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VOL 1 of 2

GