatus is moved along surface lines or down boreholes.

The transmitter cycle consists of slowly increasing the current over a few milliseconds, a constant current, abrupt linear termination of the current, and finally zero current for a selected length of time in milliseconds. The EMF created by the shutting-off of the current induces eddy currents in nearby conductive material thus setting-up a secondary magnetic field. When the primary field is terminated, this magnetic field will decay with time. The amplitude of the secondary field and the decay rate are dependent on the quality and size of the conductor. The receiver, which is synchronized to the off-time of the transmitter, measures this transient magnetic field where it cuts the surface coil or borehole probe. These readings are across fixed time windows or "channels".

SYSTEM TERMINOLOGY

Ramp Time

"Ramp time" refers to the controlled shut-off of the transmitter current. Three ramp times are selectable by the operator; 0.5ms, 1.0ms, and 1.5ms. By controlling the shut-off rather than having it depend on the loop size and current ensures that the same waveform is maintained for different loops so data can be properly compared.

The 1.5ms ramp is the normally used setting for good conductors. It keeps the early channel responses on scale and decreases the chance of overload. The faster ramp times of 1.0ms and 0.5ms will enhance the early time responses. This can be useful for weak conductors when data from the higher end of the frequency spectrum is desired.

Time Base

Time base is the length of time the transmitter current is off (it includes the ramp time). This also equals the on time of the current. Eight time bases are selectable by the operator. They include the original time bases used in the analog system as well as time bases to eliminate the effects of powerline interference. The eight time bases are as follows: compatible to analog Rx: 10.89ms, 21.79ms; 60hz powerline noise reduction: 8.33ms, 16.66ms, & 33.33ms; 50hz powerline noise reduction: 10.00ms, 20.00ms, 50.00ms and 150ms.

Since readings are taken during the off cycles, the time base will have an effect on the receiver channels. Normally, a standard time base is selected for the type of system and survey being used, but this can be changed to suit a particular situation. A longer time base is preferred for conductors of greater time constants, and in surveys such as resistive soundings where more channels are desired.

Zero Time Set

The term "zero time set" or "ZTS" refers to the starting point for the receiver channel measurements. It is manually set on the receiver by the operator thus allowing adjustments for the ramp times and fine tuning for any fluctuations in the transmitter signal.

Receiver Channels

The rate of decay of the secondary field is measured across fixed time windows which occupy most of the off-time of the transmitter. These time windows are referred to as "channels". These channels are numbered in sequence with "1" being the earliest. The analog and datalogger receivers measured eight fixed channels. The digital receiver, being under software control, offers more flexibility in the channel positioning, channel width, and number of channels.

PP Channel

The PEM system monitors the primary field by taking a measurement during the current ramp and storing this information in a "PP channel". This means that data can be presented in either normalized or unnormalized formats, and additional information is available during interpretation. The PP channel data can provide useful diagnostic information and helps avoid critical errors in field polarity.

Synchronization

Since the PEM system measures the secondary field in the absence of the primary field, the receiver must be in

"sync" with the transmitter to read during the off-time. There are three synchronization methods available: cable connection, radio telemetry, and crystal clock. This flexibility enhances the operational capabilities of the system.

SURVEY METHODS

The wide frequency spectrum of data produced by a Pulse EM survey can be used to provide structural geological information as well as the direct detection of conductive or conductive associated ore deposits. The various types of survey methods, from surface and borehole, have greatly improved the chances of success in deep exploration programs. There are eight basic profiling methods as well as a resistivity sounding mode.

Moving Coil

A small, multi-turn transmitter loop (13.7m diameter) is moved for each reading while the receiver remains a fixed distance away. This method is ideal for quick reconnaissance in areas of high background conductivity.

Moving Loop

Same as Moving Coil method, but with a larger transmit loop (100 to 300 meters square). This method provides deeper penetration in areas of high background conductivity, and works best for near-vertical conductors. This method can be used in conjunction with the Moving In-loop survey for increased sensitivity to horizontal conductors.

Moving In-Loop

A transmit loop of size 100 to 300 meters square is moved for each reading while the receiver remains at the center of the loop. This method provides deep penetration in areas of very high background conductivity, and works best for near-horizontal conductors. It can be used in conjunction with the Moving Loop survey.

Large In-Loop

A very large, stationary transmit loop (800m square or more) is used, and survey lines are run inside the loop. This mode provides very deep penetration (700m or more) and couples best with shallow dip conductors (<45 deg.) under the loop.

Deepem

A large, stationary transmit loop is used, and survey lines are run outside the loop. This mode provides very deep penetration, and couples best with steeply dipping conductors (>45 deg.) outside the loop.

Borehole (Z Component only)

Isolated Borehole: A drill hole is surveyed by lowering a probe down a hole and surveying it with a number of transmit loops laid out on surface. The data from multiple loops gives directional information on the conductors.

Multiple Boreholes: One large transmit loop is used to survey a number of closely spaced holes. The change in anomaly from hole to hole provides directional information.

These methods have detected conductors to depths of 2500m from surface and up to 200m from the hole.

3-D Borehole

Drill holes are surveyed with both the Z and the XY borehole probes. The X and Y components provide accurate direction information using just one transmit loop.

Since the probe rotates as it moves down the hole a correction is required for the X-Y data. This is accomplished in one of two ways. The standard approach is to use the measurement of the primary field from the "PP" channel, apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation device for the X-Y probe which is produced in cooperation with IFG Corp. This attachment uses dipmeters to calculate the probe rotation.

Underground Borehole

Underground drill holes can be surveyed in any of the above mentioned borehole methods with one or more transmit loops on the surface. Near-horizontal holes can be surveyed using a push-rod system.

Resistivity Soundings

By reading a large number of channels in the centre of a transmit loop it is possible to preform a decay curve analysis giving a best-fit layer earth model using programs such as ARRTI or TEMIX.

627030

EQUIPMENT

Transmit Loops

The PEM system can operate with practically any size of transmit loop, from a multi-turn circular loop 13.7m in diameter, to a 1 or 2 turn loop of any shape up to 1 or 2 kilometers square using standard insulated copper wire of 10 or 12 gauge. The multi-turn loop is made in two sections with screw connectors. The 10 or 12 gauge loop wire comes on spools in either 300m or 400m lengths.

Power Supply

The PEM system normally operates with an input voltage from 24v to 120v. The maximum current is 20 amps in a single loop but the effective current can be increased by doubling the loop wire in series. For low power surveys a 20amp/hr 24v battery can be used. The power supply requires a motor generator and a voltage regulator to control and filter the input voltage to the transmitter.

Specifications: PEM Motor Generator

- 4.5 hp Wisconsin, (2 kw)
- belt drive to D.C. alternator
- cable output to regulator
- maximum output: 120v, 20amp (2 kw);
- fuse type overload protection
- steel frame
- external gas tank
- unit weight: 33kg (2 kw); 52kg (4 kw)

Specifications: PEM Variable Voltage Regulator

- selectable voltage between 24v and 120v or 48v and 240v
- 20amp maximum current
- fuse and internal circuit breaker protection

Transmitter

The transmitter controls the bi-polar on-off waveform and linear current shut-off ramp. The latest 2000w PEM Transmitter has the following specifications:

Specifications: PEM Transmitter

- time bases: 10.89ms, 21.79ms, 8.88ms, 16.66ms, 33.33ms, 10ms, 20ms, 50ms 150ms.
- ramp times: 0.5ms, 1.0ms, 1.5ms
- operating voltage: 24v to 120v (2 kw); 48v to 240v (4 kw)
- output current: 5amp to 20amp
- monitors for input voltage, output current, shut-off ramp, tx loop continuity, instrument temperature, and overload output current
- automatic shut-off for open loop, high instrument temperature, and overload
- fuse and circuit breaker overload protection
- three sync modes: 1) built-in radio and antenna
  2) cable sync output for direct wire link to receiver or remote radio
  3) connectors for the crystal clock

Receiver

The receivers measure the rate of decay of the secondary field across several time channels. Three types of receivers are available with the PEM system: Analog Rx, Datalogger Rx, and Digital Rx. The Analog Rx and Datalogger Rx read eight fixed time channels while the Digital Rx, under software control, offers a variety of channel configurations. The Digital Rx has been used in the field for contract surveys since 1987.

Specifications: Digital PEM Receiver

- operating temperature -40 °C to 50 °C
- unit weight 15kg; shipping weight 25.5kg

Hardware:

- 24v rechargeable gel cell battery supply
- two CMOS microprocessors (NSC800)
- alphanumeric keyboard

- 2 x 16 character cold weather display
- 16 x 40 character (256 x 128 pixels graphic) display
- 64k byte solid state memory storage
- cable, radio or crystal clock synchronization
- RS-232 serial I/O

Sampling process features:
- 16 bit A/D conversion
- digital recording of data in nano-tesla/sec
- rejection of atmospheric noise samples based on digital threshold detection
- automatic gain control to optimize receiver signal to noise ratio

Menu driven operating software system offering the following functions:
- controls channel positions, channel widths, and number of channels using a basic slice of 4.5µsec
- time bases: 10.89ms, 21.79ms, 8.88ms, 16.66ms, 33.33ms, 10ms, 20ms, 50ms and 150ms
- ramp time selectable in 4.5µsec steps
- sample stacking from 512 to 65536
- scrolling routines for viewing data
- graphic display of decay curve and profile with various plotting options
- routines for memory management
- control of data transmission
- provides information on instrument and operating status

Sync Equipment

There are three modes of synchronization available; radio, cable, and crystal clock. The radio sync signal can be transmitted through a booster antenna from either the PEM Transmitter internal radio or through a Remote Radio.

Specifications: Sync Cable
- 2 conductor, 24awg, teflon coated
- approx. 900m per aluminum spool with connectors

Specifications: Remote Radio
- operating frequency 27.12mhz
- 12v rechargeable gel cell battery supply
- fuse protection
- sync wire link to transmitter
- coaxial link to booster antenna

Specifications: Booster Antenna
- 8m, 4 section aluminum mast
- guide rope support
- ¼ wave CB fiberglass antenna
- range up to 2km
- coaxial connection to transmitter or remote radio

Specification: Crystal Clocks
- heat stabilized crystals
- 24v rechargeable gel cell battery supply
- rx unit can be separate or housed in the receiver
- outlet for external supplementary battery supply

Surface PEM Receive Coil

The Surface PEM Receive Coil picks up the EM field to be measured by the receiver. The coil is mounted on a tripod that can be positioned to take readings of any component of the field.

Specifications: Surface PEM Receive Coil
- ferrite core antenna
- built-in preamplifier
- VLF filter
- 10khz bandwidth
- 23:1 amplifier gain
- two 9v transistor battery supply
- tripod adjustable to all planes

Borehole PEM Z Component Probe

The Z component probe measures the axial component of the EM field. The Z component data is not affected

by probe rotation so no correction are required.

Specifications: Borehole PEM Z Component Probe

- ferrite core
- built-in preamplifier
- dimensions: length - 1.6m; dia - 3.02cm (3.15cm for high pressure tested probes)
- internal rechargeable ni-cad battery supply
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths 2800m

Borehole PEM XY Component Probe

The XY probe measures two orthogonal components of the EM field perpendicular to the axis of the hole. Correction for probe rotation can be achieved by two methods. The standard approach is to use the measurement of the primary field from the "PP" channel, apply a "cleaning" algorithm to remove most of the secondary field contamination, and compare this to theoretical values. The amount of probe rotation is then calculated, and the correction can be made. The second method involves the use of an optional orientation device for the X-Y probe that uses dipmeters to calculate the probe rotation.

Specifications: Borehole PEM XY Component Probe

- ferrite core
- built-in preamplifier
- dimensions: length - 2.01m; dia - 3.02cm
- internal rechargeable ni-cad battery supply
- selection of X or Y coils by means of a swich box on surface or automatic switching with Digital receiver
- replaceable heat shrink tubing for abrasion protection
- pressure tested for depths to 2800m

Orientation Device

The orientation device is an optional attachment for the XY probe which measures the rotation of the probe using two dipmeters.

Specifications: Orientation Device

- 2 axis tilt sensors
- sensitivity +/- 0.1 deg.
- operating range -89.5 to -10 deg.
- dimensions: length - 0.94m; dia - 28.5cm

Borehole Equipment

To lower the probe down a drill hole requires a cable and spool, winch assembly frame and cable counter. Borehole surveys also require equipment to "dummy probe" the hole before doing the survey.

Specifications: Borehole Cable

- two conductor shielded cable
- kevlar strengthened
- currently 1500m but will shortly have cabability of surveying to depths of 3000m.

Specifications: Slip Ring

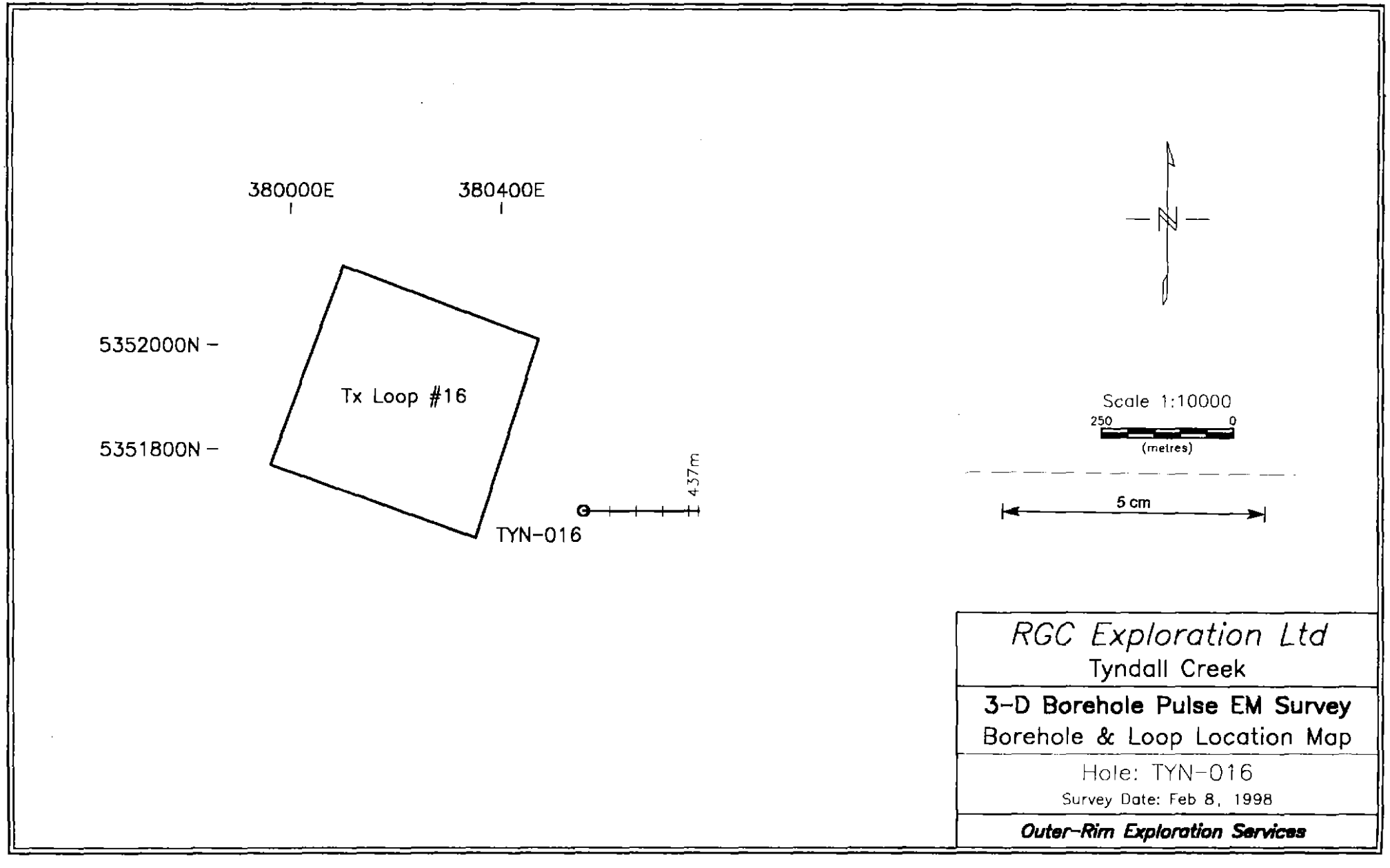
- attaches to side of borehole cable spool providing a connection to the receiver while allowing the spool to turn
- VLF filter
- pure silver contacts

Specifications: Borehole Counter

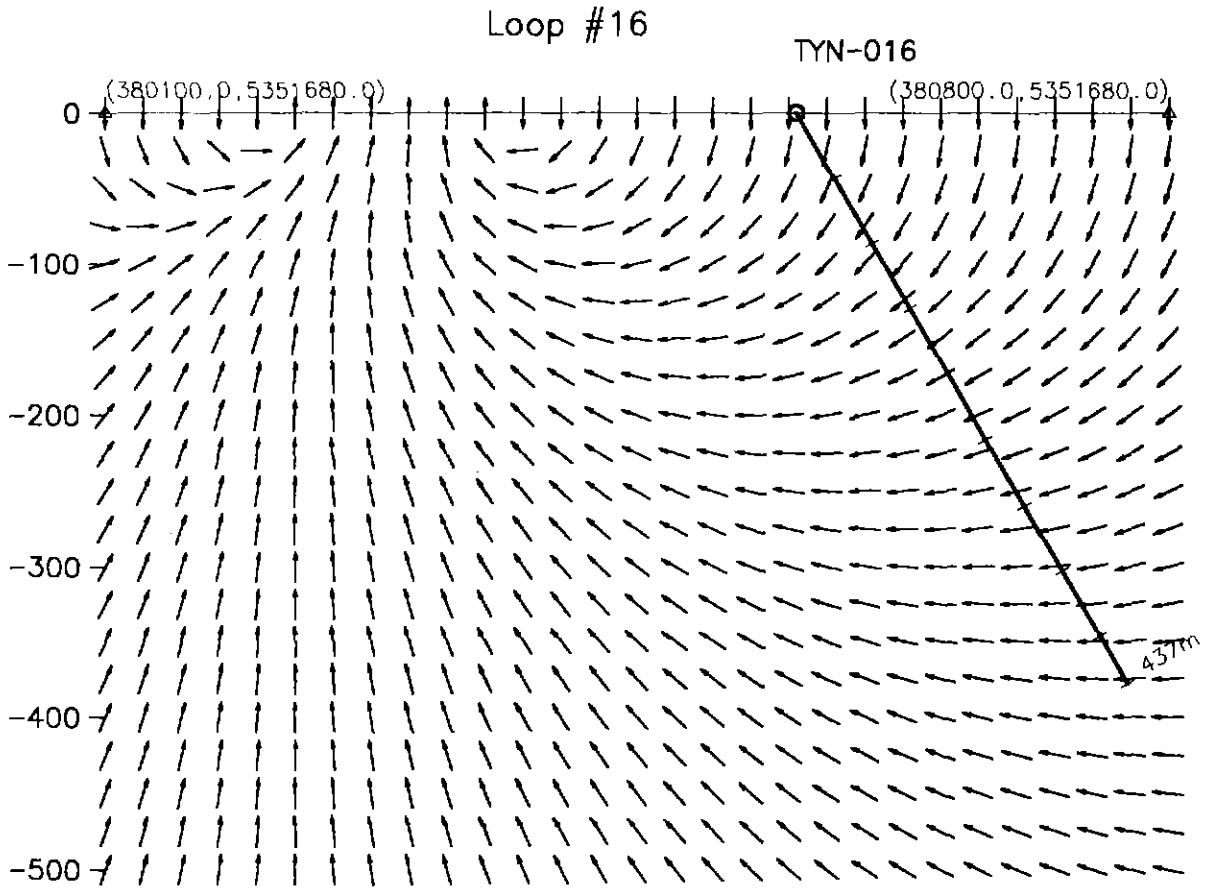
- attaches to the drill hole casing
- calibrated in meters

Specifications: Dummy Probe and Cable

- solid steel or steel pipe
- same dimensions as borehole probe
- shear pin connection to dummy cable


380000E
380400E
5352000N
5351800N
Tx Loop #16
437m
TYN-016
N
Scale 1:10000
250
0
(metres)
5 cm
RGC Exploration Ltd
Tyndall Creek
3-D Borehole Pulse EM Survey
Borehole & Loop Location Map
Hole: TYN-016
Survey Date: Feb 8, 1998
Outer-Rim Exploration Services

627033



Scale 1:5000

50 0 50 100

(metres)

5 cm

RGC Exploration Ltd

Tyndall Creek

3-D Borehole Pulse EM Survey

Hole Section with Primary Field

Hole: TYN-016

Survey Date: Feb 8, 1998

Outer-Rim Exploration Services

627034

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 8, 1998	File name	: TC16Z.PEM
Time Base	: 20.00 ms	# Readings	: 43
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 31	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 400m X 400m	Receiver	: Digital #109
Current	: 16 Amps	Operator	: Brett Rankin

Loop Coordinates (X,Y,Z)

1. 380100m, 5.35215e+06m, 0m
2. 379960m, 5.35177e+06m, 0m
3. 380350m, 5.35163e+06m, 0m
4. 380470m, 5.35201e+06m, 0m

Hole Coordinates (X,Y,Z) or (Azimuth,Dip,Length)

1. 380555m, 5.35168e+06m, 0m
2. 90deg, 60deg, 437m

Channel Times (usec)

Ch	Start	End	Center	Ch	Start	End	Center	Ch	Start	End	Center
PP	-198	-99	-149	1	50	58	54	2	58	72	65
3	72	86	79	4	86	104	94	5	104	126	115
6	126	153	140	7	153	185	169	8	185	225	205
9	225	270	248	10	270	328	299	11	328	396	362
12	396	482	439	13	482	580	531	14	580	702	641
15	702	850	776	16	850	1026	938	17	1026	1242	1134
18	1242	1498	1370	19	1498	1813	1656	20	1813	2187	2000
21	2187	2646	2416	22	2646	3195	2920	23	3195	3861	3528
24	3861	4666	4264	25	4666	5634	5150	26	5634	6808	6221
27	6808	8221	7514	28	8221	9936	9078	29	9936	12000	10968
30	12000	14490	13245	31	14490	17510	16000				

627035

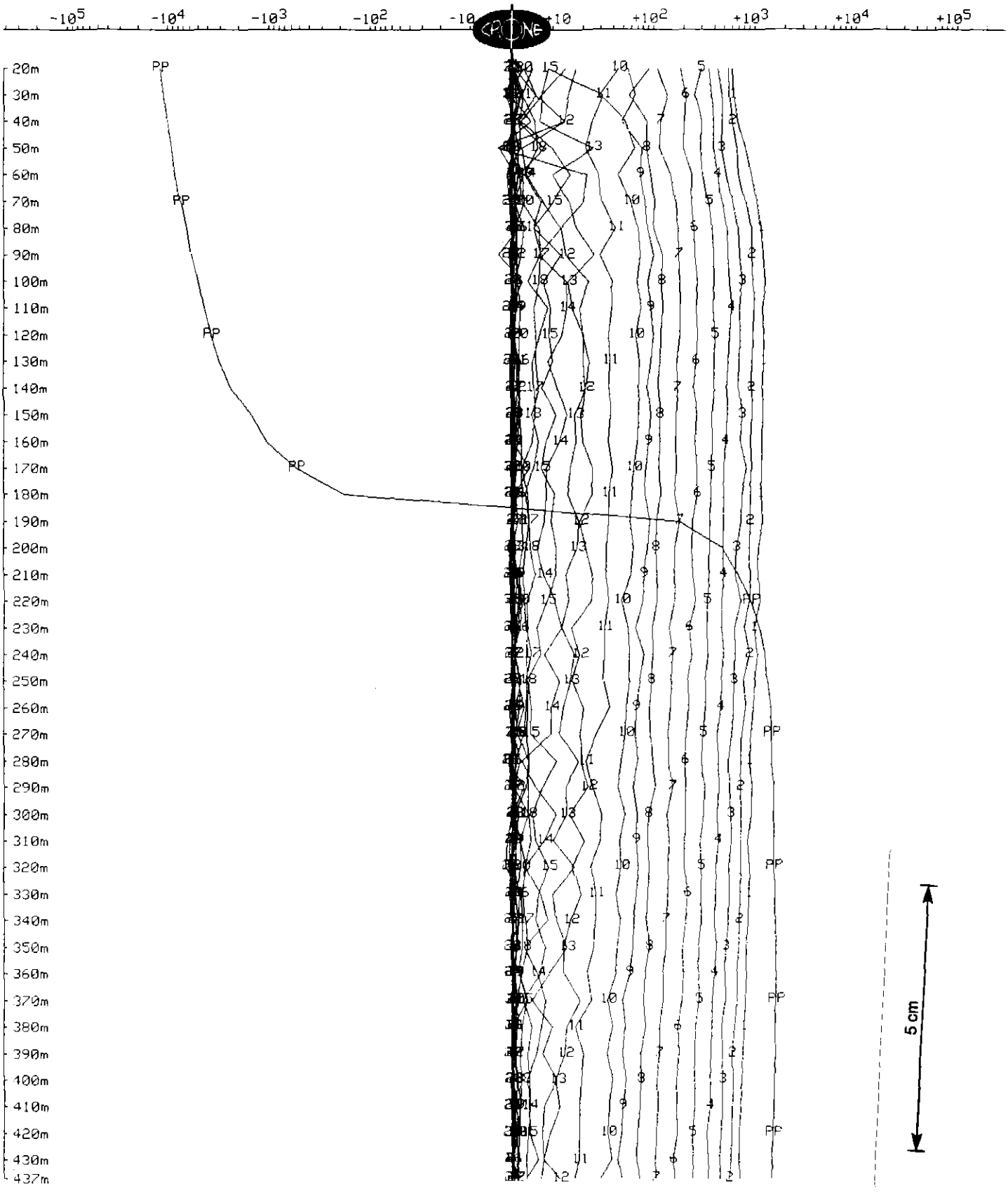
627036

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 8, 1998	File name	: TC16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000



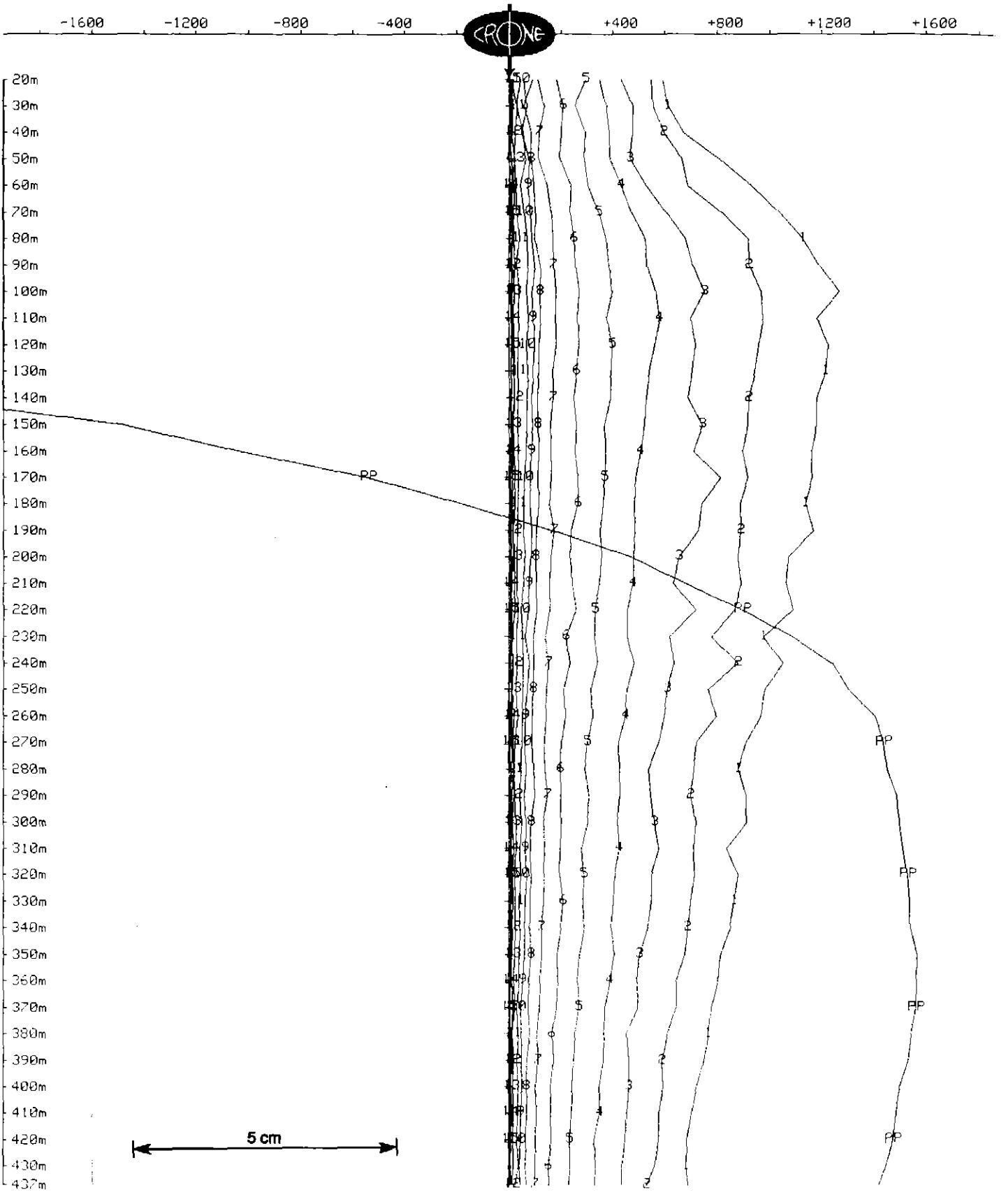
627037

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 8, 1998	File name	: TC16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 200 nT



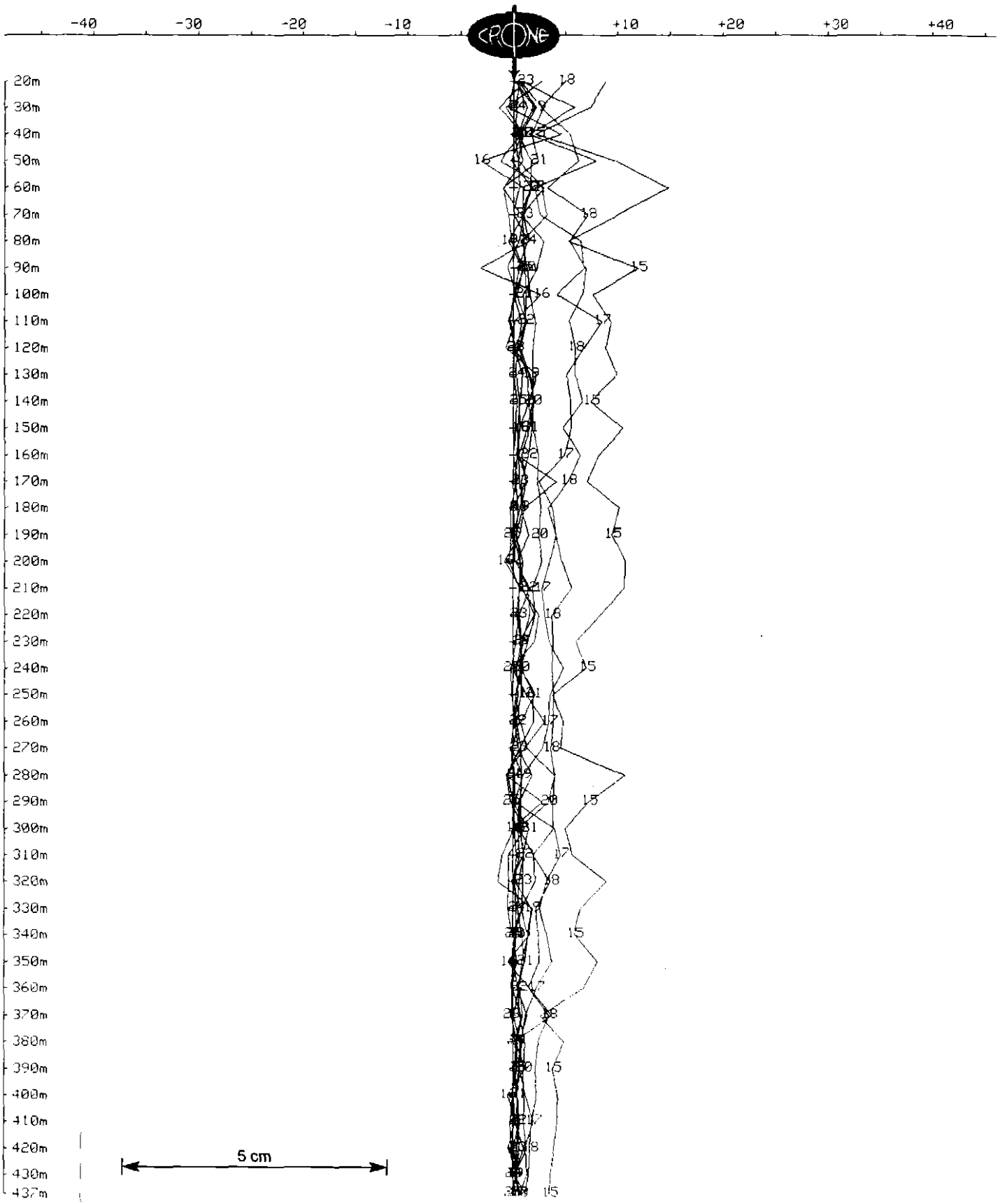
627038

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 8, 1998	File name	: TC16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

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



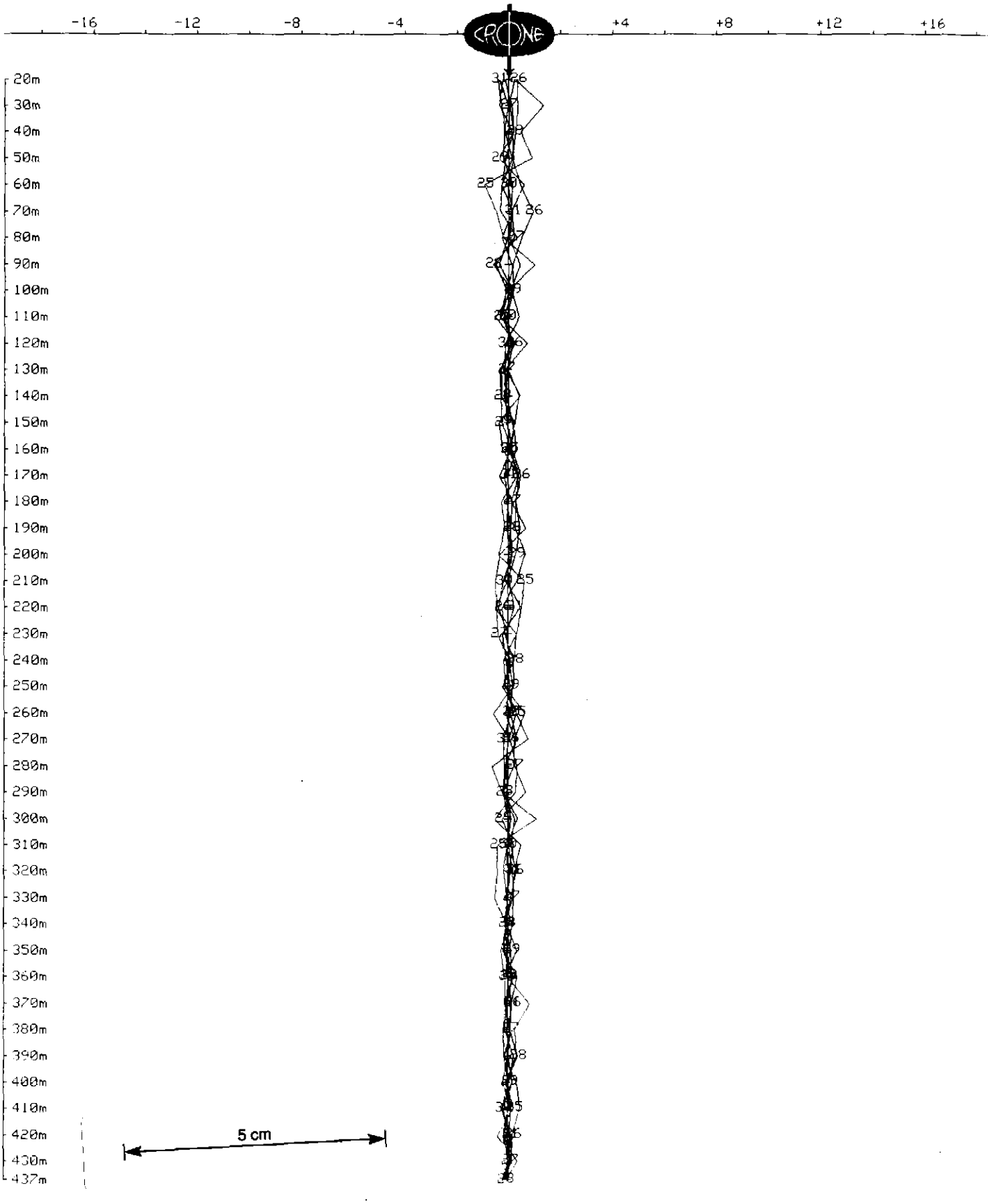
627039

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 8, 1998	File name	: TC16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

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



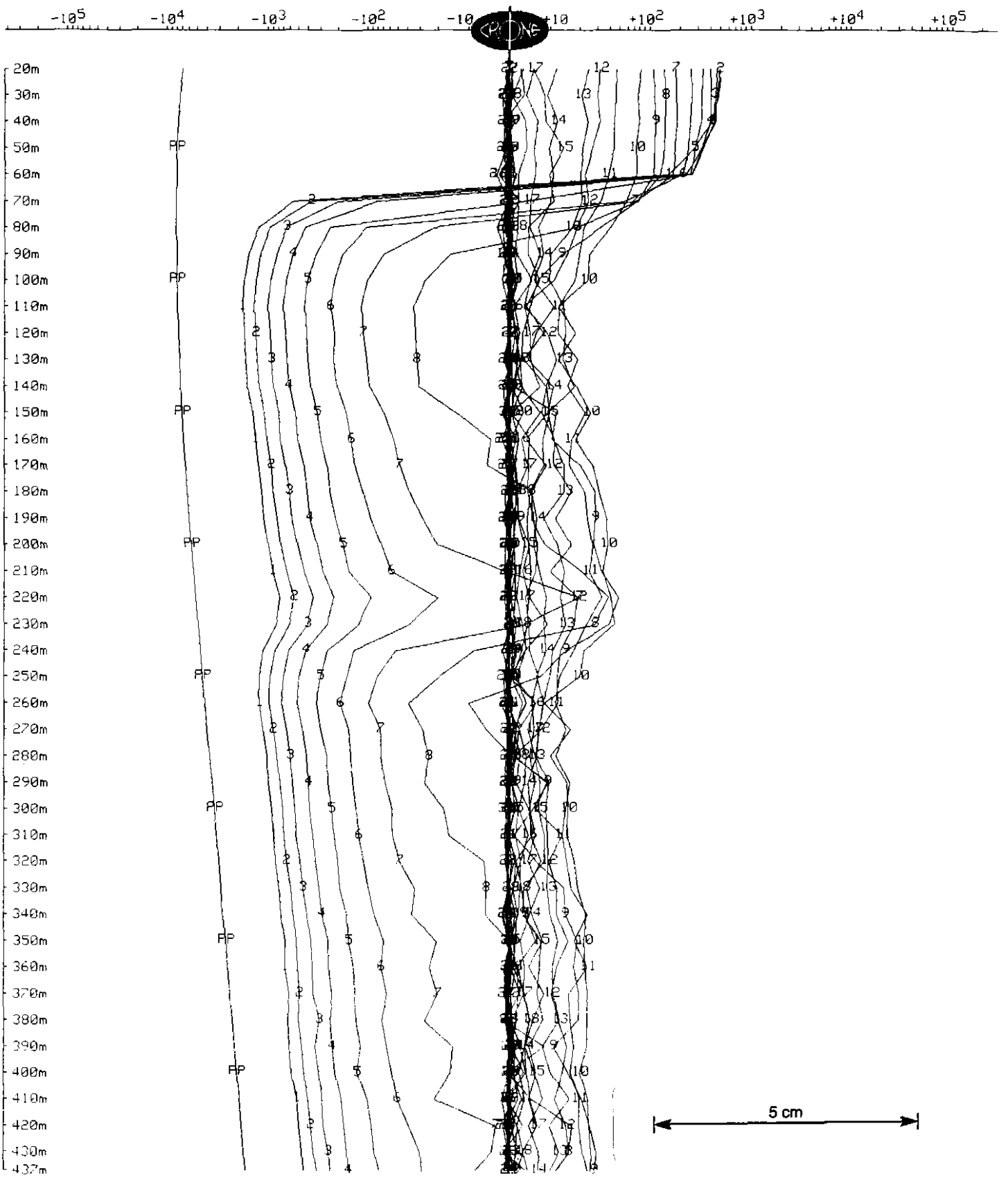
627040

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 9, 1998	File name	: TYN16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #5
X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000



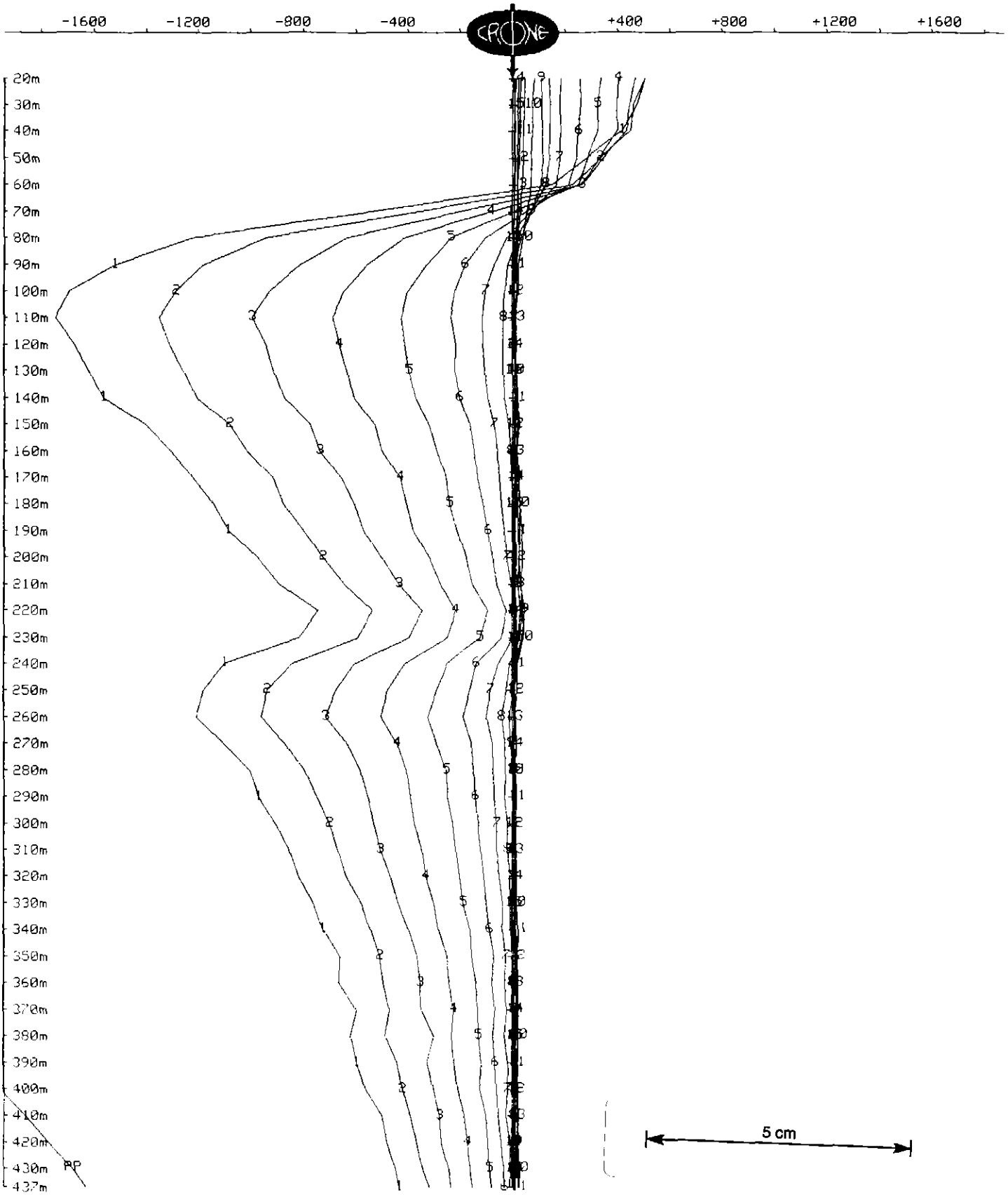
627041

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 9, 1998	File name	: TYN16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #5
X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000 Unit Scale: 1cm = 200 nT



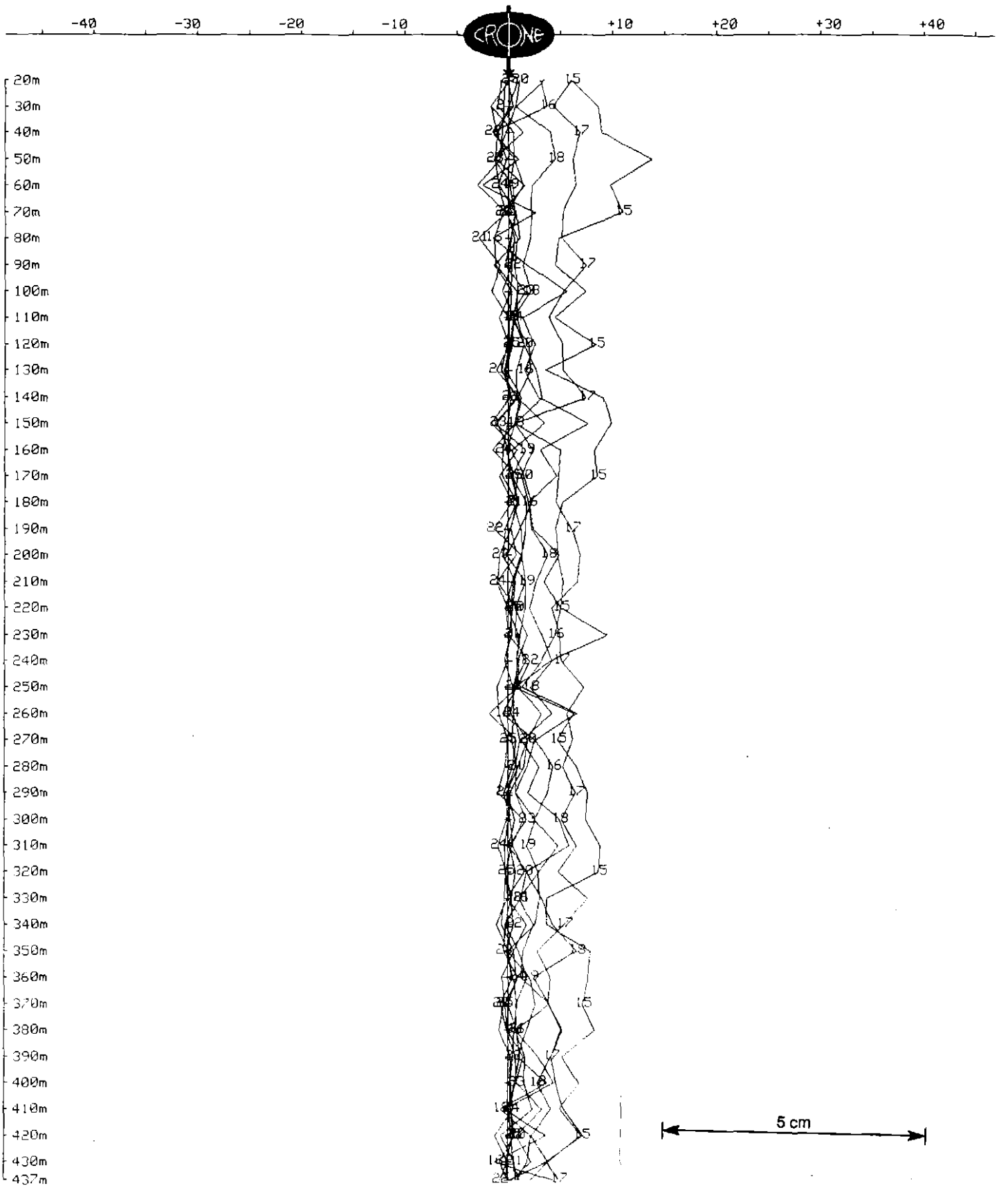
627042

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 9, 1998	File name	: TYN16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #5
X COMPONENT dBx/dt nanoTesla/sec - 31 channels

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



627043

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: RGC Exploration Ltd	Hole	: TYN-016
Grid	: Tyndall Creek	Tx Loop	: #16
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X COMPONENT dBx/dt nanoTesla/sec - 31 channels

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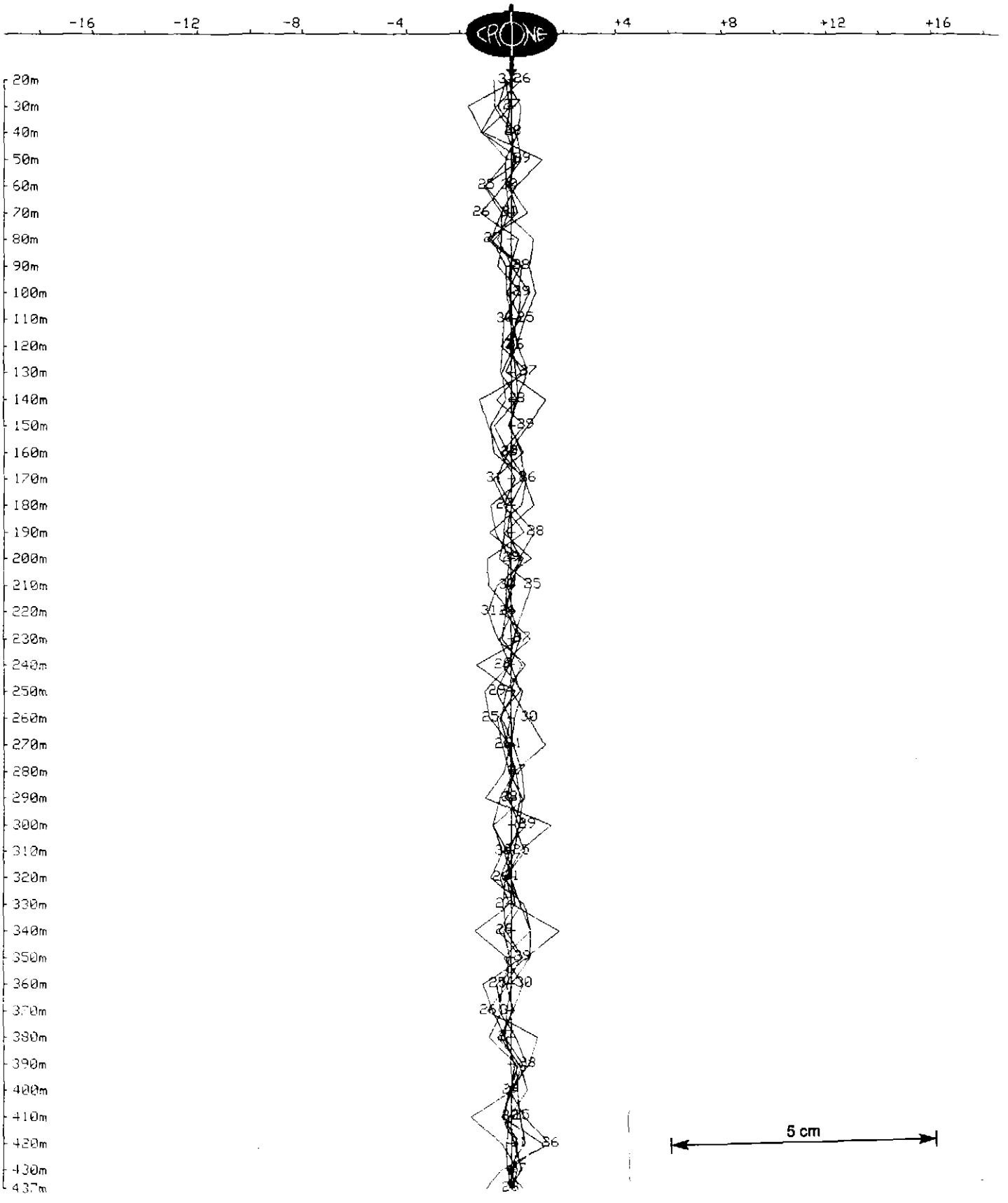

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OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

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Grid	: Tyndall Creek	Tx Loop	: #16
Date	: Feb 9, 1998	File name	: TYN16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #5
Y COMPONENT dBy/dt nanoTesla/sec - 31 channels and PP

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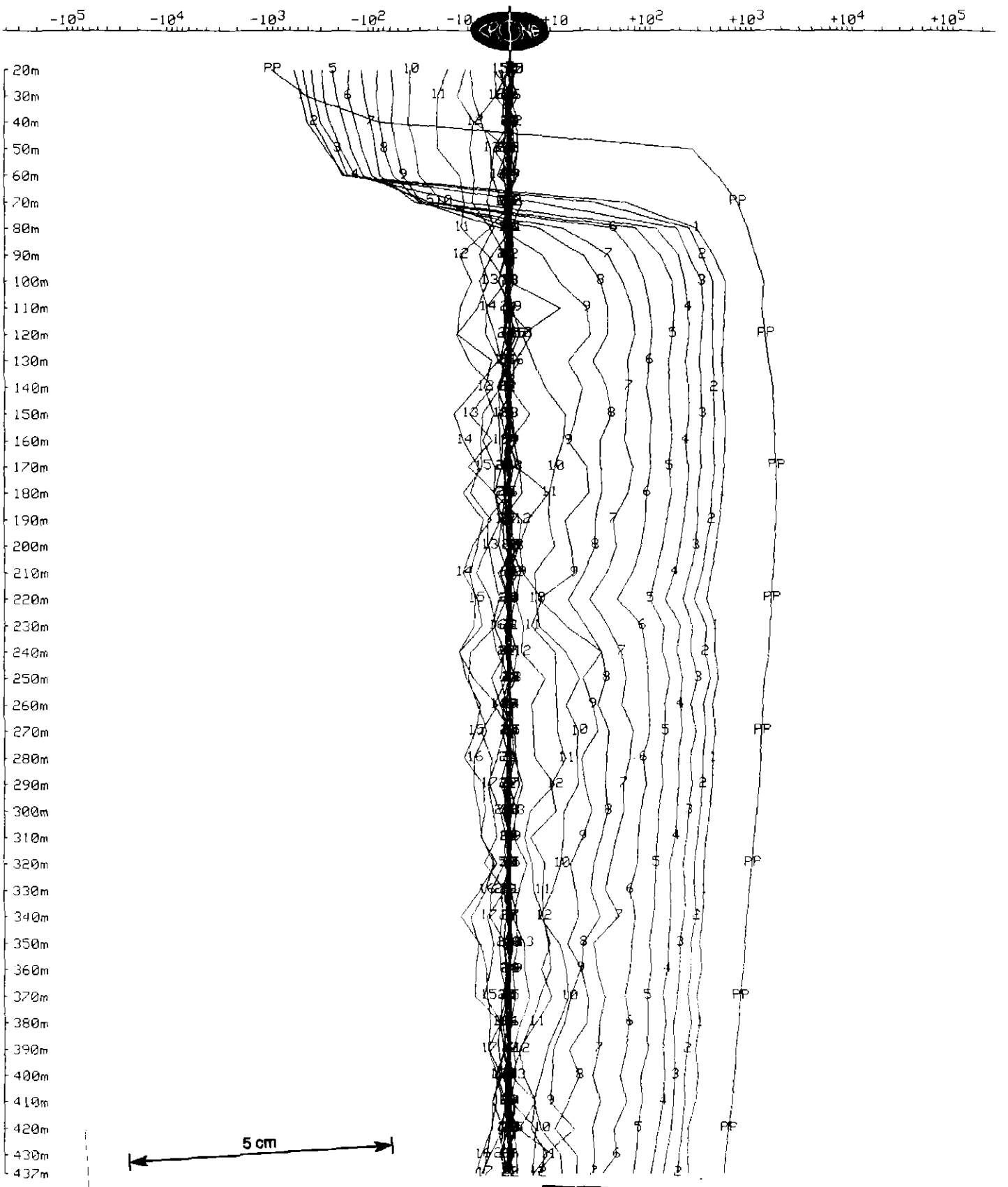

RGC EXPLORATION PTY LTD
INFORMATION CENT

627045

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

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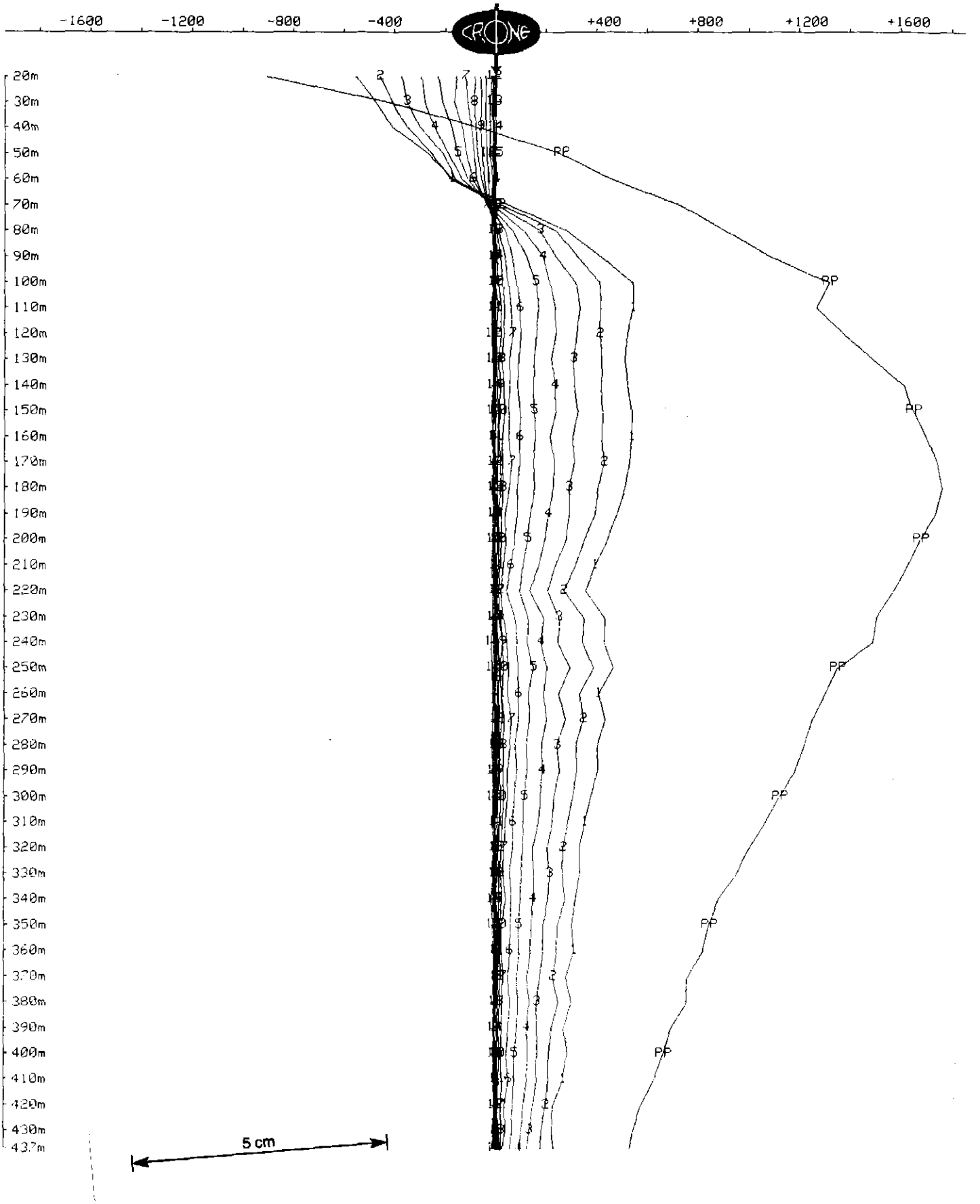

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OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

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Date	: Feb 9, 1998	File name	: TYN16XY.PEM

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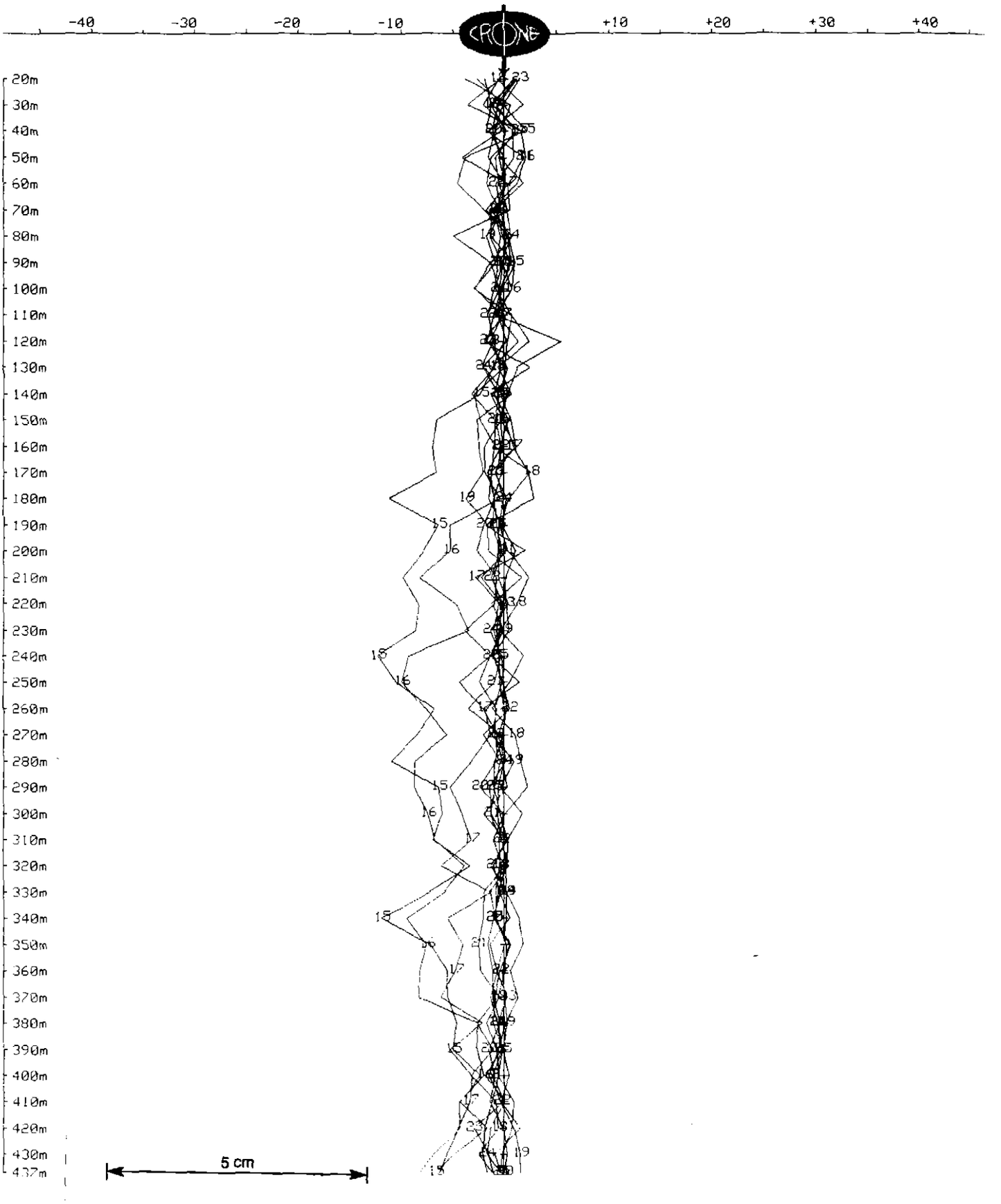

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OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

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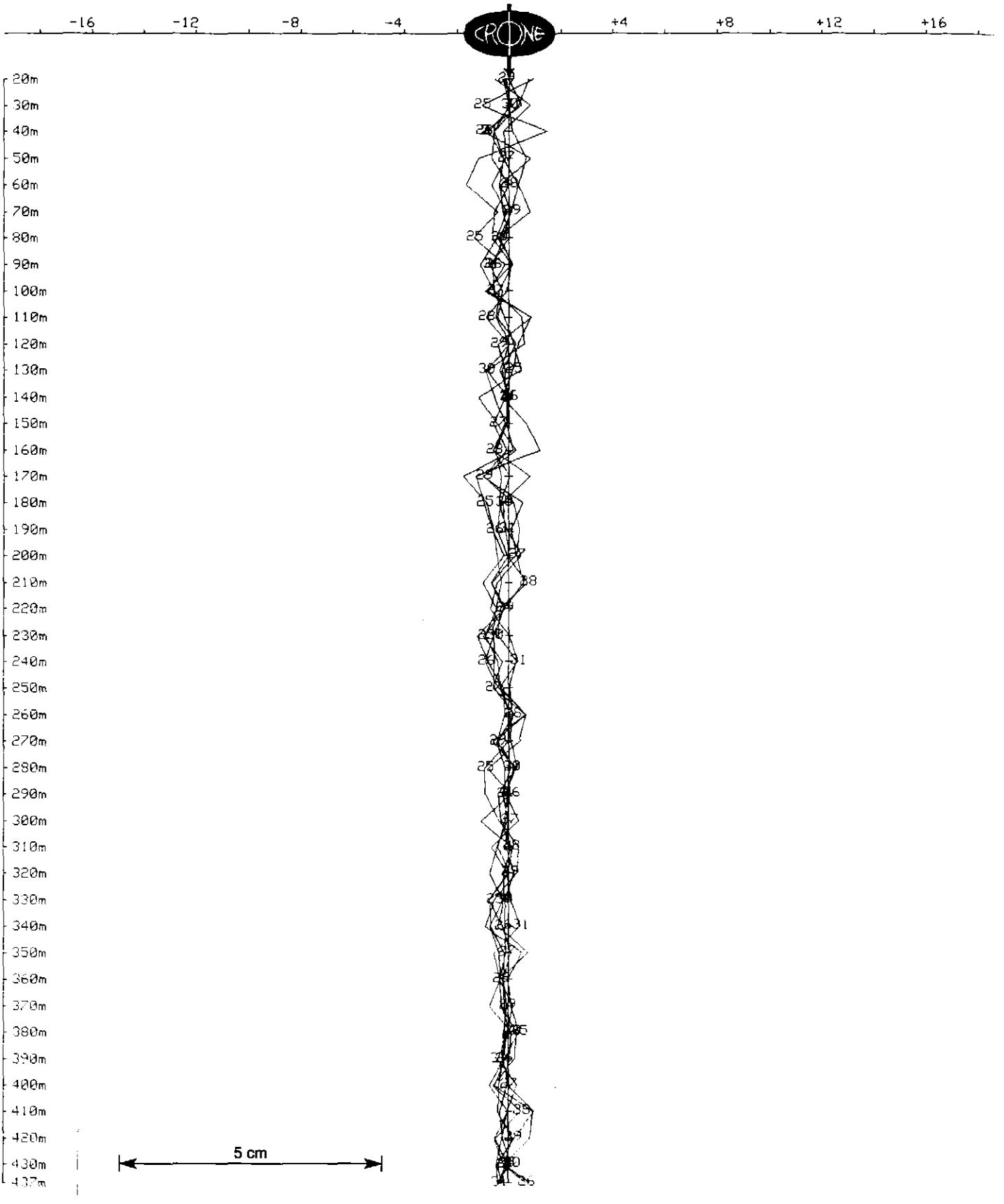
Date	: Feb 9, 1998	File name	: TYN16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #5
Y COMPONENT dBy/dt nanoTesla/sec - 31 channels

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



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

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TOTAL FIELD dBxyz/dt nanoTesla/sec - 31 channels

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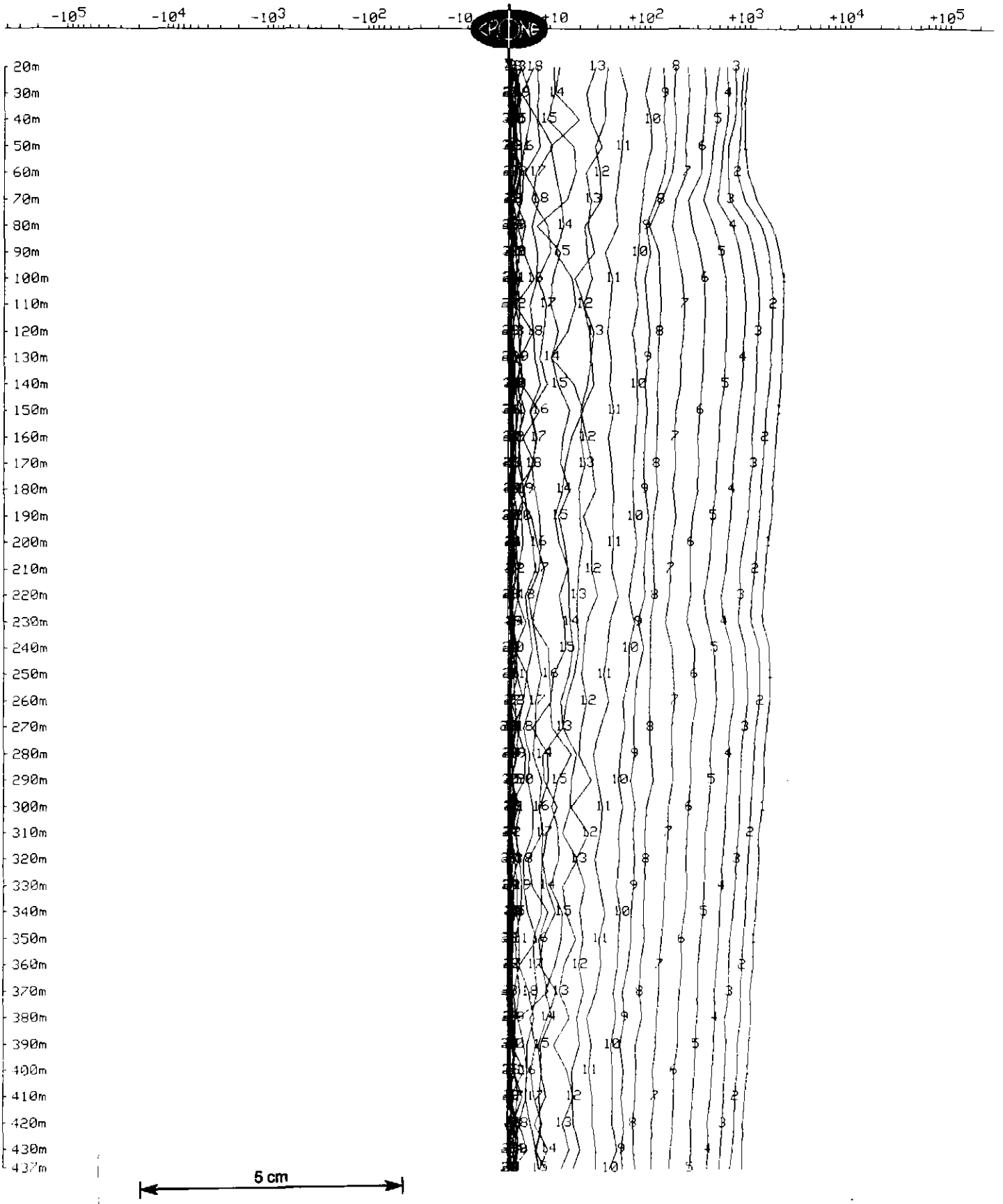

TCR 99-4411A

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Appendix 3

Basin Lake and South Henty Prospects CSAMT Technical Report

Dauth, 1999

GOLDFIELDS EXPLORATION

GOLDFIELDS EXPLORATION PTY LTD
ACN 067 813 932
89 Burswood Road P.O. Box 322 Victoria Park WA 6100
Telephone: (08) 9442 8110 Facsimile: (08) 9442 8181

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TECHNICAL NOTE

golltecs.dot

To : Michael Asten and Michael Vicary

cc : RGC Exploration Information Centre Reference:

From : Chris Dauth

Date : 8 January, 1999

Subject : Basin Lake and South Henty Project CSAMT

INTRODUCTION

This TECHNICAL NOTE summarises survey specifications and results from an existing CSAMT survey conducted by Billiton Exploration in 1989-90 over the Basin Lake Project in Western Tasmania, now held by Goldfields Exploration. A survey design is outlined for additional CSAMT surveying proposed to be conducted by Goldfields Exploration over adjacent tenure. A location diagram is presented in Figure 1. The project is situated within the Mt Read Volcanic Belt of Western Tasmania, and is prospective for Henty style gold mineralisation, Mt Lyell style Cu-Au mineralisation, and Rosebery style base-metals mineralisation.

Goldfields Exploration are currently exploring tenure extending south from the Henty Gold Mine in a thin north-south striking belt up to three kilometres wide for a strike length of approximately 15km. Exploration is focused upon Henty style gold mineralisation, and Mt Lyell style Cu-Au mineralisation. Both styles can be associated with significant sulphide mineralisation (dominantly pyrite and chalcopyrite) and hence may provide targets for use of electrical geophysical techniques. Conceptually large accumulations of such conductive sulphide minerals would form low resistivity zones in a CSAMT section (a deep probing electromagnetic geophysical technique), and thus provide viable drill targets.

Techniques with a great depth of investigation are applicable in the region, and deep drill targets (up to 500m) are currently considered viable exploration targets. Induced polarisation coverage is relatively complete over this belt, however results are considered to have not generally tested below 100-200m depth. Therefore, the current target depth for exploration in the region may be regarded as the interval between 100m to 500m below surface. It is for this reason that CSAMT is considered a suitable exploration technique.

GROUND HOLDING

Basin Lake exists in the south of the Goldfields ground holding and is adjacent to the Anthony ground. South Henty is situated north of the Basin Lake and Anthony ground with a northern tenement boundary adjacent to the Henty Mine Lease (Figure 1). Tenure for all areas form a continuous north-south belt that is currently being explored primarily for gold mineralisation by

Goldfields Exploration. The White Spur ground held by RGC in the west is not being investigated by Goldfields Exploration.

The Henty Mine Lease is held by Goldfields Ltd and contains the Henty Gold Mine Operation. One or two lines of CSAMT are being planned to traverse the Mt Julia Prospect within the Henty Mine Lease. These are yet to be confirmed due to several logistical reasons.

The South Henty ground is a JV between Goldfields Ltd and Resolute Ltd currently being operated by Goldfields Exploration.

The Anthony ground was operated until 1998 by Aberfoyle Ltd after which is was acquired by Goldfields Ltd. From 1987-91 the ground was operated by Billiton who conducted the 1989-90 CSAMT survey.

The Basin Lake ground is currently held by RGC Ltd. Goldfields Ltd are likely to become operators of this ground in JV with RGC (yet to be confirmed).

A good summary of the exploration history over the Anthony and Basin lake ground is provided by McDonald and Ikstrums (1998). A photocopy of the relevant section is provided in APPENDIX I of this TECHNICAL NOTE. A thorough compilation of all historical induced polarisation (IP) surveys prior to 1982 is provided by Bishop 1982. Subsequent IP work in the region has been non-extensive limited to localised surveys by Aberfoyle and Resolute on the South Henty ground. Several UTEM surveys were conducted and are referenced in the report by McDonald and Ikstrums (1998).

GEOLOGY

This summary is biased towards the Basin Lake ground but is applicable in a general sense to the entire belt (taken from Dauth 1997 derived from several sources).

Basin Lake comprises a sequence of Cambrian felsic to locally andesitic volcaniclastics, epiclastics and lavas abutting to the western side of a topographic ridge defined by the north-south striking Great Lyell Fault. To the eastern side of the Great Lyell Fault exists a ridge of Ordovician siliclastics forming part of the Tyndall Ranges (Owen Conglomerate). The Cambrian volcanics are generally separated into two mappable units; Anthony Road Andesites; and Central Volcanic Sequence. Exploration has currently focused on a potentially favourable exhalative horizon at the contact of the Central Volcanic Sequence and the Anthony Road Andesite. Massive carbonate horizons are commonly found on this horizon, and may be interpreted as distal, low temperature exhalative facies. Up to 80m of glacial till overlies much of the Basin Lake EL, proving a significant obstacle to effective exploration

Exploration at Basin Lake has historically been driven by drill testing geophysical anomalies (mostly surface IP and EM techniques), and more recently has focused on systematic drilling of defined prospective horizons with DHEM follow-up. Several significant hydrothermal alteration systems have been delineated in the region either at the surface (eg Bradshaw Road, and Howards Anomaly) or through drilling (including the South Henty system below the Tyndall Mine and that intersected at Basin Lake). At South Henty several holes drilled by both Resolute and Goldfields have intersected a quartz-sericite-pyrite alteration system with associated Au mineralisation. At Basin Lake drillhole BLD89-3 targeting a CSAMT anomaly intersected sericitic alteration, minor pyrite (1-5% commonly within carbonates) and rare sphalerite micro-veins. An RGC drillhole TYN15 only several hundred metres to the north of BLD89-3 intersected a wide zone of sericite-pyrite alteration from 338.8-588.4m. These geological

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indicators are generally regarded as favourable for the presence of VHMS mineralisation and are also similar in alteration style to that observed at Henty and Mt Lyell.

A number of cross-cutting structures have been either mapped or inferred on the ground, or delineated from helimagnetic data. These may form favourable sites for mineralisation. Current models suggest that the Great Lyell Fault is a known Cambrian mineralising structure, and that it dips at approximately 70° to the west. Cross-cutting structures intersecting the Great Lyell Fault may similarly provide favourable exploration targets.

BILLITON 1989-90 CSAMT

In 1989-90 Billiton conducted a CSAMT survey that extended throughout much of the Anthony and Basin Lake ground. The survey did not extend to the north onto the South Henty or Henty Mine Lease ground. The survey incorporated approximately 24 line kilometres of data acquisition on 25 east-west oriented lines at approximately 400m line interval.

Survey Specifications

Technique: CSAMT
Contractor: ZONGE
Survey Date: 1989-90
Job No.: 864 (lines 349000-353000N) and 968 (lines 3000N-7000N)
Line Spacing: 400m
Station Interval: 80m (three lines completed at 40m station interval)
Dipole Spacing: 80m
Receiver: ZONGE GDP16/3
Transmitter Position 1: located to the north on 5359500mN 1.5km long oriented E-W (all lines)
Transmitter Position 2: located to the south on 5351600mN 1.5km long oriented E-W (lines 5800 to 7000 only)

The results were reported by Zonge and by Billiton and are presented within the annual report by Creagh and Hungerford 1990. The final report by Zonge and a memo written by Hungerford are provided in APPENDIX II and APPENDIX III of this TECHNICAL NOTE respectively. The report by Zonge provides 1D smooth inversion results for five lines in total.

Digital survey data were recovered by ZONGE under instruction by Goldfields Exploration in late 1998. Results were reprocessed (Job #421) and digital data provided in addition to hardcopy pseudosections of Cagniard Resistivity, Phase, and static corrected Cagniard Resistivity (static corrected using a 5 point TMA filter at 2048Hz). Copies of all sections are provided in APPENDIX IV of this TECHNICAL NOTE. Digital data diskettes are provided in the sleeve of this TECHNICAL NOTE. A plan showing the location of all CSAMT stations is presented in Plan 1. This plan also shows geology, cultural features (roads etc), and 50m topographical contours. It should be pointed out that there were several problems with the actual northing location of several of the Billiton CSAMT lines, and some lines have true AMG Zone 55 northings that don't correspond directly with the defined line number. Plan 1 does show the correct CSAMT station locations. CSAMT survey line numbers and corresponding correct AMG Zone 55 line coordinate northings are provided below:

CSAMT Line	AMG Zone 55 Northing (mN)
349000	5349000
349400	5349400
349800	5349800

350200	5350200
350600	5350600
351000	5351000
351400	5351400
351800	5351800
352200	5352135
352600	5352485
353000	5352920
3400	5353400
3800	5353800
4200	5354200
4600	5354600
5000	5355000
5400	5355400
5800	5355800
6200	5356200
6600	5356600
7000	5357000

Three main issues regarding the survey need to be taken into account when considering future work with this data, and additional CSAMT acquisition:

1. The northern survey (Job 968 lines 3000N-7000N) does not appear to have been as rigorously interrogated as the southern survey (Job 864 lines 349000N-353000N). A vast amount of geological information could yet be extracted from the data.
2. Much of the data appear to have been acquired in the "near-field". This is well emphasised in the report by Zonge. The "near-field" data become particularly evident on the northern-most lines which were as close at 2.5km to the northern transmitter position. Inversion may not be too effective with these "near-field" dominated data.
3. Only several selected lines were inverted to provide sections that are readily able to be interpreted by geologists. In addition, early algorithms may not have been entirely suitable. Inversion of results with currently available inversion and processing algorithms may result in extraction of much additional valuable geological information.

Data from two lines have been selected for trial inversion. The purpose of this trial is determine inversion and processing parameters that should be applied (or determine if they should be applied at all) on the entire database and on future CSAMT surveys in the region. Data from lines 352600N and 353000N have been selected as they have suitable geological control. Processing sequences recommended for trial include:

- 1D inversion on data with a 5 point TMA statics filter correction
- 2D inversion on data with a 5 point TMA statics filter correction
- 2D inversion on data with no statics correction
- 1D inversion on data with EMAP statics correction
- 2D inversion on data with EMAP statics correction

Results would then be compared with known geological sections, and also viewed with a pure "physicist" understanding of what should be achievable from depth soundings with decreasing EM frequency. Recommendations would be sought as to the most suitable (and economically viable) method for data modelling. Simplified geological sections have been sketched for the purpose of calibration of modelling. More detailed sections at suitable scales will be required to

be produced by project geologists once the trial inversions have been completed, however for initial work, the sections in Figure 2 and Figure 3 for Line 532600N and 533000N respectively should prove useful.

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ADDITIONAL SURVEY

Goldfields Exploration have contracted ZONGE to complete approximately 26 line kilometres of CSAMT surveying on east-west lines extending throughout the South Henty Project with the possibility of one or two lines over the Mt Julia Prospect within the Henty Mine Lease. The survey would extend north from the northern-most line covered by the Billiton survey of 1989-90. An overlap of three lines has been planned to ensure results from both surveys are able to be correlated (although some reduction in the total extent of this overlap is likely to be recommended). Fourteen lines are being prepared for surveying at 400m line spacing. Unfortunately, one of the main areas of interest (the South Henty Prospect near the Tyndall Mine) is surrounded by dams making access impossible.

A station and receiver dipole spacing of 50m has been recommended. A transmitter of 1.8 km length, oriented E-W on 5350600mN extending from 379100mE (road intersection) to 380900mE has been recommended. This transmitter position has been chosen as a compromise between logistical and geological constraints upon suitable locations. A transmitter located to the north would place it on the northern side of a significant geological boundary in a different volcanic sequence. A transmitter location further to the south would not possible due to logistical difficulties. The proposed transmitter location on 5350600mN would be within 5.4km of the most southern CSAMT line, hence "near-field" effects may extend significantly further into the lower frequencies in the southern lines than those in the north.

Following is the designed survey coverage:

Line (mN)	Min. East (mE)	Max. East (mE)	Length	Comments
5356200	379000	380500	1500m	
5356600	379000	380750	1750m	
5357000	379000	380900	1900m	
5357400	379000	381700	2700m	less 100m due to lake
5357800	379000	381700	2700m	less 100m due to lake
5358200	379150	381650	2500m	less 100m due to lake
5358600	379150	381600	1550m	less 900m due to lake
5359000	379200	381500	2300m	less 100m due to lake
5359400	379200	381100	1900m	
5359800	379200	380700	1500m	
5360200	379200	380650	1450m	
5360600	379200	380350	1150m	
5361000	379200	380000	800m	
5361800	379500	380000	500m	Mt Julia line
		TOTAL =	24,200m	

The location of proposed CSAMT survey stations is presented in Plan 2.

REFERENCES

Bishop, J. R., 1982 An Evaluation of Geophysical Surveys Over the East Tyndall and Basin Lake Grids, E.L. 9/66, Report for the My Lyell Mining and Railway Company, RGC/Goldfields Exploration Library Ref. No. 2313-8201

Creagh, C. J., and Hungerford, N., 1990, E.L. 103/87 - Basin Lake, Progress report on Exploration for the period Ending 21st April 1990; TCR Report No. 90-3099

Dauth, C., 1997, Basin Lake Down-Hole Electromagnetic Survey Results, February 1997; RGC Exploration Internal Report within Report No. 2313-9703

McDonald, G., and Ikstrums, J., 1998, "Basin Lake" - EL103/87 Final Report May 1997 - May 1998, Resolute Limited; TCR Report No. 98-4175

GOLDFIELDS EXPLORATION

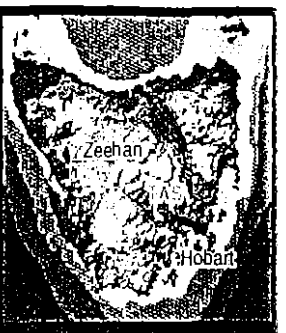
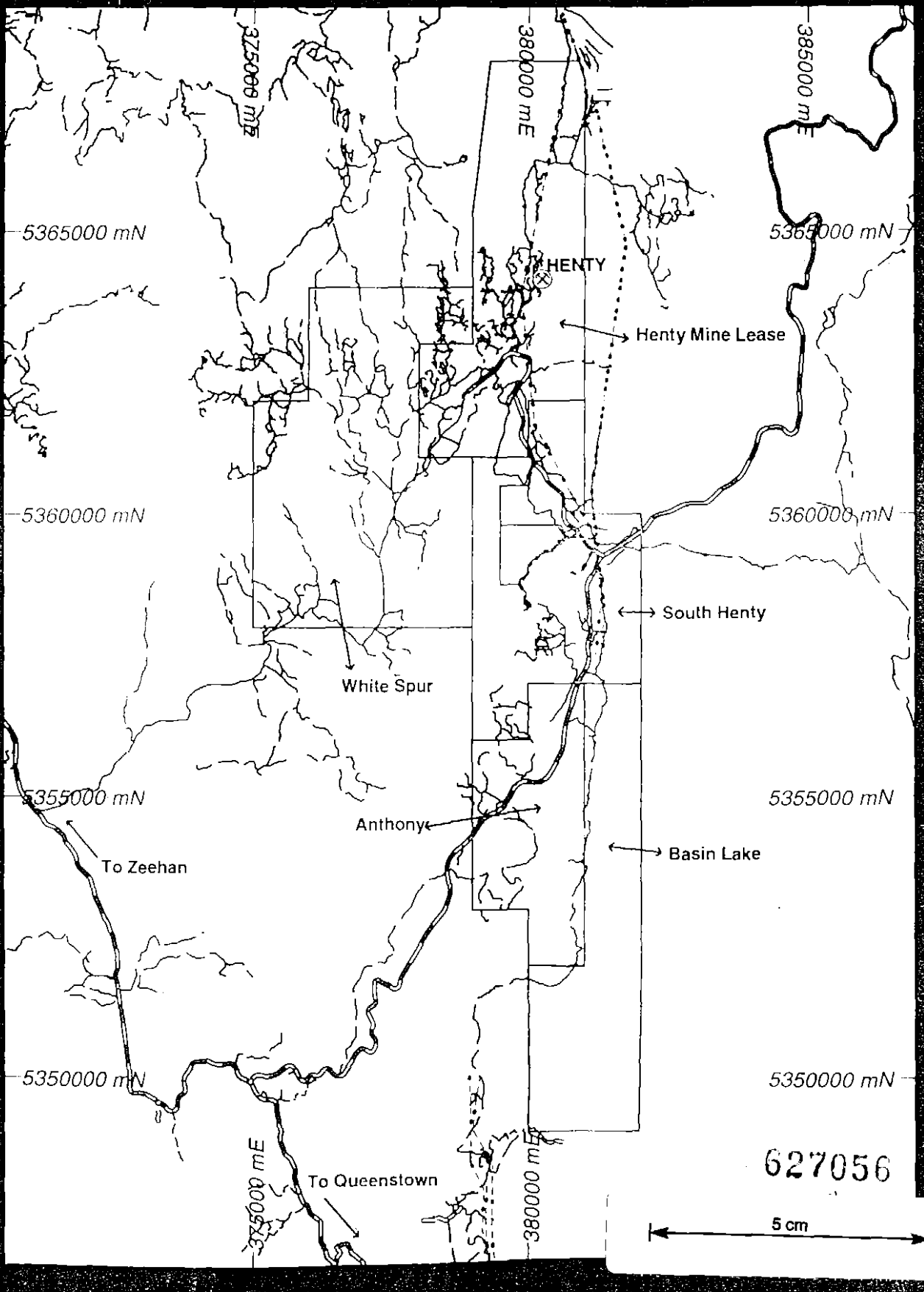


Figure 1. Location Diagram



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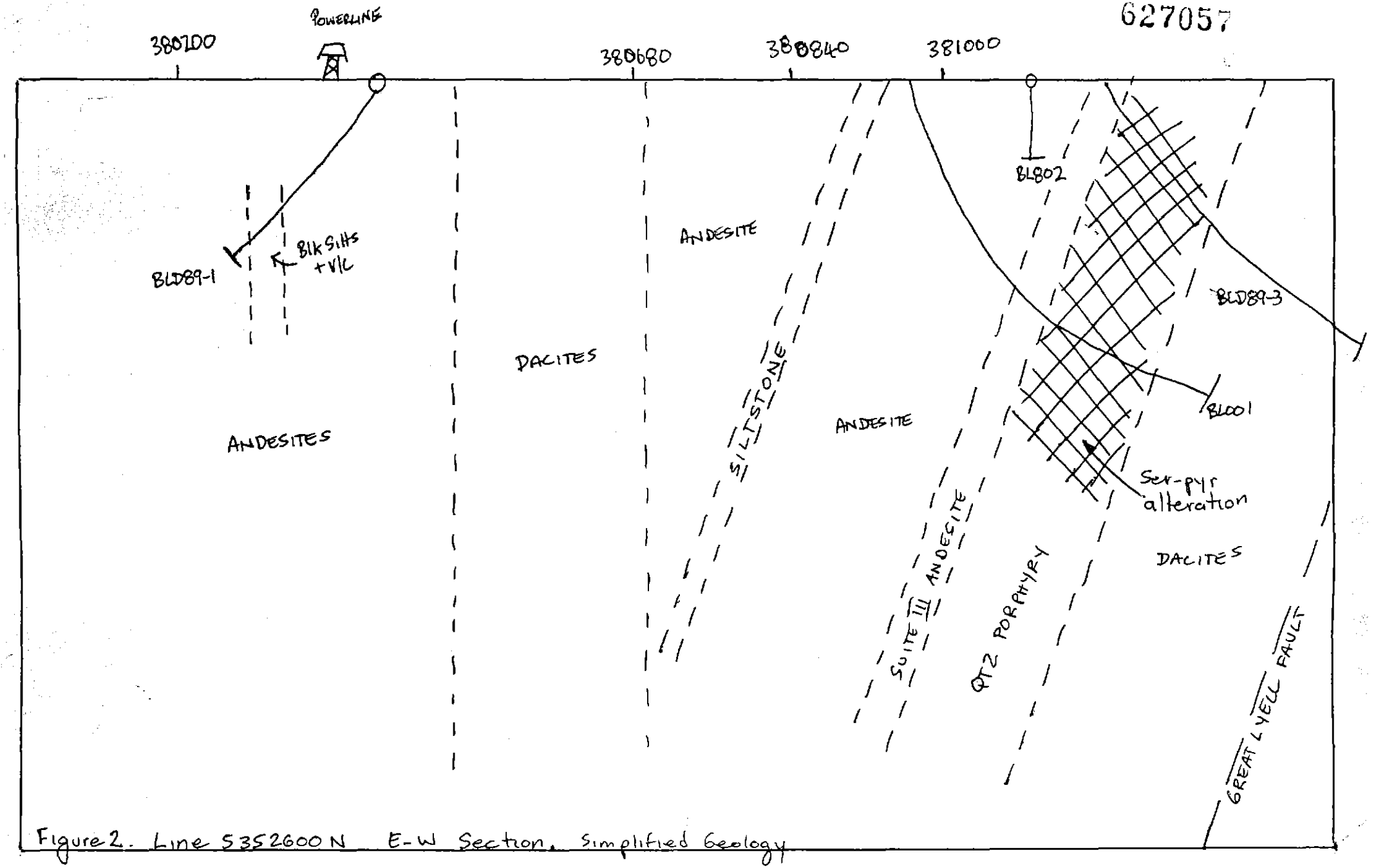

Figure 2. Line 5352600 N E-W Section, Simplified Geology

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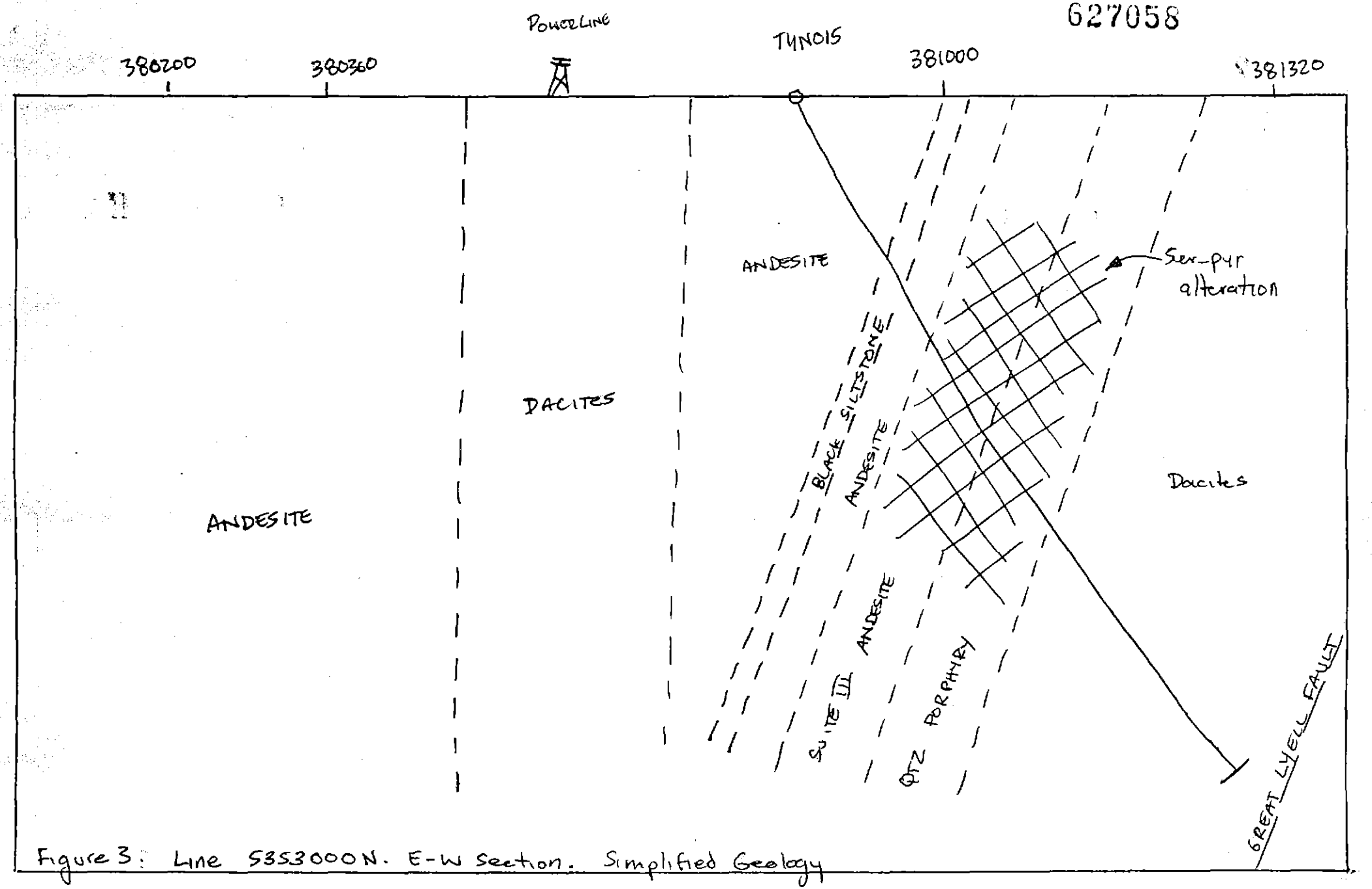

Figure 3: Line 5353000N. E-W section. Simplified Geology

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APPENDIX I

Basin Lake Previous Exploration History

Copied from

McDonald, G., and Ikstrums, J., 1998, "Basin Lake" - EL103/87 Final Report May 1997 - May 1998, Resolute Limited; TCR Report No. 98-4175

5.0 PREVIOUS EXPLORATION

5.1 Introduction

The history of exploration on "Basin Lake" reads very similarly to that of "South Henty's", at least up until 1985 when the Mt Lyell M & R Co.'s large holding in EL 9/66, in which much of "Basin Lake" lies, was relinquished.

The earliest phase of exploration was carried out by prospectors in the latter part of the last century. Evidence for their endeavours can be seen throughout the west coast by the numerous old workings in very inaccessible areas. There are no such workings known of in the Basin Lake area.

Modern exploration commenced in the 1950's. The area covered by the current "Basin Lake" licence was previously held as part of Pickands Mathers licence in the late 1950's. In 1966 much of the area was included in the Mt Lyell M & R Co.'s (to become Goldfields Exploration) large E.L. 9/66 and remained so until 1985. The other part of the current "Basin Lake" area was covered by EL 41/71 until 1973 when EL 41/71 was incorporated into EL 9/66. EL 9/66 was dropped in 1986 with the area included in EL 103/87 which was initially held by Billiton (Acacia) and later joint ventured to Aberfoyle and finally Rsolute

5.2 Pickand and Mather

The reporting of exploration by Pickands Mather was not available. The results of their work has largely been superceded.

5.3 1966 - 1987; Mt Lyell M & R Co. (became Goldfields Exploration)

1966-67 (Elms, 1967 [TCR 67-475])

The Basin Lake area was included in the Mt Lyell M & R Co.'s East Tyndall grid which extended from ~5353800mN (middle of Basin Lake) to the north of Henty with ~400 metre spaced magnetic east-west lines. The grid was covered by McPhar's reconnaissance dipole-dipole IP survey. Only even numbered lines were cut and surveyed in this initial work.

Another large grid (West Tyndall grid) covering a similar area of country to the west of the Henty Gorge was also surveyed. Both data sets are considered to be of good quality and has been reinterpreted twice subsequently (Irvine, 1974; and Bishop, 1984) in reviews of previous IP surveying. The locations of this survey are compiled by Bishop (1984).

1967-68 (Newnham, 1968 [TCR 68-527])

Work in this year involved further infill gridding, mapping, soil sampling and IP surveying. Anomalies defined from the previous years work were infilled with two or four lines adjacent to each.

IP anomalies A, B, C-1 and the southern end of C-2 were defined in Basin Lake on the East Tyndall grid. Anomalies defined by this work have been repeated in subsequent surveys and the nomenclature remains. Anomaly A corresponds to the Leech Hill alteration zone. Anomaly B corresponds to the Langdon Pyrite Zone of Aberfoyle (Lewis, 1995) whilst anomaly C-2 is the southern end of the Howards Anomaly zone.

Soil sampling was from the A-horizon and subsequent surveys have superceded these results. Samples were taken from the A-horizon, often from very peaty material and often over metres of glacials making such data of dubious use.

Drill testing of anomalies A and B was not prioritised, however, at the time of writing the report, a hole (TYN 1) was being drilled on line 12N to test the strongest part of the C-1 anomaly with a second hole planned for the southern part of the C-2 zone on lines 16N or 18N but on the South Henty licence (HA1/2).

1968-69 (Newnham, 1969 [TCR 69-569])
By the end of this year the regional mapping, soil sampling and IP had been completed over the East Tyndall grid. The IP surveying had defined essentially four anomalous zones named A, B, C-1 and C-2 (northwards) (in Bishop, 1984). DDH TYN 1 was drilled into the C-2 IP anomaly on line 12N, intersecting pyritic shales from 119m to 157m, considered to explain the anomaly. The shales are at the base of the Tyndall Group.

From 1969 to 1973 no fieldwork was conducted in the Basin Lake area.

1973-74 (Wells, 1973 [TCR 73-970])
Some limited mapping was carried out in the northern part of Basin Lake. The McPhar IP survey was re-interpreted by Irvine (1974) with some limited gradient array IP to check anomalies A and B. A recommendation was made for anomaly A to be drill tested. The geophysical coverage was considered to not extend sufficiently westwards (especially on line 8N) to cover a zone of gossan development in the S.W. margin of the andesites (outside of the EL).

1974-75 (Stevens-Hoare, 1975 [TCR 75-1149])
Work in 1974-75 was conducted on the new Basin Lake grid (80 - 100 metre spaced lines) with a gradient array IP survey over the whole grid. The surveying broke up the McPhar anomalies (the locations of these are presumably shown on figures 12 and 13 but these are not included on the microfiche copy of the report). Bishop (1984) numbers these anomalies from 1 to 12.

Recommendations are made for further work on some anomalous responses. A detailed ground magnetics survey (superceded by the later helimag survey) was conducted as well as soil sampling.

DDH TYN 2 was targetted on anomaly A on line 4N with the anomaly attributed to a ~2 metre thick lens of pyritic black shales intersected around 204m at the contact between Yolande River Sequence felsic tuffaceous sediments and overlying feldspar phyric pumice breccia. TYN 3 was targetted on the southern end of anomaly C-2 with the IP response attributed to a folded body of pyritic black shale intersected between 279.6m and 318.4m.

1975-76 (Brophy and Stevens-Hoare, 1976 [TCR 76-1176])
A-horizon soil sampling was completed over the three areas of anomalous IP on the Basin Lake grid. Soil samples included a mixture of C and A-horizon samples with a number of samples taken over glacial material.

1976-77 (Meares, 1977 [TCR 77-1228])
The A horizon soil sampling, completed over the three zones which registered chargeability responses in the 1975 gradient IP, is further discussed.

The three zones covered are referred to as the NW, SW and East zones. The NW zone is the area of anomaly A (anomalies 10 and 12 from the 1975 gradient array IP survey) with the soil sampling also extended to include anomalies 7 and 8 on lines 24S and 30S. Low order Pb anomalies (129 and 114ppm) were not tested by TYN 2 which was targetted on the northern end of this chargeable zone in 1968 and intersected black shales.

The East zone runs the length of the eastern side of the grid and includes anomaly B (5, 6, 6a, 9 and 11) and 1 at the southern end.

Recommendations were made for infill gradient IP, soil geochemistry and the drill testing of mineralisation intersected in previous DDH BL802 (just west of the EL boundary) as well as coincident chargeability/Pb soil anomalies.

1977-78 (Meares, 1978 [TCR 78-1296])
Mt Lyell were more interested in the Henty Adits prospect in this year though most recommendations made in the previous year were followed

Anomalous Zn in soils coincident with a chargeability anomaly on line 48S (850E to 1000E) were tested by costeaning with the IP anomaly found to be due to black shale and the soil anomaly found to be due to secondary enrichment in bog ironstone which had developed over andesite.

In fill IP and soil sampling was completed followed by BL1, drilled eastwards on line 72S near BL802 also testing a Pickand Mather chargeability anomaly. BL1 intersected over 170 metres of strongly sericitised and pyritised quartz (coarse rounded embayed crystals to ~5mm) feldpsar phyric dacite (293m to 447m) and the immediately overlying feldspar phyric pumice breccia from 294.7 to 462.85 metres with a 1cm band of pyrite+galena at 303.9m. Best assays were 296 - 308. 9m @ 0.11% Pb, 0.45% Zn and 4g/t Ag.

BL2 was drilled on line 48S to follow-up the alteration intersected in BL1 and also tested the 5 anomaly from the 1975 survey. The hole intersected a carbonaceous pyritic shale unit from 197.05 - 222.65 metres overlain and underlain by coherent andesite and andesitic breccia. The only significant assay was 161.5 to 166 metres, 4.5 metres @ 0.21% Pb, 0.05% Zn and 1g/t Ag. This pyritic carbonaceous shale was interpreted to be a correlate of the alteration intersected in BL1.

The only work recommended was a single hole to follow up the intersection of alteration in BL1, however, the hole was ranked as a low priority and has never been drilled.

No work was done from 1978 to 1980 on Basin Lake.

1980-81 (Meares et al 1981 [TCR 81-1660])
Work on Basin Lake recomenced focussing on two discrete areas on the Basin lake grid with a magnetic anomaly centred on 30S 8200'E and a gradient array IP anomaly centred on 36S 5900'E.

Ground magnetics had defined a broad 300-500 gamma above background ground magnetics anomaly thought to be due to a similar haematite+carbonate unit s found in BL2 ~550 metres south along strike. BL3 was targetted on this anomaly on line 30S. The hole intersected a package of andesitic clastics and coherent andesite with variable carbonate and with the magnetic anomaly due to detrital magnetite in sandier units. There is some weak chlorite and/or sericite alteration described around ~393.5m.

Dipole-dipole IP was surveyed over anomalies B6 and B6a on lines 30S and 36S with the better anomaly defined on line 30S. DDH BL4 was designed to test this chargeability anomalies associated with low order Pb and Zn soil anomalies. The hole intersected a package of coherent andesite, andesitic breccia and sandstone, basaltic andesite intrusives/extrusives, black pyritic mudstones with 11 metres of massive pyrite (from 64.7m to 76m - there is little core left with perhaps only 1.3 metres of massive pyrite with the remaining material pyritic ashy mudstone).

Andesitic breccias, probably in the footwall to the massive pyrite lense, are sericite+pyrite+silica altered from 10m to 64.7m. The shales immediately downhole from the massive pyrite are also pyritic and sericitic for ~10 metres. With this and the 'massive pyritic' zone assaying 17.2 metres @ 11.3 g/t Ag. The massive pyrite horizon was considered to represent a potentially mineralised horizon.

1981-82 (Meares et al 1982 [TCR 82-1791])
Limited work was conducted in this year with some limited rock sampling and dipole-dipole IP over a previously defined gradient array anomaly at 5500'E on line 78S (Anomaly 1). A Genie EM survey

was run over lines 00S to 36S and 78S with no anomalous responses (the system could not see the massive pyrite in BL4 at a depth of ~50 metres).

The significance of the intersection of massive pyrite and the correlation of the host rocks with those hosting high grade but small pyrite+sphalerite+galena and pyrite+chalcopyrite massive sulphide lenses at Comstock, stratigraphically overlying the extensive Mt Lyell hydrothermally altered/mineralised zone, was a significant conclusion and the first reported discussion (in annual reports at least) of possibility of a highly propsective horizon extending from Mt Lyell northwards ~20 km to Basin Lake- East Tyndall (inc. Howards Anomaly). The horizon is described as being at the contact of the overlying haematite carbonate horizon and underlying sericitic alteration. The host rocks to this favourable horizon are described as medium grained andesitic tuffs, minor dacitic tuffs, black shales cherts and carbonates.

In spite of this no work was recommended and no work was done in the Basin Lake area from 1982 to 1984.

1984-85 (Fitzgerald and Pease, 1985 [TCR 85-2459])
Work in 1984-85 essentially involved the drilling of BL5 to follow-up the 11 metres of massive pyrite intersected by BL4 as the licence was due for relinquishment on the following year.

BL5 was drilled towards the east around 160 metres south along strike from BL4. The hole intersected a similar sequence to BL4 (but in reverse) with 6m @ 0.2% Zn, 0.1% Pb and 1.8m @ 3.5 g/t Ag. There is not the same degree of alteration around this intersection as in BL4, nor is there massive pyrite.

1985-86 (Fitzgerald and Cartwright, 1986 [TCR 86-2566])
As the licence was into its final year a final pass was made in order to test for the more obvious targets. Work consisted of gridding in preparation for mapping and EM surveying.

The mapping focussed on new exposure along the Anthony Road as well as drill core. Quartz+sericite+pyrite alteration is described from the "sulphide facies" with "minor base metals and the local occurrence of bedded massive pyrite", interpreted to represent a deeper subaqueous reducing environment with the overlying "oxide facies" hematite+/-magnetite+carbonate representing a shallow subaqueous oxidising environment. The change from dominantly sericitic+pyritic to hematite+carbonate alteration occurs at the contact between the top of the Anthony Road Andesite and the base of the Tyndall Group. Further quartz+sericite+pyrite alteration occurs deeper in the volcanic pile at the Leech Hill and Bradshaws Road alteration zones.

A UTEM survey was conducted over the prospective "sulphide facies" i.e. basal Tyndall Group on the eastern side of the licence. A smaller loop enabled coverage of the Bradshaws Road alteration zone. A Sirotem survey was conducted separately over the Leech Hill alteration. Bishop interpreted 10 anomalies (A to J). Bishop's compilation (in appendix A) is discussed in detail by Fitzgerald in Fitzgerald and Cartwright (1986) with consideration of the EM anonalies against the results of previous geophysics and drilling.

In conclusion Bishop/Fitzgerald defined three zones warranting further work, all three lying within the prospective "sulphide facies".

The first anomaly, on line 16N, 250mE, was defined by coincident dipole-dipole IP/weak UTEM anomalies over pyritic volcaniclastics adjacent to black shales with up to 4000ppm Pb in outcrop 300m's south along strike (this zone was tested subsequently by TYN5). The second anomaly, on line 14.5N at 585mE was defined by a good UTEM over glacial cover with up to 4000ppm Pb from outcrop 170m's west (footwall?) (this zone has not been drilled). The third anomaly, from 12N, 1000mE to 10.5N, 1100mE is defined by a strong gradient array IP anomaly and moderately high

*** Check this UTEM target.

resistivity (no EM coverage) associated with hematite+carbonate+/-pyrite altered volcaniclastics and moderately anomalous Pb (500) and Cu (680) in soils.

EM surveys over the Bradshaws Road and Leech Hill alteration zones did not record responses due to massive sulphide mineralisation.

Recommendations are made for testing the better two of these anomalies with drilling with DHEM as well as DHEM on BL4 (if the hole is open).

1986-87 (Fitzgerald, 1987 [TCR 87-2675])
This work was subsequently carried out. TYN4 tested the second target zone (14.5N 585mE) intersecting andesitic lavas and breccias with marly finer volcaniclastics and bedded limestones in the upper part of the hole, but no sulphides or sericitic+pyritic alteration. The EM anomaly was explained as being probably due to a glacial trough. TYN5 tested the first target zone completing a scissor pair with TYN3. TYN5, 400 metres north along strike from TYN4, intersected a very similar sequence to TYN4. No source of the IP was intersected. Samples of magnetite bearing felsic lavas from the third target zone (12N, 1000mE to 10.5N, 1100mE) were tested petrophysically to see if they were the source of the IP anomaly with the result negative.

DHEM was completed on both TYN4 and 5 and BL4 (only to 62m). There were no anomalous responses except in TYN5 where an offhole response is attributed to conductive black black shales intersected just to the west in TYN3.

No further work is recommended with "the general paucity of base metal mineralisation within this large hydrothermally altered sulpidic belt is discouraging. Apart from costly stratigraphic drilling of this belt it is difficult to identify further targets that warrant additional investigationin the area."

The licence was subsequently relinqished.

5.4 **Mines Department; Corbett (1985) - Unpublished report 1985/54**
The Mines Department drilled a 504 metre deep stratigraphic hole into pyritic alteration poorly exposed just west of Leech Hill. The alteration lies near the contact of the western volcano-sedimentary sequence and central volcanic sequence. The hole LH1 was drilled eastwards and was still in alteration when stopped. The stratigraphic top of the alteration system was not pierced by the hole. Assays are all around background except for Cu with a maximum of 280 ppm.

5.5 **1988 - 1998; Billiton(Acacia)/Aberfoyle/Resolute**
Billiton successfully tendered for the area as part of a larger EL 103/87 and were granted the licence on 21st April 1988.

1988-89 (Creagh and Hungerford, 1989 [TCR 89-2928])
Billiton's work focussed upon the area south of line 352000N and consisted of a CSAMT survey on 400 metre spaced lines, ground magnetics, gravity and Max-Min EM surveys. An attempt was made to read lines 352800mN and 352700mN with with the Zonge GDP-12 system but noise and equipment problems made this data worthless.

The licence was remapped with little variation from previous work. Billiton did note the proximity of the Leech Hill and Bradshaws Road alteration zones to the western margin of the central intrusive porphyry. They also noted the existence of a "distinctive pyroxene basalt lava in BL4".

The CSAMT survey defined three anomalous trends north of 351800N (up to 353000N) with the eastern trend probably the Great Lyell Fault, the central trend corresponding with the lower or basal Tyndall Group rocks targetted by Goldfields. The western zone is more enigmatic.

Max-Min was read over the central and western anomalous trends on lines 353000N and 352600N, in the south-eastern corner of the licence, confirming the existence of the central trend but no the western which is interpreted to be deeper than 75 metres. Gravity readings were made over CSAMT anomalies on lines 352800N and 352600N. There is no anomalous gravity associated with these anomalies.

Recommendations are made for continuing the gridding/CSAMT/mapping on 400 metre spaced lines to the northern boundary of the licence. Specific anomalies are outlined in the conclusions:

- moderate gravity anomaly on line 350200N coincident with a weak shallow CSAMT anomaly.
- Coincident anomalous CSAMT, Max-Min, UTEM, IP and weak base metal mineralisation on line 352600N at 380850E (central trend)
- CSAMT anomalies on lines 352600N and 353000N at 380300E (western trend) with weak coincident Max-Min response.

1989-90 (Creagh and Hungerford, 1990 [90-3099])

Billiton's work followed up on all recommendations made in the previous year. Three holes were drilled for 873 metres. BLD89-1 (235m) was targetted on the western anomalous trend intersecting a black shale amongst a sequence of andesitic volcaniclastics between coherent andesite. There is some weak sericite+pyrite alteration but the shale explains the anomaly.

BLD89-2 was targetted on the coincident CSAMT/Max-Min/UTEM/IP/weak base metal mineralisation. It too intersected black shales which explain all anomalies (except the anomalous base metals).

BLD89-3 was targetted on the eastern trend of CSAMT anomalies. It was drilled eastwards i.e. up sequence, intersecting a zone of pyrite+/-sericite+/-chlorite alteration between 90m and 250m but particularly from 170m to 220m. Although undetailed Billiton conclude that the location of this alteration is analogous with that of Mt Lyell. The alteration occurs in the base of what is probably a basaltic unit and in the underlying coarsely quartz phyric dacite. The basalt is overlain by feldspar crystal volcaniclastics, feldspar phyric andesite, basalt breccia, feldspar phyric pumice breccia and other clastics of the Lower Tyndall Group. The Great Lyell Fault as passed through at 361 metres.

DHEM on the first two holes did not define any further targets.

The CSAMT survey data had not been interpreted at time of reporting.

Billiton also discuss the resukts of a lithogechemical sampling along the Anthony Road and some drill core. They briefly discuss their research on the Mt Read's and their recognition of "two compositionally and spatially distinctrock types whose contact horizon occurs at or close to the known massive sulphide deposits of western Tasmania" and that this horizon passes through Basin Lake (the base of the Tyndall Group).

1990-91 (Randell, 1991 [TCR 91-3244])

No actual field work was done in this year with the report principally detailing the results of the CSAMT survey. The results of DHEM on BLD89-3 were again said to be unavailable. Limited further lithogeochmical sampling of drill core was also done.

The CSAMT survey defined 14 anomalies. These are discussed again individually. Most were subsequently found to be due to black shales or known pyritic alteration.

Further comment was made regarding the definition of a major lithological break defined by low or high levels of Ti and Zr correlating with the contact between Central Volcanic Complex rocks and the Tyndall Group. Billiton define three horizons of interest within Basin Lake based upon this work. I

would suggest that all three are in fact essentially the same horizon (or within the same relatively thin sequence of rocks). No recommendations are made other than the drilling of three DDH's. The licence was subject a joint venture negotiations with Aberfoyle at the time of reporting.

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Aberfoyle joint ventured into the licence and became manager.

1991-92 (Richardson, 1992 [TCR 92-3345])
The whole of the Basin Lake licence was covered by a UTEM survey on Aberfoyles 200 metre spaced east-west grid. Aberfoyle concluded that there are no significant conductors. DHEM was also carried out on BLD 89-3 with an off hole response attributed to a shale intersected by the previously drilled BL2.

No work was done on the Basin Lake part of EL 103/87 in the 1992-93 year. Half of the existing area of the Basin Lake part of EL 103/87 was relinquished including the 1km wide strip down the eastern side of the current Basin Lake EL.

1993-94 (Sharpe, 1994 [TCR 94-3552])
Aberfoyles work was based around a high resolution helimagnetic-radiometric survey. The licence was remapped with samples collected for both lithogeochemcial and petrological analysis.

The helimag and mapping indicated that there is a significant variation in the level of magnetism in the Anthony Road Andesite with the non-magnetic type due to hydrothermal alteration. All samples assayed for whole rock returned andesitic Ti/Zr (between 17 and 22) and thus are andesitic.

The Pyrite Corner Fault is defined in this work. This noth west trending zone is traceable from the Bradshaws Road alteration (now freshly exposed in Anthony Road outcrop) up into the Tyndall Range. The Leech Hill alteration is considered to be spatially correleated with this Pyrite Corner Fault zone.

The only specific recommendations are those for "wacker" C-horizon soil geochemistry from Lower Tyndall Group rocks covered by glacials.

1994-95 (Lewis, 1995 [95-3716])
The Tyndall Creek grid was cut in the very northern part of the licence to follow up outcropping massive barite+sulphide located in Tyndall Creek just north of the northern EL boundary i.e. in South Henty. The north-east/south-west oriented grid was soil sampled with "wacker" C-horizon soil samples, surveyed by Aberfoyle's Zonge IP system and surveyed by UTEM by Lamontagne Geophysics.

An anomalous chargeability response was recorded corresponding to the C2 anomaly defined by early IP surveying and tested already by TYN3 and TYN5 (scissor holes through the zone). There were no resposes attributable to massive sulphides from the surface EM survey. The wacker sampling located a zone of anomalous Ag+Zn+As in a zone along strike from the Howards Anomaly "silver zone" to the north. The zone has aparently been tested by TYN3 and TYN5 as well HA5 to the north. There is some possibility. DHEM could not be read as the hole had collapsed.

Further grid was cut along the eastern part of the licence designed to cover . A number of anomalous zones were defined by this work. However, only two were prioritised for further work, both from line 4200N. This area had become the Langdon Pyrite Zone by 1995-96.

Anomaly 1 from lines 4000N to 4400N is associated with sericite+silica+pyrite altered volcaniclastics (maximum 372ppm Cu, 1062ppm Pb, 1246ppm Zn, 7600ppm Ba and 0.068ppm Au). This alteration correlates with that seen in BL4 and coincides with the Pyrite Corner Fault which is marked by anomalously west-north-west trending S0 and S1 in outcrop. The "wacker" sampling and mapping

also resulted in the location of outcropping basaltic andesite between lines 4200N and 5000N correlatedwith that intersected in BL4.

Aberfoyle consider the IP anomaly immediately east of the pit they excavated on line 4200N beneath the centre of the anomaly to possibly represent the northern extension of the 11 metres of pyrite intersected in BL4 and proposed a hole to intersect this horizon >250 metres below the surface (below surface EM range?) where the horizon intersects the Pyrite Corner Fault.

The second anomalous zone follows this structure to the north-west and is defined by disseminated pyrite+chalcopyrite (Cu to 3349ppm) in sericite altered andesite. There is some associated anomalous IP chargeability.

1995-96 (Richardson, 1996 [TCR 96-3855])
Work focussed on the Langdon Pyrie Zone. DDH BL6 (510.6m) was designed to test two targets. The first is defined from the previous years work as coincident IP down dip from anomalous base metals in soils, considered to correspond to the favourable Lower Tyndall Group rocks. The second target was geological, being the intersection of the Pyrite Corner Fault down dip and along strike from BL4's intersection.

The hole was collared in andesite and not Lower Tyndall Group rocks as planned. Drilling conditions meant that the second target could not be reached. The first target is explained by silica+sericite+pyrite alteration of the coarsely quartz phyric unit between 359.1m and 391.7m with best results 342.2 - 344.3m, 2.1m @ 0.56% Cu (Pb 310ppm, Zn 140ppm, Ag 7.4ppm) and 371.3 - 373.3, 2.0m @ 0.17% Cu (Pb 127ppm, Zn 140ppm) with the best Au 0.5m @ 1.5g/t.

DHEM could only be read between 230m and 360m but located an offhole response below BL6, down dip from the alteration intersected in BL6.

BL7 was designed to test this offhole DHEM anomaly. The hole, collared ~250 metres east from BL6 also collared in andesite remaining in so throughout. The better assays (core grinds) come from apparently unmineralised andesite between 259.3m - 324.0m averaging 0.14% Zn.

During the drilling of the hole it became apparent that it would need to be much deeper than originally planned (due to the steeper bedding than expected). The hole was stopped and surveyed by DHEM down open hole with results still awaited at time of reporting, however, the anomaly can still be seen but it is not near BL7.

The only significant alteration is moderate sericite+chlorite+pyrite alteration in the lowermost 33 metres of the hole.

1996-97 (Hicks, 1997 [TCR ??-????])
Work again focussed on the Langdon Pyrite Zone prospect with the drilling of BL8 (883.5m) which was designed to test the Lower Tyndall Group rocks adjacent to the Great Lyell and Pyrite Corner Faults, both considered to be synvolcanic structures.

The Langdon Pyrite Zone prospect was defined by the intersection of the Pyrite Corner Fault with the Lower Tyndall Group. The Pyrite Corner Fault was considered to be a Cambrian structure as (a) it is the focus of pyritic alteration and anomalous Cu known to extend from Pyrite Corner to the Langdon Pyrite Zone, (b) there is a facies variation across the fault with shale dominated to the north and volcaniclastic to the south, and (c) the fault marks (approximately) the boundary between magnatic and non-magnetic andesite. The fault is also considered also shows dextral movement in the Devonian.

The hole was collared in andesite and remained in andesite breccia with variable carbonate until the Pyrite Corner Fault was intersected at 406.3 metres. Below the fault a sequence of coarsely quartz (~5mm) feldpsar (~1mm) phyric dacites, andesite+/-carbonate breccias and lesser finer grained units is weakly altered to ~700 metres.

A pyritic ashy tuffaceous siltstone was intersected from 834 to 841.8 metres, however, Zn is only 1148ppm (Pb 668ppm).

There were no anomalous responses rom the DHEM. A reinterpretation of the DHEM in BL7 was conducted with the conclusion being drawn that the response is a surficial effect.

Resolute acquired Aberfoyle's share in the JV (57%) in 1997.

5.6 Conclusions

Exploration has been directed towards stratiform massive sulphides with stringer/disseminated chalcopyrite an early target style. This exploration has concentrated on the Lynchford Member, Comstock Formation, the basal member of the Tyndall Group. Further exploration has also targetted the two occurrences of pyritic alteration deeper in the sequence i.e. Bradshaws Road (Pyrite Corner) and Leech Hill alteration zones as well as discrete geophysical anomalies.

The upper prospective stratigraphic horizon, the Henty-Comstock horizon, at the base of or within the Lynchford Member, only lies within EL 103/87 for ~ 1.5 kilometres. Over this length it has been quite adequately tested with extensive EM, IP, CSAMT and a number of drill holes. Massive pyrite intersected in BL4 is from this horizon, followed up with lesser success by BL5. There is some strike potential of this horizon to the south of BL5 beyond EM/IP/CSAMT range.

The lower horizon has been partially tested by LH1 and TYN2, though neither passed through the upper contact. EM and CSAMT responses in the immediate area appear to be picking out the black shale intersected by TYN2. There are no CSAMT or EM anomalies north of TYN2 along the projected strike of this horizon southwards from South Henty.

There has been no exploration directed towards discrete structurally hosted mineralisation.

There are no obvious high priority targets which remain untested from exploration to date other than the upper contact of the Leech Hill alteration zone. The anomalous copper zone coincident with the Pyrite Corner Fault is a potential target for a shallow drilling programme.

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APPENDIX II

CSAMT SURVEY REPORT
ZONGE Engineering Final Report

Copied from the APPENDIX of
Creagh, C. J., and Hungerford, N., 1990, E.L. 103/87 - Basin Lake, Progress report on Exploration for the period Ending 21st April 1990; TCR Report No. 90-3099

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FINAL REPORT

CSAMT SURVEY
BASIN LAKE PROSPECT
for
Billiton Australia

Zonge Engineering & Research Organization, Inc.
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Executive Summary

Five of eleven CSAMT lines run for Billiton Australia by Zonge Engineering Australia, Ltd., were processed and interpreted by Zonge Engineering (U.S.). We static-corrected the data using our phase-integration technique, and then performed smooth-model inversions to produce interpretable electrical cross-sections.

The data are of good quality except in the vicinity of a power line, where high noise levels and current-channeling effects invalidated data over a 200 meter wide swathe.

Several north-south trending, conductive features are present in the data. Their persistence from line to line indicates geologic structures with significant strike extent. The data indicate anisotropic geology with strong lateral resistivity contrasts. A narrow, steeply dipping conductive feature on the western ends of lines 353000N and 352600N may be an attractive exploration target.

A second conductive feature is present on the eastern ends of the five lines. It is rather broad and dips at a moderate to steep angle to the west. This second feature is coincident with a known fault.

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Project Logistics

The CSAMT project was contracted by Zonge Engineering Australia, Ltd., which can provide details of survey logistics. Work was done on eleven east-west lines using a dipole length of 80 meters, with detailing over part of line 353000N using 40 meter dipoles. Data were obtained between 32 and 4096 Hz. One electric-field and one magnetic-field component were measured at each station using a GDP-12 receiver. This report reviews the results from five of the eleven lines surveyed. Line locations are shown on a plan map in figure 1.

Geology

The survey area is dominated by Cambrian volcanics of very high resistivity, overlain in the south by about 50 meters of resistive glacial cover.

Data Presentation

Billiton has already received Cagniard resistivity and phase difference data. The data presented in this report are static-corrected apparent resistivity and smooth-model inversions.

The static-corrected data are located in plates at the back of this report:

Plate 1	Static-corrected resistivity, line 353000N a=80m
Plate 2	Static-corrected resistivity, line 353000N a=40m
Plate 3	Static-corrected resistivity, line 352600N a=80m
Plate 4	Static-corrected resistivity, line 351800N a=80m
Plate 5	Static-corrected resistivity, line 350200N a=80m
Plate 6	Static-corrected resistivity, line 340400N a=80m

The other information is provided as figures:

Fig. 1	Location map
Fig. 2	Selected magnetic field plots
Fig. 3	Smooth-model inversion, line 353000N
Fig. 4	Smooth-model inversion, line 352600N
Fig. 5	Smooth-model inversion, line 351800N
Fig. 6	Smooth-model inversion, line 350200N
Fig. 7	Smooth-model inversion, line 340400N

Data Quality

The data are typically of good quality. Error bars on resistivity and phase are generally $\pm$10% or better, although data at 2048 Hz is often somewhat noisier. Data near the power line on lines 353000N and 352600N are very noisy and reflect strong cultural contamination.

Data Interpretation

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Near-Field Effects

The extremely high resistivities in this area place most of the data in the near-field zone. The transition zone notch typically occurs near 1024 Hz, with near-field saturation occurring at frequencies of about 256 Hz and below. In general, only data at 4096 Hz are truly in the far-field zone. Figure 2 shows averaged magnetic-field magnitude curves for each line as an illustration of the onset of near-field data (see Zonge and Hughes, in press). Figure 2 shows nearly constant magnetic field amplitudes at frequencies below 256 Hz. Frequency independent magnetic-field amplitudes are characteristic of near-field data.

The occurrence of near-field data has important implications for this project. Near-field data are more sensitive to lateral variations in resistivity than far-field data and penetration depths are controlled more by the geometric relationship between source and receiver than by frequency. Reducing the frequency of a near-field measurement will not achieve greater depth penetration.

The implication of this is that data below 256 Hz should be interpreted with great caution. Above 256 Hz, the soundings generally are sensitive enough to frequency to be useful for interpretation.

Surface Anisotropy Effects

The northern three lines have data which suggest a very pronounced conductor at the surface. Plots of log(resistivity) versus log(frequency) show responses which are far more exaggerated than would be expected from a 1D (layered) environment. It is probable that the effect is due to strong surface anisotropy. The anomalously high phase-difference values observed at Basin Lake are also consistent with anisotropic geology. The effect is strongest on the most northern line, diminishing to the south. It is possible that the glacial cover to the south mitigates the anisotropic response. Alternatively, the anisotropic material may be confined to the north of the east-west fault shown in figure 1. Anisotropic geology is probably contributing to the dramatic contrasts in apparent resistivity observed in this area.

Cultural Contamination

Two cultural features are observed in this data set. The most disruptive is the power line which crosses the two northern-most lines. This causes two problems: high noise levels and current-channeling.

High noise levels not only cause scattered data values, but may also saturate the CSAMT magnetic antenna. The result is noisy, peculiarly shaped resistivity sounding curves within several stations of the power line.

Current-channeling is particularly troublesome at Basin Lake due to the high surface resistivities. The CSAMT source fields are strongly coupled into the transmission wires. This problem is exacerbated by the fact that the western electrode of the source bipole was placed very close to the power line. This may

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have allowed direct conduction of current down the power line into the area of exploration.

The data show unrealistic patterns of high and low resistivities beneath the power line. These patterns are typical of high-power transmission lines and of direct current-channeling from the source bipole. The result is that several stations on either side of the power line on the northern two lines are not suitable for interpretation. The data have been removed in the smooth-model inversions. This interrupts the continuity of the lines, but the remaining data set is still interpretable.

Topographic Effects

The survey area is relatively flat and produces insignificant topographic effects. Steep topography to the east of the survey area has no discernable effect on the CSAMT data.

Line-by-Line Interpretation

Line 353000N. This line was run with 80 meter dipoles, and part of it was detailed with 40 meter dipoles. Measurements from both data sets are in close agreement.

The 80 meter static-corrected data (plate 1) show surface anisotropy and power line contamination, as discussed above. Figure 3 shows the smooth-model inversion. A nearly vertical contact occurs near station 300, with resistive material to the west and more conductive material to the east. At depth the contact may assume a more easterly, shallower dip. This effect is more pronounced on this line than on any of the other four lines evaluated in this report.

Figure 3 appears to outline a conductive body between stations 300 and 520. Such a body may be of strong exploration interest. However, a key point to note is that the resistor centered on the power line gives this conductor its distinct shape. If the resistor is real, then the conductor is a localized feature; if the resistor is artificial, the conductor is more likely to be the west end of a broad conductive area, a less interesting result. Hence, it is crucial to understand the nature of the resistor.

The fact that the resistor is centered on the power line is not encouraging. Looking at plate 1, we note that all the surface within two stations of the power line is anomalously resistive. The resistor in figures 3 is the result of resistive stations which we did not choose to blank out of the inverted data. It is our opinion that the resistor is artificially induced by the power line.

This finding weakens support for a distinct conductive body in this area. However, magnetic-field information indicates strong lateral contrasts. In the 40 meter dipole data there is a symmetric pattern of low magnetic-field amplitude at station 300, flanked on both sides by symmetrical high amplitude values. The feature is some 200 meters in apparent width. The electric field shows little disturbance in this area; hence there is a distinct resistivity feature near station 300. The feature's unique behavior and almost perfect symmetry suggest a narrow sheet-like or pipe-like vertical conductor. Its lateral dimension is probably less than 80 meters.

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We conclude that there is evidence for a steeply-dipping, distinct conductor centered near station 300. The evidence is not conclusive. However, even if one adopts the conservative view that there is no distinct conductor but only a geologic contact, the steep contact at station 300 may still of strong exploration interest.

Other conductors are found east of the structure. The most prominent are found between stations 920 and 1000 and on the extreme east end of the line. These are strong in amplitude and coherent in shape, and might represent exploration targets.

The pronounced apparent resistor centered at depth below station 840 is in the deep near-field and may very well be a geometric effect unrelated to geology under the measurement location. Based upon the available data, no firm conclusion can be drawn on this feature.

Line 352600N. Plate 3 shows the static-corrected resistivity data for this line. Note the power line crossing at station 200. Figure 4 shows the more useful smooth-model inversion. As on the previous line, there is a contact associated with an apparent conductor dipping steeply to the east, this time on the far west end of the line. Unlike the previous line, however, the ground to the east of the contact is not consistently conductive all the way to the east.

As before, we consider whether or not the conductor below station 120 is real or not. Again there is a resistor west of the power line which may be artificial, tending to enhance the appearance of a conductor. But the magnetic field again shows a symmetrical perturbation similar to that observed on line 353000N, suggesting a steeply-dipping conductive sheet or pipe. Thus it is probable that the conductor is real; certainly there is a major contact there. The dip is roughly 70 degrees to the east, as opposed to the near-vertical easterly dip on line 353000N. This might represent an attractive exploration target.

The other feature of interest on this line is the conductor centered on station 1240 and the deeper conductor to the west and deeper. Actually these are both lows in a broad conductive zone which drops roughly vertically from the surface, then dips at an intermediate angle to the west. Although more data would be needed to the east in order to better define this feature, it is most likely a conductive structure.

Line 351800N. Plate 4 shows the static-corrected data for this line. No culture crosses the line to disturb the interpretability of the data.

Figure 5 shows the smooth-model inversion for the line. A narrow conductor is observed beneath station 120. The data do not extend far enough to the west to fully define it, but it appears that the conductor is narrow (probably less than 80 meter wide) and steep in angle (nearly vertical, with a possible westerly dip at depth). This may be the same conductor observed on the more northern lines, but here it is much less pronounced.

A second conductor is observed on the east end of the line at depth. It is broad (roughly 100 meters) and dips at perhaps 75 degrees to the west. It is similar to the one observed on line 352600N but may be deeper.

627076

Line 350200N. Plate 5 shows the static-corrected data for this line. The data behavior is very "normal," with no peculiar surface or other effects.

Figure 6 shows the smooth-model inversion for the line. A narrow conductor is observed beneath station 120, as on line 351800N. The data suggest only a moderate conductor, narrow in width (perhaps 50 meters), with a very nearly vertical dip. It is evident only in the intermediate depths, not at the surface or at depth.

There are no other conductors evident on this line.

Line 349400N. Plate 6 shows the static-corrected data for this southern line. Figure 7 shows the smooth-model inversion for the line. The conductor seen on the other lines is not immediately evident here, but we speculate that it is the feature barely detected by station 40. If so, it confirms a NNE trend to the conductor.

A broad, moderately conductive zone is observed between stations 520 and 880. It seems to be intermediate in depth, not coming to the surface or extending very deep. It is thus similar to the feature seen on line 350200N.

Conclusions

From a geophysical viewpoint, the data clearly identify two interesting conductive features. Communications from Billiton Australia indicate that the western conductor on the northern lines is the most interesting exploration target. Despite complications from the power line, we consider this to be a real conductor which is associated with a significant structure or contact. The feature's appearance on both line 35300N and 352600N indicate that it is a conductor with significant strike extent.

Billiton may benefit from additional processing on the remaining six lines of CSAMT. We took a quick look at two of these, and believe more work could be profitable. Scott MacInnes can discuss the details if you wish.

References

Zonge, K.L., and Hughes, L.J., in press, Controlled source audio-frequency magnetotellurics, *in* E.M. Methods, M.N. Nabighian (Ed.), Society of Exploration Geophysicists.

Scott MacInnes Geophysicist

Norm Carlson Geophysicist

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CSAMT Smooth-model Inversion

Smooth-model inversion is a robust method for converting CSAMT measurements to profiles of resistivity versus depth. Observed apparent resistivity and phase data for each station are used to determine the parameters of a layered-earth model. Layer thicknesses are fixed by calculating source-field penetration depths for each frequency. Layer resistivities are adjusted iteratively until the modeled CSAMT response is as close as possible to observed data. Smoothness constraints restrict layer resistivities to minimum variation from layer to layer.

The algorithm for calculating the CSAMT response of a layered model includes the effects of finite transmitter-receiver separation and a three-dimensional source field. Accurate impedance values are calculated for all frequencies and transmitter-receiver separations.

The result of smooth-model inversion is a set of estimated resistivities which vary smoothly with depth. Lateral variation is determined by inverting successive stations along a line. Results for a complete line can be presented in pseudosection form by contouring model resistivities. For contouring, resistivity values are placed at the midpoint of each layer, forming a column below every station. The columns form an array representing modeled resistivities in cross-section.

Inverting apparent resistivity and phase to a smoothly varying model resistivities is an effective way to display the information inherent in CSAMT measurements. Smooth-model inversion does not require any a priori estimates of model parameters. The data are automatically transformed to resistivity as a function of depth. Models with smoothness constraints are complementary to more detailed models incorporating a priori geologic constraints.

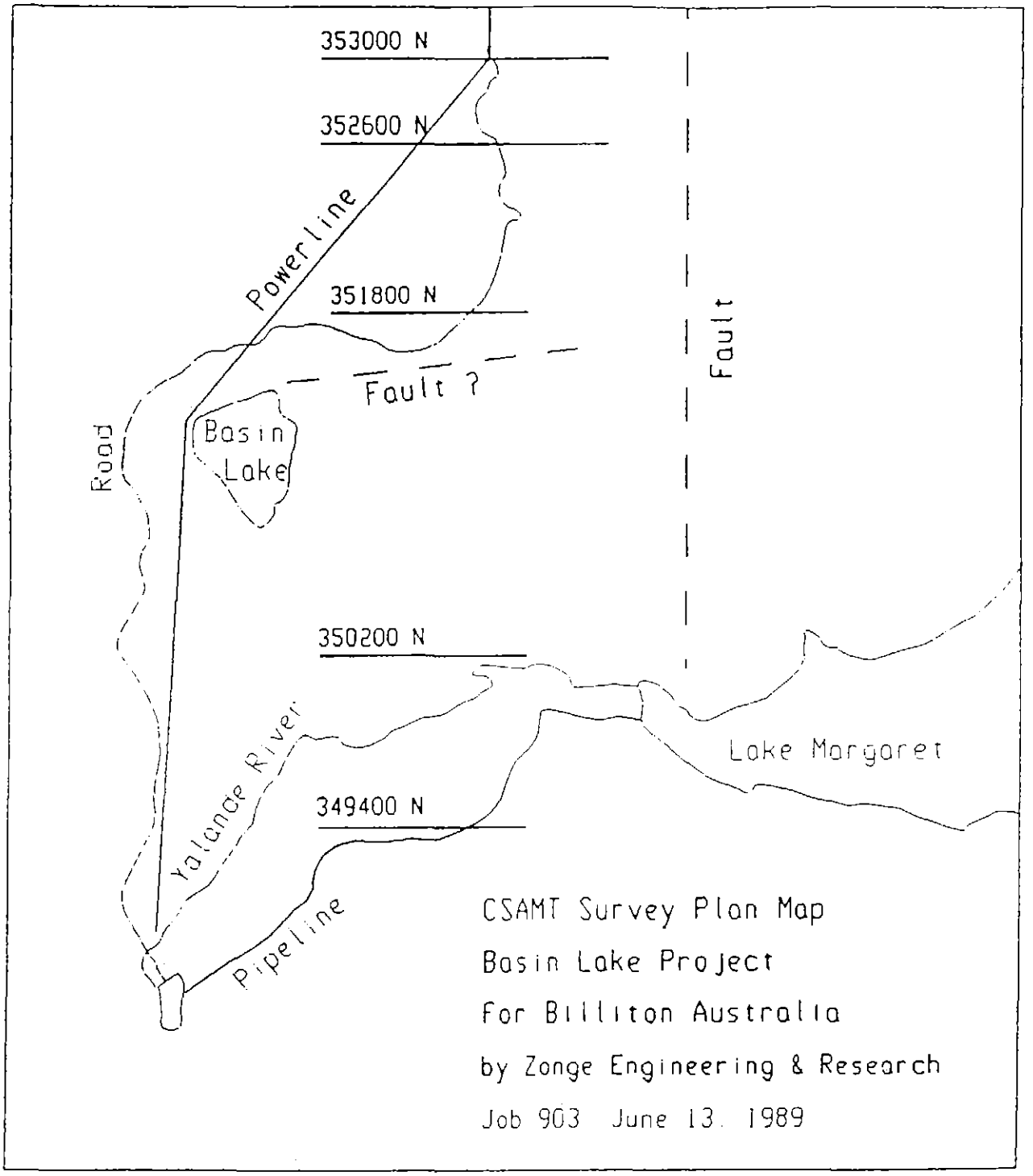

Figure 1: CSAMT line location map.

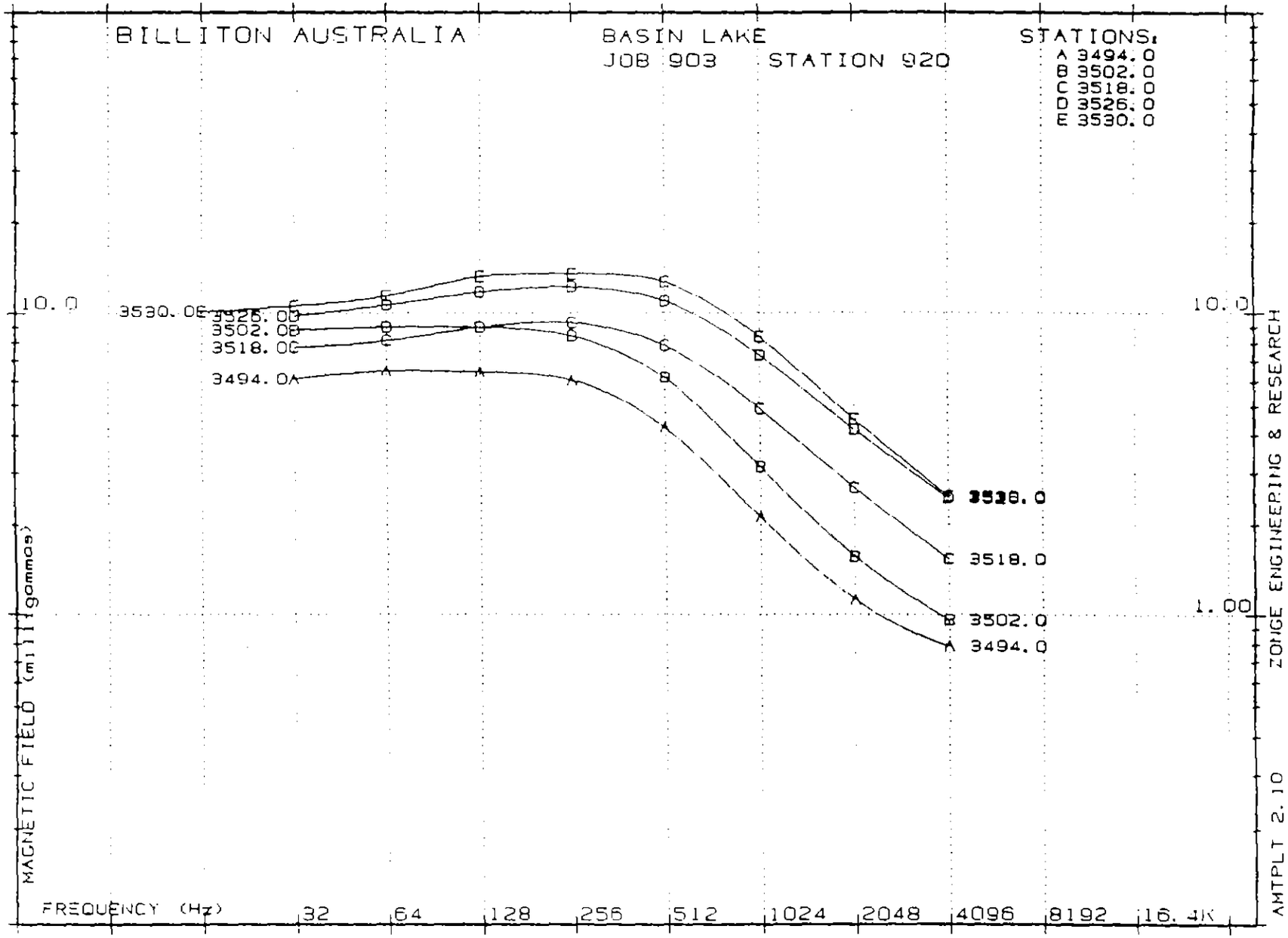

Figure 2: Log-log plot of magnetic-field amplitude versus frequency.

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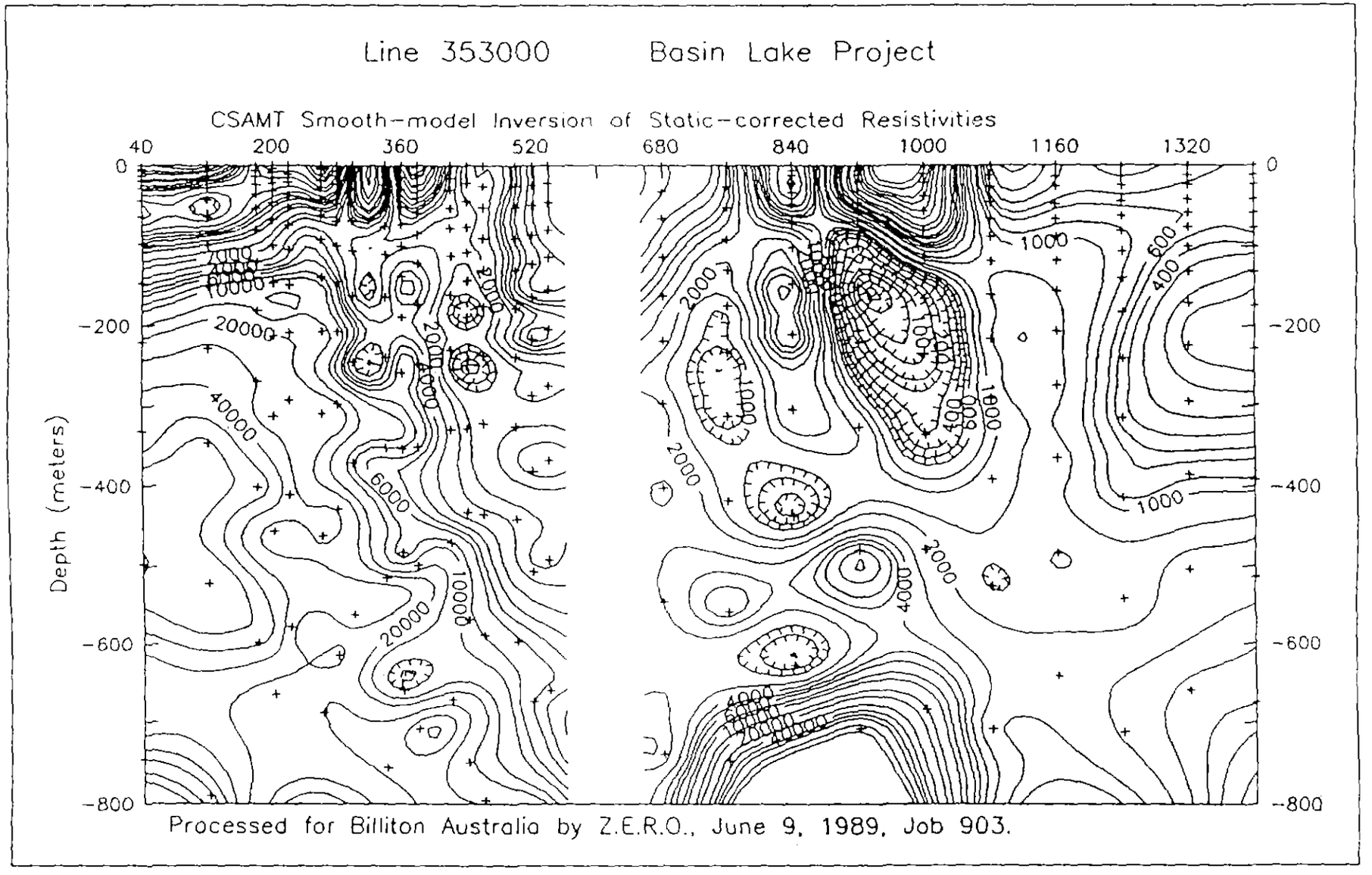

Figure 3: Smooth-model inversion for line 353000N.

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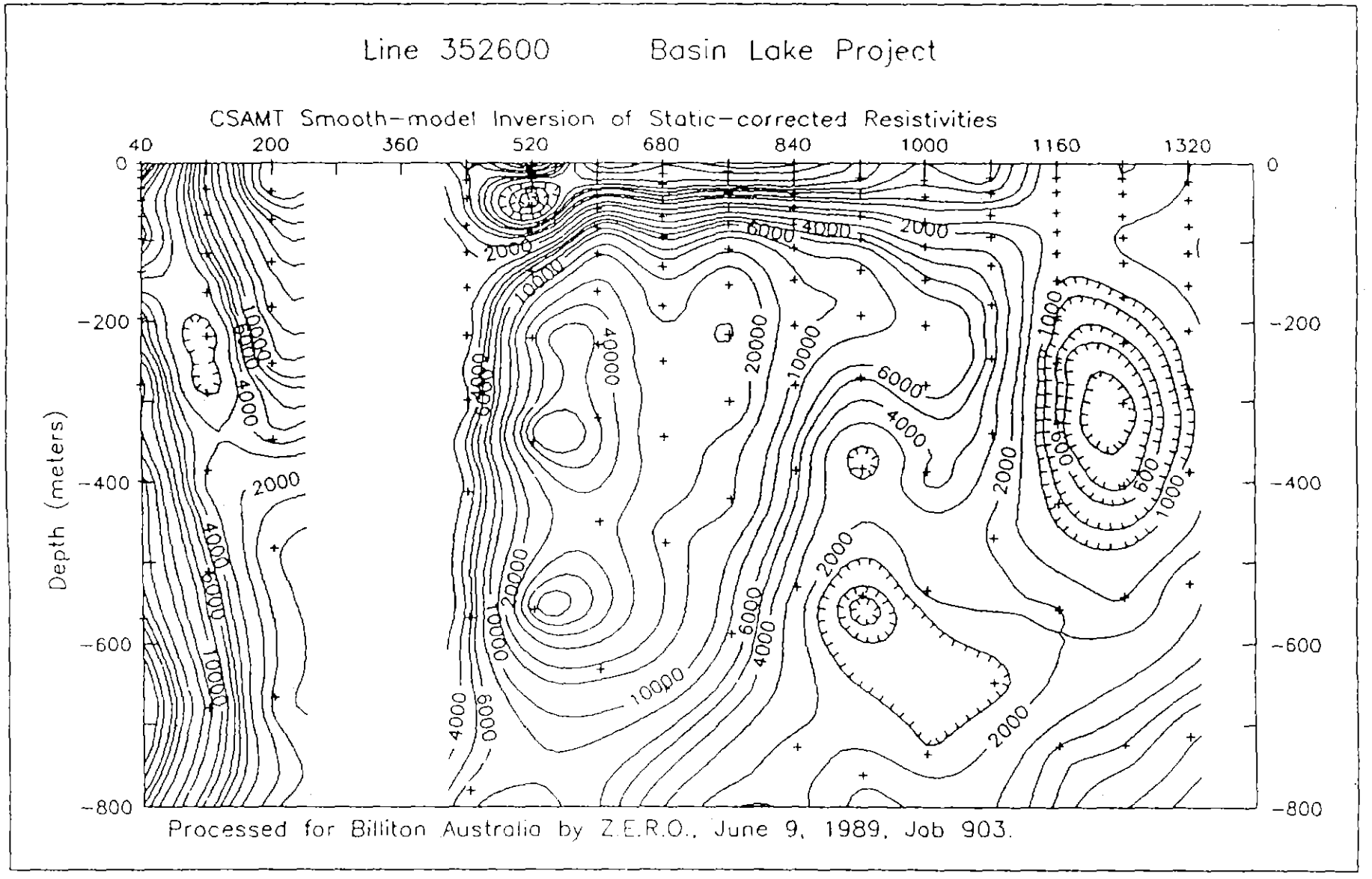

Figure 4: Smooth-model inversion for line 352600N.

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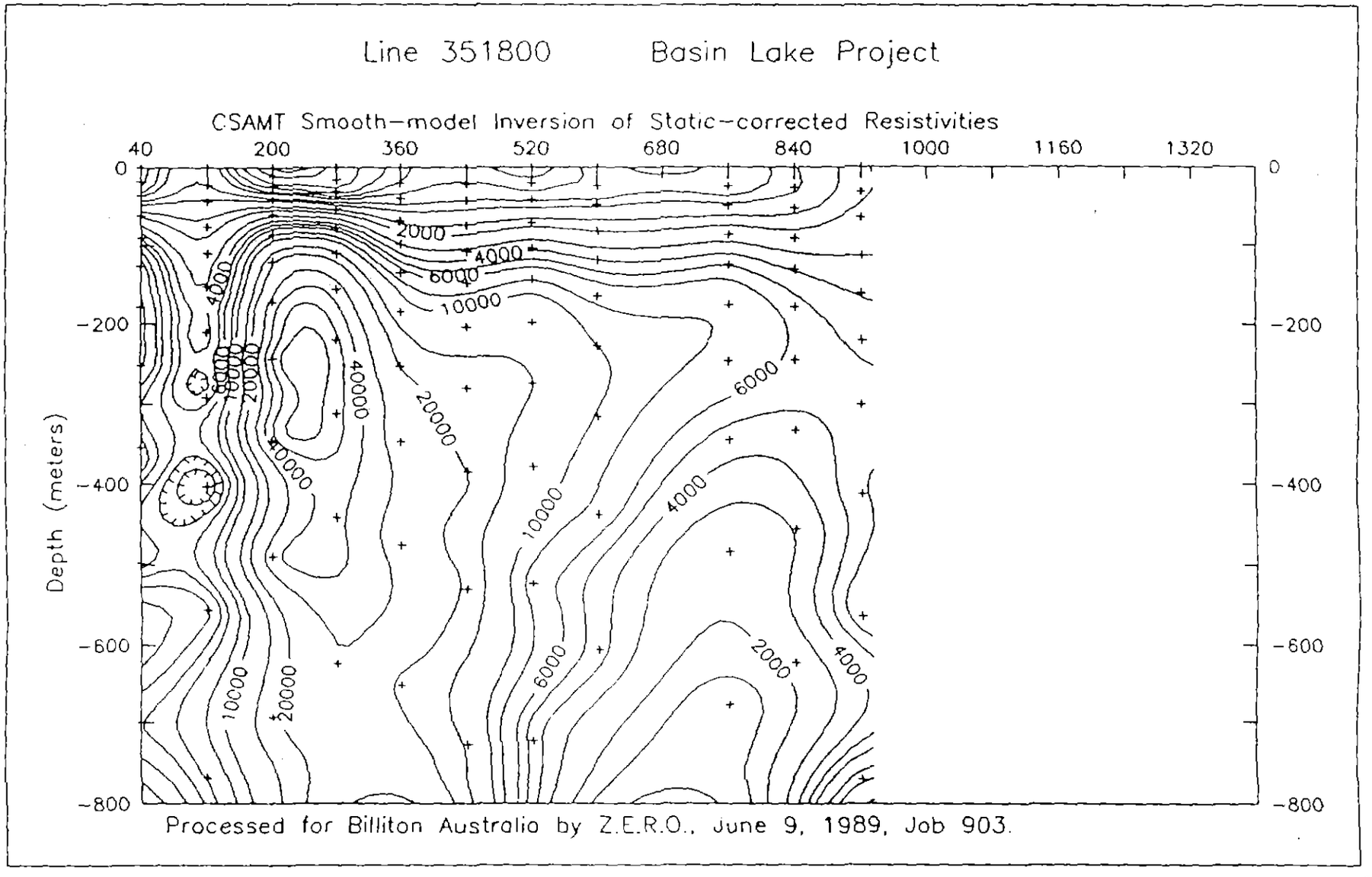

Figure 5: Smooth-model inversion for line 351800N.

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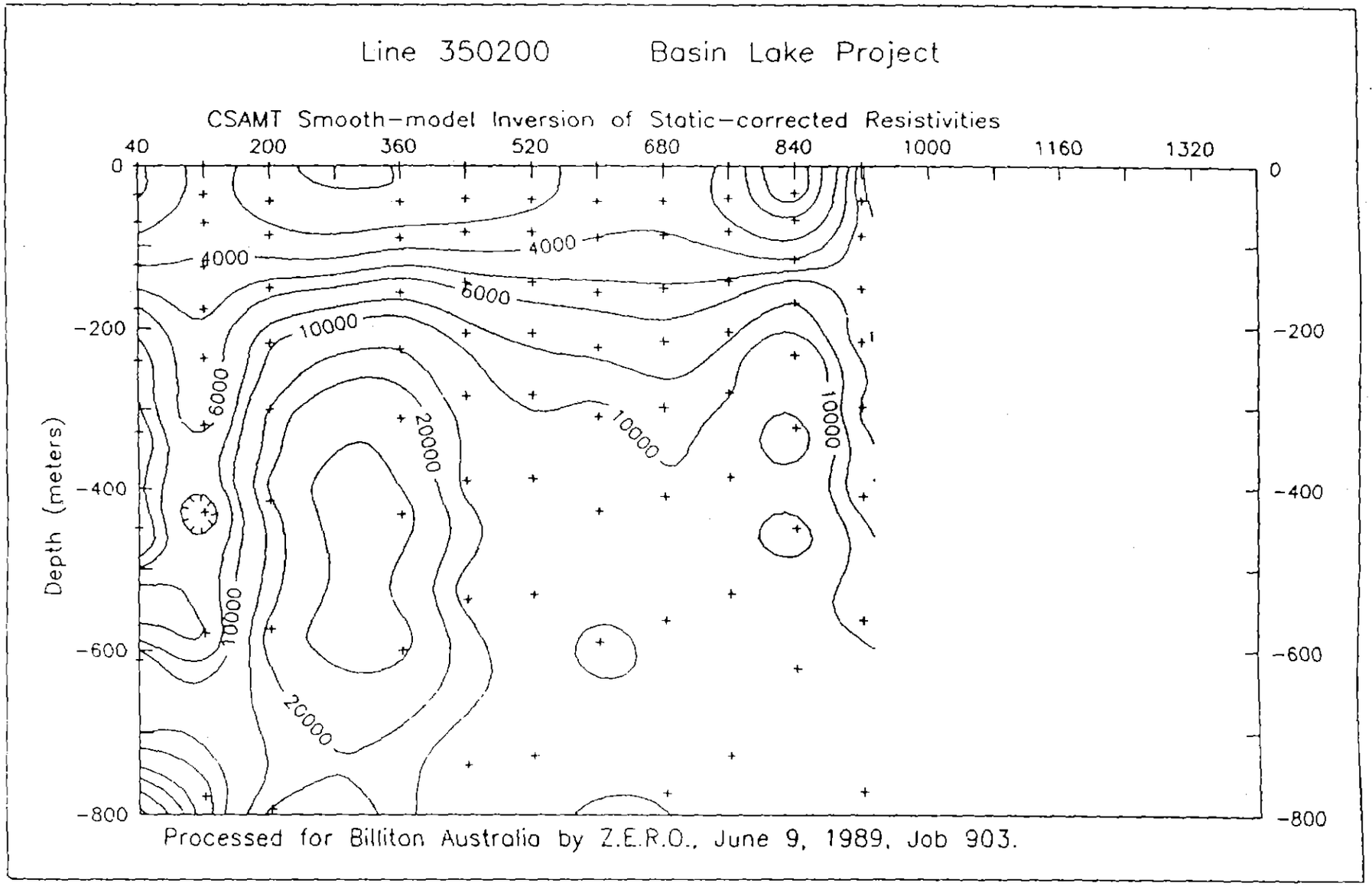

Figure 6: Smooth-model inversion for line 350200N.

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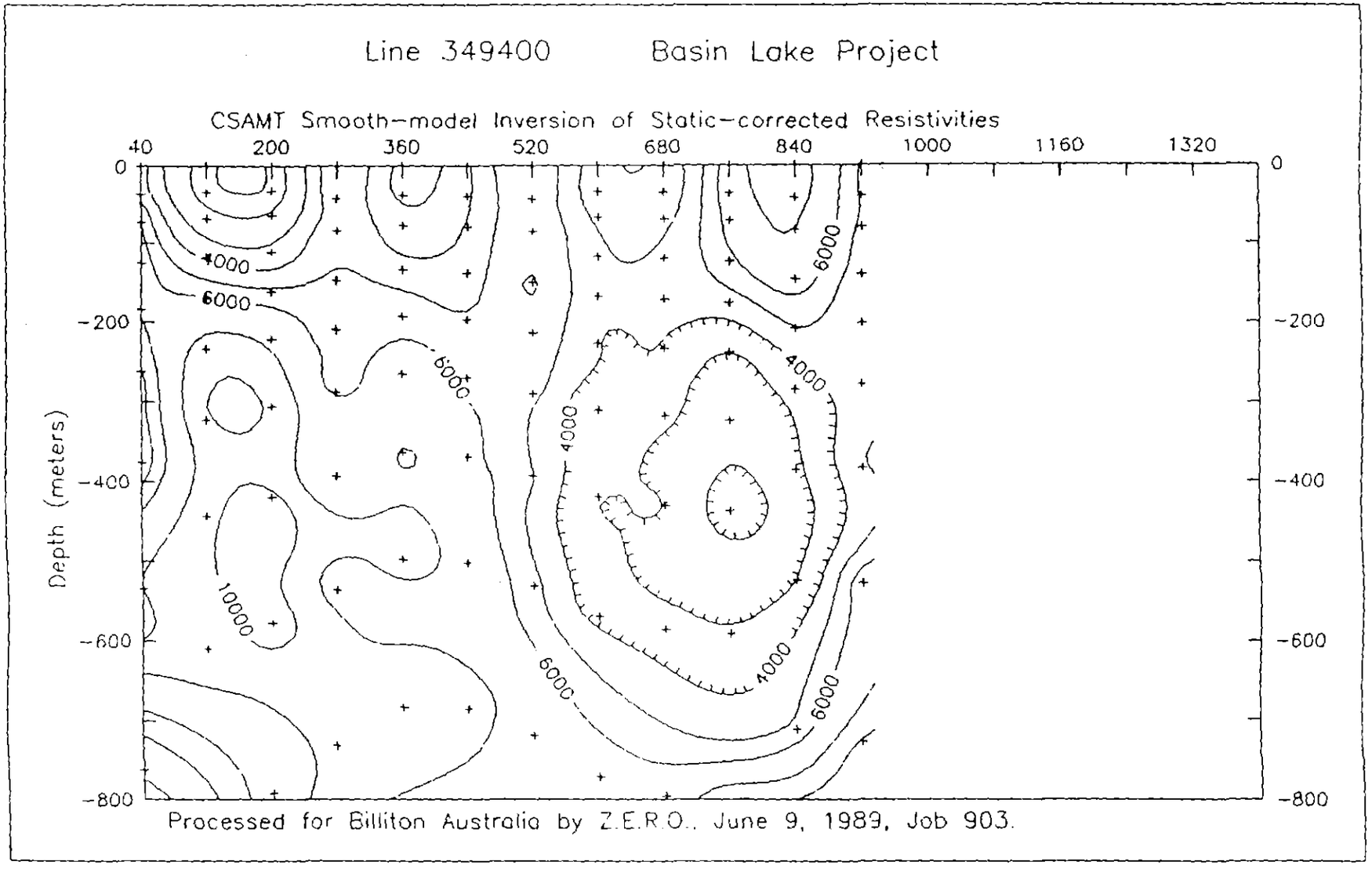

Figure 7: Smooth-model inversion for line 349400N.

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APPENDIX III

CSAMT SURVEY INTERNAL MEMO
Billiton MEMO on survey results

Copied from the APPENDIX of
Creagh, C. J., and Hungerford, N., 1990, E.L. 103/87 - Basin Lake, Progress report on Exploration for the period Ending 21st April 1990; TCR Report No. 90-3099

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LDS 702

MEMORANDUM

DATE: 10 April 1990

FROM: BXN:MELBOURNE

TO: BXH:DEVONPORT

SUBJECT: BASIN LAKE CSAMT SURVEY - MARCH 1990

Herewith a few preliminary comments on the results.

There do not appear to be any CSAMT anomalies characteristic of a large deposit of massive sulphides, although there are some conductors worth remarking on. However, some of these have already been detected as UTEM anomalies and drilled. In general, the CSAMT survey seems to have detected great lateral variability in resistivity, giving rise to unusual phase effects. These are probably due to considerable lateral changes in lithology across a mixed and steeply-dipping sequence of volcanics and sediments. The only area which appears to lack variability is the north-west of the grid, where there are presumably more massive monotonous rocks (porphry?).

353400N: Low resistivity zone at 81020E. Correlates with carbonaceous shale unit drilled by BL2 (UTEM anomaly).

353800N: BL4 tested a low resistivity zone (UTEM anomaly) at 80560E and intersected black pyritic shales. There is also an interesting conductor at 80880E which appears not to have been tested. It may, however, be a strike continuation of the conductor drilled by BL2 (see RGC's UTEM plan - conductor G). There were no significant conductors tested by the Leech Hill drill hole.

354200N: TYN-2, originally drilled on an IP/Resistivity anomaly, intersected a black shale unit mildly anomalous in base metals. It was also a weak UTEM anomaly and is a CSAMT conductor.

354600N: A conductor at 80360-80440E may well be a further continuation of the conductor mentioned on 353800N. It correlates with UTEM trend D.

355800N: TYN-1 appears to have drilled to the west of a CSAMT/weak UTEM conductor at 81080E which has an unusual phase response (due to nearby powerline). An interesting response also occurs at 81400E which must be close to the Great Lyell Fault.

356200N: A conductor occurs at 81000E which is probably related to the one on 355800N. TYN-4 appears to have drilled this position, but not clearly explained the UTEM and CSAMT conductors. (The UTEM anomaly was attributed to a glacial trough). Down-hole TEM is really required to determine whether a bedrock conductor occurs near TYN-4 which appears to have intersected some quite interesting rock types. A nearby conductor at 81160 is also of some interest (not covered by UTEM).

356600N: TYN-3 and TYN-5 tested a weak UTEM conductor and intersected pyritric black shales (TYN-3). These shales are evident as a CSAMT conductor at 380880E. A conductor also occurs at 381320E. This appears to have a dip to the east and some phase correlation, which makes it interesting. There is no UTEM coverage.

357000N: A conductor at 80700E may be a continuation of that tested by TYN-3. There is also a weak conductor at 81580E adjacent to the great Lyell Fault.

CONCLUSIONS:

There do not appear to be many strong CSAMT anomalies that have not been already tested by drilling on UTEM anomalies. The exceptions are at the eastern end of line 355800N, and on 353800N at 80880E, and on 356600N at 381320E. These are all worth ground checks prior to deciding on drilling.

Transparencies of the CSAMT profiles will be sent to you from Melbourne drafting in due course.

Some data-processing is still being completed by Zonge. I will do a final interpretation when I return.

N. Hungerford
Chief Geophysicist

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APPENDIX IV

CSAMT SURVEY RESULTS FROM THE BILLITON 1989-90 BASIN LAKE SURVEY

Hardcopy and digital data
produced by Zonge December 1998
Job # 421

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Data Processing Checklist for Goldfields Exploration
Job # 421
29 December 1998

Job 864 Basin Lake CSAMT

Line	Stations	A-sp	CagR	ZPHz	StaR
349000N	40-920E	80m	X	X	X
349400N	40-920E	80m	X	X	X
349800N	40-920E	80m	X	X	X
350200N	40-920E	80m	X	X	X
350600N	40-920E	80m	X	X	X
351000N	40-920E	80m	X	X	X
351400N	40-920E	80m	X	X	X
351800N	40-920E	80m	X	X	X
352200N	40-1320E	80m	X	X	X
352600N	40-1320E	80m	X	X	X
353000N	380180-380580E	40m	X	X	X
350000N	380040-381400E	80m	X	X	X

TOTAL NUMBER OF LINES = 12

Job 968 Basin Lake CSAMT

Line	Stations	A-sp	CagR	ZPHz	StaR
3000N	79040-79920E	80m	X	X	X
3400N	79020-81580E	40m	X	X	X
3800N	79040-81600E	80m	X	X	X
4200N	79040-81440E	80m	X	X	X
4600N	79000-81560E	80m	X	X	X
5000N	79080-81560E	80m	X	X	X
5400N	79080-81560E	80m	X	X	X
5800N	79080-79640E	80m	X	X	X
5800N	80360-81080E	80m	X	X	X
6200N	80040-81560E	80m	X	X	X
6600N	80040-81560E	80m	X	X	X
7000N	80060-81620E	40m	X	X	X
7000N	80060-81020E	80m	X	X	X

TOTAL NUMBER OF LINES = 13

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Appendix 4

Zonge Trial Inversions on Billiton Basin Lake CSMAT Data

Asten, 1999a

627091

Flagstaff Geo-Consultants

Note to: Michael Vicary
Senior Geologist, Goldfields Exploration

From: Michael Asten

22/2/99

RE: Zonge trials of inversions on Biliton Basin Lake CSAMT Data

Zonge have completed a set of 1D CSAMT inversions (includes far-field, near field and transition-zone modelling) and a set of 2D AMT inversions (uses far-field data only, and is distorted by transition-zone effects).

For each line supplied, Zonge performed

- 1D inversion on Cagniard resistivities without static correction
- 1D inversion on Cagniard resistivities after Zonge 5-point static correction
- 1D inversion on Cagniard resistivities after EMAP-filtering (data-adaptive) static correction performed by myself
- 2D inversion on each of the above.

In addition to Zonge inversion products, I have supplied

- Frequency pseudosection of EMAP-smoothed Cagniard resistivities
- Parasection of Bostick depths
- Interpolated parasection of Bostick depths.

Lines processed were

- Mt Lyell public domain data, Line 29000W (also known as 586M30).
- Basin Lake line 352600N
- Basin Lake line 353000N.

INTERPRETATION

Bear in mind that frequency pseudo-sections, Bostick inversions (by Flagstaff), 1D inversions (by Zonge) and 2D inversions (by Zonge) are all representations of the CSAMT data, not interpreted sections, and each representation has its own strengths and weaknesses in terms of how noise in the data affects the image, and in how processing limitations affect the output

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Hugh Rutter	Geophysicist
Geof Fethers	Geologist
Nigel Hungerford	Geophysicist
Paul Hamlyn	Geologist
Michael Asten	Geophysicist
Ross Caughey	Geologist
Alaster Edwards	Geologist

Flagstaff Geo-Consultants includes A & J Edwards & Associates Pty Ltd ACN082 417 810, Chromite Pty. Ltd. ACN 006 151 079, Cropten Pty. Ltd. ACN 006 146 441, Earth Bytes Pty Ltd CAN 081 437 587, Geophysical Exploration Consultants Pty. Ltd. ACN 005 890 415, Hungerford Geophysical Consultants Pty. Ltd. ACN 064 811 490, Michael Asten & Associates Pty. Ltd. ACN 077 755 474 and Ore Research and Exploration Pty. Ltd. ACN 006 859 856.

image. Interpretation is therefore best done by comparing multiple representations of the data with known geological constraints.

Mt Lyell Line 29000W

Frequency pseudo-sections of raw Cagniard resistivities and Zonge static-corrected data both show strong static effects which are visible as vertical striping. Such striping is also apparent on 1D inversions.

EMAP-filtered data shows oblique "shape" to the conductors, on each of the frequency pseudo-section, the Bostick depth parasection, and the1D inversion parasection. (Note that the eastern edge of the line is corrupted by strong noise in middle frequencies, which appears to give false conductive anomalies). Do we have geological data on dip of Mt Lyell mineralisation and alteration at depth?

The FW lens and EP17 lens, at positions noted by Bishop and Lewis (1988), are the most obvious near-surface conductors. The most interesting new results are conductors at 750mE 300 m depth, and 450mE 500-600m depth. Both these conductors show on Bostick and 1D inversions.

The 2D inversions for Mt Lyell Line 29000E are curious. The three inversions (no static corrections, Zonge static corrections, and EMAP corrections) give remarkably similar parasections, despite the fact that the frequency pseudo-sections from which they are derived, are very different. This result should be followed up further with Zonge. (Note that 2D inversions are restricted to the depth range 300 m, by their requirement that input data be strictly far-field data).

Basin Lake (Biliton) Line 352600N

Pseudosections and 1D inversion parasections appear to show a near-surface conductor at 380840E, corresponding to a known siltstone, and an apparent conductor at 381240E 300-500m depth which appears to be the target for drill-hole BL001.

However when the data is EMAP-filtered, the near-surface conductor is barely visible, ie it is largely a static effect. The siltstone thus appears not to be visible in the data. This result is quite explicable, in that a narrow sub-vertical conductor parallel to strike, is expected to be "transparent" to CSAMT with this transmitter-receiver geometry (transmitter oriented E-W and placed perpendicular to strike). We would expect however, that an alteration zone having significant width, would be visible in CSAMT data with this transmitter-receiver geometry.

On the EMAP-filtered data, we also observe that the deep conductor, while still present in the images, is both west-shifted and deeper after the removal of statics. It is best seen on the frequency pseudosection and the interpolated Bostick depth parasection, at 381160mE 350m depth, ie it appears to be about 100m below the zone tested by hole BL001. [Geophysical note: This conductor requires some caution in interpretation, as it lies near the CSAMT transition zone notch. However the fact that it shows a lateral maximum, and shows in 1D

inversions which include a correction for the transition zone, suggests that evidence for a real conductor is significant.]

The 2D inversion parasections from Zonge are again curious, in that the images of raw and static-corrected data are very similar, despite frequency pseudo-sections input to the inversion being very different. It is intriguing to note that the two known siltstones on the geological section lie close to two conductors shown on the 2D inversions; I don't dismiss the importance of this, but I find it almost too good to be true in the context of all the above discussion.

Basin Lake (Biliton) Line 353000N

Results in terms of static correction on this line are very similar to those noted above for Line 352600N.

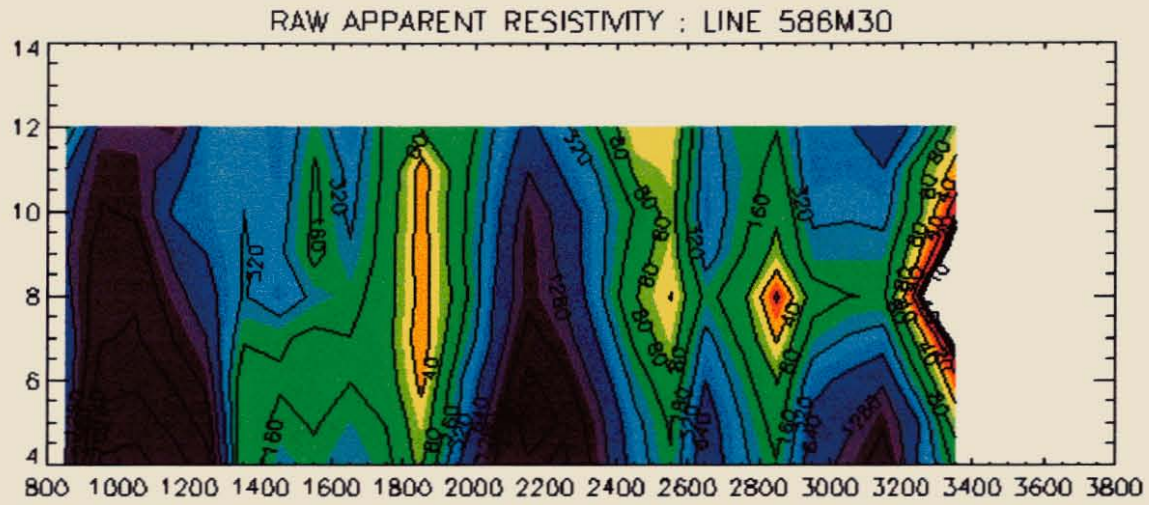
The most interesting result is evidence for a conductor at 381160mE 350m depth, which aligns with that observed on Line 352600N. Hole TYN015 has drilled beneath this zone, so as with the previous line, there is some evidence for an untested conductive zone near the qz-porphry/dacite boundary, and extending east in the dacites. Whether this zone can justify a further drill hole depends on whether the prevailing geological model can accommodate the concept of a flat-lying alteration zone dominantly in dacites.

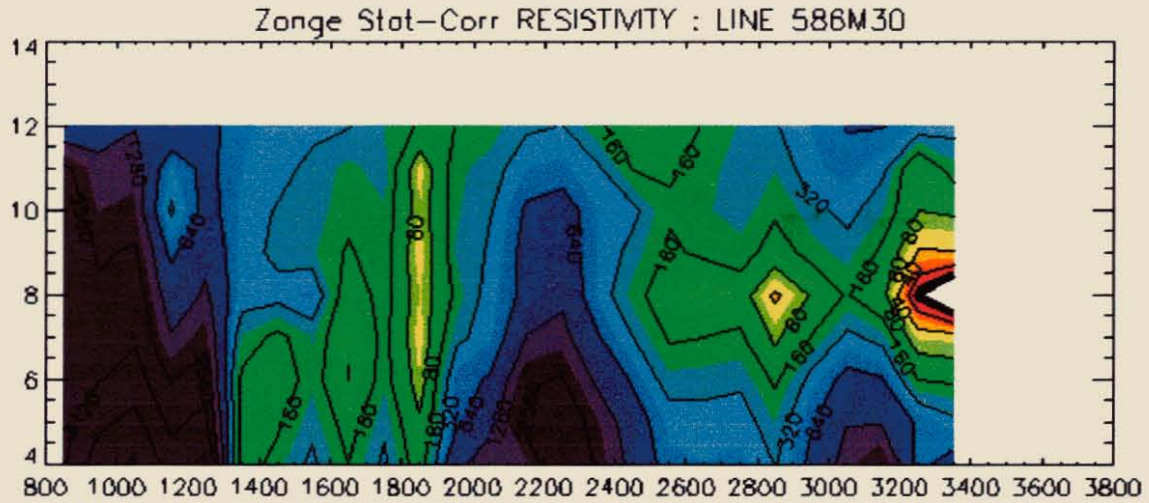
Another conductor, probably sub-vertical, can be identified at 380840mE, depth order 200m, and is probably evidence for the known siltstone horizon, although it does lie about 100m west of the siltstone horizon marked on the geological sketch provided by Goldfields. This conductor is imaged clearly on the 2D inversions by Zonge.

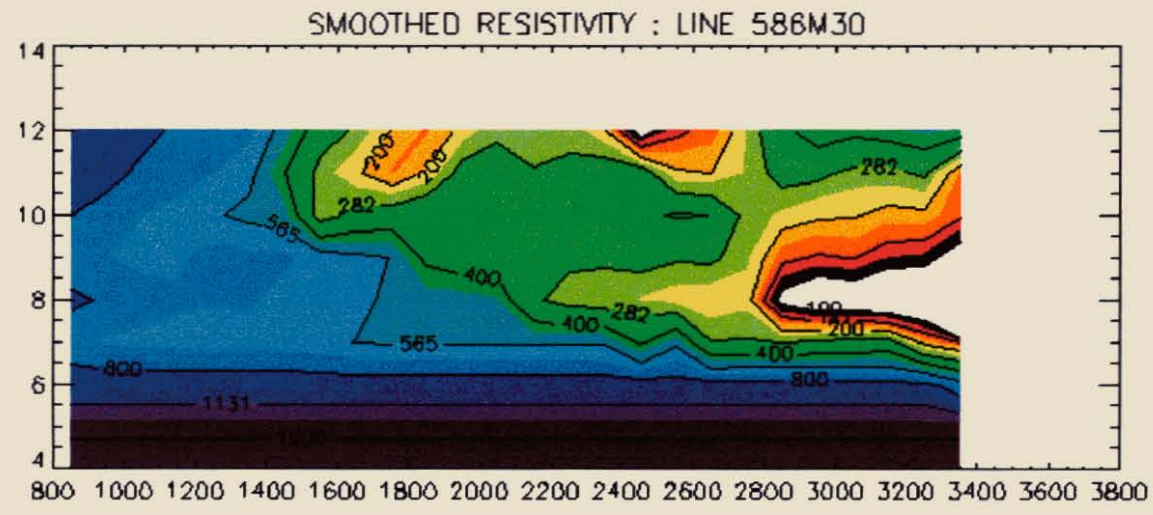
RECOMMENDATIONS FOR FUTURE CSAMT PROCESSING

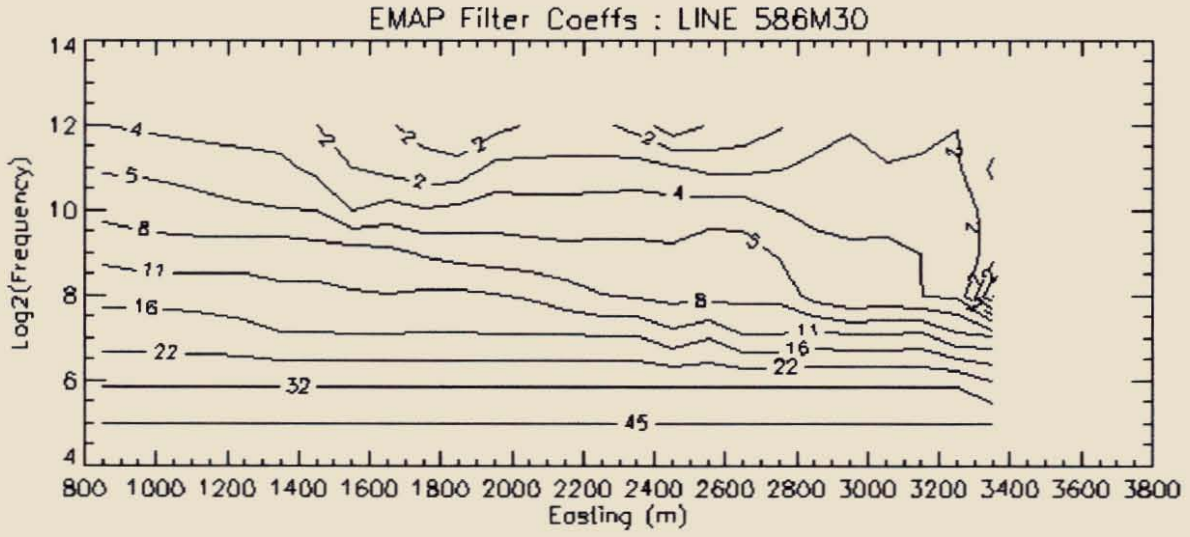
The EMAP smoothing process is superior to the Zonge static correction process. I recommend that the existing lines of Biliton CSAMT data, and the Goldfields data to be acquired next month, be processed using the EMAP filter and Bostick inversion by Flagstaff, and that filtered data be inverted (1D) by Zonge. Use of 2D inversion by Zonge might be an option on an occasional basis, depending on results obtained from the routine processing recommended.

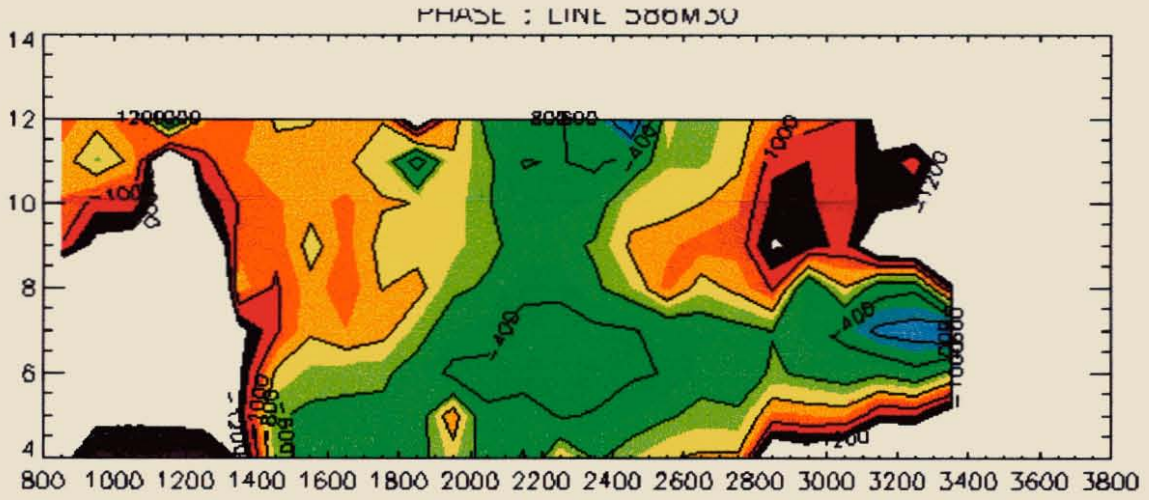
Michael W Asten
Consulting Geophysicist











GOLDFIELDS EXPLORATION
Mt Lyell CSAMT Data 1986 Re-Processed with EMAP filter Jan 1999
Drawn by: Flagstaff Geo-Consultants 14/1/99

Flagstaff GeoConsultants

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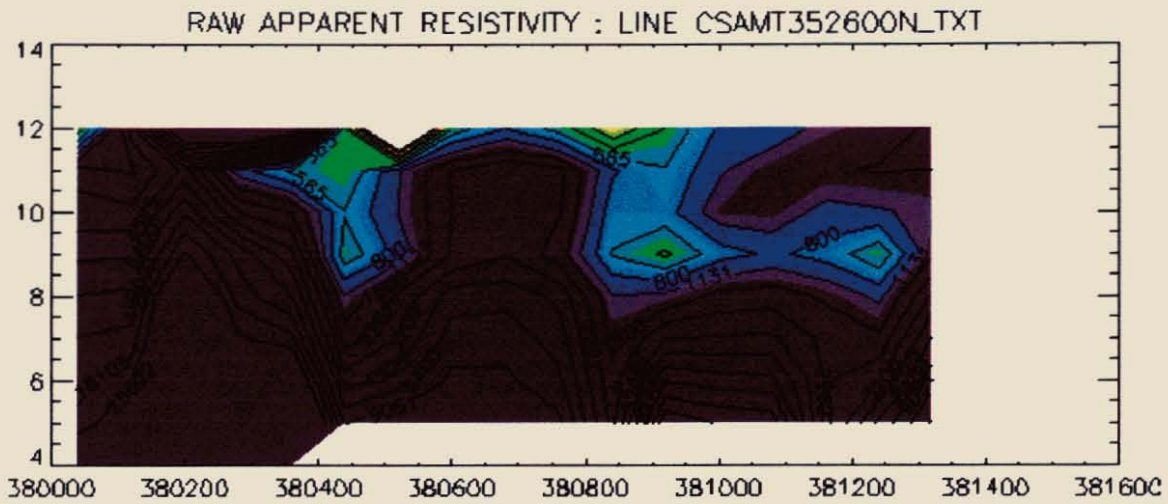

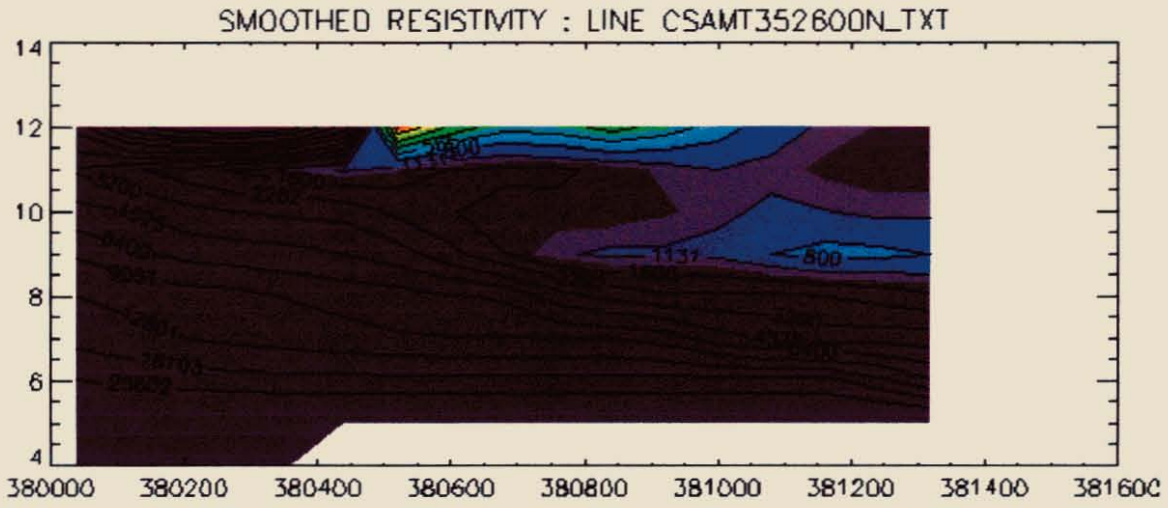

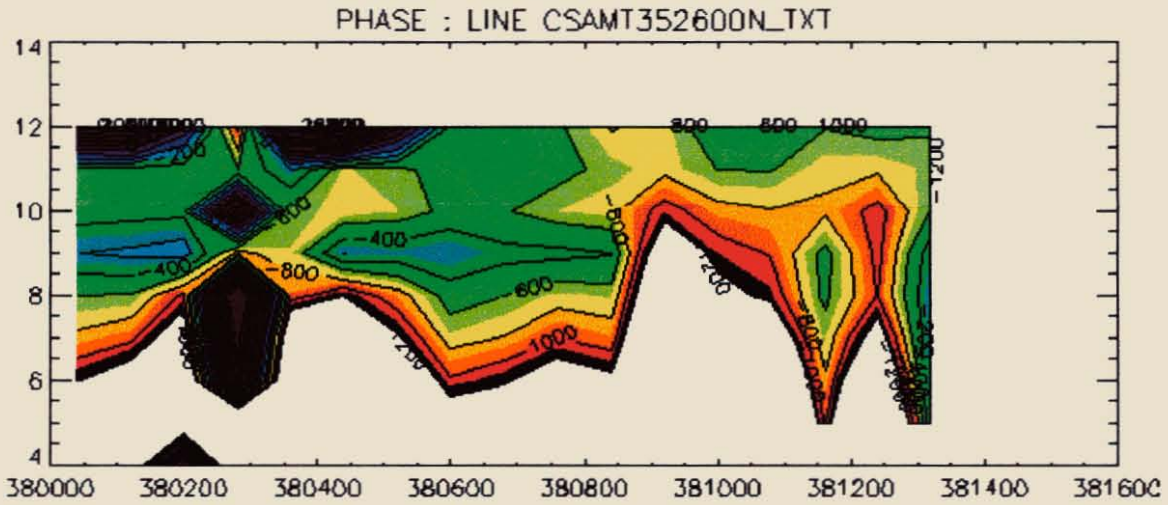

GOLDFIELDS EXPLORATION

BASIN LAKE CSAMT DATA 1989. Line 352600N

Re-Processed with EMAP filter Jan 1999

Drawn by: Flagstaff Geo-Consultants
14/1/99

Flagstaff GeoConsultants

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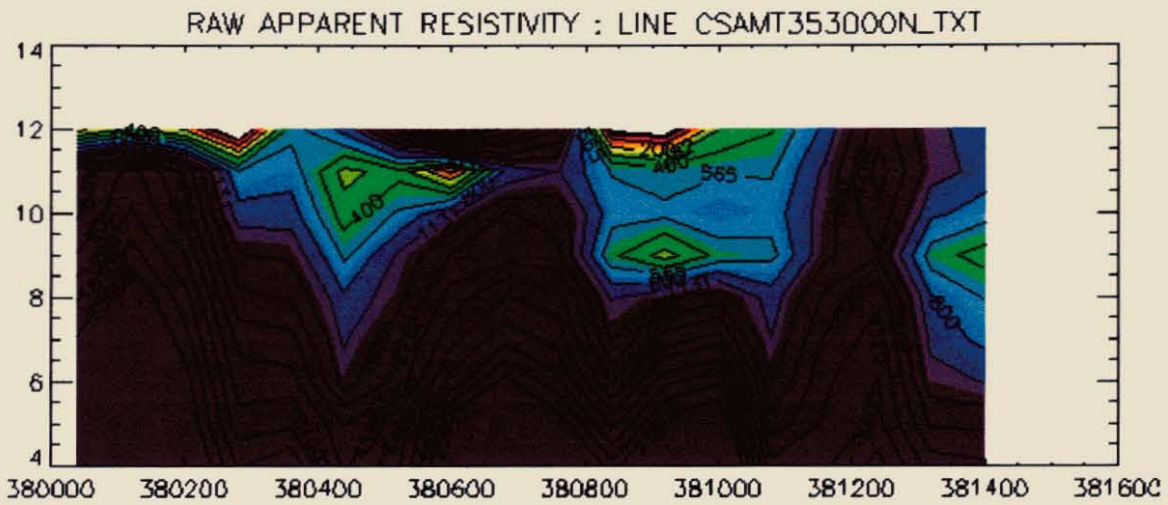

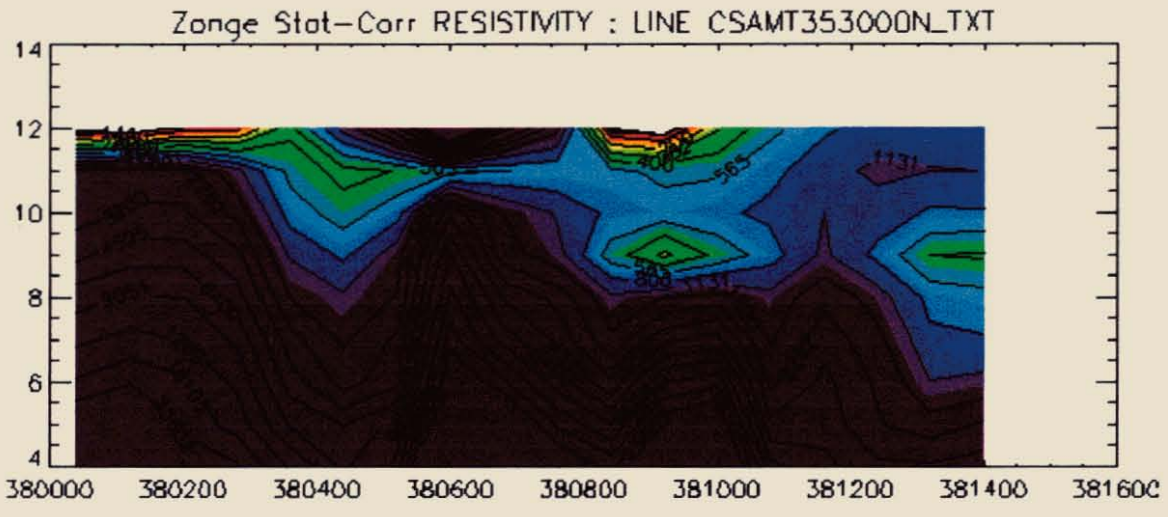

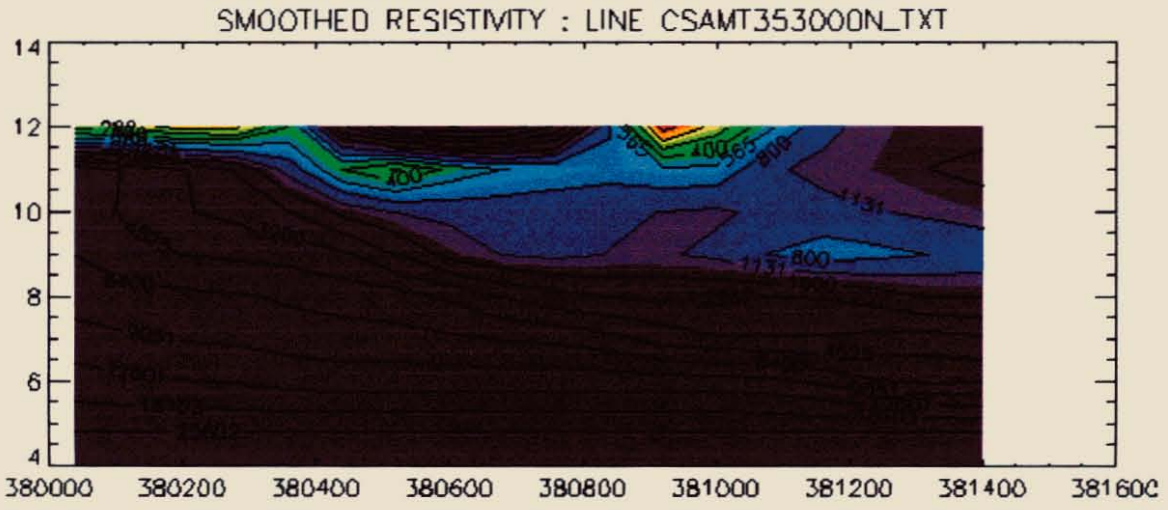

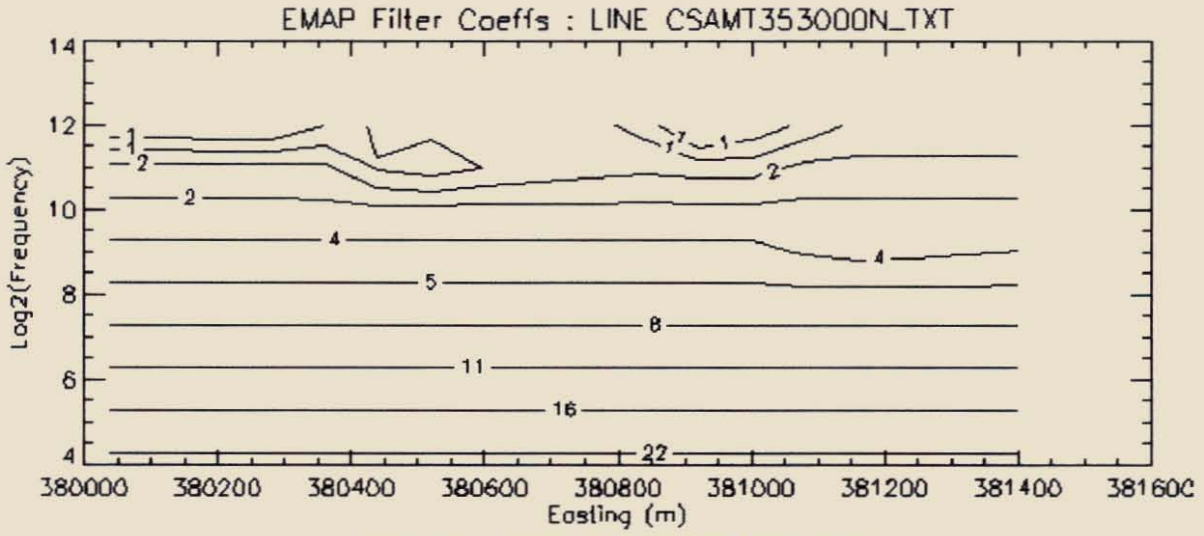

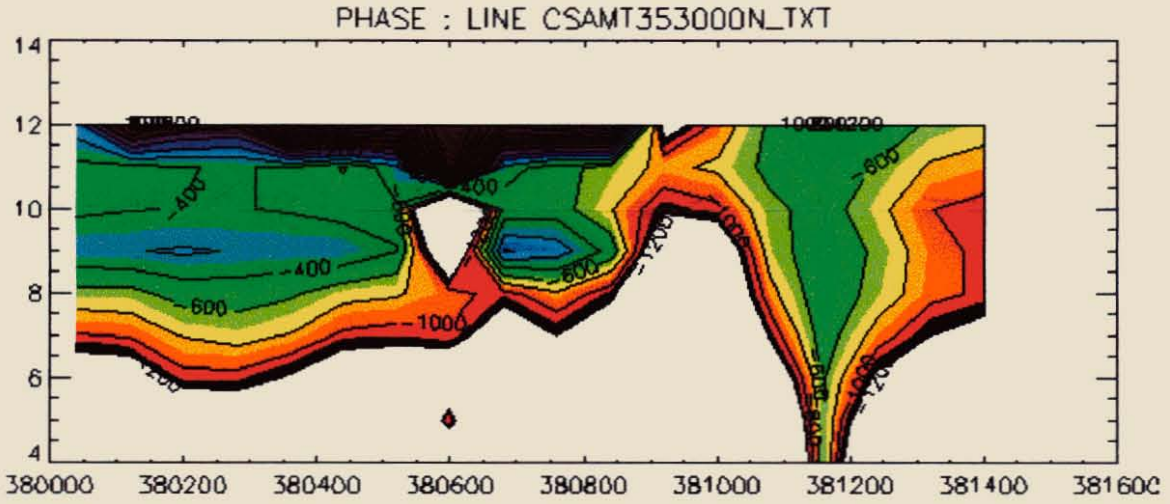

GOLDFIELDS EXPLORATION
BASIN LAKE CSAMT DATA 1989. Line 353000N Re-Processed with EMAP filter Jan 1999
Drawn by: Flagstaff Geo-Consultants 14/1/99

Flagstaff GeoConsultants

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TCR 99-44118.

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Appendix 5
Review of Billiton CSAMT Data

Asten, 1999b

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Review of Billiton CSAMT data (Anthony Road area, W. Tas) Basin Lake EL 19/98

Michael W. Asten.
22/9/99

INTRODUCTION

The Basin Lake (Anthony Road) area covered by EL19/98 was held by Billiton from 1987-91, who conducted two CSAMT surveys in 1988-90. This report presents a re-interpretation of that data, using recent processing enhancements plus more recent geological data for constraining the interpretation.

The historical data and known geology is described by Dauth (1999).

The Billiton CSAMT data covers lines at 400 m intervals from line 5351000N to line 5357000N (Five additional lines exist to the south, to 5354900N, but these are outside the EL, and have not been reprocessed).

The electric dipole spacing for the surveys was 80m, with the exception of lines 5353400N and 5357000N, where a dipole length of 40m was used.

The data appears to have been acquired in two surveys by Zonge Engineering and Research Organisation (Aust.) Pty Ltd, being Job 864 (Nov 1988) covering lines 5349000N to 5753000N, and Job 968 (Jan 1990) covering lines 5353400N to 5357000N.

Line 5353000N also contains a short section of data at 40m dipole spacing. Line 5357000N also contains partial coverage at 80m spacing. Such fragments of data have been viewed, but are not included here, as they appear not add to the information content of the survey.

A recent new survey conducted by Zonge for Goldfields Exploration (Feb 1999) gives a partial overlap, covering lines 5356200N to 5362000N, using 50m electric dipoles. The additional coverage, to the west of that covered in the Billiton data, shows resistive ground, and has therefore not been integrated into this data set.

Job 864 covering the southern lines used a maximum transmitter frequency of 4096 Hz. Later surveys used a maximum frequency of 8092 Hz, which gives better definition of nearr-surface resistivities in this resistive ground.

Data from jobs 864 and 968 was unarchived, re-processed and re-formatted by Zonge in Dec. 1998. The data was then converted to full AMG coordinates and filtered using the EMAP process (Torres-Verdin and Bostick, 1992) by this author. The EMAP filtering process gives a dramatic reduction in magneto-telluric static effects, which makes interpretation of the data via resistivity-frequency pseudo-sections significantly more reliable.

Note that conversion to true AMG requires re-labeling of line numbers; in particular the following lines are shifted:

OLD LABEL	NEW LABEL
352200N	5352135N
352600N	5352485N
353000N	5352920N.

The EMAP filtered data was then transformed to resistivity-depth parasections, using the Bostick transform (Jones, 1983). While the Bostick transform is a one-dimensional (layered-earth) transform, when coupled with EMAP filtering it gives results close to two dimensional inversion (Torres-Verdin and Bostick, 1993).

A significant constraint on interpretation of this data is that the transistion zone for the controlled source occurs at 1024Hz or 512Hz, and much of the data acquired (frequencies 256 Hz to 8 Hz) is in the near field. This means that the intrinsic depth sensitivity of the CSAMT data is lost at these lower frequencies, and the Bostick transform becomes a weaker approximation for the purpose of extracting resistivity and depth data.

The CSAMT data also suffers from significant noise problems particularly (but not only) in the vicinity of a high-tension power line crossing the entire EL (north to south). Such noise sources make it necessary to delete selected frequency points from the data (via the "skip-flag" with Zonge file format). Some time was spent in discussion with Zonge personnel in order to exclude such data prior to EMAP filtering.

In addition to Bostick transformation, the EMAP-filtered data was inverted to resistivity-depth parasections by Zonge, using their proprietary 1D smooth-model inversion algorithm. This process has the advantage of retaining validity for transition-zone and near-field data, and it produces more stable resistivity estimates than the Bostick transformation. However the method appears to be poorer than the Bostick method in imaging up dipping conductors. Thus the optimum interpretation process is to view the data via both Bostick and smooth-model inversions.

Selected profiles have also been processed by Zonge using a proprietary 2D smooth-model inversion algorithm. The results of 2D inversion are limited by the fact that the 2D algorithm (like the Bostick transform) cannot process near-field data.

PLOTS PRESENTED

For each survey line, plots of EMAP-filtered resistivities, raw Bostick resistivities and depths, and Bostick resistivities interpolated over depth are presented. These are at scale 1:5000, and are included in this report as a PowerPoint file (Office 97 format). The plots are also included as hardcopy prints, reduced to A3 pages.

Parasections of raw Bostick resistivities show symbols giving depth estimates of resistivity solutions at each frequency. These symbols are colour-coded for resistivity using the same scale as that used for the contoured resistivity in the plots of interpolated Bostick resistivity. Some Bostick resistivities have poor confidence due to the apparent

resistivity-frequency curve violating alowable slopes (+-1). This phenomenon is usually due to noisy data; such Bostick solutions are identified on the plots by crosses or + symbols within the raw Bostick resistivity box symbol.

Two types of plan-view presentations of the data are included. Frequency slices of EMAP-filtered resistivities are a useful stable method of showing resistivities at near surface (using 8192 or 4096 Hz) or at depths in the range 300-500m (using 1024 or 512 Hz).

Depth slices of Bostick resistivities give better resolution of variation of resistivity with depth, but these products tent to be noisy, since "bad" resistivity estimates corrupted by noise give "bulls-eyes" of high or low resistivity estimates, especially in the vicinity of power lines. Depth slices are presented for depths corrected for topographic variations referred to the maximum elevation of 660 m, hence depth slices 200, 300, 400 and 500m correspond to RLs of +460, +360, +260, and +160m RL.

All plan-view images and maps are presented at scale 1:10,000.

INTERPRETATION

The most useful map product for interpretation of near-surface geology is the top-most "depth-slice" draped on topography (PLATE 1). This is essentially the same as a frequency-slice of resistivities at 8192 Hz, with fill in from lower frequencies where 8192 Hz data does not exist.

Note that the lateral resolution of the CSAMT method is limited by the wavelength of EM radiation measured. Lateral resolution is of similar order to depth penetration; for rocks of 1000 ohm.m resistivity, such resolution is of order 120 m, 250 m and 500 m, for frequencies 8192 Hz, 2048 Hz and 512 Hz respectively. Thus we cannot expect to literally outline the margins of outcropping siltstones with tens of metres of thickness. Ratherm we expect the CSAMT method to show a thin good conductor as a broad zone of moderate conductivity.

Seven zones of new surface conductive alteration or black siltstones are identified from PLATE 1. These are annotated in red on PLATE 6.

Zone 1A, 1B: correlates with the line of outcrop of black siltstone (Cas).
Zone 1B appears to have been tested with holes TYN11 and TYN14; both of these holes penetrate a thick fault containing alteration asssociated with the fault zone. This makes possible an interpretation hypothesis that the conductive trend represented by Zones 10-1A-1B-2 could be the response of a thick fault zone, not necessarily or not entirely the response of black siltstones.

Zone 2: a continuation northwards of Zone 1. This Zone appears to have been drill-tested with holes BL6, BL7, however there is no black siltstone in the cores from these holes. BL6 shows some sericite-pyrite alteration.

Zone 3B: A weakly-conductive zone; may be a northward extension of Zone 1-2 (siltstones) or a separate, alteration zone in felsic pyroclastics.

Zone 3A: extends from holes TYN001 to TYN004, but may not have been tested by either hole. TYN001 contains an intersection of black siltstone, but TYN004 intersected only andesites, despite apparently being targeted on the eastern conductor of a pair of conductor mapped by Aberfoyle Exploration using UTEM.

Zone 4: Follows mapped volcano-clastics (Cttl) from hole TYN003, possibly SSE to Zone 3A, or more probably SSW (parallel with the road) to join Zone 5. Appears to be drill tested with TYN003 and TYN005. This conductor correlates with the location of the western conductor of a pair of conductors mapped by Aberfoyle Exploration using UTEM.

Zone 5: This is a NE oriented trend parallel with the Anthony Road. The most interesting part is the southern end, vicinity of TYN002, but the main zone of the anomaly has not been drill tested. This Zone is a magnetically quiet area; it is highly likely to be a zone of alteration. Inversion of old dipole-dipole IP data (1967) in this area is recommended for added study.

Zone 6: This is an area untested by drilling, mapped as siltstone (Cas) in 1996, and as volcano-clastics (Cttl) in 1999. It is an area of low magnetic activity and is likely to contain alteration. Black siltstone has been observed in a costean in this locality, and a gradient-array IP anomaly was recorded by Mt Lyell M&R Co.

Zone 7: Located at eastern end of line 5356200N, vicinity of a mapped E-W fault. Not drill tested to date. Hole TYN008 near the zone was directed west (away from the zone), but that hole did show a high degree of fracturing in the core, indicative of proximity to a fault zone.

Review of frequency-slice EMAP-filtered resistivities for 2048Hz and 512Hz (Plates 2 and 3) highlights those parts of the conductive zones which extend to depth. Such zones are outlined on PLATE 6 in green and blue shading.

Zone 1A (extending east into **Zone 9**) is the largest such area; it has been drill tested with BL001 and TYN015, but there is scope for further testing.

Zone 3A (north of TYN001) is not drill tested. (This zone must be interpreted with caution, due to the existence of power-line noise in the data, but I believe the evidence does point to a conductive zone of probable alteration). This Zone is also of interest in that it is a magnetically-quiet zone.

Zone 7 is probably on eastward, down-dip extension of Zone 3A, near the Great Lyell Fault, east of TYN008. It is untested by existing drilling.

Zones 3B, 5 and 6 also show sub-areas with conductivity extending to order 200m depths.

Zone 10 shows as a distinct anomaly at the eastern end of line 5351800N, located 200m south of hole TYN010. This anomaly does not appear to be due to noise or other non-geological causes, but being located at the end of a survey line, and without continuity north or south, it should be defined with additional geophysics (IP or CSAMT) before drilling. The Zone is magnetically quiet and therefore may represent a zone of alteration.

Interpretation of depth-slices and parasections of Bostick resistivities requires some care. "Bulls eyes" are unlikely to be significant (since they are often caused by noise in the data affecting the transform maths) but conductive trends with consistency from line to line are of interest. Reference to parasections is also necessary, due to the fact that the "transition-zone notch" gives low apparent resistivities when the CSAMT data lies in the transition-zone; the presence of this notch can be misleading when interpreting conductors at depth.

Zones 1A, 1B: The depth slice at 200m gives an image over the EL broadly similar to the 2048Hz frequency slice (as expected). However it accentuates the western margin of Zones 1A- 1B, which correlates with the presence of black siltstones intersected in hole BLD89-1.

Zones 9, 1C and 10: The depth slice 300m (PLATE 4) image highlights Zone 9, and also shows Zone 1C located west of Zone 1B. The Zone 1C has been tested by holes BL004 and BL008, and lies along strike from black siltstones intersected in BLD89-1. It is also significant that BL004 shows an intersection of black siltstone plus massive pyrite. Hole BL008 shows weak alteration and no black siltstone. This zone needs to be compared in section with the two drill holes for further analysis.

Some confirmation of Zone 3A is also given by the depth slice 300 m, but the evidence is dubious due to high noise levels in the data.

The depth slices 400m, and 500m (PLATE 5) show images which suggest that the Zone 9 conductor plunges northwards. These images also give further support to Zone 10 on line 5351800N.

Zones 7, 8: The deep depth slices at 400 m and 500 m also give support for the existence of deep alteration in the north-east of the EL, labelled as Zone 8, and partly overlapping Zone 7. The association of these features with major east-west faulting gives them added interest as potential zones of alteration.

NOTES ON EXISTING IP/TEM DATA

Dipole-dipole IP data exists for part of the prospect, acquired circa 1967 by the Mt Lyell M & R Co. Inversion of the old data, using recent developments in IP modelling software, is recommended in order to integrate IP (chargeability) data with the resistivity data acquired from the CSAMT survey.

IP lines 13N-18N extend to 381200E, which gives partial coverage over Zones 7 and 8. This is of particular interst in view of the noise problems on the CSAMT data; confirmation of the CSAMT anomaly might justify drill testing without further geophysics.

IP lines 2N to 8N cross hole TYN002 and Zone 5, and are of interest in confirming (or not) the existence of alteration in the Zone.

Borehole EM data exists for holes TYN011, 12, and BLD89-3. This data should be reviewed as part of an assessment of the geophysical expression of alteration in Zones 1A and 9.

RECOMMENDATIONS

1) Zones 3A, 5 and 6 are new areas prospective for alteration. These should be drilled to 200 m depth. IP data from 1967 exists over the zone and should be inverted.

2) Zones 7,8 give a new target area with potential for alteration to depths exceeding 400 m. Due to high noise in the CSAMT data in these zones, further geophysics (eg IP) is recommended prior to drilling. Study zone 8 in section with holes TYN009 and TYN001, and with re-interpreted IP data.

3) Zone 10 is a new target with potential for alteration to depths exceeding 400 m. Due to the location of this zone at the end of line 5351800N, and lack of continuity north or south, this zone requires further geophysics prior to drilling.

4) Study Zone 1C in section, with holes BL004 and BL008. Drilling to 300 m depth is required to adequately test this.

5) Zone 9 has previously shown significant alteration in drill core, and the CSAMT anomaly persisting to depth gives the zone continuing interest. Examination of the parasections suggests that the strongest resistivity lows have not been tested. Re-examination of the drill core and available borehole EM data with the CSAMT parasections, is required in order to target further drilling.

REFERENCES

Dauth, C., 1999, Basin Lake and South Henty Project CSAMT, Technical Note 8 Jan 99, Goldfields Exploration.

Jones, A.G., 1983, On the equivalence of the "Niblett" and "Bostick" transformations in the magnetic-telluric method: Journal of Geophysics, v.53, 72-73.

Torres-Verdin, C., and Bostick, F.X., 1992, Principles of spatial surface electric field filtering in magnetic-tellurics; electromagnetic array profiling (EMAP): Geophysics v.57, 603-622.

LIST OF PLATES INCLUDED IN THIS REPORT

PLATE 1 Basin Lake EL19/98
Depth Slice top 50m, dropped on topography

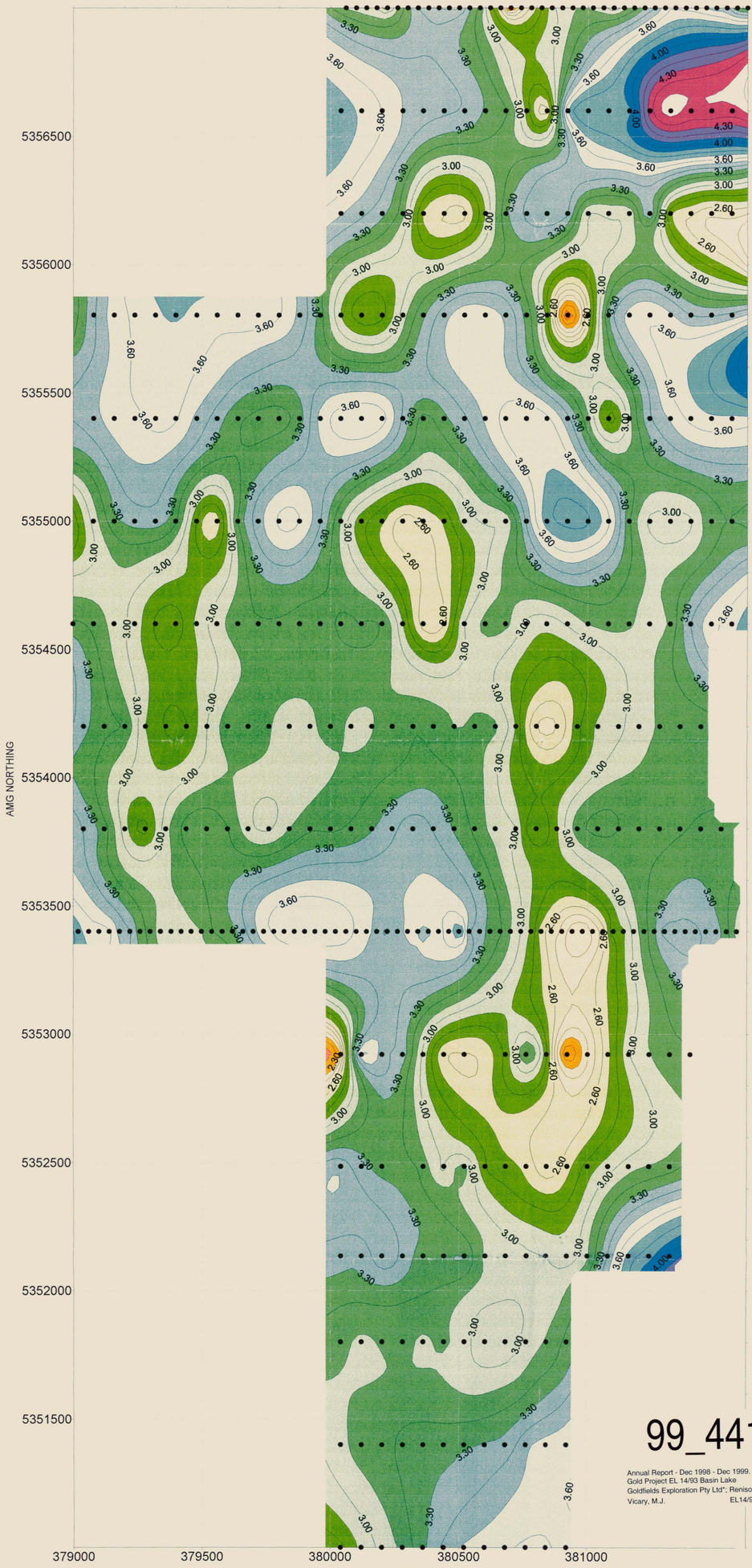
PLATE 2 Frequency slice 2048 Hz

PLATE 3 Frequency slice 512 Hz

PLATE 4 Depth slice 300m below topographic maximum i.e. at RL = +360m

PLATE 5 Depth slice 500m below topographic maximum, i.e. at RL = +160m

PLATE 6 Basin Lake EL19/98
Conductive trends interpreted from CSAMT surveys



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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

PLATE 1

0 500 1000 1500 2000

5 cm

GOLDFIELDS EXPLORATION

BASIN LAKE (TAS) - CSAMT INTERPRETATION
Bostick Resistivity
Depth Slice draped on topographic surface

Drawn by: Flagstaff Geo-Consultants
16/9/99

Flagstaff Geo-consultants

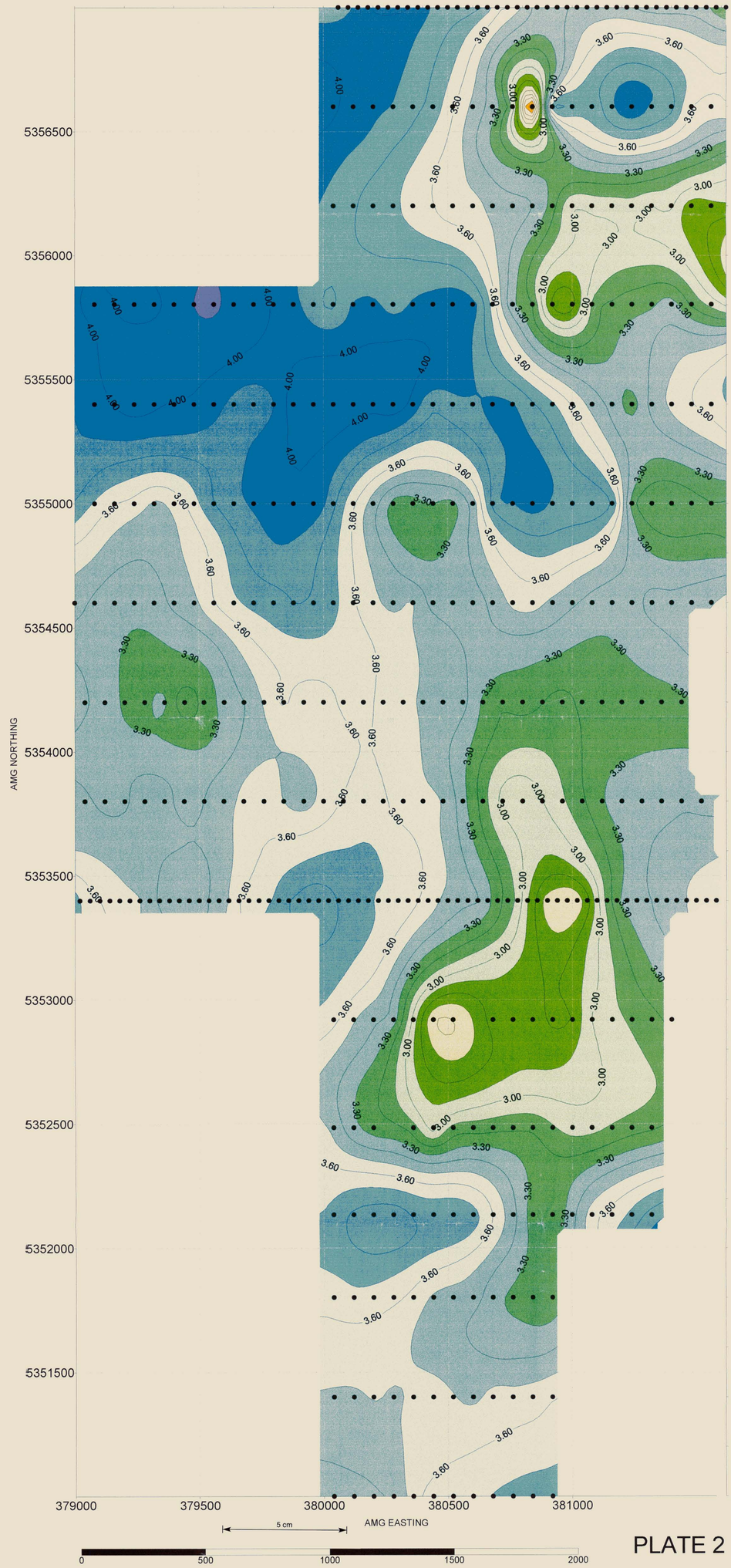

PLATE 2

99_4411

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GOLDFIELDS EXPLORATION

BASIN LAKE (TAS) - CSAMT INTERPRETATION
EMAP - Cagniard Resistivity
Frequency Slice 2048 Hz (Depths 100-300 m)

Drawn by: Flagstaff Geo-Consultants
6/9/99

Flagstaff Geo-consultants

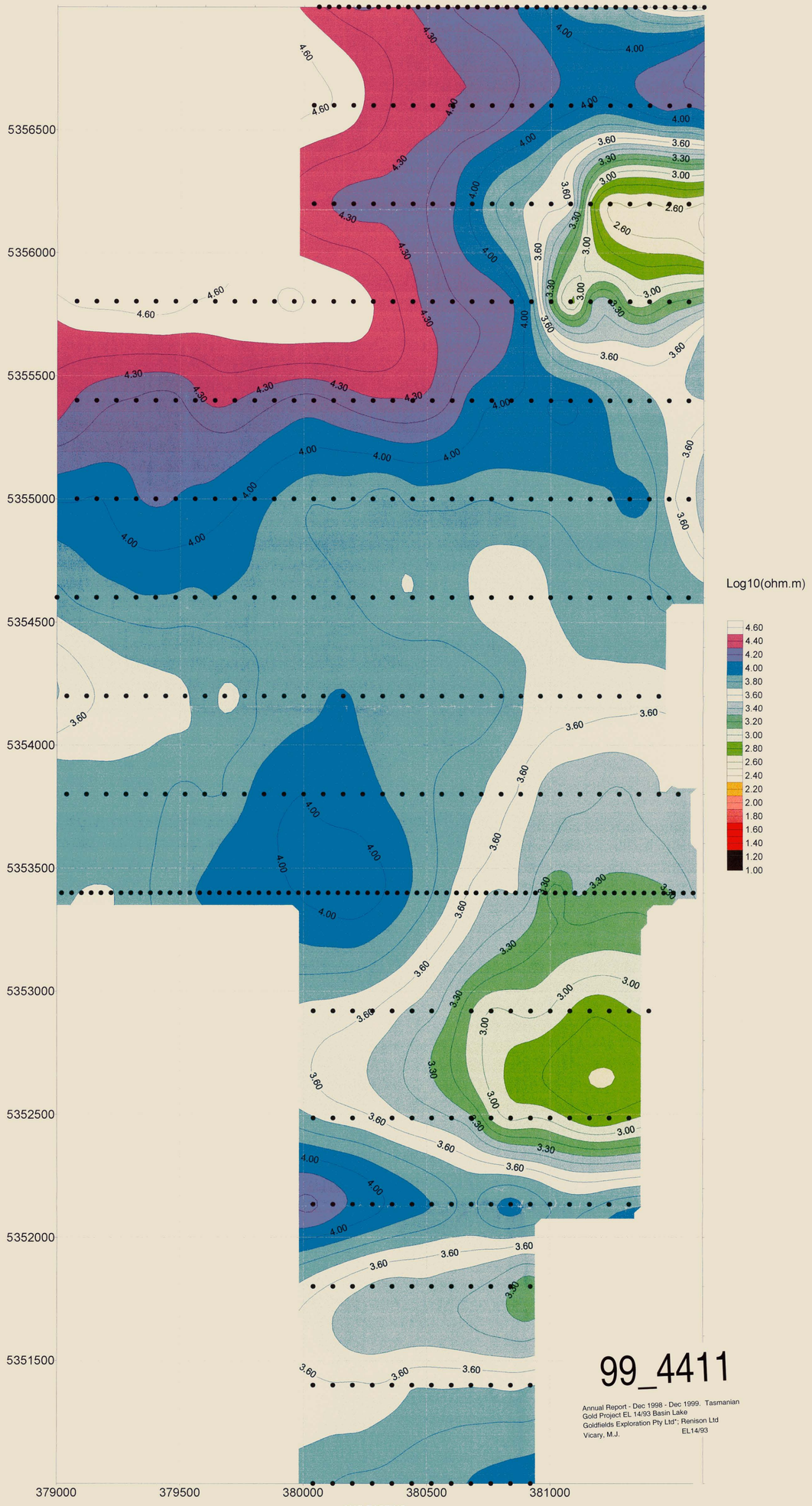

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PLATE 3

627108

GOLDFIELDS EXPLORATION

BASIN LAKE (TAS) - CSAMT INTERPRETATION
EMAP - Cagniard Resistivity
Frequency Slice 512 Hz (Deep depths 300+ m)

Drawn by: Flagstaff Geo-Consultants
6/9/99

Flagstaff Geo-Consultants

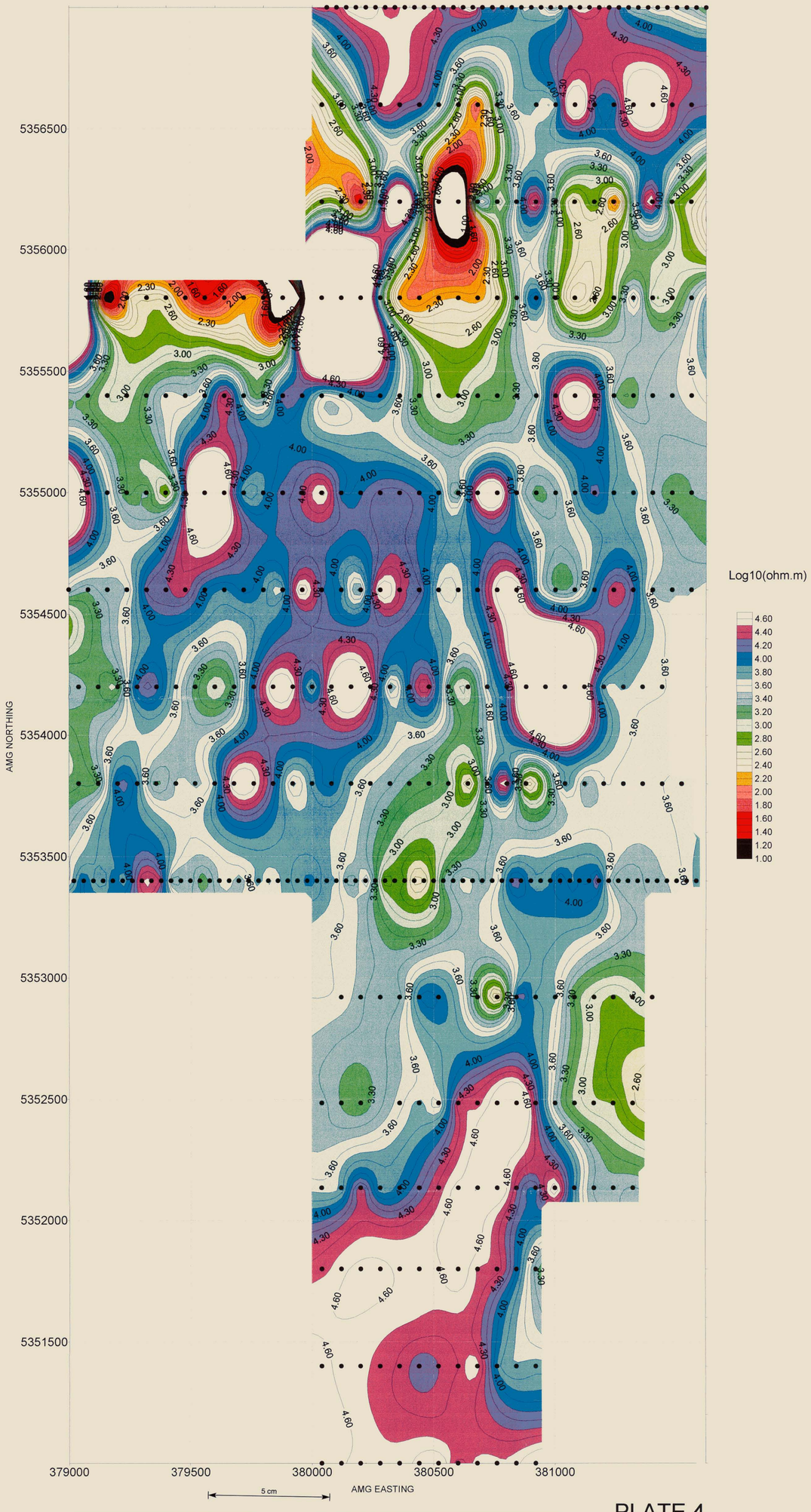

PLATE 4

99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

GOLDFIELDS EXPLORATION

BASIN LAKE (TAS) - CSAMT INTERPRETATION
Bostick Resistivity
Depth Slice 300 m, = +360 m RL

Drawn by: Flagstaff Geo-Consultants
16/9/99

Flagstaff Geo-consultants

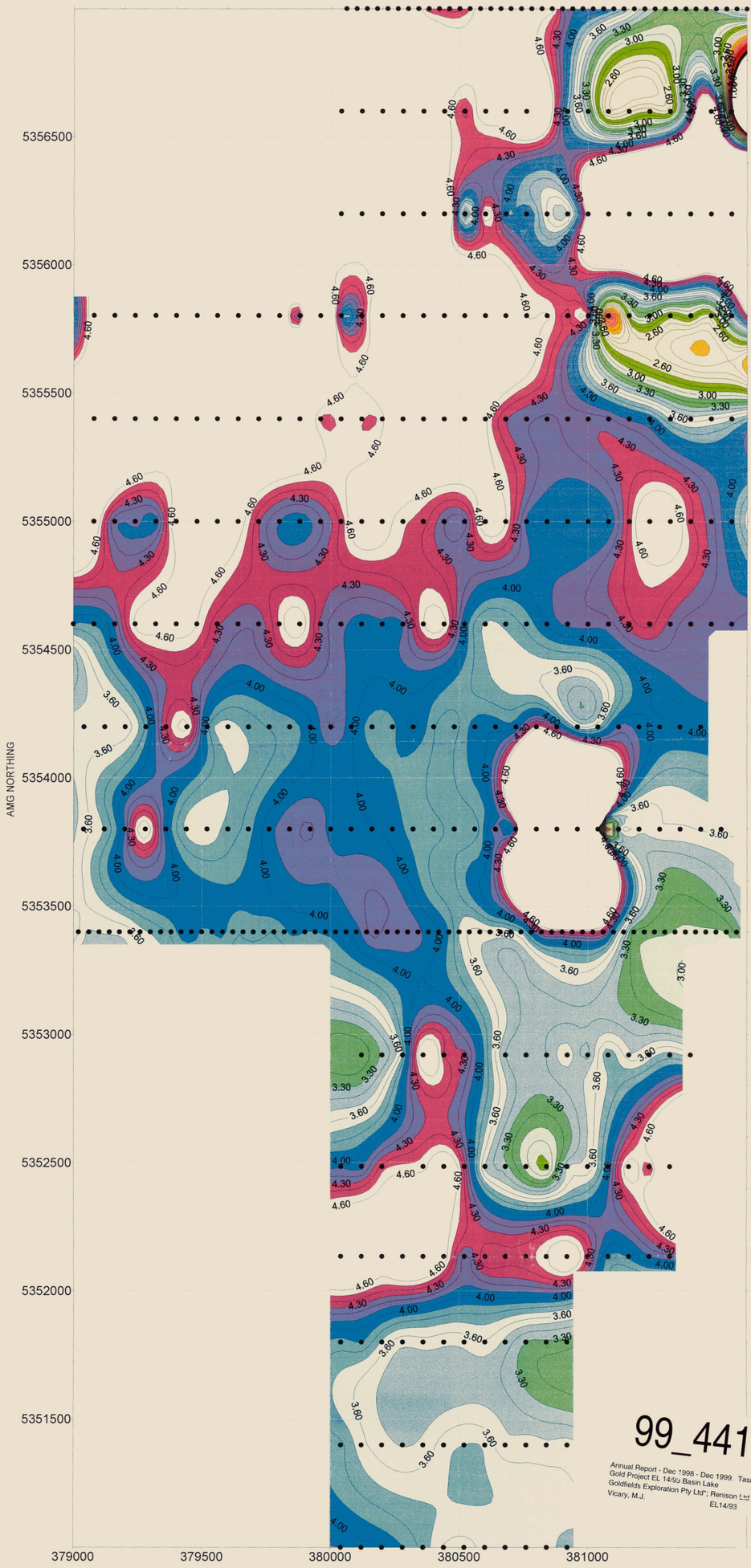

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PLATE 5

0 500 1000 1500 2000

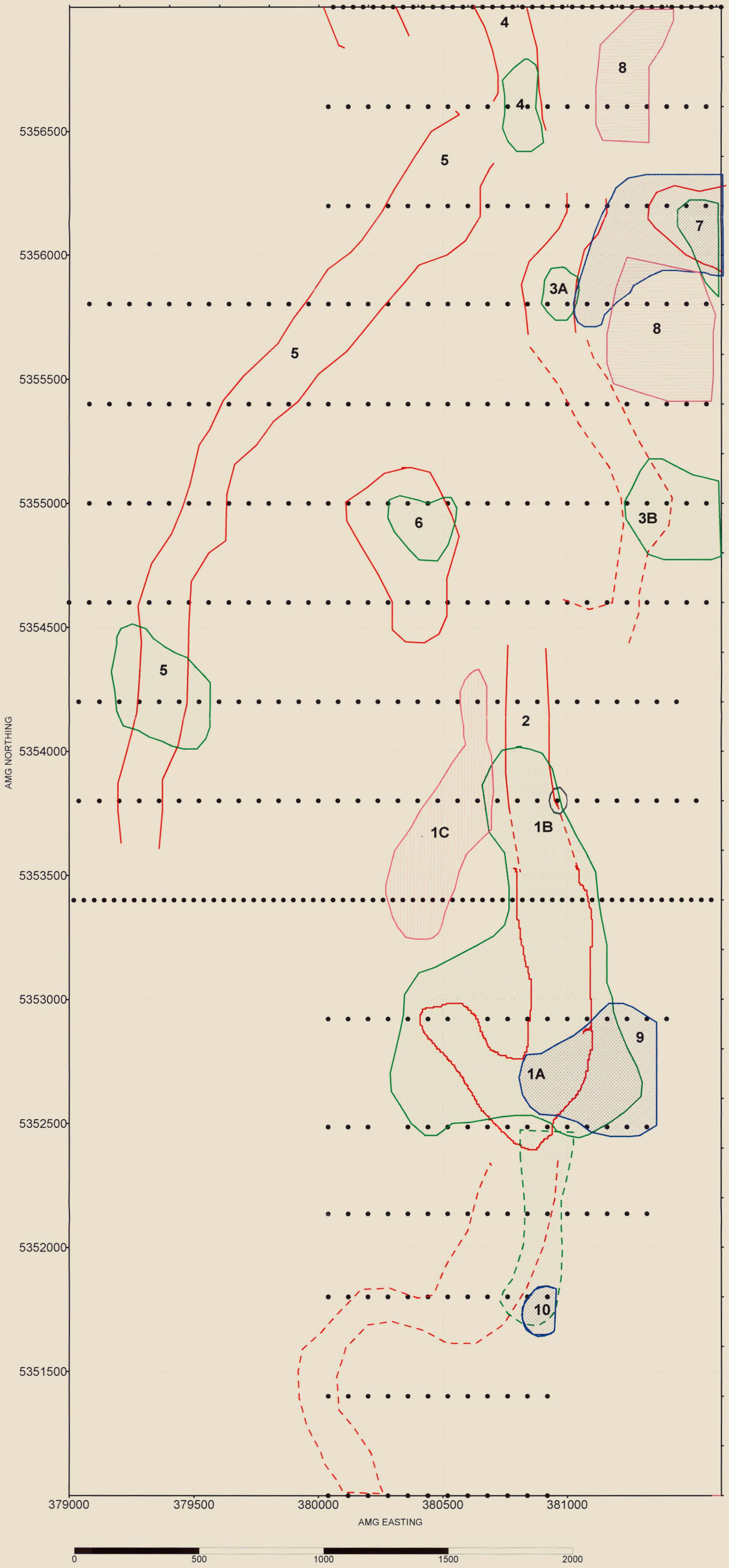
GOLDFIELDS EXPLORATION

BASIN LAKE (TAS) - CSAMT INTERPRETATION
Bostick Resistivity
Depth Slice at 500 m, RL=160 m.

Drawn by: Flagstaff Geo-Consultants
6/9/99

5 cm

Flagstaff Geo-consultants



0 500 1000 1500 2000

5 cm

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PLATE 6

627111

KEY

- CSAMT Receiver sites 1988-90
- Edges of surficial conductors (top 100 m)
- Conductor at depth 100-200 m (from 2048 Hz data)
- Conductor at depth 200-400 m (from 2048 Hz data)
- Conductor from depthslice at RL +360 m
- Conductor from depth slice at RL +260 to 160 m
- 1B Zone number (see text of report)

GOLDFIELDS EXPLORATION

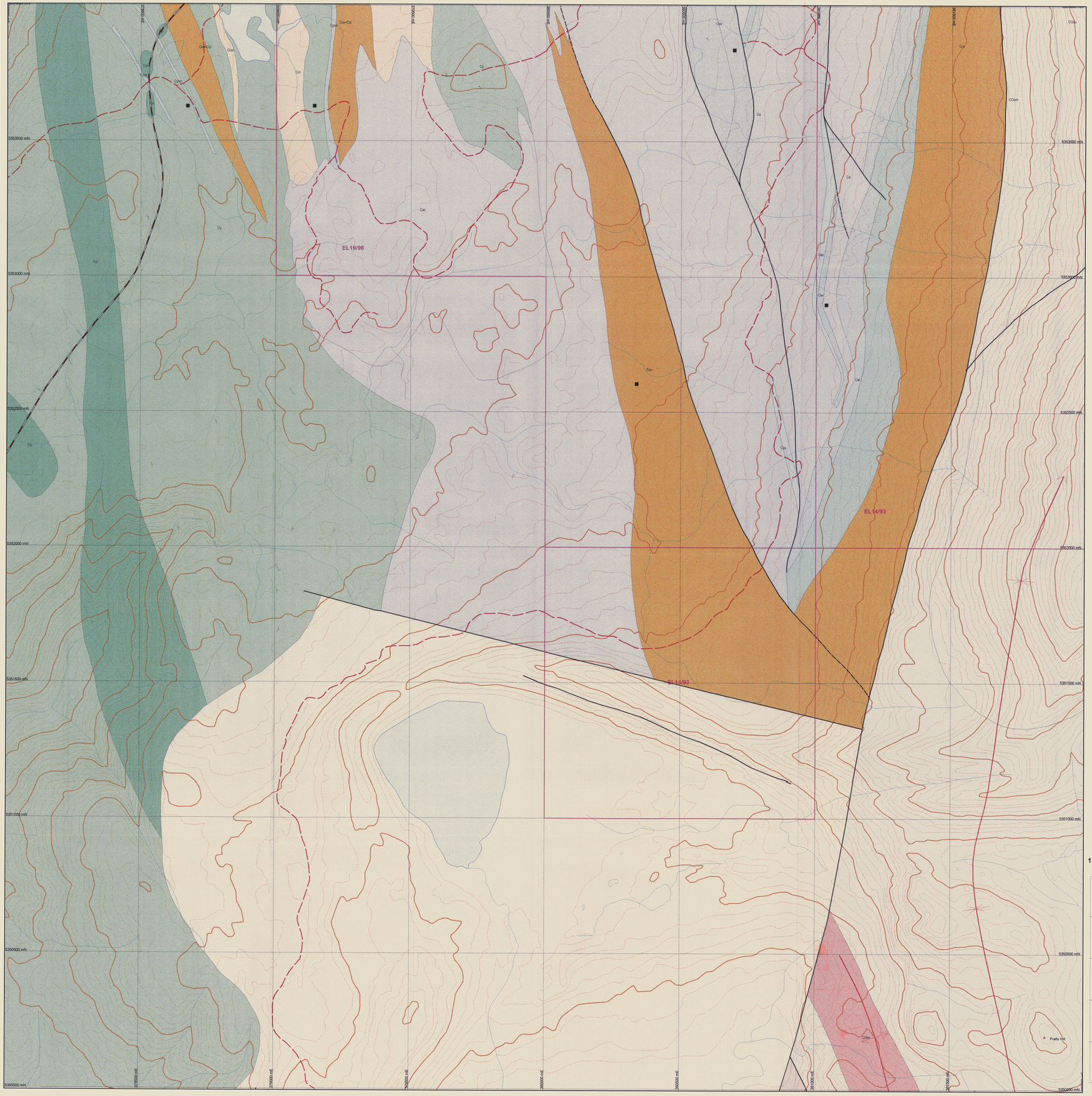
EL 19/98 BASIN LAKE - ANTHONY AREA (W. TAS.)
Zones of alteration and black siltstones (low-resistivity zones) re-interpreted from Biliton CSAMT data 1988-90.

Drawn by: Flagstaff Geo-Consultants (Michael Asten) 20/9/99

Flagstaff Geo-consultants

627112

Plans



Qu Undifferentiated Quaternary sediments

Qgl Mainly limestone commonly decomposed to black clay "pug"

COou Upper Owen correlates in Tyndall Range - Mt Murchison area. Predominately pink sandstone & granite - pebble conglomerate, includes granule - pebble conglomerate (COouc) & grey sandstone and conglomerate (COoug).

COoug Upper Owen correlates in Tyndall Range - Mt Murchison area. Predominately pink sandstone and granite - pebble conglomerate, includes granule - pebble conglomerate (COouc) & grey sandstone and conglomerate (COoug).

COom Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COomcs).

COomcs Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COomcs)

COqs Mainly thinly bedded quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.

COcmb Mainly thinly bedded siltstone, quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.

COcmc Mainly pebble conglomerate with minor thinly bedded quartzitic sandstone & pebbly sandstone - Newton Creek Sandstone.

Cqc Mainly volcaniclastic conglomerate with minor siltstone and volcaniclastic sandstone.

Cbs Bedded sandstone - siltstone units

Cct Mainly crystal - rich volcanic sandstone (quartz-feldspar phyric). Comstock Tuff and correlates.

Cctg? Chert rich mass flow horizon. Basal unit to Comstock Tuff.

Clft Crystal - rich volcanic sandstone (feldspar-pyroxene phyric), lithic-rich bases with minor ash, sandstone & limestone. Lynchford Tuff & correlates.

Cly Quartz phyric lava & tuff. Possibly equivalent to Lower Tyndall Group.

Cfl Quartz-feldspar phyric lava

Cfbg

Cfbs Graded crystal-rich volcanic sandstone (feldspar-quartz phyric) with interbedded black siltstone (Lynchford Tuff correlate)

Sulphide Lenses

Cx Andesitic to basaltic intrusive bodies with lavas & clastic units. Includes feldspar-hornblende-pyroxene-phyric & feldspar-pyroxene phyric types & small chlorite altered dykes.

Cbs Thinly bedded black pyrite siltstone

Cav Andesitic to basaltic clastic units

Cb Basalt. Henty Dyke Swarm

Cbe Interbedded basaltic lava & volcaniclastic sediments

Cal Interbedded basaltic lava & volcaniclastic sediments

Cad

Cdv Interbedded dacitic volcaniclastic sandstone and siltstone

Cav Mainly felsic pyroclastic rocks, dominantly feldspar phyric, including pumice bearing tuff & breccia, crystal vitric tuff, vitric tuff & minor shale & sandstone

Cavf Mainly felsic feldspar phyric lava & intrusives; massive to flow banded or autobrecciated, with rare columnar jointing

Cavu

Cvl Mainly felsic felspar phyric lava and intrusives; massive to flow banded or autobrecciated, with rare colmnar jointing

Cvs Units of bedded siltstone, sandstone, tuff & agglomerate

Cy Undifferentiated massflows, sandstones & black siltstones

Cye Ashy siltstone

Cyl Felsic porphyry bodies, intrusive & partly extrusive.

Cys Units of bedded siltstone, sandstone

Cysl Black siltstone

Cyg Dominantly greywacke & mudstone with some interbedded vitric tuff, crystal tuff & crystal-lithic tuff

Cyf Interbedded vitric tuff, crystal tuff, silstone, slate, sandstone & agglomerate.

Cyv Volcaniclastics

Cyb Undifferentiated Lower White Spur Formation

Cyc Crystal rich volcaniclastics sandstone

Chs Siltstone & sandstone

Geological boundary, accurate
Geological boundary, inferred
Fold feature
Fault, position accurate
Inferred Fault
Concealed Fault

Major Mine site
Mineral Deposit
Abandoned Minesite
Prospect
Mineral Occurrence

Built up populated area
Homestead (Pastoral)
Building
Railway Station
Beacon, Lighthouse
Airport or Aerodrome
Bridge
Road tunnel
Monument, Statue, Cross
Landmark Object

Named Relief Feature
Mountain or mountain range
Pass
Cliff, Escarpment, Breakaway
Sand Ridge or Sand Dunes
Spur, Spur line
Rock
Plateau
Valley
Gully, Gap

Cave, Cavern
Island
Point
Pool, Pond, Waterhole, Rockhole
Swamp
Waterfall
Dam
Spring
Ford
Marine, Mooring Pier, Port

Highway
Secondary Road
Minor Road
Vehicle Track
Runway
Landing Ground
Powerline
Contour line
Watercourse
Perennial Lake

0 250 500 1000

Scale 1 : 5 000

Distances in Metres
Major Contour Interval 50m
Minor Contour Interval 10m
AMG Zone 55

5 cm

1 : 5 000 Sheet Index

White Spur 53	Mount Julia 32	Julia Peak 11
Howard's Road 52	Anthony 31	Mount Tyndall 10
Henty Gorge 51	Poets Hill 30	The Bastion 9
Lhotse Face 50	Crown Hill 29	Mount Cyril 8
East Sister 49	Davies Hill 28	Cape Horn Spur 7

99_4411

No Window

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Vicary, M.J. EL14/93

Mt Read Volcanics Belt Tasmania

Plan 1
SHEET 30
Poet's Hill

627113

GEOLOGICAL INTERPRETATION

Workspace Path: I: \ draft \ mapinfo \ basemet \ bm_tas \ 2301 \ 5K \ SHEET30 \ SH30_GEOL5K.WOR

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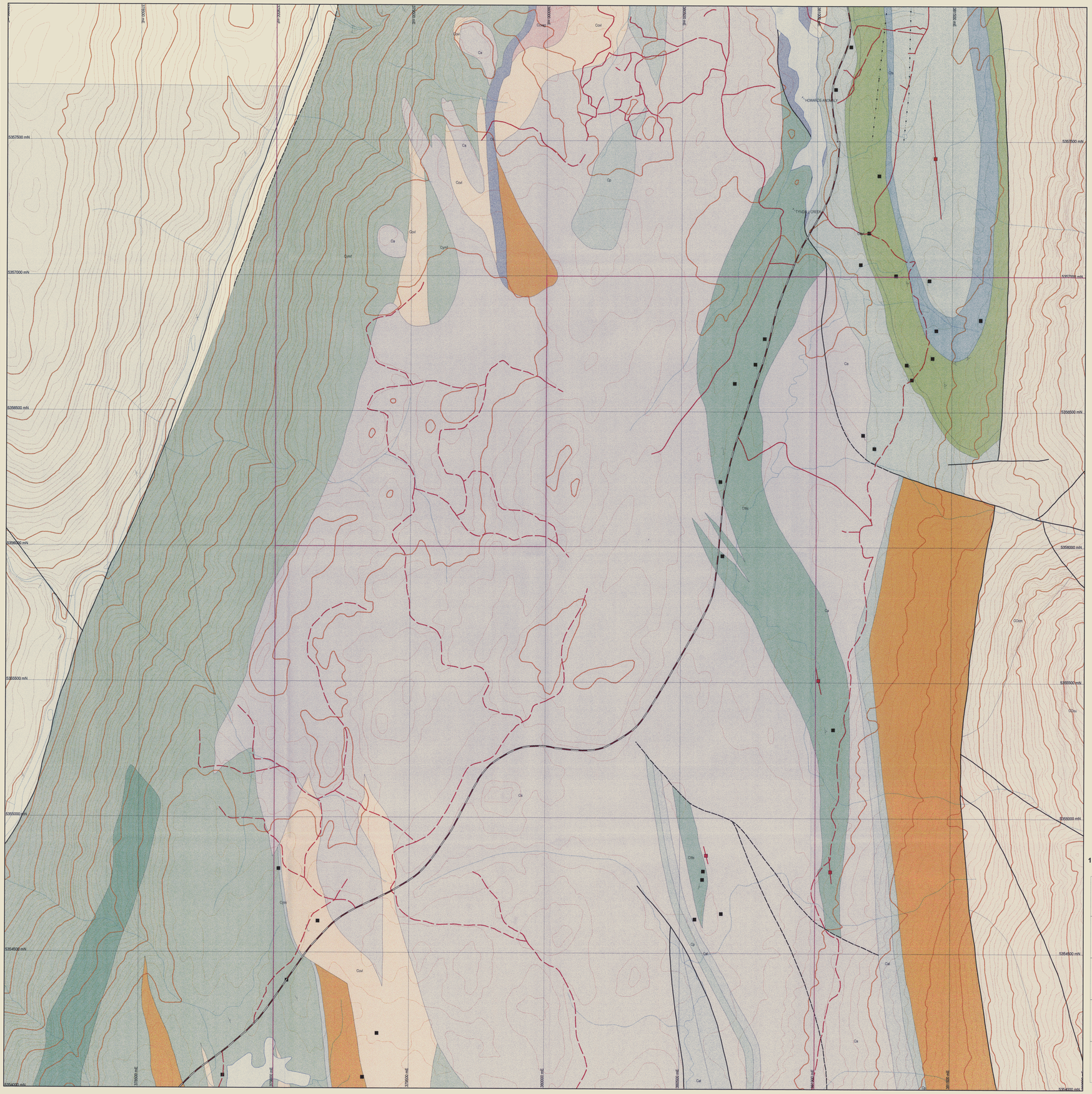
Date: October 1997



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COcug Upper Owen correlates in Tyndall Range - Mt Murchison area. Predominately pink sandstone and granule - pebble conglomerate, includes granule - pebble conglomerate (COcuc) & grey sandstone and conglomerate (COcug).

COcm Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COcmcs).

COcmcs Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COcmcs)

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Cal Interbedded basaltic lava & volcaniclastic sediments

Cad

Cdv Interbedded dacitic volcaniclastic sandstone and siltstone

Cov Mainly felsic pyroclastic rocks, dominantly feldspar phyric, including pumice bearing tuff & breccia, crystal vitric tuff, vitric tuff & minor shale & sandstone

Covf Mainly felsic feldspar phyric lava & intrusives; massive to flow banded or autobrecciated, with rare columnar jointing

Covu

Cvl Mainly felsic felspar phyric lava and intrusives; massive to flow banded or autobrecciated, with rare colmnar jointing

Cos Units of bedded siltstone, sandstone, tuff & agglomerate

Cy Undifferentiated massflows, sandstones & black siltstones

Cys Ashy siltstone

Cyi Felsic porphyry bodies, intrusive & partly extrusive.

Cys Units of bedded siltstone, sandstone

Cysb Black siltstone

Cyg Dominantly greywacke & mudstone with some interbedded vitric tuff, crystal tuff & crystal-lithic tuff

Cyf Interbedded vitric tuff, crystal tuff, silstone, slate, sandstone & agglomerate.

Cyv Volcaniclastics

Cgb Undifferentiated Lower White Spur Formation

Cgs Crystal rich volcaniclastics sandstone

Cbs Siltstone & sandstone

Geological boundary, accurate
Geological boundary, inferred
Fold feature
Fault, position accurate
Inferred Fault
Concealed Fault
Major Mine site
Mineral Deposit
Abandoned Mineslte
Prospect
Mineral Occurrence
Built up populated area
Homestead (Pastoral)
Building
Railway Station
Beacon, Lighthouse
Airport or Aerodrome
Bridge
Road tunnel
Monument, Statue, Cross
Landmark Object
Named Relief Feature
Mountain or mountain range
Pass
Cliff, Escarpment, Breakaway
Sand Ridge or Sand Dunes
Spur, Spur line
Rock
Plateau
Valley
Gully, Gap
Cave, Cavern
Island
Point
Pool, Pond, Waterhole, Rockhole
Swamp
Waterfall
Dam
Spring
Ford
Marine, Mooring Pier, Port
Highway
Secondary Road
Minor Road
Vehicle Track
Runway
Landing Ground
Powerline
Contour line
Watercourse
Perennial Lake

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0 250 500 1000

Scale 1 : 5 000

Distances in Metres
Major Contour Interval 50m
Minor Contour Interval 10m
AMG Zone 55

5 cm

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Mt Read Volcanics Belt Tasmania

Plan 2
SHEET 31
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GEOLOGICAL INTERPRETATION

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Basin Lake

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Appendix 6

Reinterpretation of IP Profiles, Basin Lake Grid (W Tas)

AUTHOR(s): Michael Asten
Flagstaff Geo-Consultants

13 December, 1999

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Report 9910/3 for
GOLDFIELDS EXPLORATION

Re-interpretation of IP profiles, Anthony - Basin Lake areas (W. Tas) El 19/98 and EL 14/93

Michael W Asten
Flagstaff GeoConsultants Pty Ltd

27 Oct 1999

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Flagstaff GeoConsultants

RE-INTERPRETATION OF IP PROFILES, ANTHONY AREA AND BASIN LAKE GRID (W. TAS)

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DATA SUPPLIED

This re-interpretation uses dipole-dipole resistivity and chargeability data from surveys conducted by Scintrex in 1981 and 1982, and by McPhar Geophysics (1967). Lines 30S and 36 S were digitised from Figures 11 and 12 of Bishop (1982). Line 78S was digitised from a MLM&R plot of pseudo-sections and borehole sections dated May 1982 (scale 1:2000). Lines 16N, 14N, 12N, 10N, 8N, 6N, 4N and 2N were digitised from original pseudo-sections provided by McPhar in 1967.

The resistivity and IP data was inverted using the University of British Columbia 2D inversion software (Oldenburg et al, 1997).

A base map at scale 1:5000, showing locations of the Lines on the Mt Tyndall East grid, as drawn by the MLM&R in 1982, was used as the primary geographic reference. Note the uncertainty in the positions of lines 2N and 4N discussed below.

Sketches of geology in plan and section were provided by M Vicary, and are included in Appendix 2 of this report.

CSAMT data referred to in this report dates from 1988 and 1990 (acquired by Biliton). The most recent re-interpretation of the CSAMT data was reported in Asten (1999) and Vicary (1999).

LINE 78S (holes BL001, BLD89-3 – Basin Lake Prospect)

(Scintrex March 1982 dipole-dipole survey, a=200 ft).
Inversion data is shown on Figure 1 (scale 1:5000) and Figure 2 (scale 1:2000). The pseudo-section and borehole section from MLM&R (1982) is included as Figure 4. A 1:5000 sketched geological section from Dauth (1999) is included as Figure 3.

The most prominent anomaly is Line 78S, 5400 ft E (=AMG 380840mE, 5352430mN), at depth 60 m (200 ft). The anomaly is a prominent resistivity low and IP high. It is depth-limited in IP, ie does not extend to >100 m depth. The glacials at this location are of order 30 m thick, hence this anomaly is not due to clays. The anomaly is one of the strongest on the prospect (equivalent to 10% to 20% PFE – see Appendix 1) and this strength is suggestive of sulfides rather than (or as well as) black siltstone, by analogy with IP data on Line 30S near hole BL004. This anomaly is centred 130 m west of the collar of hole BL001, west of a black siltstone unit, and within a wedge of andesites according to the geological sketch of Figure 3.

Figures 5 and 6 show sections of hole BLD89-2 at scales 1:1500 (approx) and 1:5000 respectively. Hole BLD89-2 is located 130 m south of BL001, and intersected black siltstone. When the trace of hole BLD89-2 is projected on to the section (Figure 4) the black siltstone intersected correlates with the sketched location of black siltstone on the section, and leaves the origin of the geophysical anomaly unexplained. Thus I continue to favour the proposition that the IP anomaly at 380840mE is due to sulfides.

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There is a weak resistivity low at 6000 ft E (=AMG 381000mE). This weak conductor was drilled by BL001 (depth 100-150m) but there is no noticeable change in background alteration of the drill core which explains the resistivity anomaly.

There is a moderate resistivity low and IP high (equivalent to 5% to 10% PFE – see Appendix 1)at the eastern end of the line, below 6900 ft E at depth 100 m (300 ft). This zone correlates well with a zone of sericite-pyrite alteration in qz-porphyry, intersected in hole BLD89-3.

LINE 30S (holes BLD004, 5, 8 and 3; Langdon Prospect)

This dipole-dipole data (a=200 ft) has the advantage of having double coverage and correspondingly higher lateral resolution than normal data. Figures 7 and 8 show the inversion sections at scale 1:5000 and 1:2000. Figures 9 , 10 and 11 show sketched geological sections from Vicary (see Appendix 2) at 1:5000, and from Bishop and Lewis (1988) at scale 1:2000.

The IP response on this line, in the vicinity of hole BLD004, was studied by Bishop and Lewis (1988). They commented on the difficulty of resolving the responses of massive pyrite from adjacent black siltstones, and concluded that the gradient-array IP data gave best resolution (where dipole-dipole, UTEM and Sirotem EM techniques failed). Inversion methodology allows us to re-examine their conclusions.

Pyritic black siltstones subcrop at 6300-6400 ft E (from drill data, hole BL004). These show in inverted resistivity data as a clear near-surface resistivity low, but they show only a weak IP high. Massive pyrite at 6550 ft E shows a resisitivity low and strong IP high; we conclude that inversion of the dipole-dipole IP data allows resolution of these two geological units, whereas viewing pseudo-sections alone did not.

Note that the inverted data indicates the presence of additional conductors below glacial till, at 7500 ft E, 8000 ft E and 8600 ft E, but these resistive anomalies lack significant corresponding IP anomalies. It is possible that these anomalies represent additional black siltstone units east of hole BL004.

A comparison of geological data with inverted IP data (Figures 7 and 9) shows that hole BL004 intersected massive sulfides (pyrite) exactly correlating with the location of the IP high. There is a secondary IP high 300 ft (100 m) to the east, which correlates with a sericite-pyrite alteration zone, separated from the western mineralisation zone by a central zone of unaltered andesites. I conclude that massive pyrite and sericite-pyrite alteration in this locality give stronger IP responses than the black siltstones. This result gives added confidence to the prediction of sulfide mineralisation on Line 78S.

LINE 36S (holes BL005 - and BL008 projected)

Figures 12 and 13 show the inverted resistivity and IP data at scales 1:5000 and 1:2000 respectively. Figure 10 (section through hole BL005) is the nearest geological section to this geophysical data.

A near-surface resistivity low and IP high at 6100-6200 ft E is clearly associated with black siltstones intersected in hole BL005. The apparent easterly dip of the conductor as imaged by the inversion is contrary to current geological thinking

A second feature of interest is a resistivity low at 6800 ft E (depth 80 m or 250 ft) and IP high at depth 160 m (or 500 ft). This zone appears to correlate with the weak IP high already discussed at 6850 ft E on line 30S. No black siltstones appear to be known in this stratigraphic position, but sericite-pyrite alteration of dacites/rhyolites are shown in Figure 10. This leads to the interpretation that this conductive and polarisable zone has an increase in mineralisation to the south, and plunges to the south. Note that hole BL008 shown on Figure 10 is a projection; the hole lies north of the significant polarisable zone observed on line 36S.

IP anomalies from inversion of lines 30S and 36S are shown in plan view in Figure 17a.

LOCATION OF LINES 4N and 2N

Lines 4N and 2N from the 1967 resistivity-IP survey give additional support to the interpretation model of mineralisation increasing and plunging to the south.

Figure 2 of the Appendix 2 shows the relative position of lines 4N, 2N, 30S and 36S. Note that there is some doubt as to the actual (AMG) and relative location of these lines. The position of line 2N arcs to the south on the MLM&R 1:5000 base map (May 1982), but the IP line is straight in the presentation by Bishop (1982, Fig. 3). The original IP pseudosections for Line 2N show power lines and phone lines cutting the surveyed line, which suggests a straight profile as per the Bishop plan. However the relative location of the Basin Lake (00 S to 95 S) and East Tyndall grids (2N to 40N) shown on the two base maps mentioned, differs by up to 130 m. In particular, hole BL003 lies south on line 4N on the MLM&R base map, but is north of 4N on the Bishop plan. Figure 2 of the Appendix 2 shows line 2N as two lines 130 m apart, representing the likely limits of uncertainty in position, relative to AMG.

Line 4N and 2N also suffer from uncertainty in location of their easting coordinates, as eastings for these two lines are not marked on the MLM&R base map. However the original IP pseudo-sections from 1967 show the position of power lines, which has been used in this work to define a reference point for local eastings in feet.

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LINE 8N (east end - Langdon Prospect)

The inversion data is shown in Figure 20. The results show only surficial low-resistivity material presumed to be glacial cover. No IP reponse of note is observed.

LINE 6N (east end – Langdon Prospect

The inversion data is shown in Figure 19. The results show a broad surficial resistivity low, with extension to depth at 4650 ft E and 5300 ft E. A narrow IP high (PFE 11%) outcropping at 4500 ft E, dipping steeply east and extending to depth, is the most significant feature. This is along strike from sericite-pyrite alteration mapped 200 m to the south in hole BL006. This IP high correlates with a similar high on Line 4N – see locations marked on Figure 17a.

LINE 4N (hole BL003 – Langdon Prospect)

The inversion data is shown in Figure 14, from original pseudo-sections (a=300 ft). This line shows only minor surficial resistivity lows, which is probably explained by the fact that the line lies mainly north of a NW-SE fault which cuts off the black siltstones and altered volcanics which subcrop (as discussed above) to the south (see Fig. 1 of the Appendix 2).

The surficial IP high outcropping between 5000-5300 ft E correlates with the location of black siltstone as interpreted from extrapolation from hole BL004 (see geological sketch map in Figure 17a and in Appendix 2 Figure 1). This north-north-west interpretation of the geological strike allows the strong east-dipping IP high at 5700 ft E to be associated with sericite-pyrite alteration (and or massive pyrite) as intersected 200 m south in hole BL004. This IP high has Pfe values to 11% and probably correlates with the similar anomaly on Line 6N.

The moderate IP high (PFE 4%) at 7000 ft E has probably been tested by hole BL003. The lack of alteration seen in this hole (Appendix 2, Fig. 6) however, leaves this IP feature inadequately explained.

LINE 2N

Figure 15 shows the inverted resistivity and IP data (a=300 ft).

The surficial resistivity low and IP high at 5700-6000 ft E probably is mapping the southerly continuation of black siltstone from hole BL004.

The most striking feature is the large and very strong IP high of PFE15% at 6300-6600 ft E, depth 100-200m (300-600 ft). This correlates in location with the IP high

noted at 6800 ft E on line 36S, and thus supports the interpretation model of mineralisation increasing and plunging to the south.

DRILLING TARGETS – BASIN LAKE PROSPECT

Figure 3 shows the drill target identified from interpretation of IP data on line 78S. The target is located at AMG 380840mE, 5352430mN, at depth 60 m, and is depth-limited. It is probably sulfides rather than siltstone, based on the comparison with IP data near hole BL004.

CORRELATION WITH CSAMT DATA

The target zone for mineralisation, and the known black siltstones, correspond well with Zone 1B defined from the CSAMT interpretation. Since CSAMT is sensitive to low resistivities, but not to IP, it is expected that the CSAMT will map both siltstones and mineralisation.

DRILLING TARGET – Langdon Prospect (south)

Figures 16 and 17 show the location of hole BL002, 300 m south of BL005. Noting the location of faults in holes BL002 and BL005, I have interpreted an additional NW-SE fault (Fault B) on Figure 17.

Figure 17a shows IP anomalies and proposed correlation line-to-line on the Langdon Prospect. The PFE 15% anomaly on Line 2N at 6500 ft E is the best target; it is located within altered dacites and rhyolites, bounded on the north by Fault A and on the south by Fault B. The IP anomaly correlates with IP highs within basement on lines 36S and 30S to the north, but uncertainty in the relative position of these lines makes the map in Figure 17a somewhat tentative. The drill target is shown in section on Line 5353700N, in Figure 18, but confirmation of location by comparing old survey data with land-marks, or (preferably) by a further IP survey, is necessary.

The interpretation of IP anomalies and the position of faults A and B shows that a target zone of sericite-pyrite alteration of length 300-400 m is defined for further study. It is likely that the sericite-pyrite alteration in hole TYN011 is the fault-shifted southerly extension of the target defined by IP data on lines 2N and 36S, but no historical dipole-dipole IP data near TYN011 has been found so far.

DRILLING TARGET – Langdon Prospect (north)

A section drawn from holes BL06 and BL007 shows east-dipping altered dacites/rhyolites intersected between the two PFE 11% IP anomalies (also east-dipping) imaged by inversion of data from lines 4N and 6N. The section by M.

Vicary shows that existing holes failed to test the IP anomaly which is clearly strongest at depths of order 100 m . The strike extent of this polarisable zone is at least 400 m (5354000N to 5354400N) and hence there is considerable potential for mineralisation.

CSAMT data gives some support to this zone as being anomalous, but it is not definitive. CSAMT data on line 5354200N is strongly noise affected by power-lines in the vicinity of 381000E. There is a broad surficial conductive zone extending from 380750-381100E, but conversion to Bostick resistivities and depths is degraded due to the noise levels. Subject to these caveats, the presence of a Bostick resistivity low extending to a depth of 300 m partially overlapping the IP high gives additional support for further drilling. I support the proposed hole as marked on Figure 18a.

LINES 2N, 4N, 6N, 8N and 10N, VICINITY HOLE TYN002 (Bradshaws Road Prospect)

Figures 19 -21 show inversions for IP data for Lines 6N, 8N and 10N (a=300 feet). Figures 22 and 23 show 1:5000 scale local subsections of resistivity contours derived from CSAMT data.

Reference to Figures 14, 15, and 19-21 shows a broad zone of moderately low resistivity containing patches of high IP response, striking roughly north-south, and passing through the zone of alteration mapped on the Anthony Road (379200E to 379400E). Within the broad zone of IP response, three or four individual anomalies are identifiable on each line. Correlation of individual anomalies from line to line is difficult; the most important result is that the strongest responses (up to PFE=14%) occur in the south (Line 2N) and at depth. Responses on line 6N and 8N are nearer to surface, and weaken to the north. IP response is essentially insignificant in the northern limit on Line 10N.

Figures 24 and 25 show a sketch geology map and sections for the locality (from M. Vicary) with IP and CSAMT anomalies added. Location of the Eastings of the IP data is subject to some uncertainty; I have used 00 ft E as being the location of the old Anthony Road marked on Figure 24. However if the location of power lines (annotated on the original IP pseudo-sections of 1967) is used as reference, then the IP anomalies plot about 100 m east (or 200 m east, for Line 8N) of the positions marked on the sketch in Figure 24.

The frequency slice of CSAMT resistivity data at 4096 Hz (shallow depths – Figure 22) maps surficial low resistivities and shows a north-north-east trend in the vicinity of the Anthony Road. This trend correlates well with the trend given by the IP data. CSAMT data on Line 5354600N (near Line 6N) shows a shallow conductor at 379300-379500mE, but no conductor at depth. This location, and its surficial nature, are consistent with the IP anomaly on line 6N. Note also that the two strongest

resistivity lows (on Lines 5354200N and 5355000N) coincide with IP anomalies extending to depths >100m.

CSAMT Bostick resistivities show evidence of a resistivity low dipping east, below lines 5354200N and 5353800N. This zone is imaged on the CSAMT depth slice at RL +260m (about 300m below surface) – see Figure 23. This deep conductive trend also has a north-north-east strike. It is east-shifted from the surficial CSAMT resistivity low of Figure 22, consistent with an easterly dip. Note that the 1967 IP survey (a=300 feet, n=4) does not give information at these depths.

Correlation of IP anomalies along a NNW strike (as done by Vicary) is the most probable in terms of current geological knowledge, but an alternative correlation striking north-east between line 2N and 4N on Figure 25 is also possible; this alternative has the advantage of linking the two strongest IP anomalies, and is consistent with the low-resistivity trend given by the CSAMT depth-slice data.

In addition to IP anomalies marked on Figures 24 and 25, Line 4N has a further significant anomaly at AMG 380050mE (3500 ft E). This anomaly shows no strike correlation north or south, and lies under glacials. The lack of strike extent and geological data downgrades this anomaly at present.

The most significant results from the joint study of CSAMT resistivity and IP data on this prospect, are that the IP high is strongest at the southern limit of the survey (Line 2N), it is open to the south, and the coincident CSAMT resistivity low suggests the trend extends for 200m to 300m further south. The alteration mapped on the Anthony Road is therefore likely to continue south under glacial cover a distance of at least 1000m, and may have a depth extent of up to 400 m.

RECOMMENDATION FOR FURTHER GEOPHYSICAL SURVEYS – BRADSHAWS ROAD PROSPECT

The interpretation of a conductive and polarisable zone of length >1000m and depth extent up to 400 m, extending south of geologically mapped alteration on the Anthony Road, suggests the Bradshaws Road prospect has high potential for further exploration. Only one hole (TYN002) has tested the prospect so far, and it does not pass through any of the IP highs.

I recommend a dipole-dipole IP survey over the prospect, using 100 m dipoles, and modern noise-rejection technology allowing spacings out to n=8. This should give useful mapping information to 400m depth, and allow efficient targeting of drill holes.

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DRILL RECOMMENDATIONS, BRADSHAWS RD PROSPECT VICINITY TYN002

As an immediate step towards testing the geological potential of this prospect, I recommend two drill-holes of length 250m, targeted on existing IP highs. The two recommended holes are shown on Figure 25; I have chosen these based on the highest IP responses. If the local geology (especially the black siltstone intersected in TYN002) strikes north-north-west, then these two holes will test two different stratigraphic positions. Note that the locations need careful checking with reference to any survey data recoverable relating to the 1967 East Mt Tyndall grid.

LINES 8N, 10N, 12N, 14N, 16N – TYN001 AREA, NORTH OF LANGDON PROSPECT

The most interesting anomaly in this prospect is on Line 12N, 2100 ft E to 2700 ft E, being a shallowly-dipping (30 degrees) conductor and IP high. The zone strikes south-south-east and weakens to the south but is still visible on line 10N as a conductive and IP high. The anomalous zone is possibly present to the north on Line 14N, along the same strike trend, as a weakly conductive zone without IP response. This conductive trend from 14N to 12N is consistent with the conductive trend 3A to 3B derived from CSAMT data.

The conductive and IP target on Line 12N is shallow, 150 m wide, with depth ranging from outcrop (west end) to 200 ft (60 m) over a lateral width from 2100 ft E to 2700 ft E (380800 m E to 380950 m E AMG). The zone corresponds with mapped undifferentiated central volcanic sequence Ccvu, and the eastern extent of this zone lies below hole TYN001. Hole TYN001 collared at 2700 ft E on this line, was angled west, and appears to have tested the centre of this target – see section in Figure 29. The hole intersected a sequence of interbedded black siltstones and crystal-rich volcaniclastic sandstones. Apart from minor pyrite in the siltstones, the sequence is unaltered.

A second trend of lesser interest extends from Line 8N to line 12N. Line 8N shows a thin (80 ft or 25 m thick) conductive overburden (probably till) with patchy IP highs at or near surface, at 2400 ft E and 3300 ft E. Lines 10N and 12N show a similar patchy IP response, with a strike trend north-south.

Line 16N contains an isolated IP high at 1800 ft West, depth 300 ft (100 m). It is highly localized, and weaker to the north (line 20N on the adjacent EL). The isolated nature of the anomaly gives it a low priority for further consideration.

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APPENDIX 1

RELATIVE STRENGTH OF IP ANOMALIES, 1967 and 1981 IP SURVEYS

The 1967 survey used a frequency-domain measurement, yielding anomalies in percent frequency effect (PFE). The 1981 survey used time-domain instrumentation, giving anomalies in a different unit, millivolts/volt (mV/V). Comparison of anomalies on near-coincident lines allows the units to be compared.

Two IP anomalies on Line 78S are of interest. The anomaly at depth 60m , located 130 m west of the collar of hole BL1, inverts to 80mV/V. Using the conversion factor derived below, this IP anomaly is equivalent to a range 10% to 20% PFE, ie. it is at the top of the range of IP anomalies on the Basin Lake grid, and is similar to or greater than the anomalies located north and south of hole BL6. This target west of hole BL1 is therefore a strong candidate for drill-testing (unless a geological reconstruction places black siltstone as a likely cause of the anomaly). Note however that this target, as interpreted from 200 ft dipole IP data, appears to have limited depth extent.

The second anomaly on Line 78S inverts to give a strength of 40 mv/V, equivalent to 5% to 10% PFE. This anomaly appears to have been drilled by hole BLD89-3, which intersected moderate sericite-pyrite alteration. This observation assists in assessing priorities arising from inversions of IP anomalies on the Langdon Prospect; IP targets with strengths of order 5% PFE are less likely to be of value for drill-testing.

DERIVATION OF COMPARISON

The overlapping nature of lines 4N, 2N and 30S allows comparison of IP responses from the frequency and time-domain systems, and thus provides an approximate conversion factor.

LINE	ANOMALY	MAGNITUDE
30S	surfical anomaly near collar of BL3	50mV/V
4N	ditto, near AMG 381000E	6% PFE
~~30~~S 36S	deep anomaly 100m-200m ~~east~~ west of powerline	60mV/V
2N	ditto	15% PFE.

The conversion factor for mV/V into equivalent PFE is therefore in the range x(1/4) to x(1/8).

Flagstaff GeoConsultants Pty. Ltd. (ACN 074 693 637)
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Phone: +61 3 9421 1000 Fax +61 3 9421 1099
Email: postman@flagstaff-geoconsultants.com.au WebSite: www.flagstaff-geoconsultants.com.au

627126

Flagstaff GeoConsultants

APPENDIX 2

GEOLOGICAL SECTIONS AND SKETCHES

Flagstaff GeoConsultants Pty. Ltd. (ACN 074 693 637)
Suite 2, 337A Lennox Street, (PO Box 2236) Richmond South, Victoria, 3121 Australia
Phone: +61 3 9421 1000 Fax +61 3 9421 1099
Email: postman@flagstaff-geoconsultants.com.au WebSite: www.flagstaff-geoconsultants.com.au

627129

GOLDFIELDS EXPLORATION

GOLDFIELDS EXPLORATION PTY LTD
ACN 067 013 932
Cnr Main & Gellibrand Steers P.O. Box 62 Zeehan Tas 7469
Telephone: (03) 6471 6444 Facsimile: (03) 6471 6644

FACSIMILE

golfaxz.dot

To : Michael Asten.
Fax No :
From : Michael Vicary
Date : 15 October, 1999
Subject : BL004 AREA
Pages : 4

DEAR MIKE,

A FEW SKETCHES TO ILLUSTRATE SOME OF THE MAIN FEATURES IN THE BL004 AREA.

Fig 1. Geology Plan. - Note NW-SE fault running through upper part of BL008

Fig 2. Chargeability Contours - Note two discrete anomalies, and 30 ms peak in W anomaly that corresponds with massive pyrite lens. Anomalies offset by fault.

Fig 3. X section - BL008 didnt intersect the blk siltstone in BL004. The ser-pyr alteration in BL004 is much stronger in BL004 than BL008 (ie, alteration ↓ down dip)

Note: BL006 + BL007 may have been too deep to test northern anomaly. They only intersected weak alteration.

Michael.

Principal Office: 89 Burswood Road, Post Office Box 322, Victoria Park WA 6100
Telephone: (08) 9442 8100 Facsimile: (08) 9442 8181

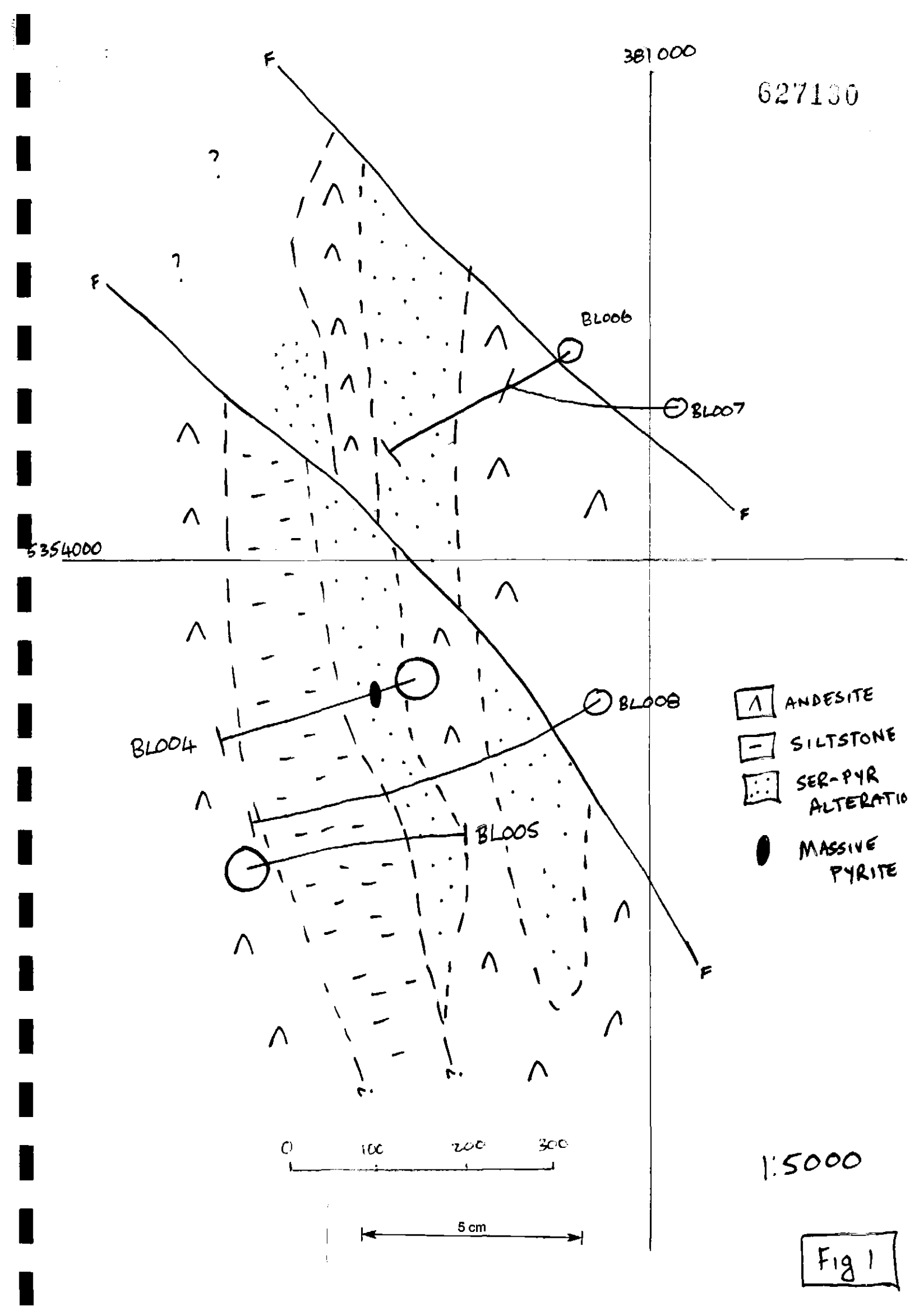
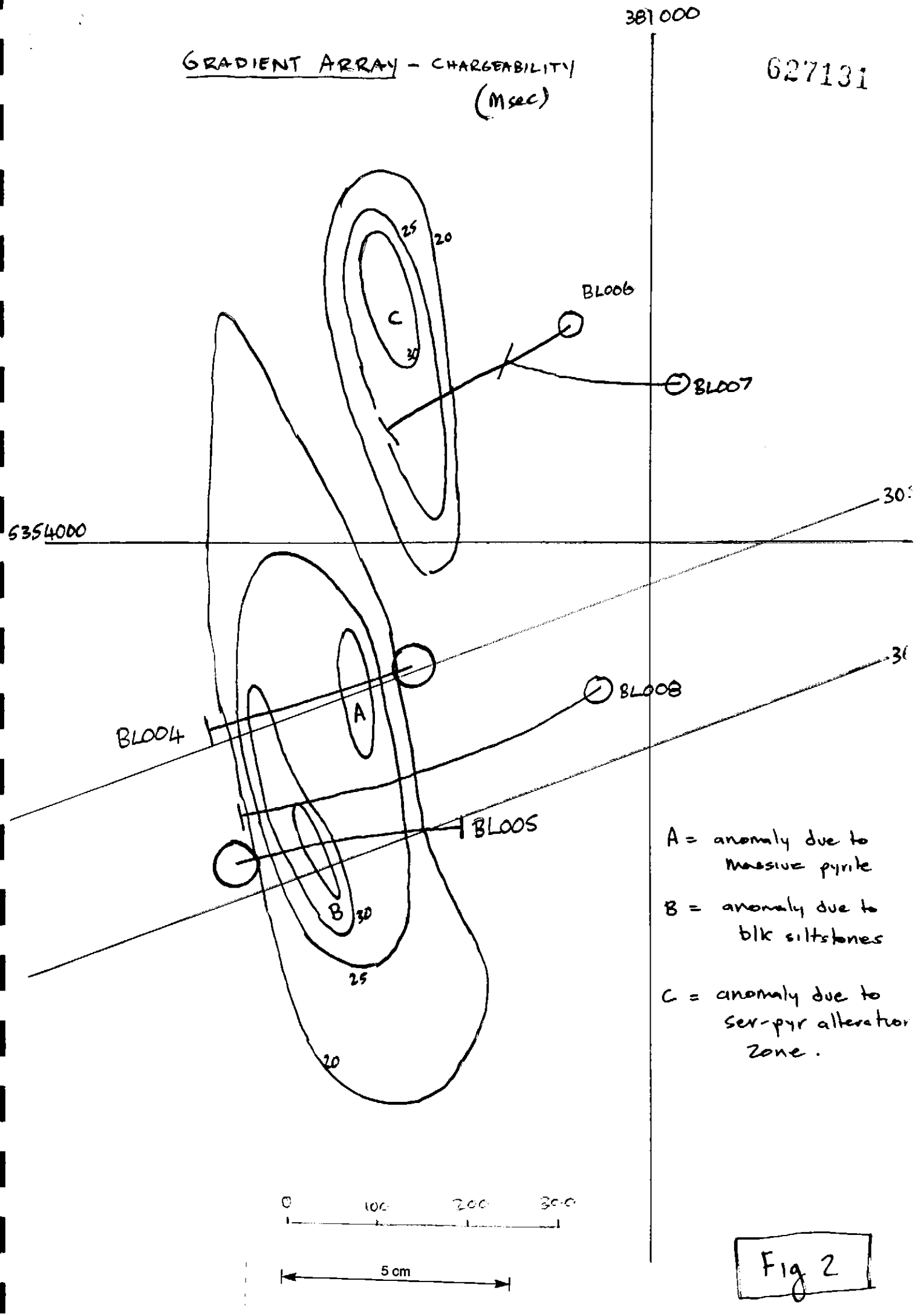

381000
627130
F
?
?
F
BL006
BL007
F
5354000
BL004
BL008
BL005
F
ANDESITE
SILTSTONE
SER-PYR ALTERATIO
MASSIVE PYRITE
0
100
200
300
1:5000
5 cm

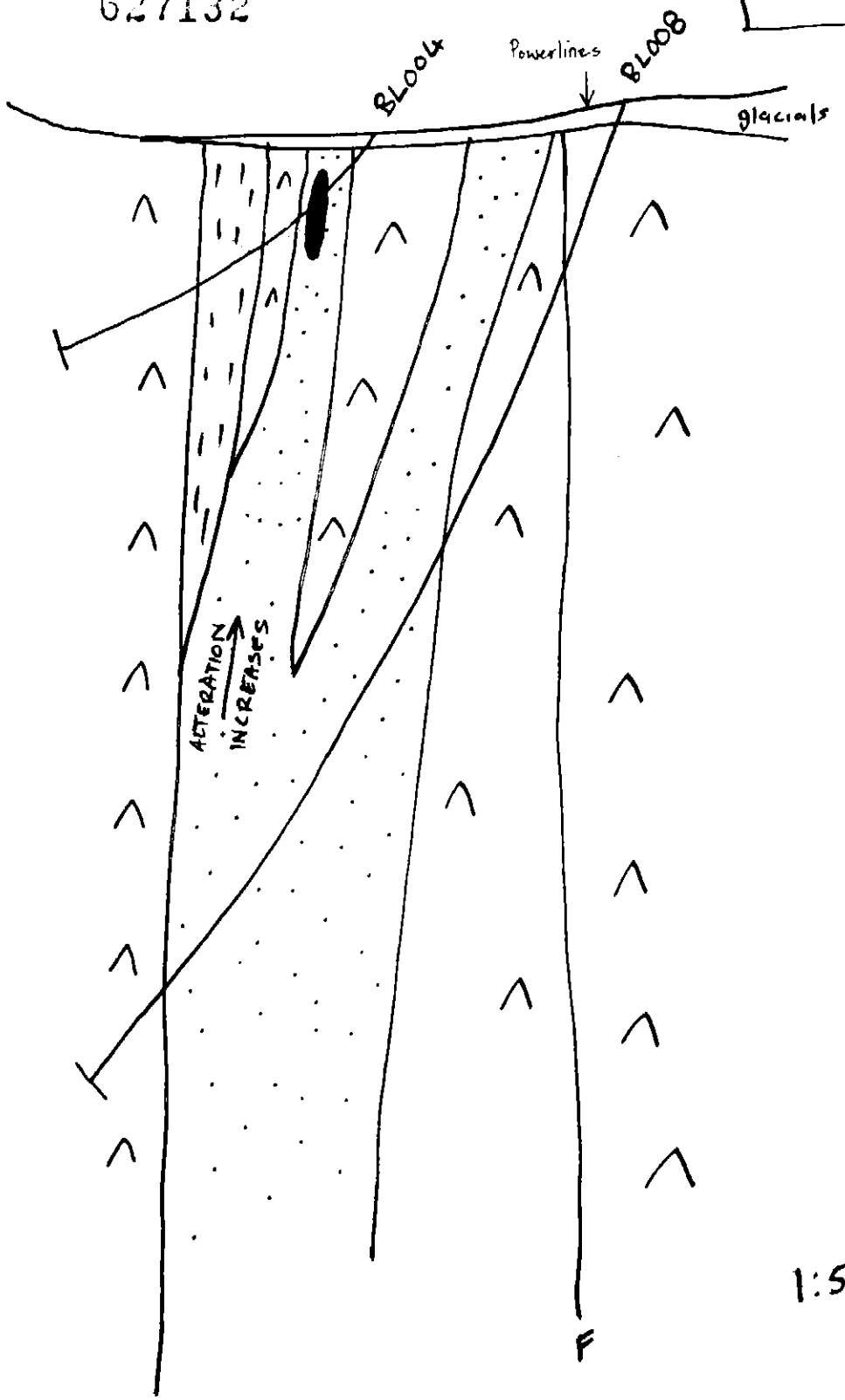
Fig 1


381000
GRADIENT ARRAY - CHARGEABILITY (Msec)
627131
25
20
C
30
BL006
BL007
5354000
A
BL004
BL008
BL005
B
30
25
20
A = anomaly due to massive pyrite
B = anomaly due to blk siltstones
C = anomaly due to ser-pyr alteration zone.
0
100
200
300
5 cm
Fig 2

627132

≃5353800mN

≃ Line 30S



1:5000

0 100 200 300

5 cm

Fig 3

627133

5353700 mN

≃ Line 36S + Line 2N

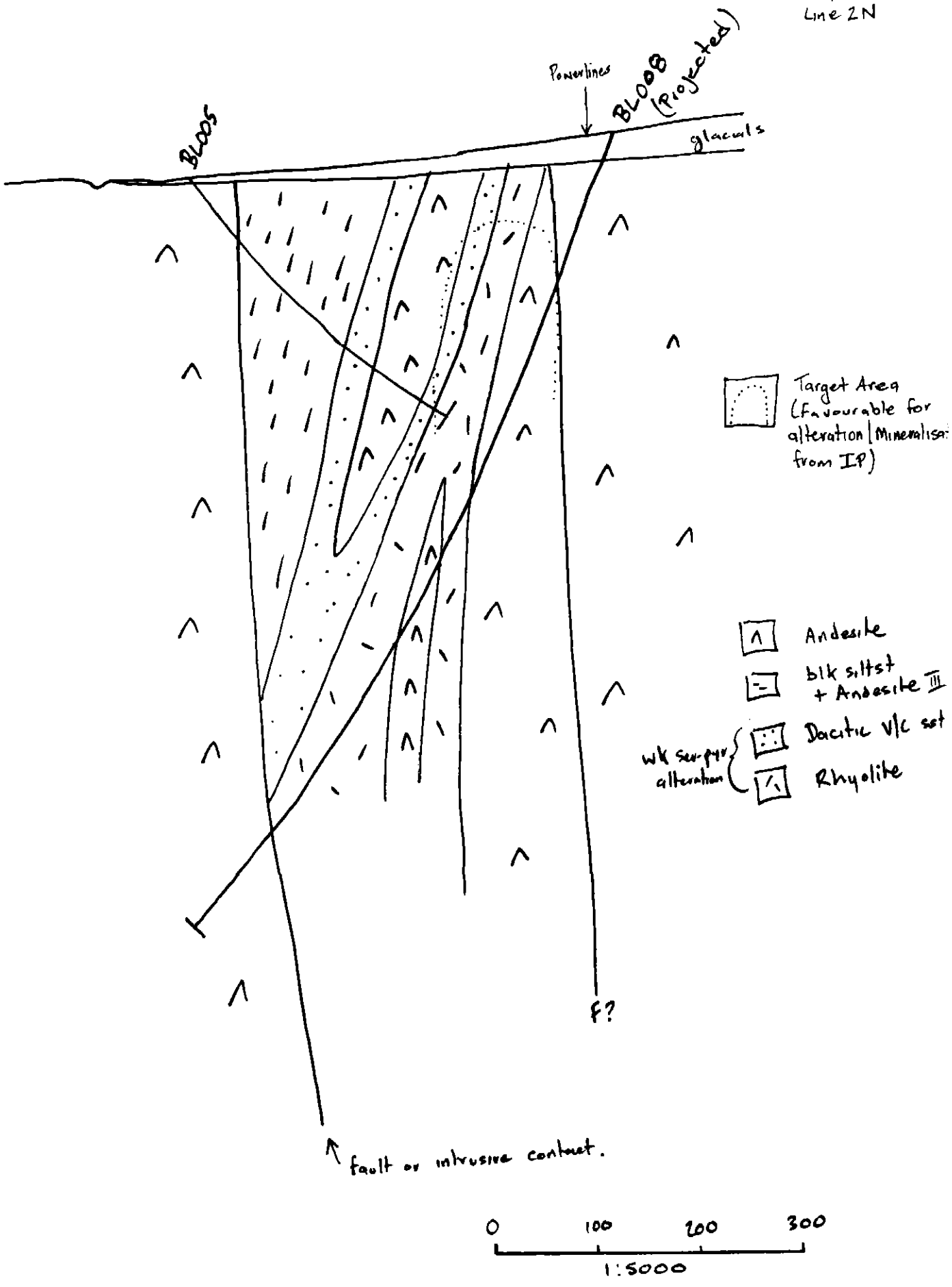


Fig 4

627134

5353400 mN

1:5000

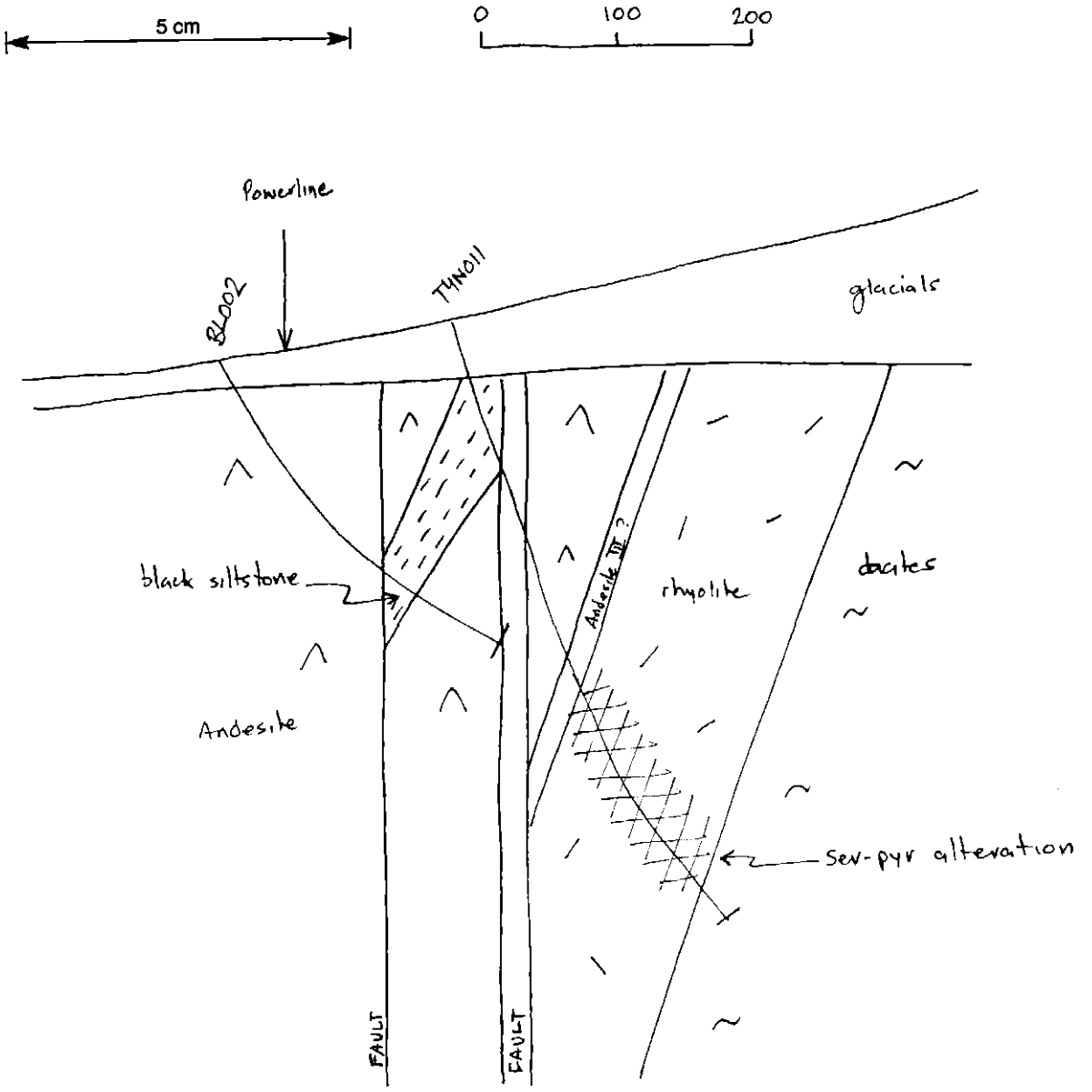
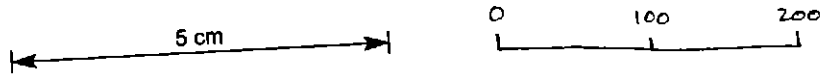


Fig 5.

5354000m N

627135

1:5000



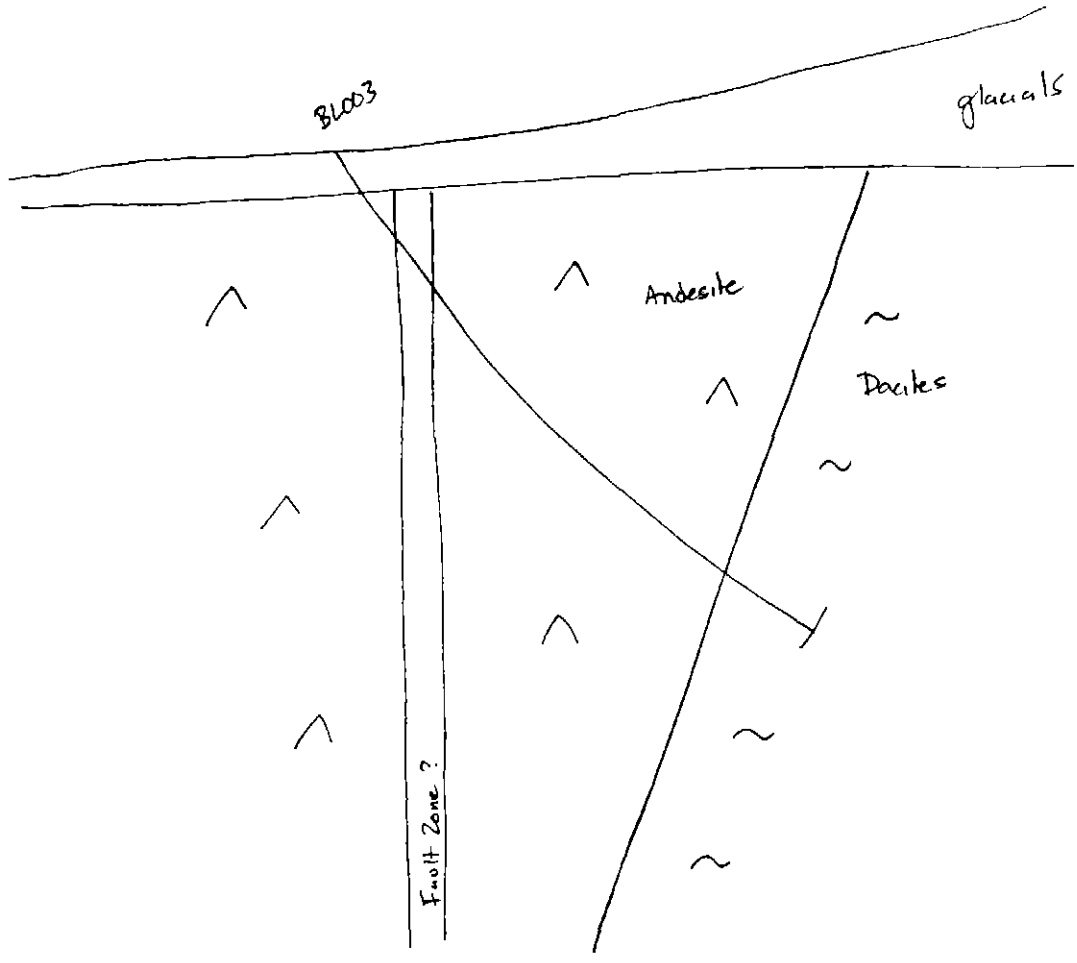


Fig. 6

627136

GOLDFIELDS EXPLORATION
GOLDFIELDS EXPLORATION PTY LTD
ACN 067 013 932
Cnr Main & Gellibrand Steers P.O. Box 62 Zeehan Tas 7469
Telephone: (03) 6471 6444 Facsimile: (03) 6471 6644

FACSIMILE

document2

To	:	Mike Asten
Fax No	:	
From	:	Michael Vicary
Date	:	10 December, 1999
Subject	:	Section 5355650mN
Pages	:	2

TYN001 intersected a sequence of interbedded black siltstones and crystal rich volcaniclastic sandstones. Apart from a bit of pyrite in the silstones the sequence is unaltered.

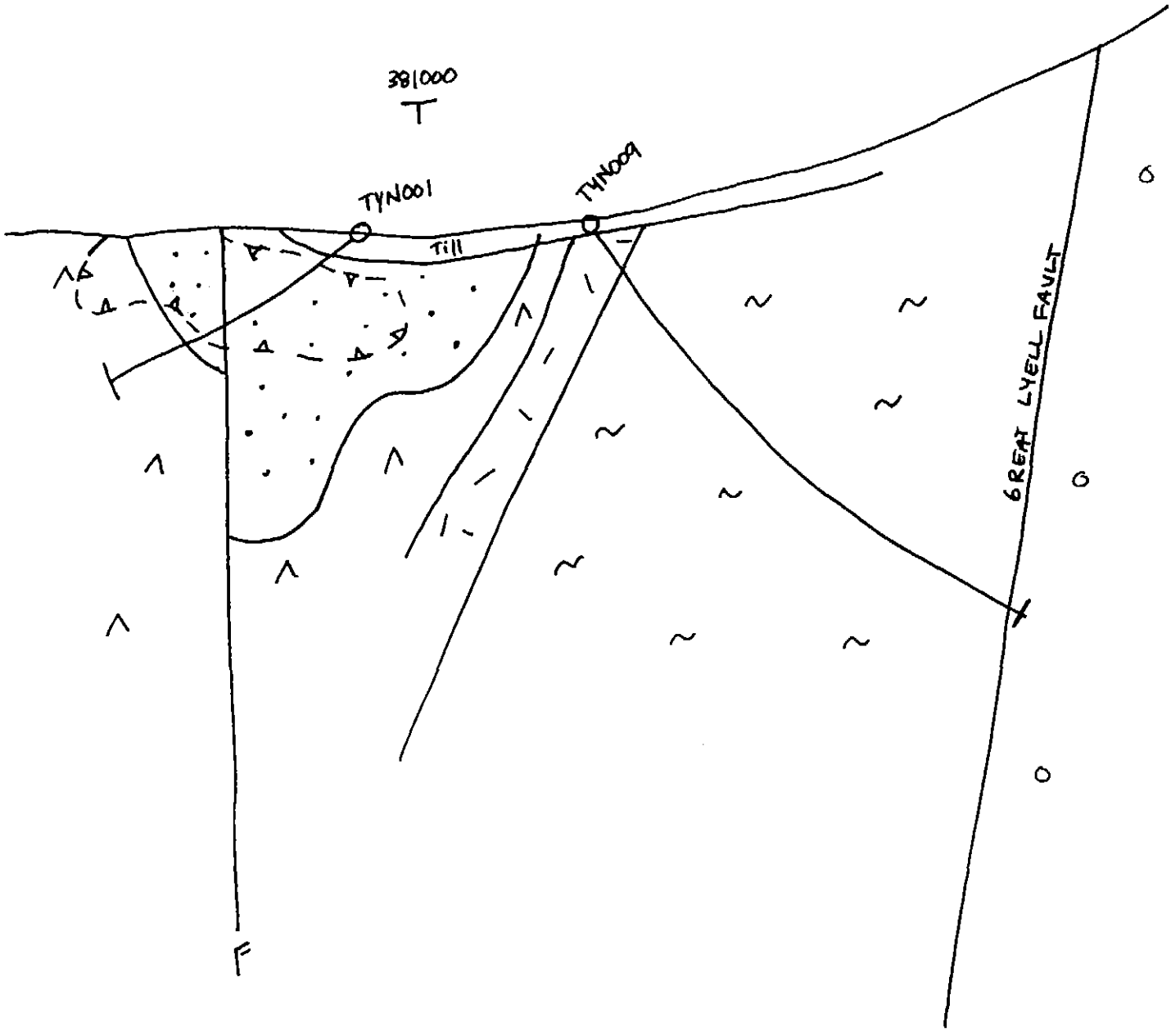
No significant alteration was intersected in TYN009.

The weak chargeability high between 600 – 900 E on Line 12N is unexplained. Interestingly there is no corresponding resistivity low. There is a zone of low resistivity however located between 900 – 1200 E.

Michael

5355650 mN

627137



Owen Conglomerate

Undifferentiated Tyndall Group
- black siltstones + volcaniclastic sst

Andesite

Qtz Porphyry

Central Volcanic Sequence

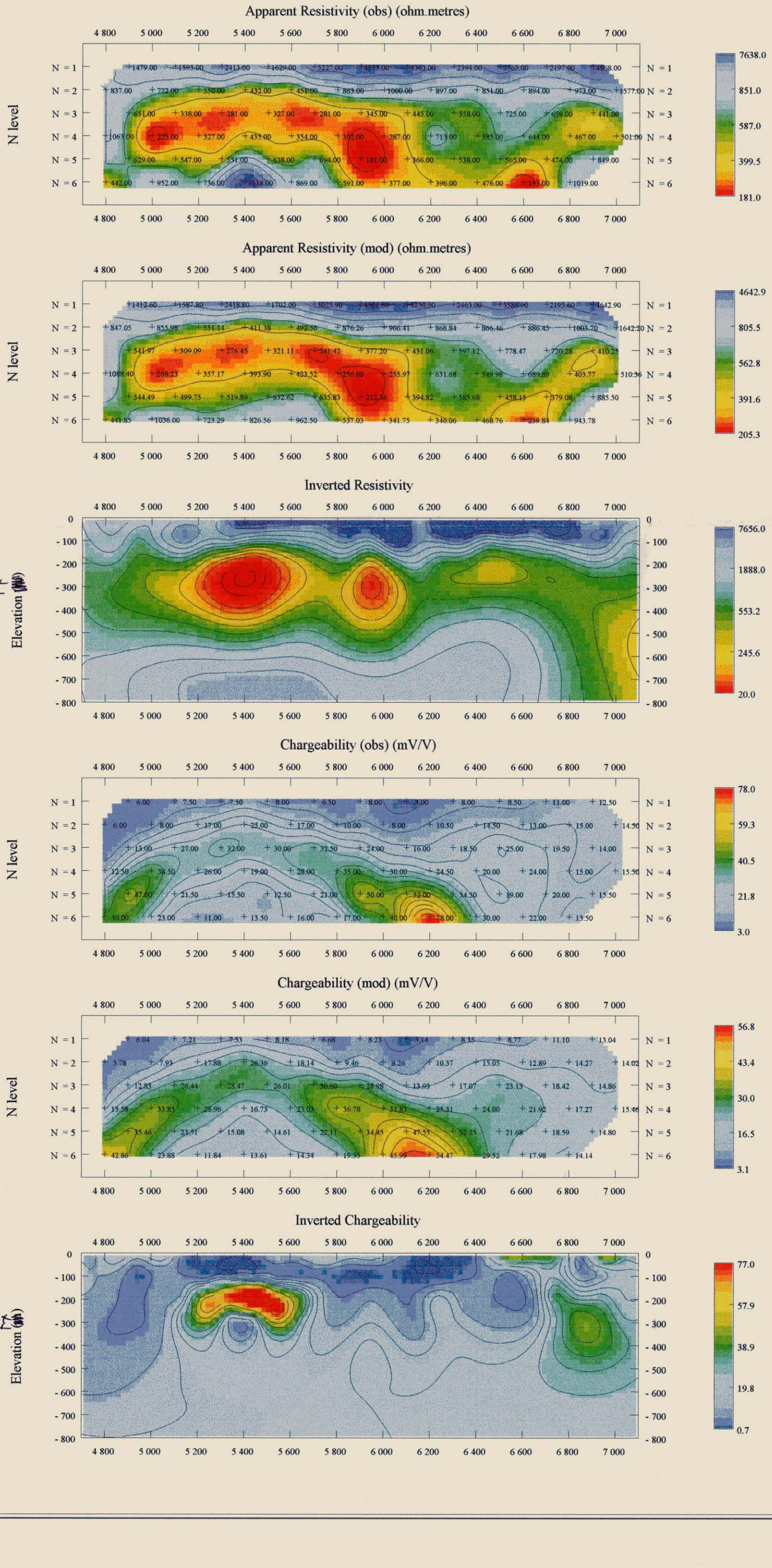
Dipole-Dipole Anomaly
chargeability high

5 cm

0 100 200 300

1:5000

Fig 7



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

Feet

GOLDFIELDS EXPLORATION

LINE 78S - BASIN LAKE GRID (W. TAS)

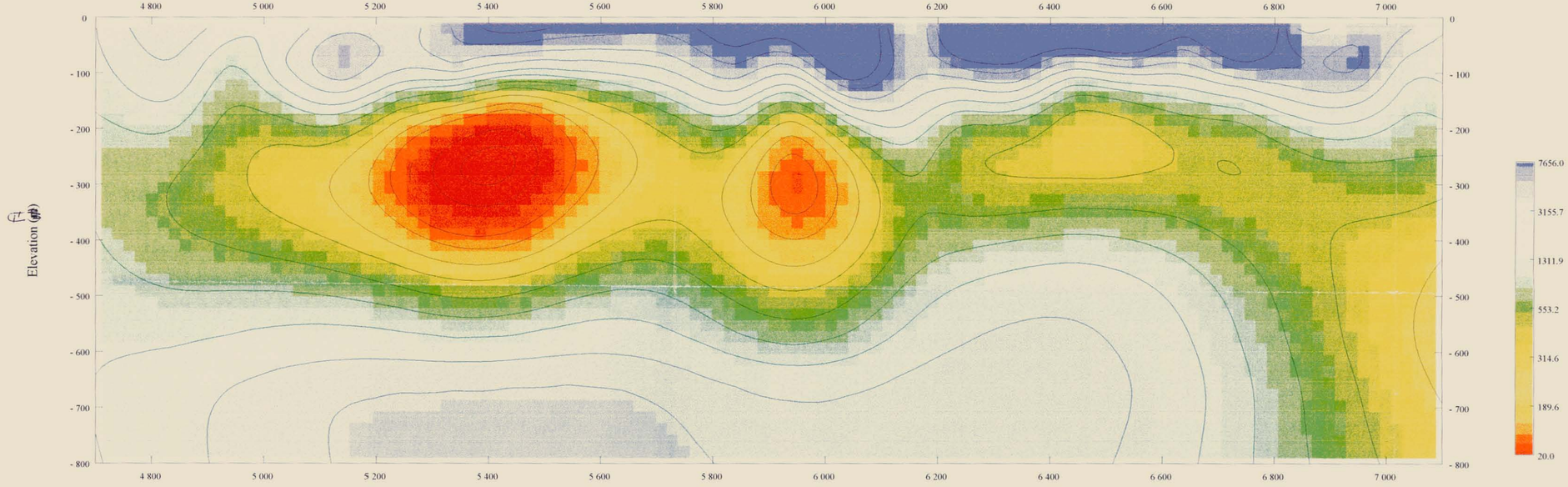
Inversion of 1982 Scintrex Dipole-Dipole IP Survey

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond, Vic 3121
NB Distances in Feet - Actual scale is 1:5000

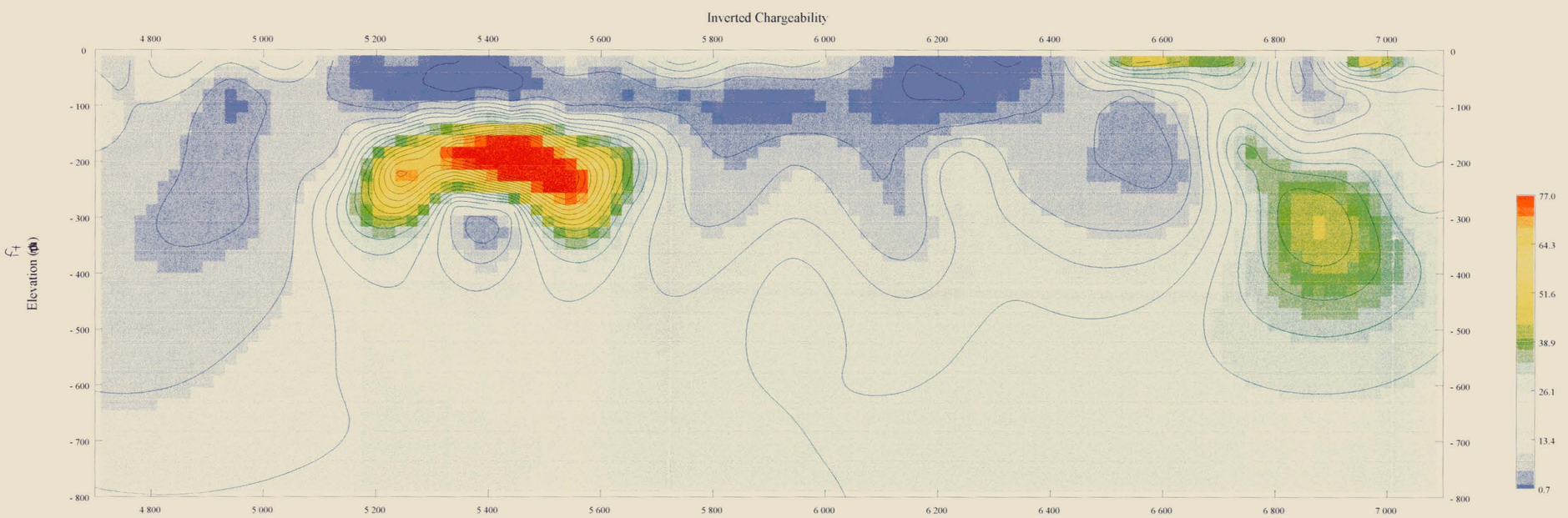
Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : Fig. 1.

627138

Inverted Resistivity



Inverted Chargeability



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

627139

Scale 1: 2000

0 200 400 600

feet

GOLDFIELDS EXPLORATION

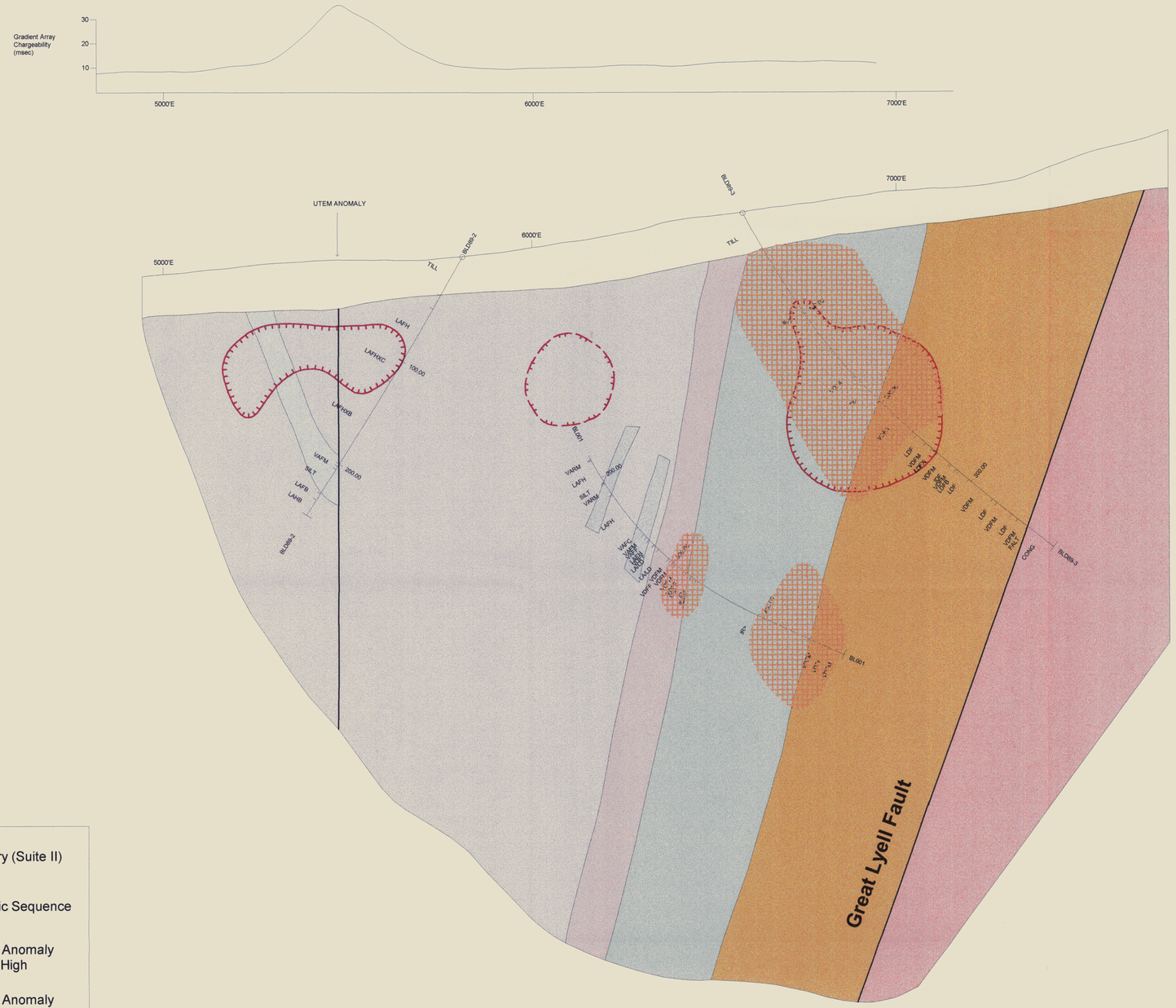
LINE 78S - BASIN LAKE GRID (W. TAS)

Inversion of 1982 Scintrex Dipole-Dipole IP Survey

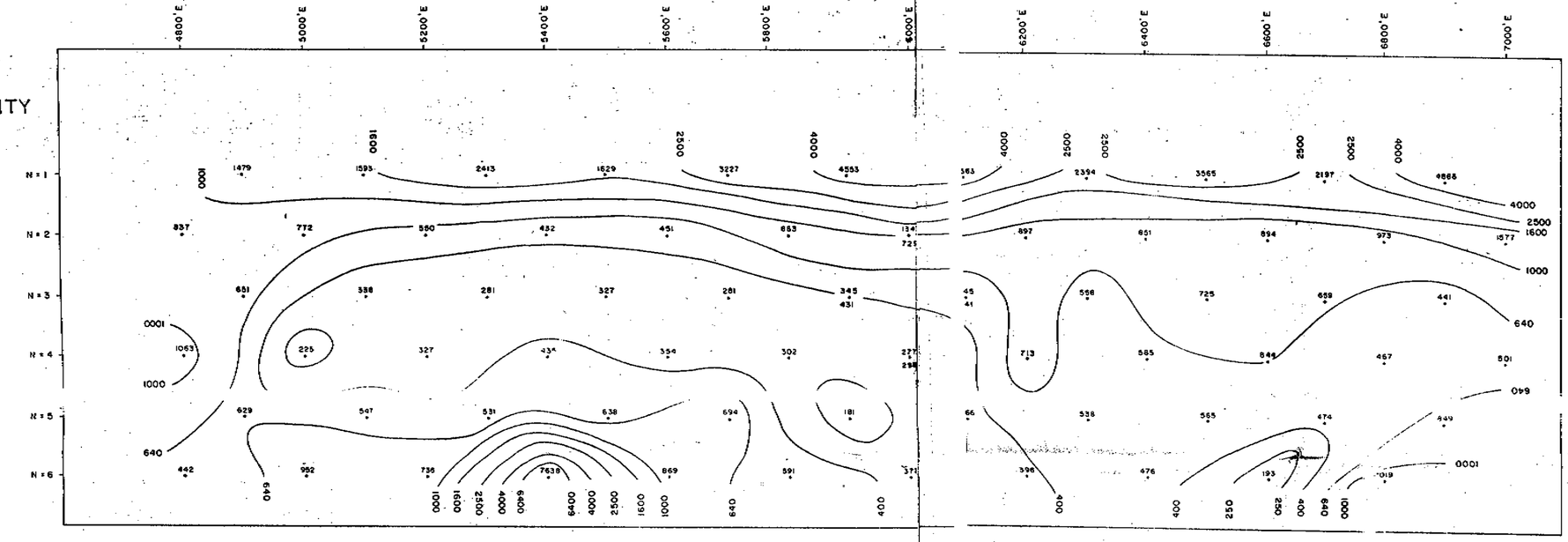
Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond, Vic 3121
NB Distances in Feet - Actual scale is 1:2000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 2000	Plan No : FIG. 2.

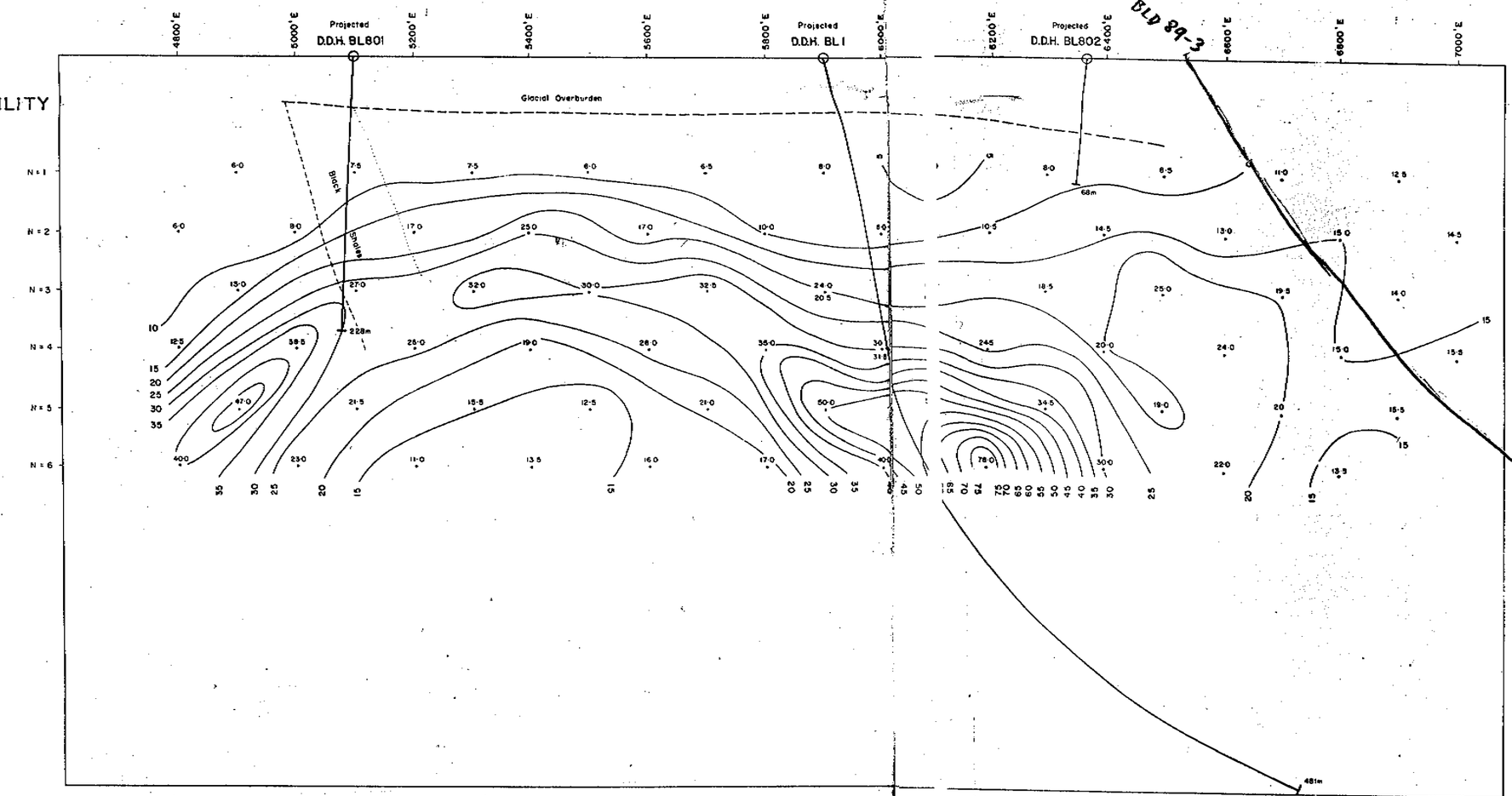
5 cm

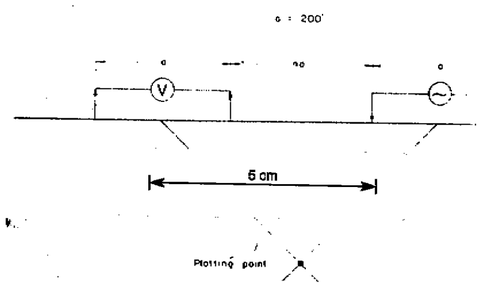

Gradient Array Chargeability (msec)
30
20
10
5000'E
6000'E
7000'E
UTEM ANOMALY
BLDBH-2
BLDBH-3
BL001
TEL
LAFH
LAFHXC
LAFHXB
VAFM
SILT
LAFB
LAHB
100.00
200.00
VARM
LAFH
SILT
VARM
LAFH
850.00
VAFC
VARM
LAFB
LAHB
LVALP
VDFM
VDFT
VDFF
VDFT
LDF
SILT
VARM
LAFH
VDFM
LDF
VDFM
LDF
VDFM
LDF
VDFM
SILT

RESISTIVITY
(ohm-m)



CHARGEABILITY
(mv/v)





627141

99_4411

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Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

Survey by Scintrex Pty. Ltd., March 1982.
Instrument Receiver : Scintrex IPR8 2 sec. pulse
Chargeability Contour Interval - 5 mv/v
Resistivity Contour Interval - Logarithmic

FIG. 4

THE MOUNT LYELL MINING & RAILWAY COMPANY LTD.

Basin Lake

Dipole-Dipole E.I.P.

Pseudo-sections Looking N.N.W.

Line 78S

SCALE 1:200	DRAWN BH
DATE MAY 1982	DRAFTSMAN

99_4411

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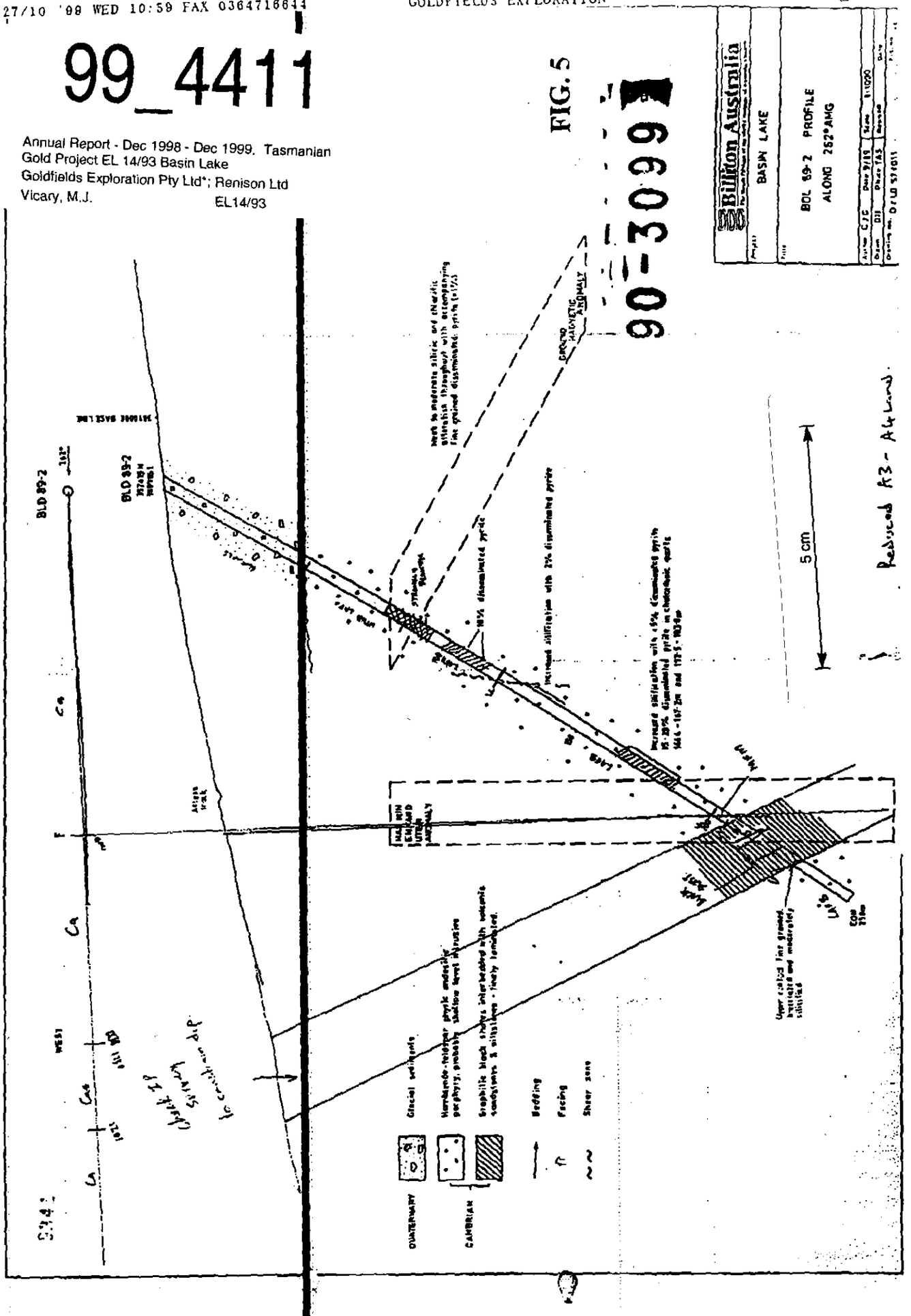
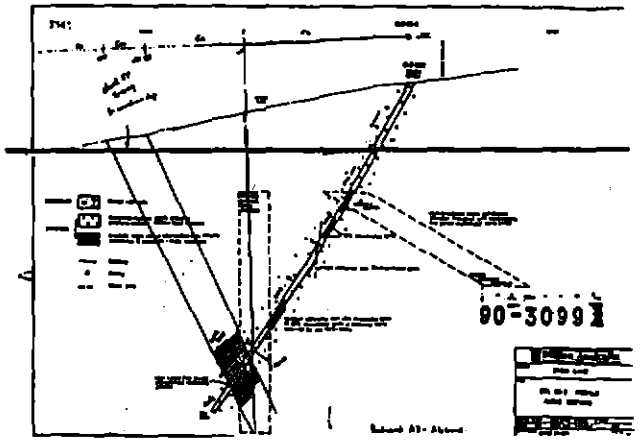
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

FIG. 5

90-3099



027142



BLD 89-2

Scale 1:5000

627143

FIG. 6

5 cm

99_4411

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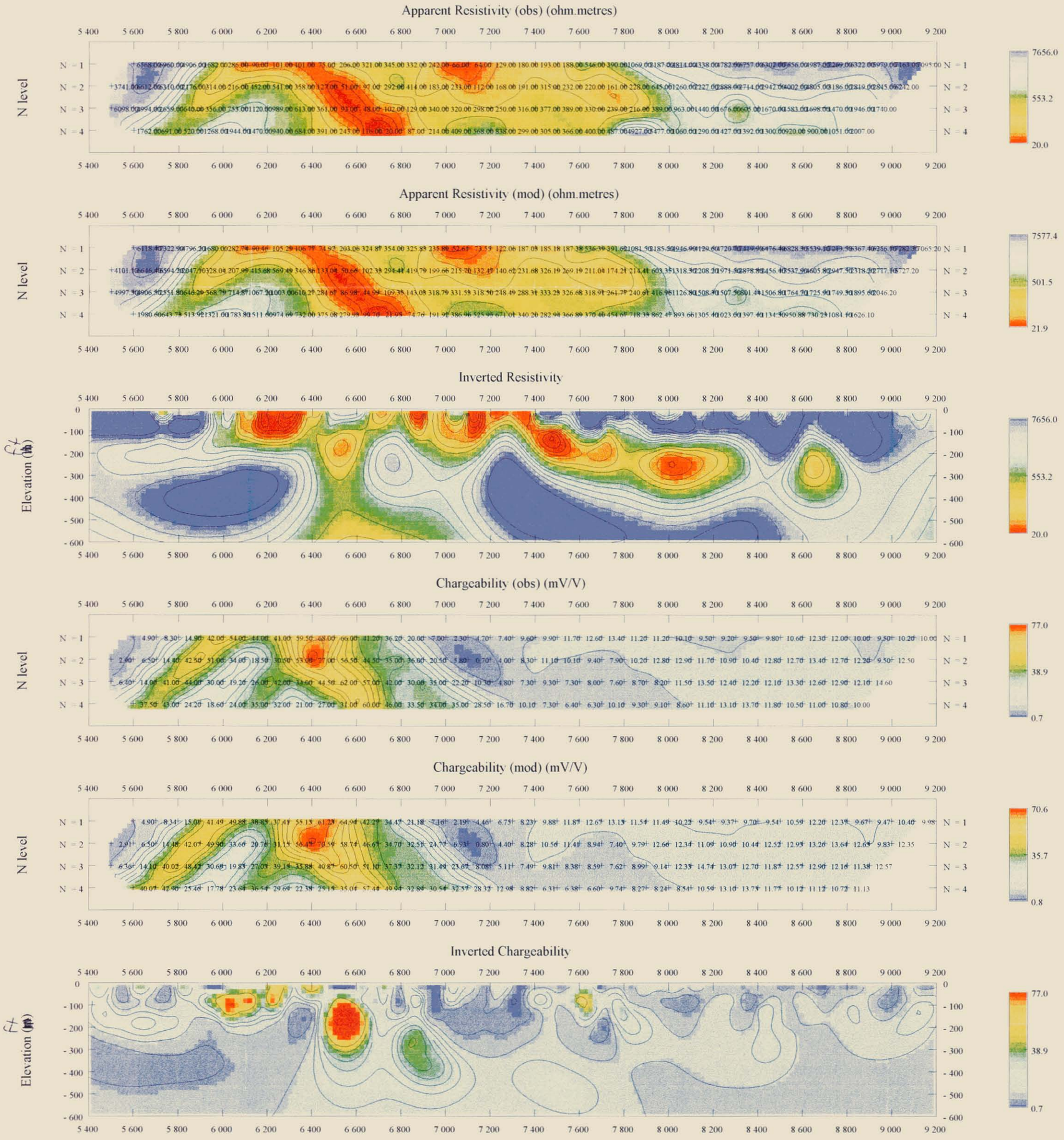
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

627144

5 cm

5000
Scale 1: ~~Metres~~
0 500 1000 1500
~~metres~~ feet

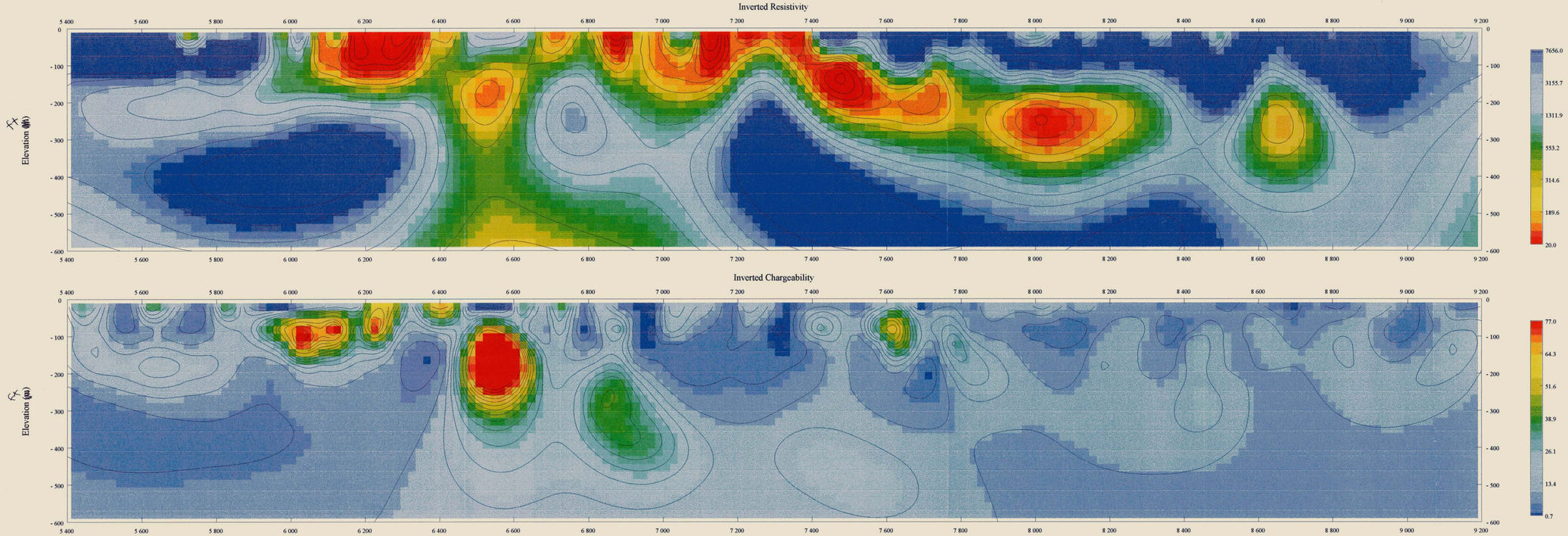
GOLDFIELDS EXPLORATION

LINE 30S : BASIN LAKE GRID, W. Tas.

Inversion of Scintrex 1981 Dipole-Dipole IP Survey

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: ~~1:5000~~ 5000	Plan No : Fig. 7



5 cm

99_4411

627145

Annual Report - Dec 1998 - Dec 1999. Tasmanian
Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J.
EL14/93

Scale 1: 2000

0 200 400 600

feet

GOLDFIELDS EXPLORATION

LINE 30S : BASIN LAKE GRID, W. Tas.

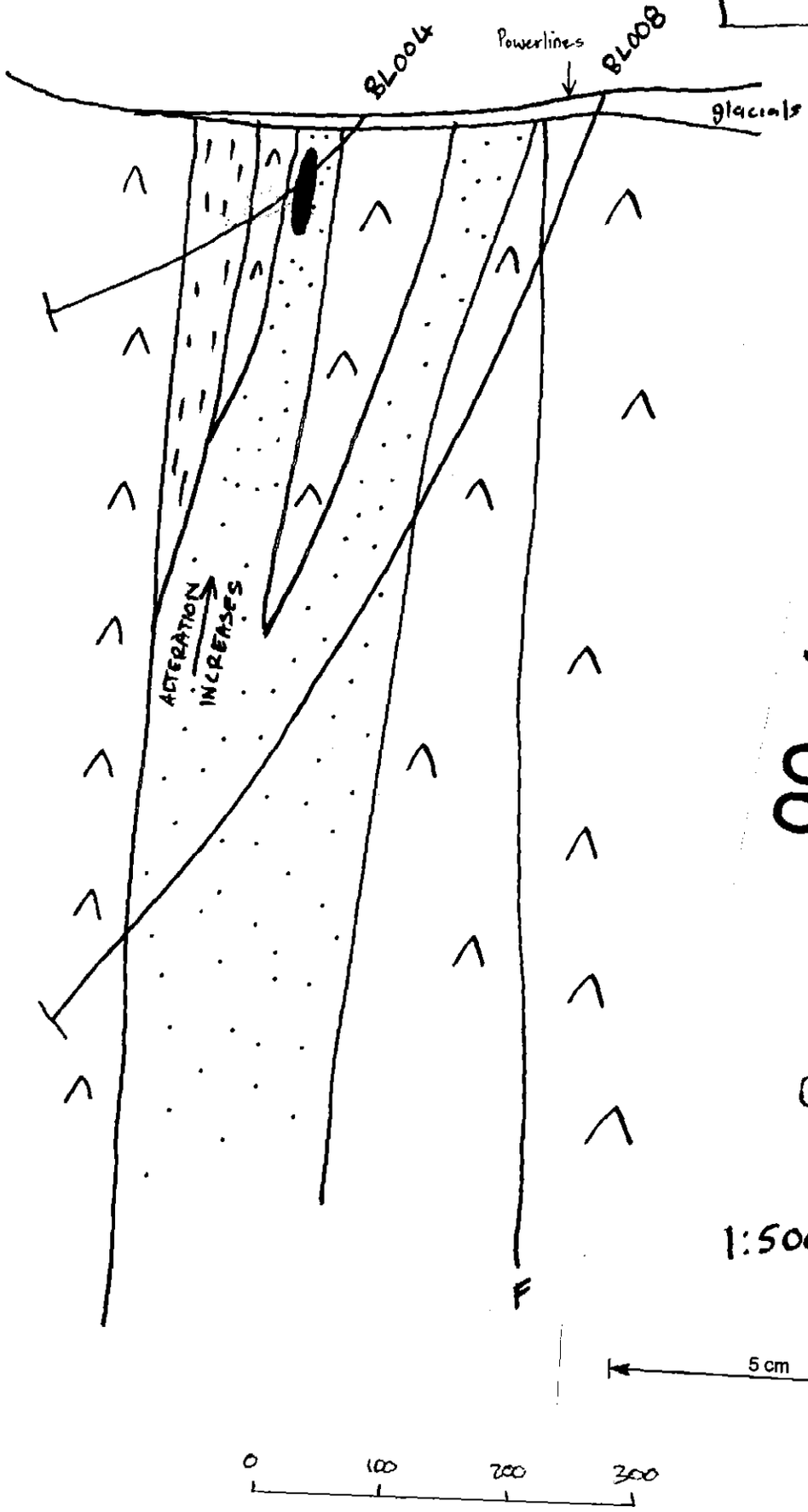
Inversion of Scintrex 1981 Dipole-Dipole IP Survey

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
Distances are in Feet. Actual scale is 1:2000.

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 2000	Plan No : FIG. 8.

≃5353800mN

≃ Line 30S



5 cm

1:5000

99_4411

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Goldfields Exploration Pty Ltd*: Renison Ltd
Vicary, M.J. EL14/93

627146

Fig. 9

99_4411

5353700 mN

≃ Line 36S + Line 2N

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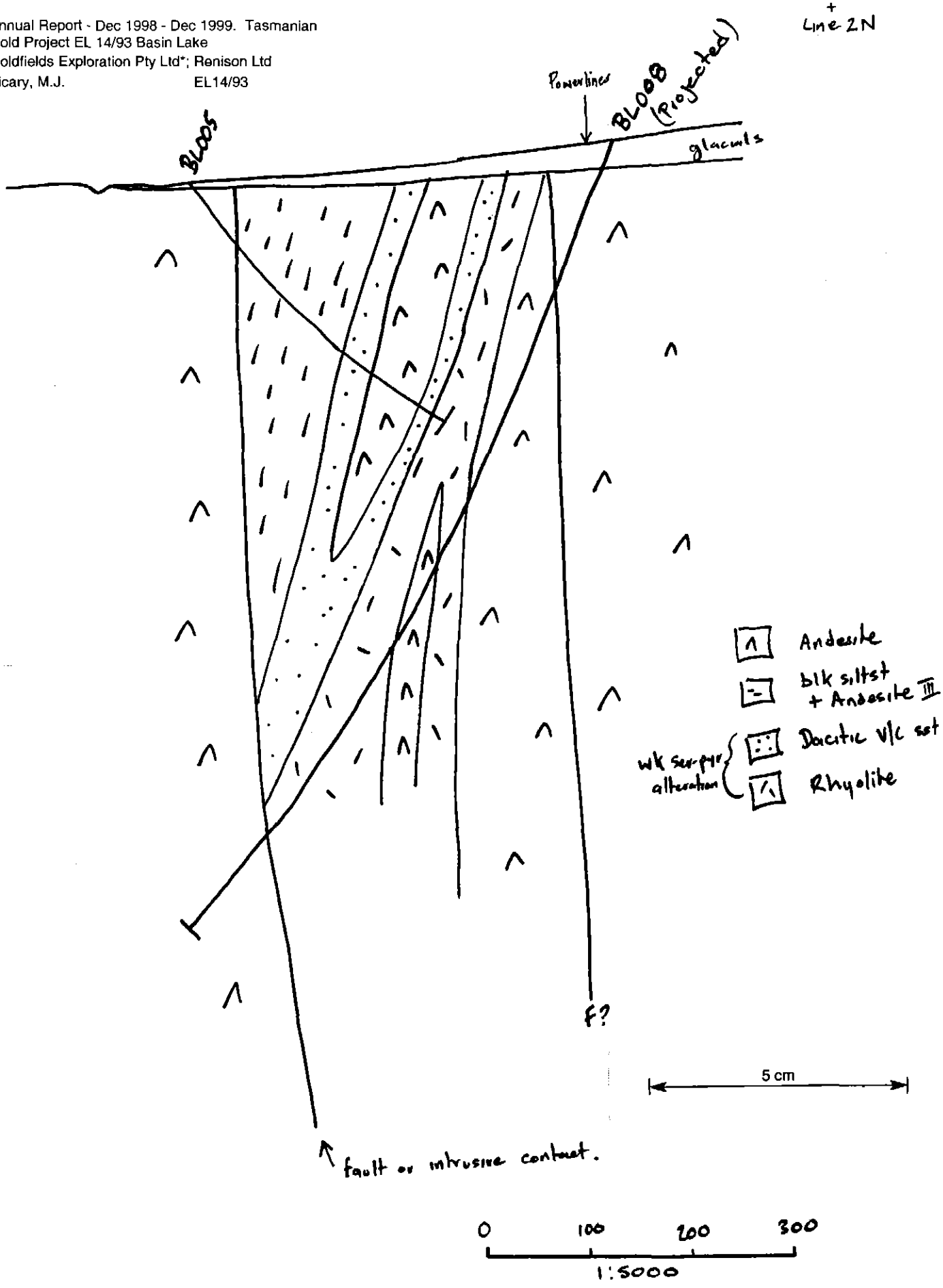
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



627147

Fig. 10

99_4411

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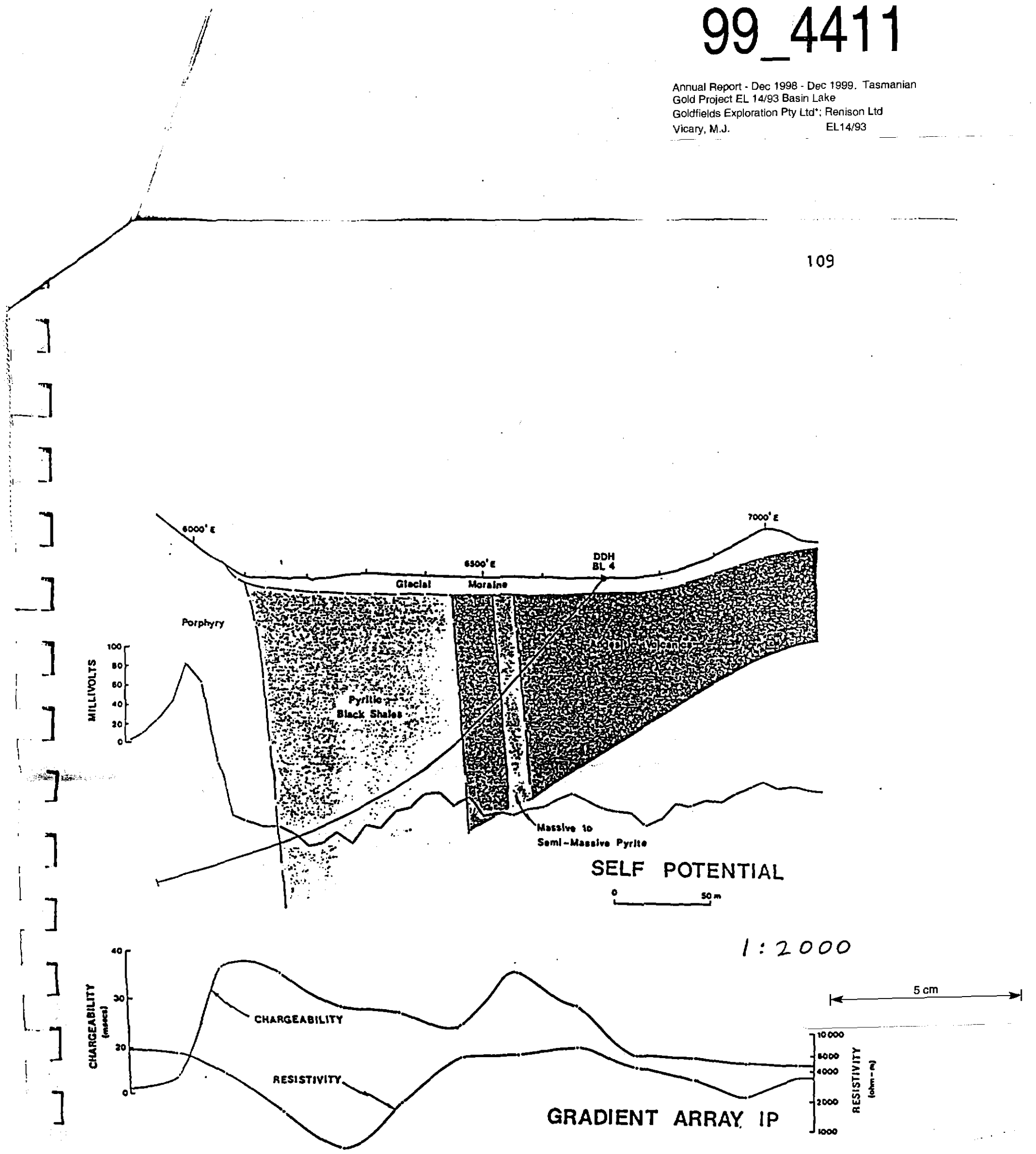
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



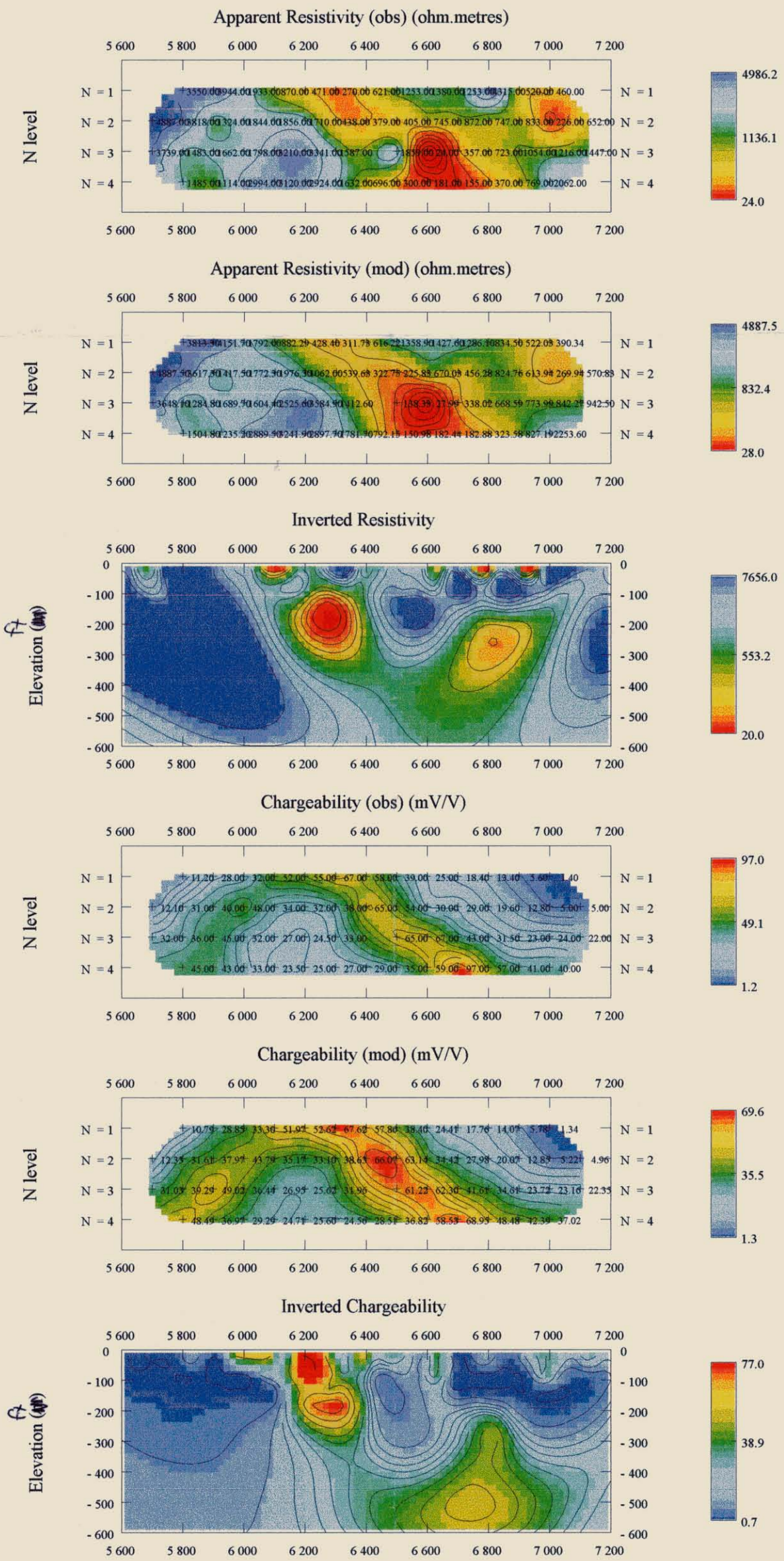
MOUNT READ VOLCANICS PROJECT:
GEOPHYSICAL SIGNATURES

**BASIN LAKE, LINE 30S:
SP AND GRADIENT ARRAY
IP PROFILES**

FIGURE 64 | MD/MG87/06

FIG. 11

627148



99_4411

Annual Report - Dec 1998 - Dec 1999. Tasmanian Gold Project EL 14/93 Basin Lake

Goldfields Exploration Pty Ltd*; Renison Ltd

Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

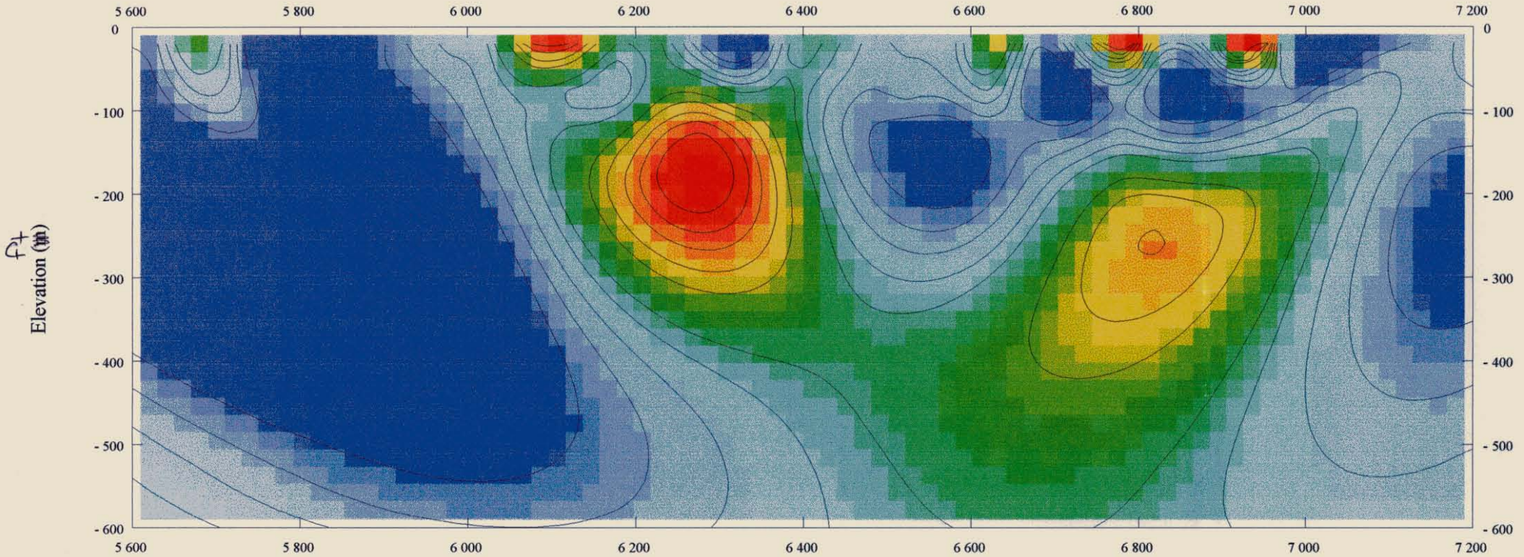
metres

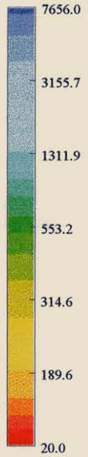
feet

GOLDFIELDS EXPLORATION	
Line 36S - BASIN LAKE GRID (W. TAS) Inversion of 1981 Scintrex Dipole-Dipole IP Survey	
Interpretation by Flagstaff GeoConsultants 2/337A Lennox St Richmond, Vic 3121 NB Distances in Feet. Actual scale is 1:5000	
Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : Fig. 12

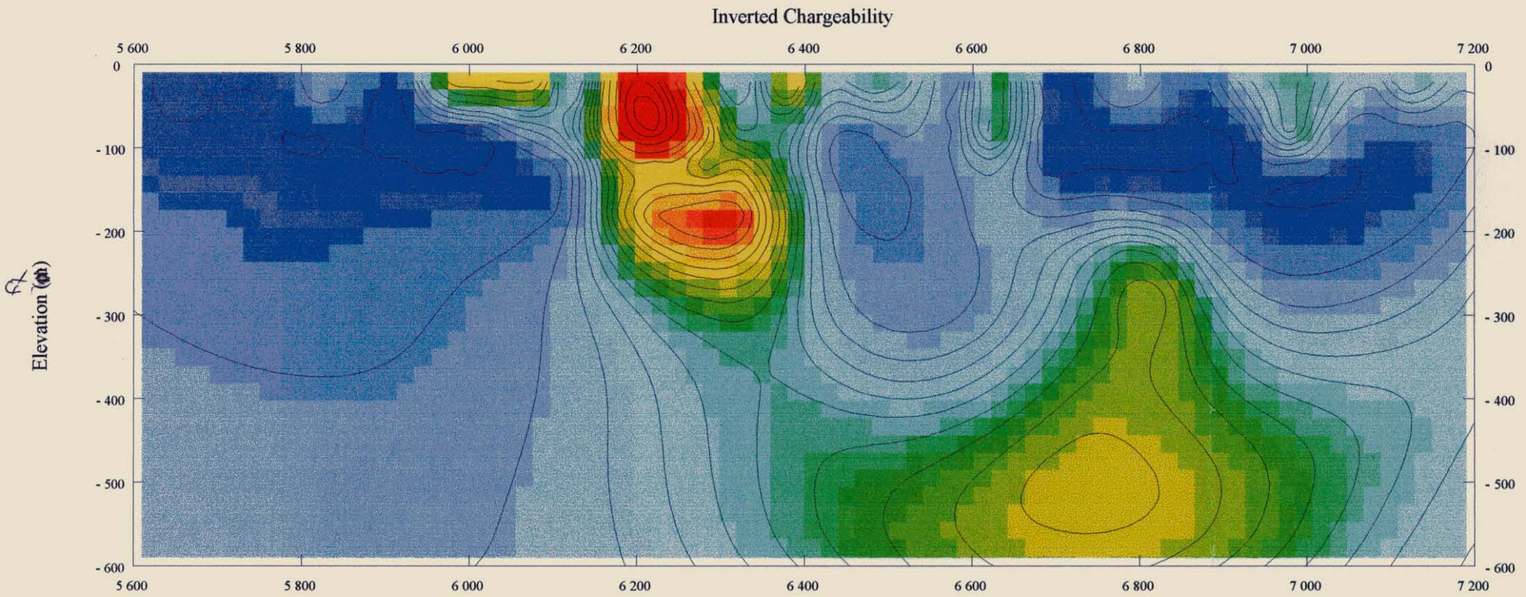
627149

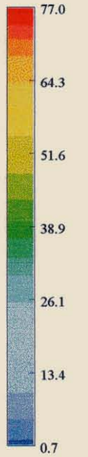
Inverted Resistivity





Inverted Chargeability





99_4411

Annual Report - Dec 1998 - Dec 1999. Tasmanian Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

627150

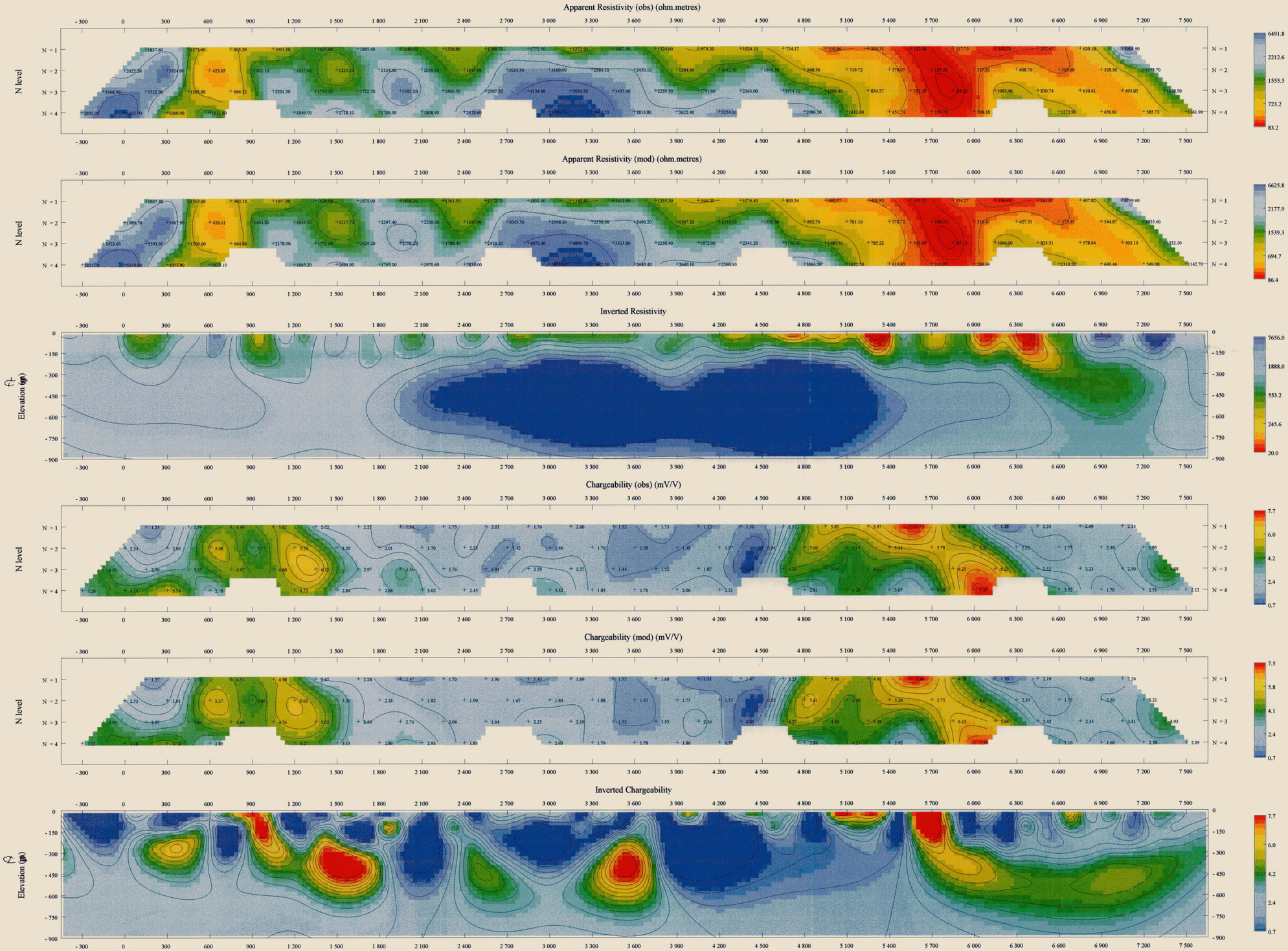
5 cm

Scale 1: 2000

0 200 400 600

feet

GOLDFIELDS EXPLORATION	
Line 36S - BASIN LAKE GRID (W. TAS) Inversion of 1981 Scintrex Dipole-Dipole IP Survey	
Interpretation by Flagstaff GeoConsultants 2/337A Lennox St Richmond, Vic 3121 NB Distances in Feet. Actual scale is 1:2000	
Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 2000	Plan No : FIG. 13.



99_4411

Annual Report - Dec 1998 - Dec 1999. Tasmanian Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: ~~10000~~ 5000

0 500 1000 1500

~~metres~~ feet

GOLDFIELDS EXPLORATION

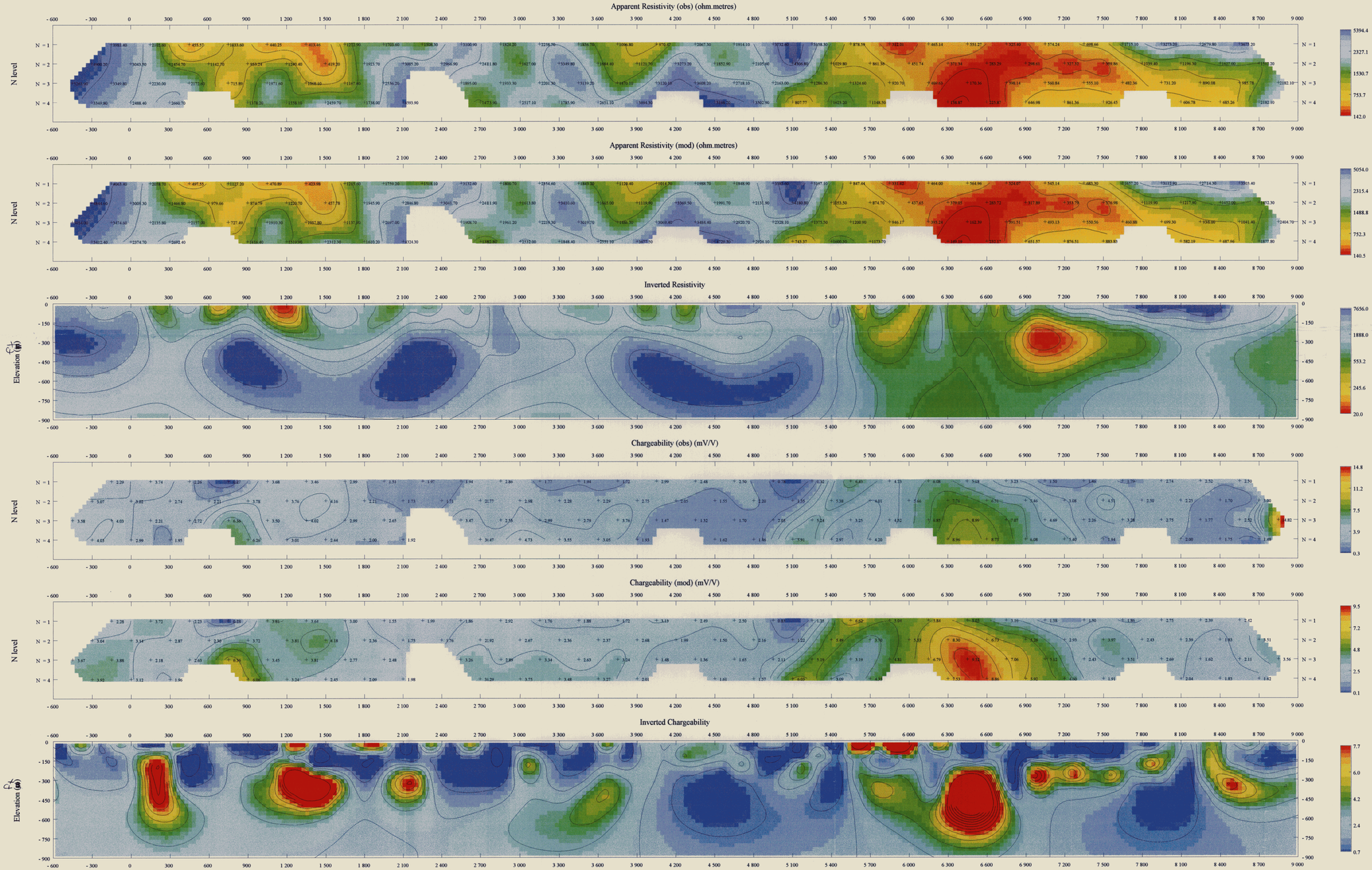
LINE 4N : EAST TYNDALL (1967) GRID

Inversion of Dipole-dipole IP survey (1967 data)

Interpreted by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
Distances are in feet. Actual Scale is 1:5000
(Power lines intersect at 6500 ft E).

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: ~~10000~~ 5000	Plan No : Fig. 14.

627151



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1:5000

0 500 1000 1500

metres

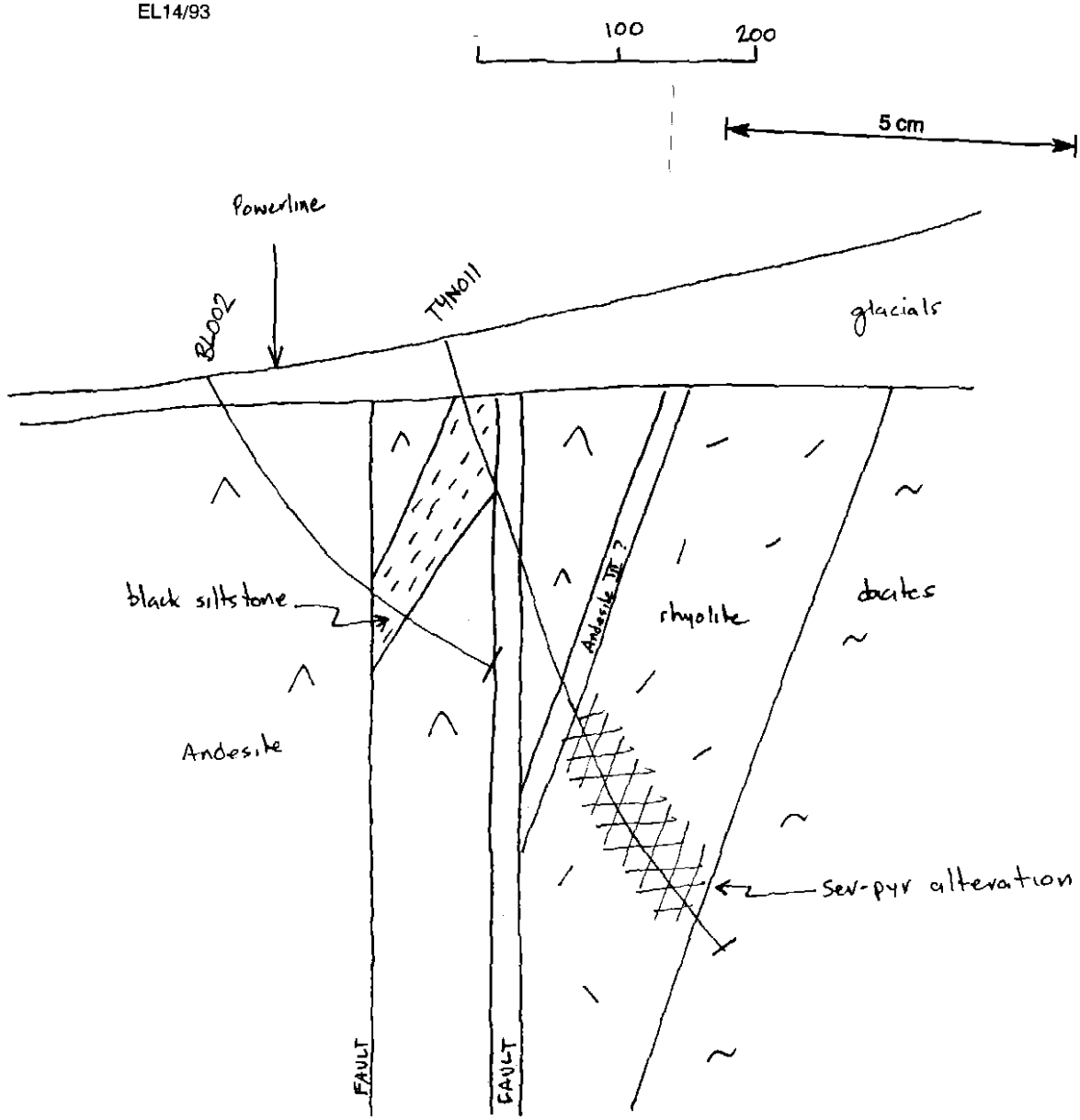
GOLDFIELDS EXPLORATION	
LINE 2N : EAST TYNDALL (1967) GRID, W. Tas.	
Inversion of dipole-dipole IP survey (1967)	
Interpretation by Flagstaff GeoConsultants 2/337A Lennox St Richmond, Vic 3121 Distances in Feet. Actual scale is 1:5000 (Power line intersects at 6700E)	
Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : FIG. 15.

627152

99_4411

5353400 mN
1:5000

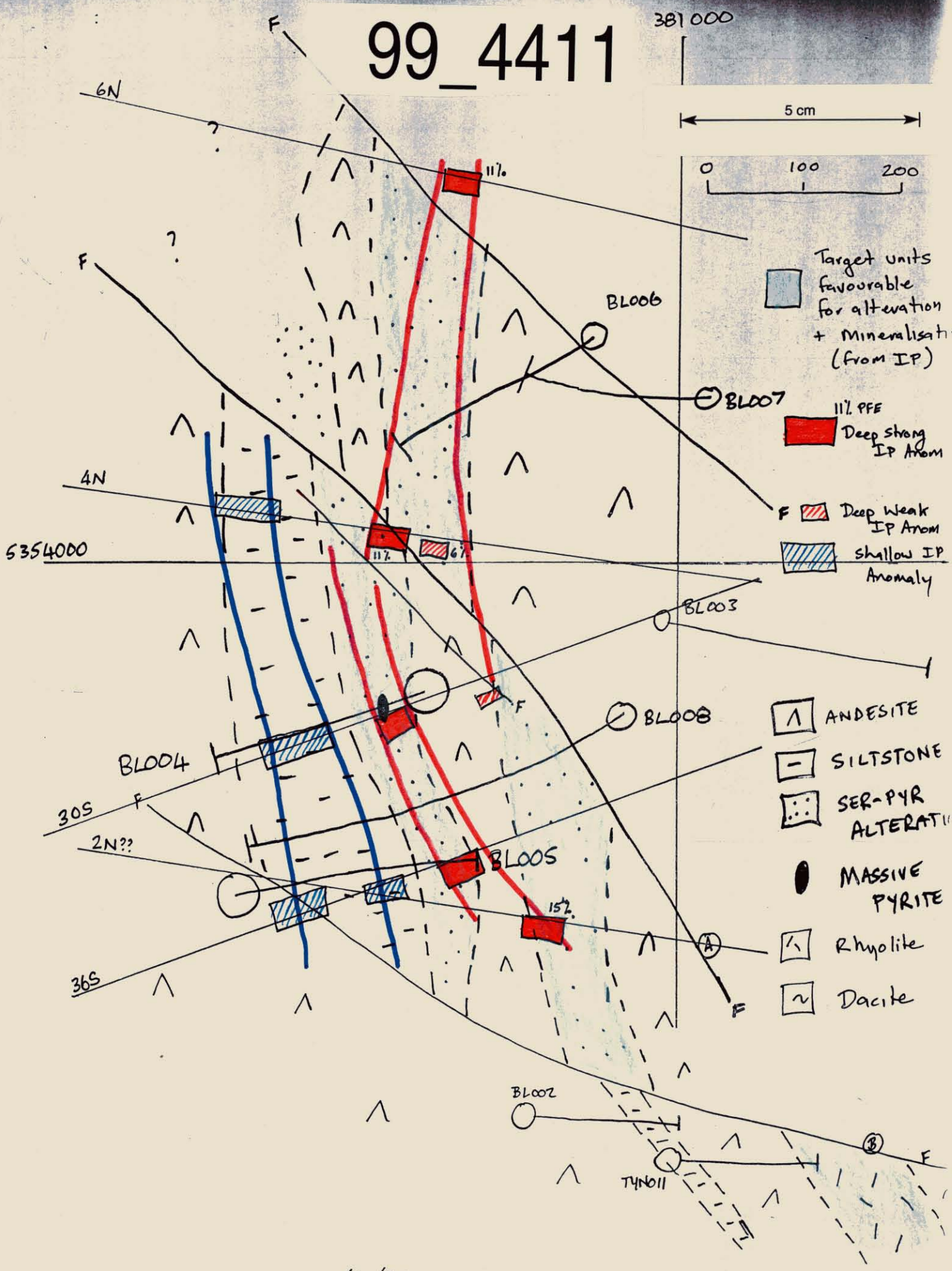
Annual Report - Dec 1998 - Dec 1999. Tasmanian Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



627153

Fig. 16

99_4411



M W Asten 28/10/99

627154

Fig. 17a

99_4411

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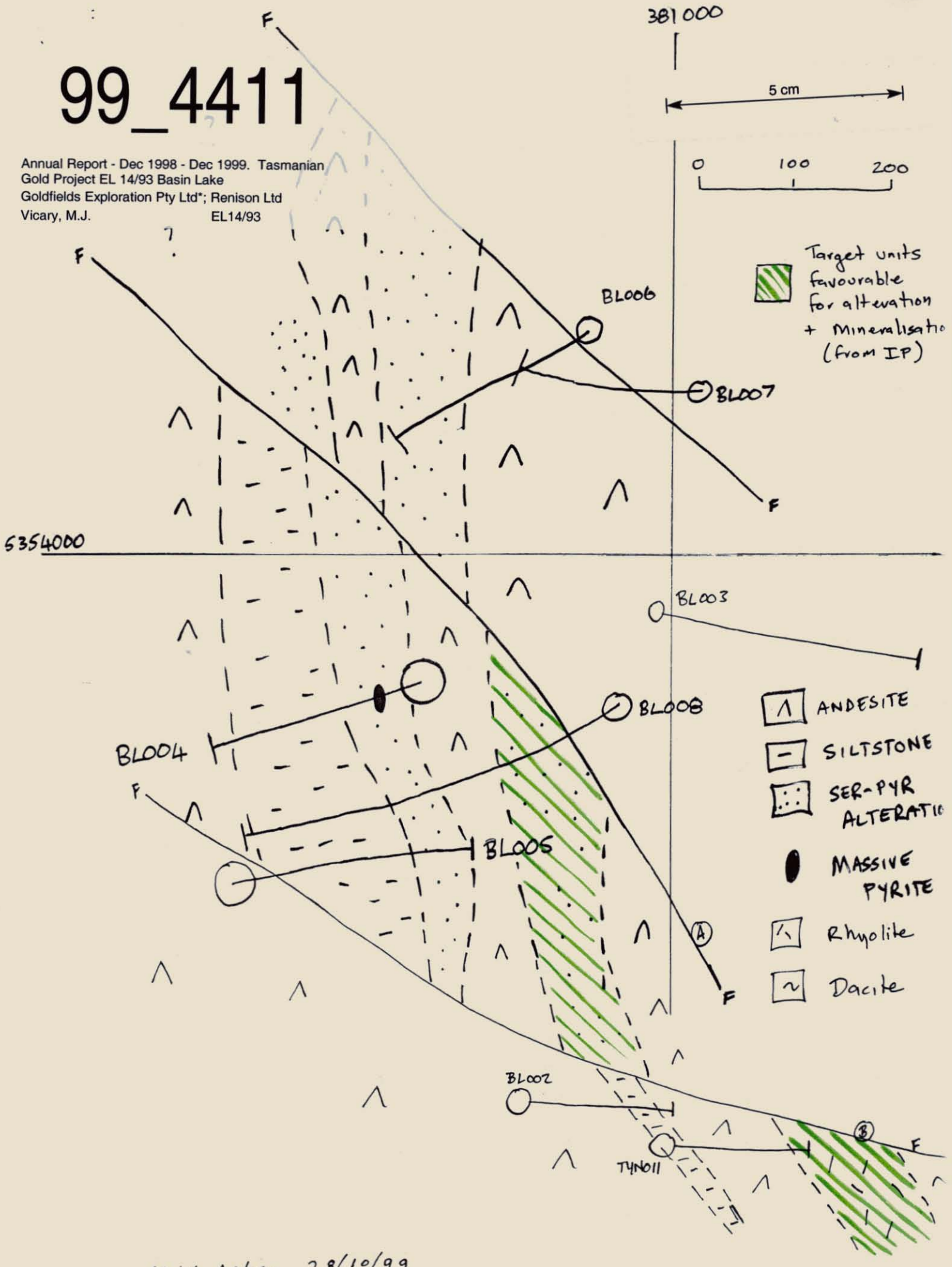
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



MW Asten 28/10/99

Fig. 17

627155

99_4411

5354200mN

5 cm

1:5000

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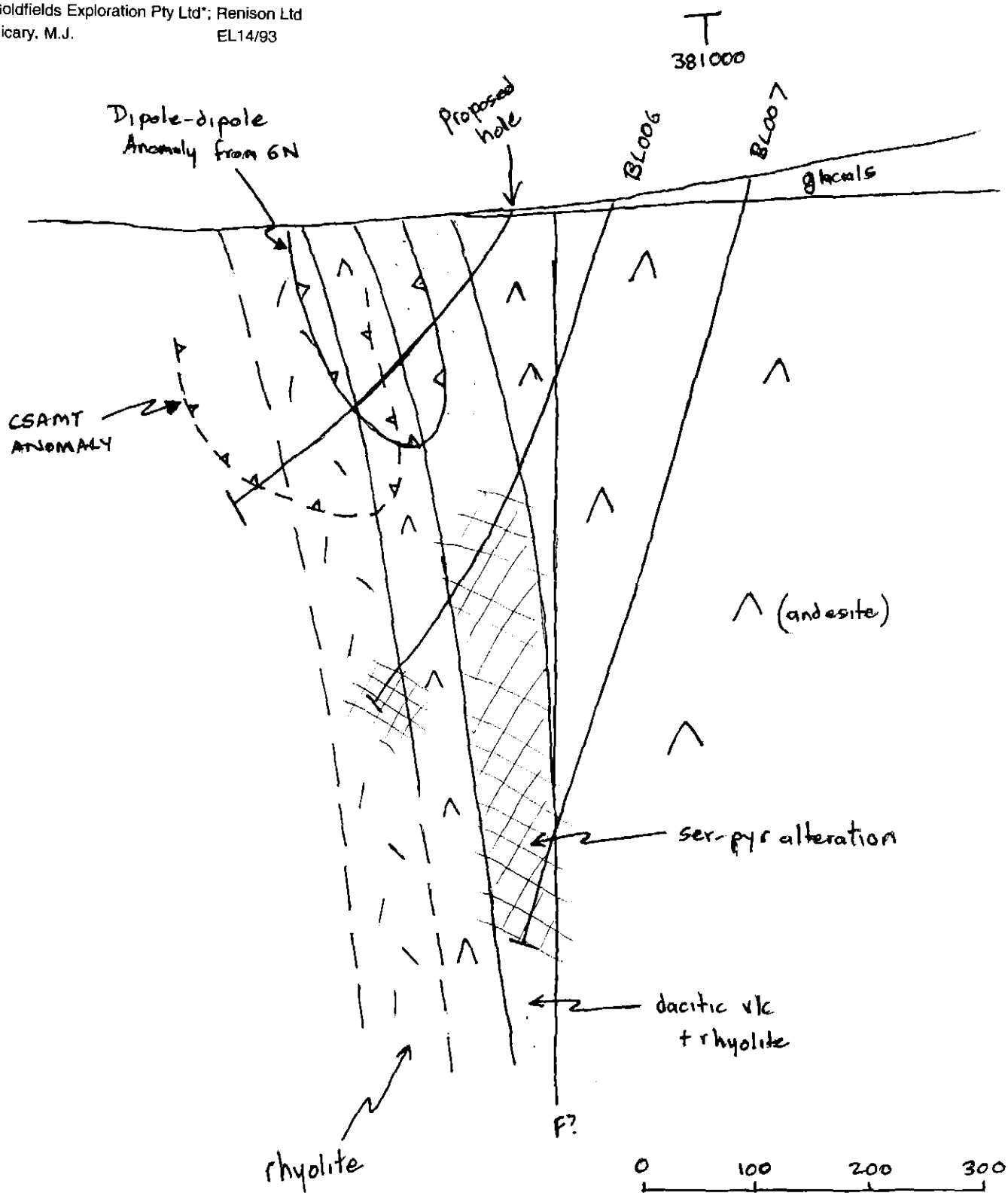
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93



627156

Fig. 18a

99_4411

627157

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

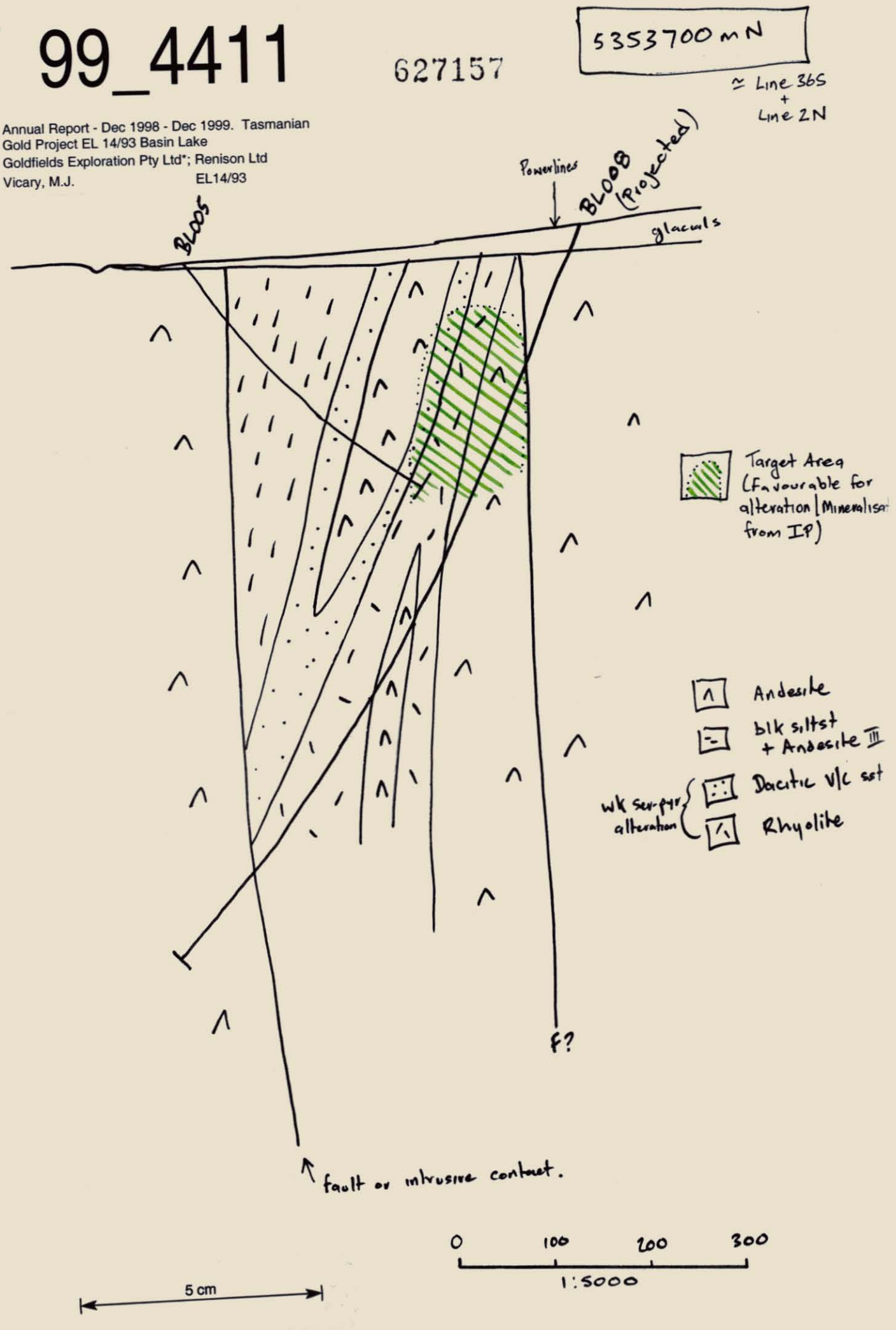
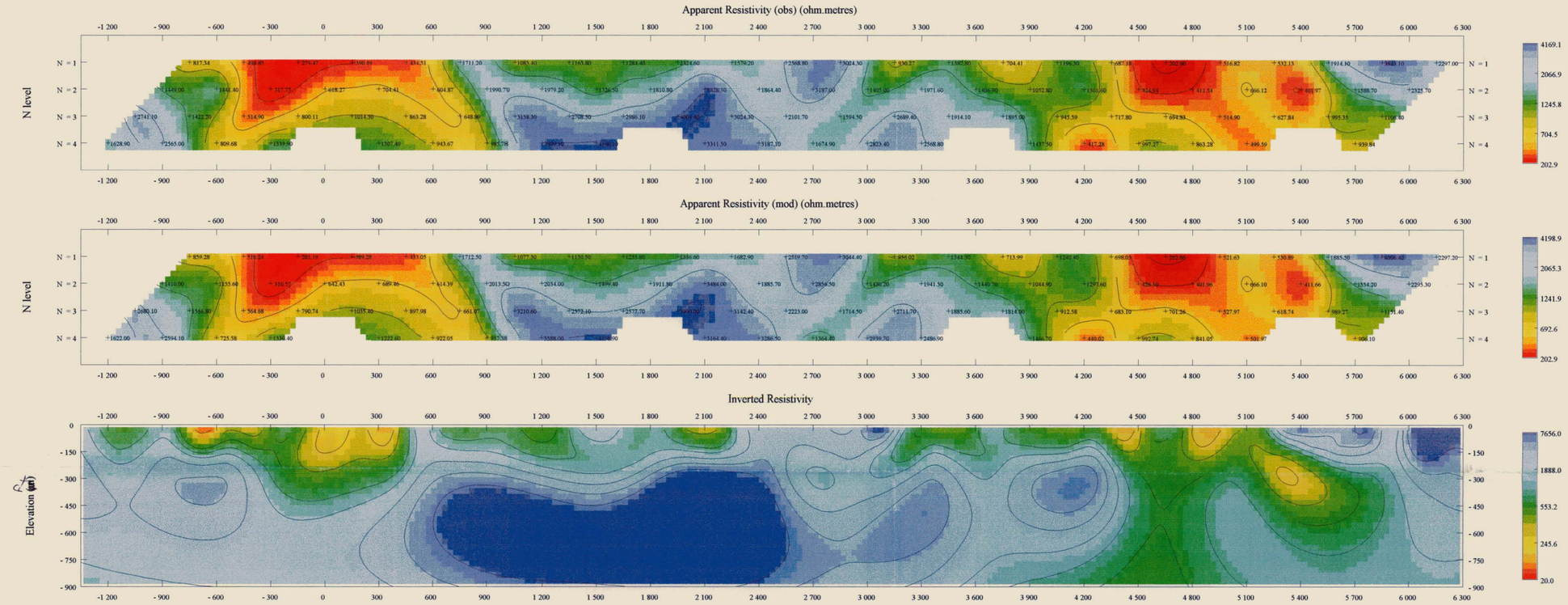


Fig. 18



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500 feet

GOLDFIELDS EXPLORATION

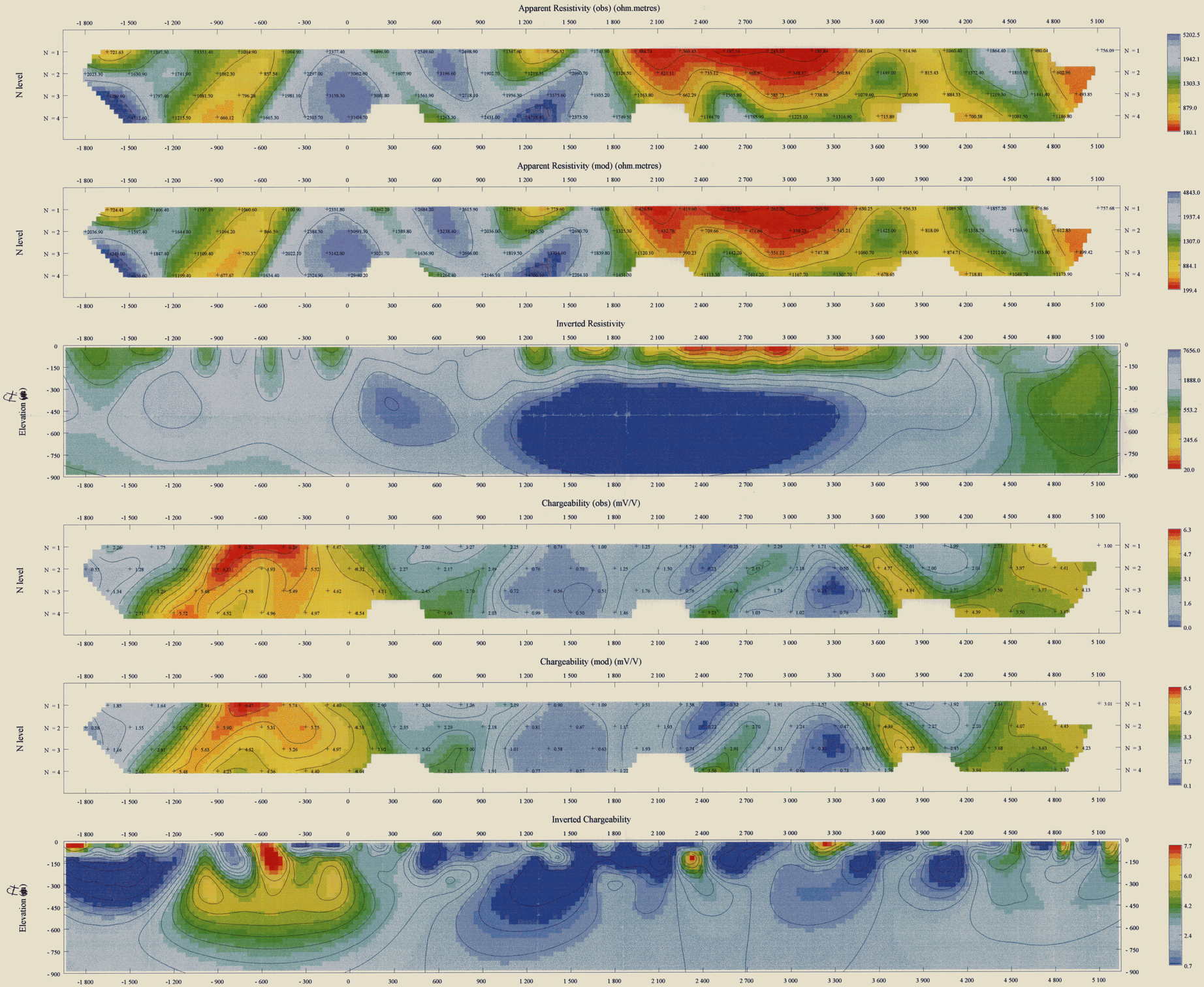
LINE 6N - MT TYNDALL GRID (W. Tas)

Inversion of 1967 McPhar dipole-dipole IP survey (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
NB Distances are in feet. Actual scale is 1:5000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : FIG. 19

627158



99_4411

Annual Report - Dec 1998 - Dec 1999. Tasmanian Gold Project EL 14/93 Basin Lake
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

metres
feet

GOLDFIELDS EXPLORATION

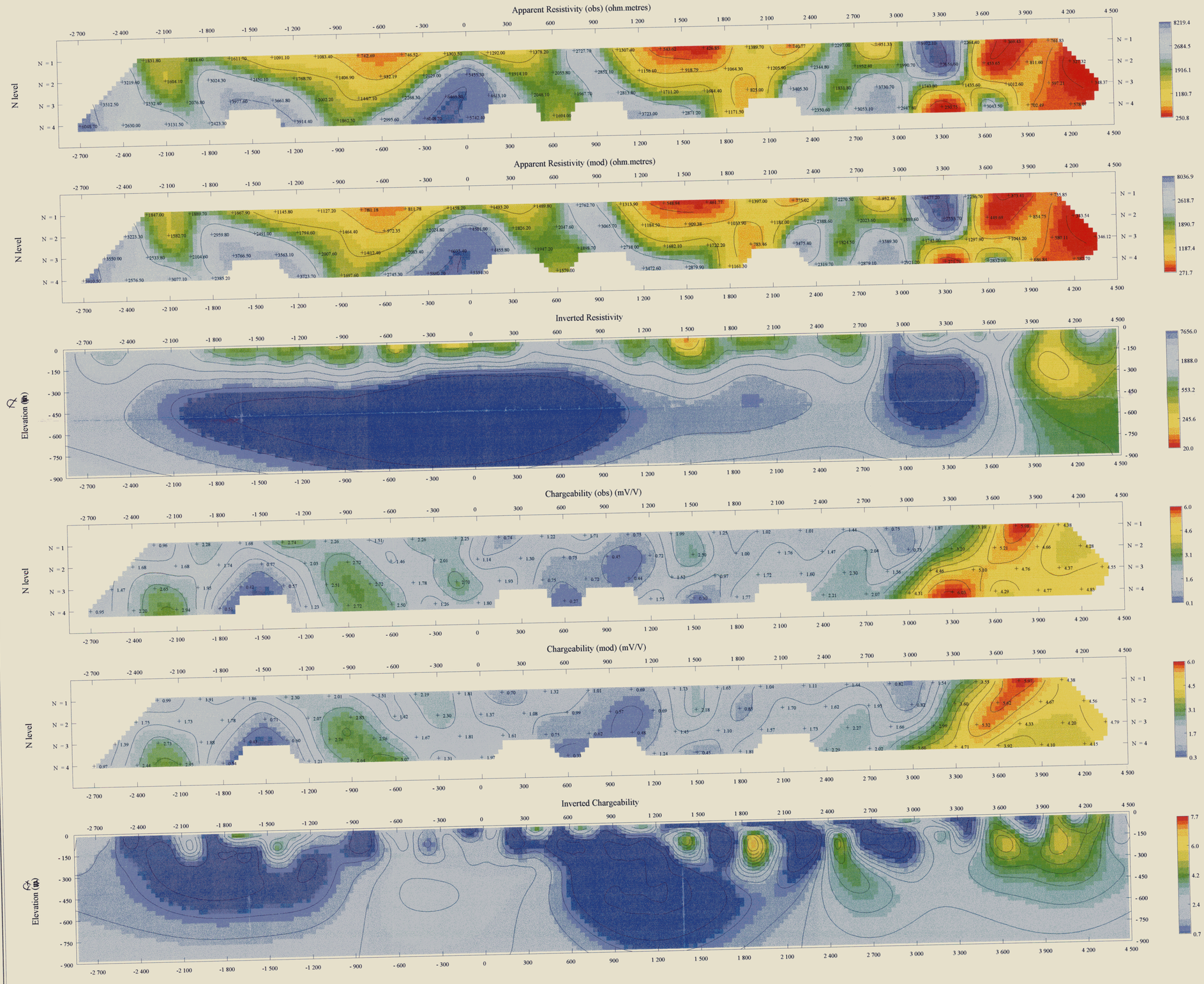
LINE 8N : MT TYNDALL GRID (W. Tas)

Inversion of 1967 McPhar dipole-dipole IP survey (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
NB Distances are in feet. Actual scale is 1:5000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : Fig. 20

627159



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

feet

GOLDFIELDS EXPLORATION

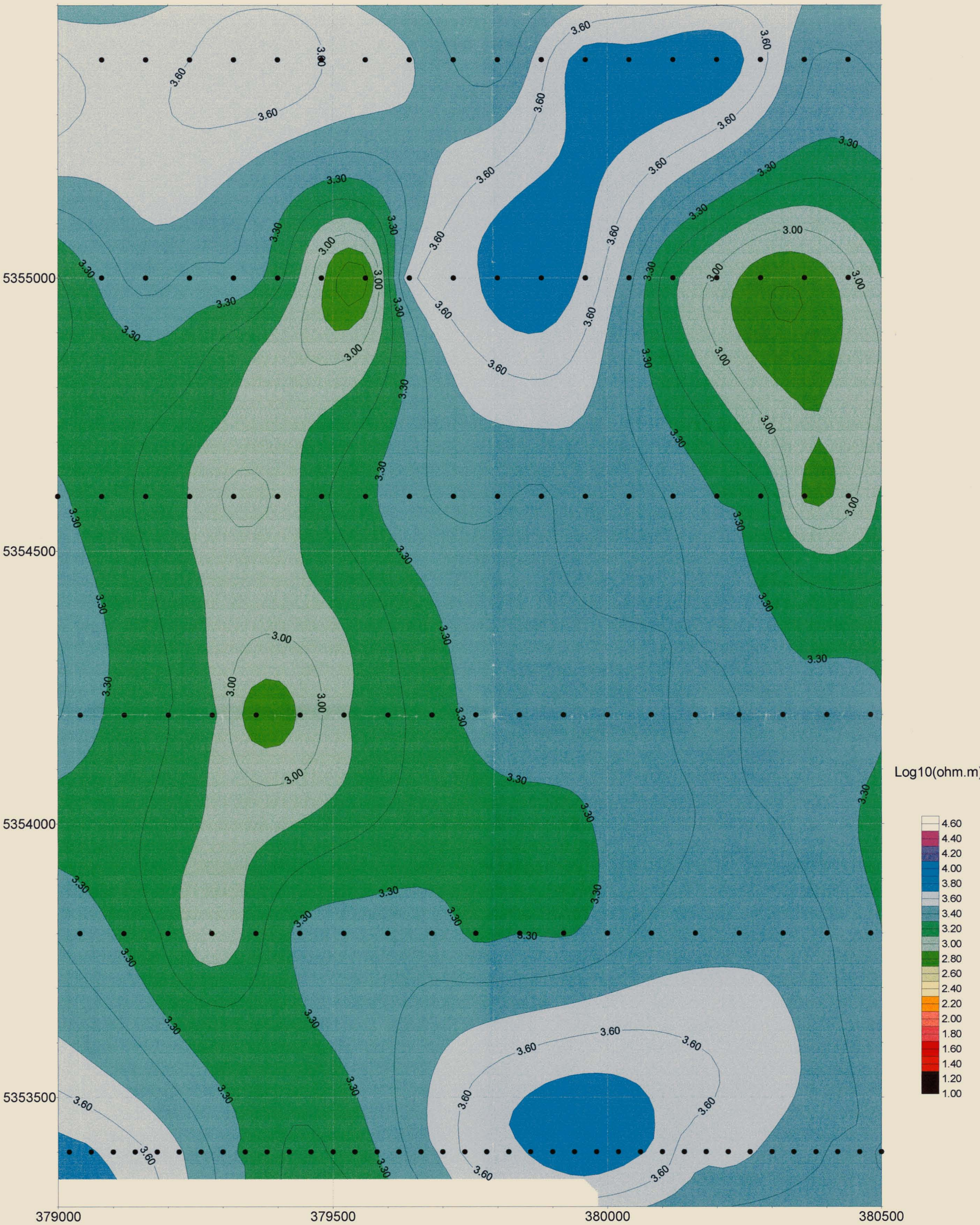
LINE 10N - MT TYNDALL EAST GRID (W. Tas)

Inversion of 1967 McPhar dipole-dipole IP survey (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
NB Distances are in feet. Actual scale is 1:5000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : Fig. 21

627160



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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J.
EL14/93

GOLDFIELDS EXPLORATION

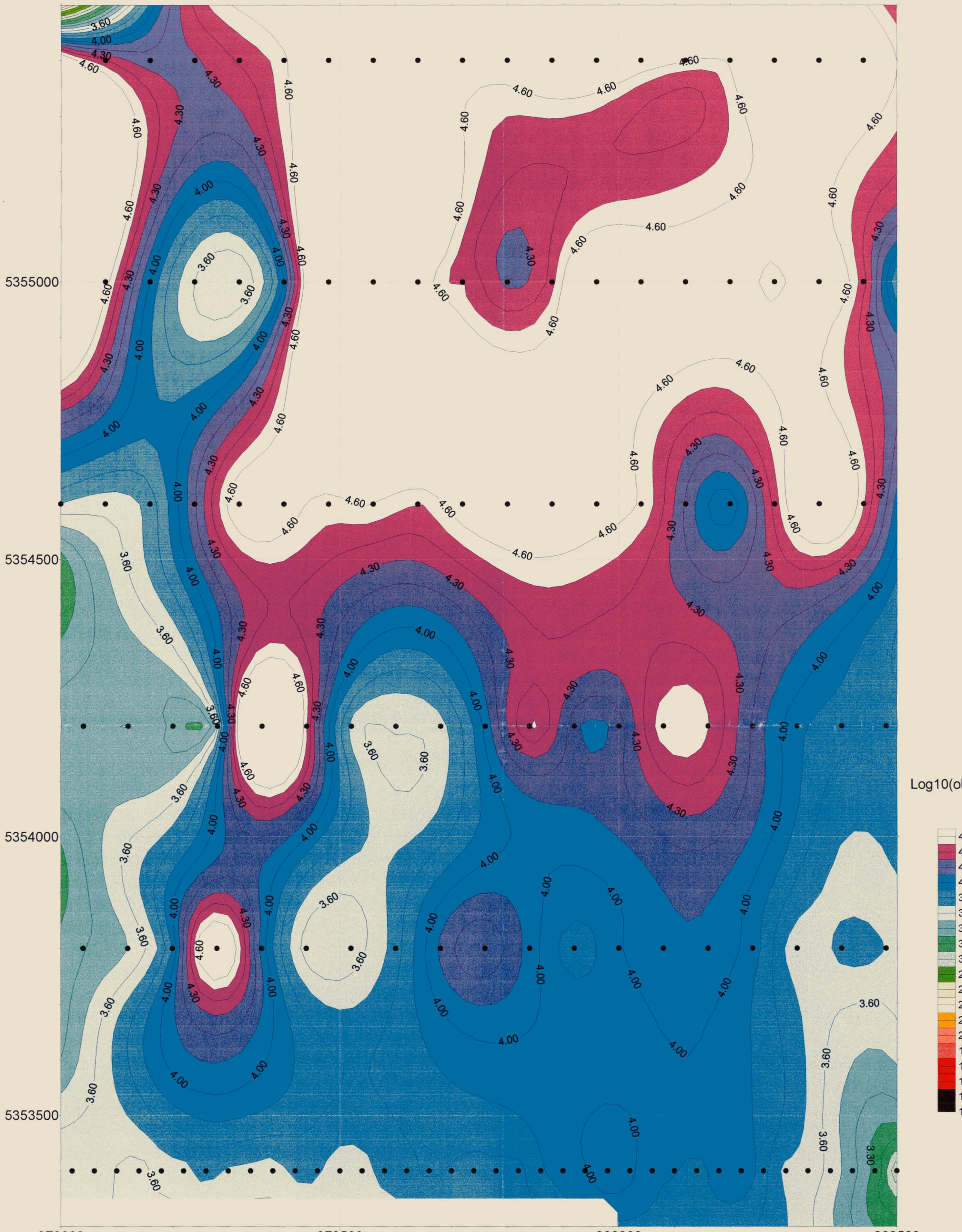
BASIN LAKE (TAS) - CSAMT INTERPRETATION
EMAP- Cagniard Resistivity
Frequency Slice 4096 Hz (shallow 0-100 m)
Subsection: BRADSHAWS RD PROSPECT

Drawn by: Flagstaff Geo-Consultants
6/9/99

Flagstaff Geo-consultants

627161

FIG. 22



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

GOLDFIELDS EXPLORATION

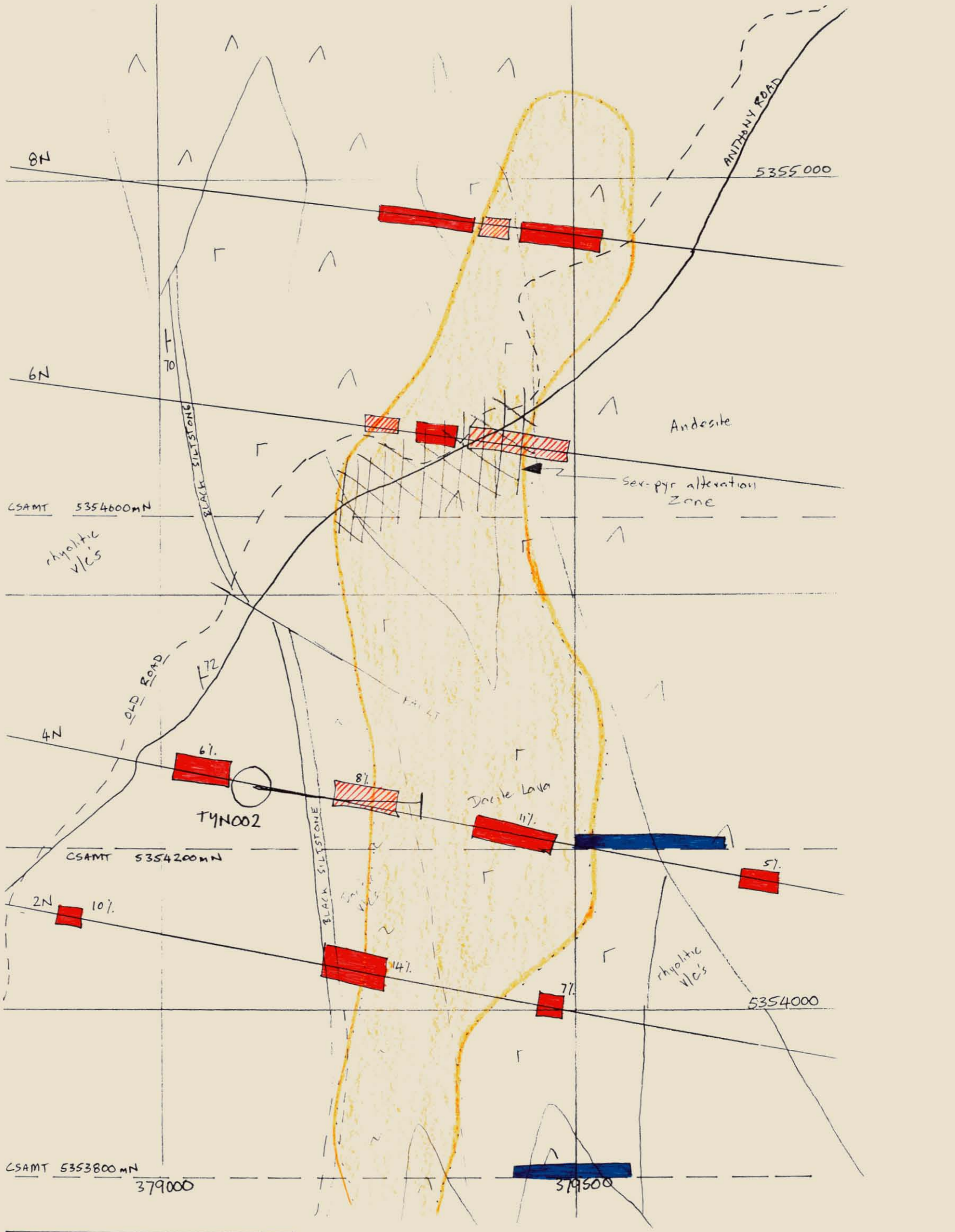
BASIN LAKE (TAS) - CSAMT INTERPRETATI
Bostick Resistivity
Depth sclice 400 m ie at RL +260 m
Subsection: BRADSHAWS RD PROSPECT

Drawn by: Flagstaff Geo-Consultants
6/9/99

Flagstaff Geo-consultants

FIG. 23

627162



Bradshaws Road Prospect
Geology, IP and CSAMT

11%. PFE — shallow IP Anomaly

14%. PFE — Deep (>100m) IP Anomaly

CSAMT Anomaly at 200m

near surface CSAMT Anomaly

99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

627163

Fig. 24

Bradshaws Road Prospect
IP inversions + Drill Targets
(Recommended MW Asten 8/11/99)

627164

Fig. 25

0 100 200
1:5000

5 cm

99_4411

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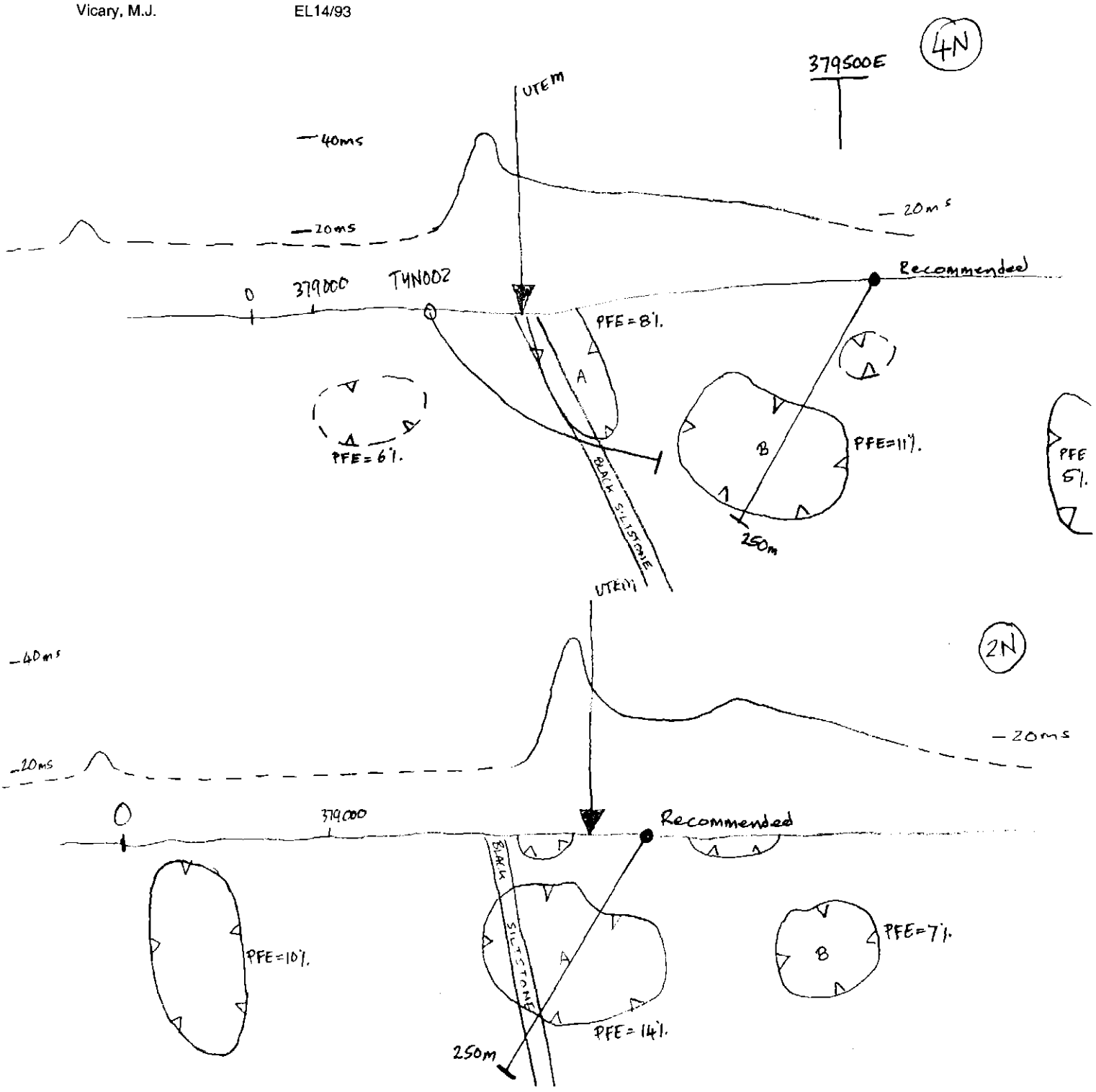
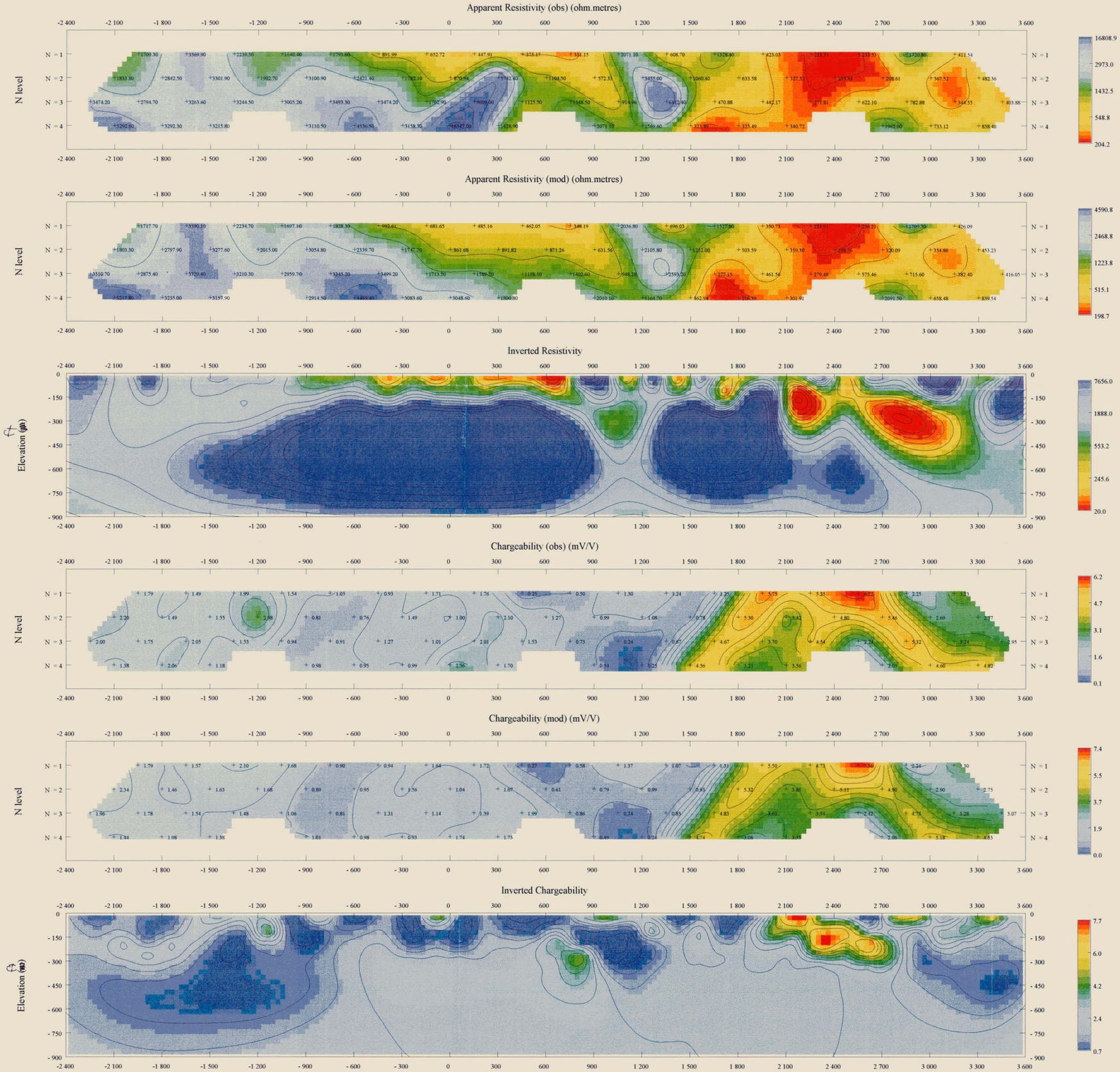
Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93





99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

feet

GOLDFIELDS EXPLORATION

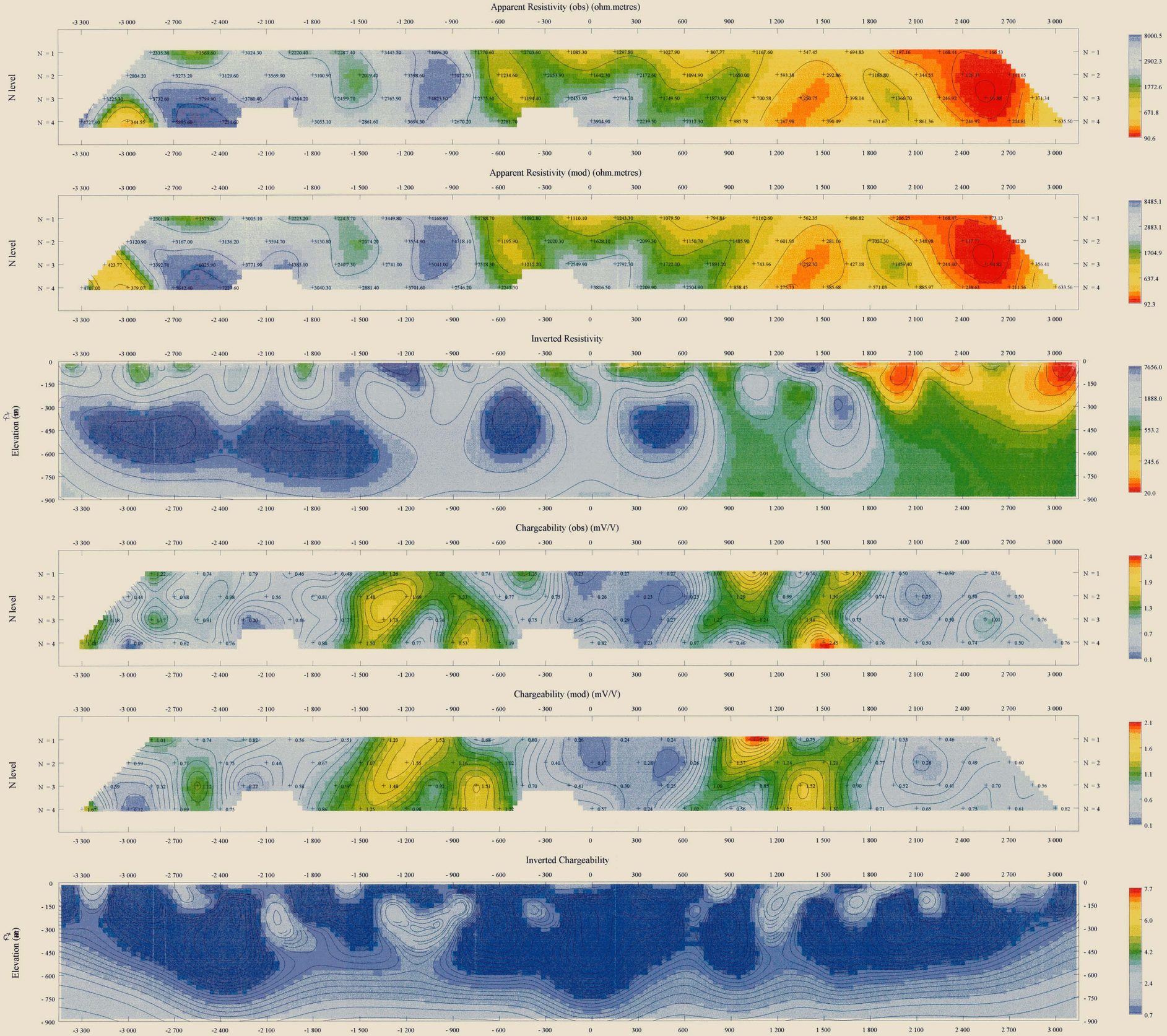
LINE 12N : TYNDALL EAST (1967) GRID W. Tas

Inversion of dipole-dipole IP data (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
Distances are in feet. Actual scale is 1:5000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : FIG. 26.

627165



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500

feet

GOLDFIELDS EXPLORATION

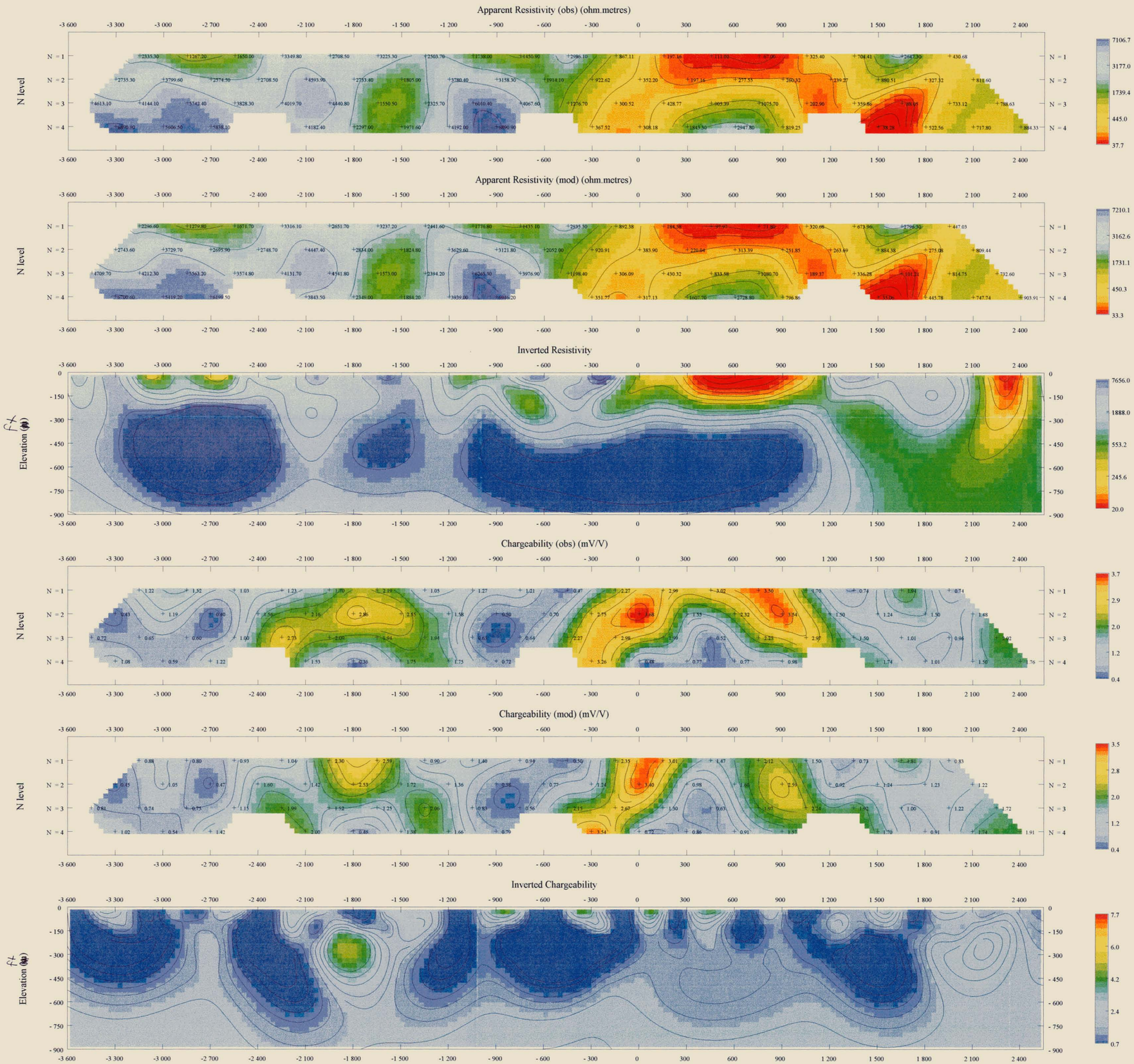
LINE 14N : TYNDALL EAST (1967) GRID W. Tas

Inversion of dipole-dipole IP data (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
Distances are in feet. Actual scale is 1:5000

Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : FIG. 27.

627166



99_4411

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Goldfields Exploration Pty Ltd*; Renison Ltd
Vicary, M.J. EL14/93

5 cm

Scale 1: 5000

0 500 1000 1500 feet

GOLDFIELDS EXPLORATION

LINE 16N : EAST TYNDALL (1967) GRID, W. Tas

Inversion of dipole-dipole IP survey (a=300 ft)

Interpretation by Flagstaff GeoConsultants
2/337A Lennox St
Richmond Vic 3121
Distances are in feet. Actual scale is 1:5000

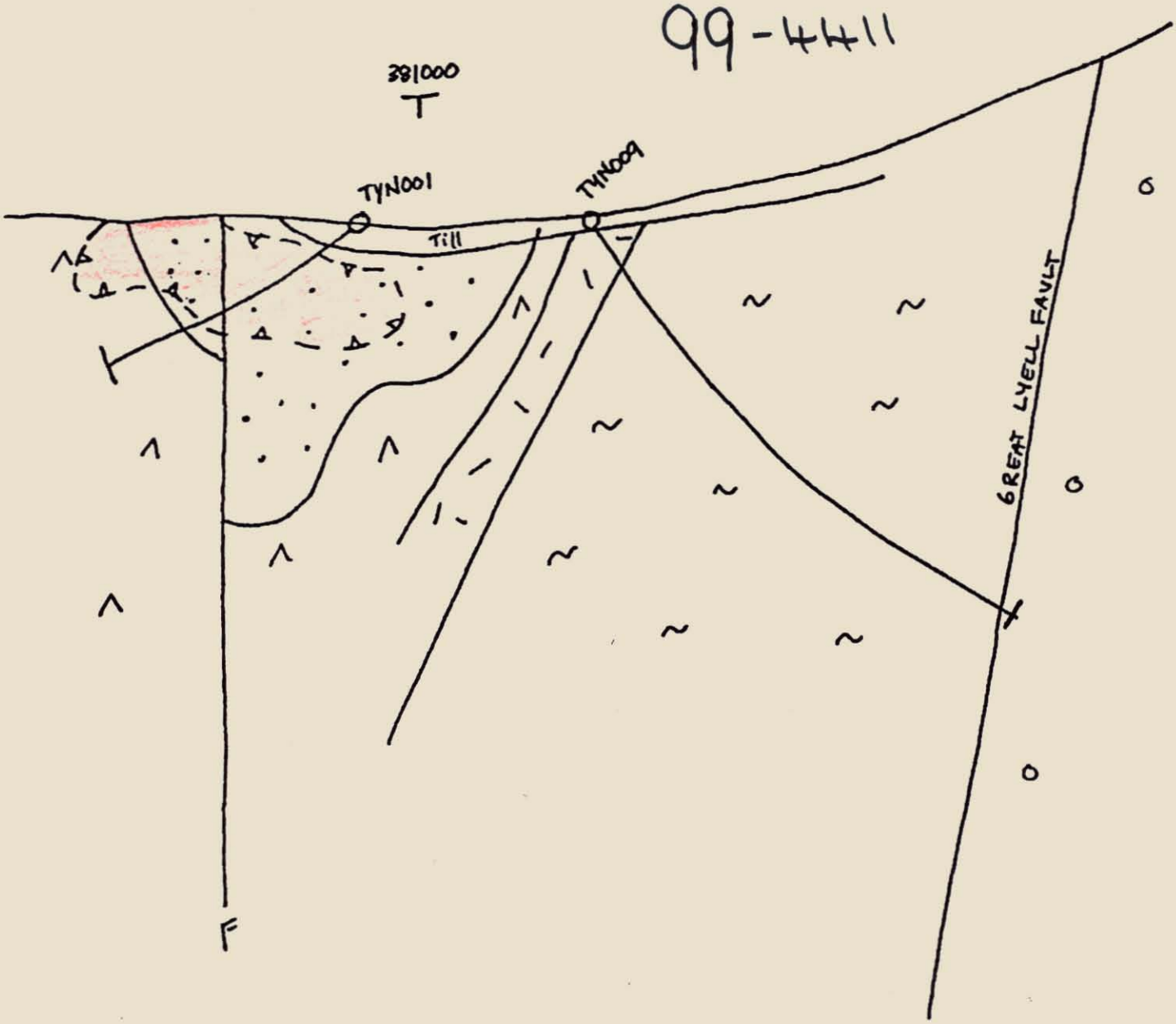
Author :MW Asten	Ref :
Drawn :	
Date : 9-Dec-1999	Report No :
Scale 1: 5000	Plan No : FIG. 28.

627167

5355650 mN

627168

99-4411



Owen Conglomerate

Undifferentiated Tyndall Group
- black siltstones + volcaniclastic sst

Andesite

Qtz Porphyry

Central Volcanic Sequence

Dipole-Dipole Anomaly
Chargeability high

FIG. 29

5 cm

0 100 200 300
1:5000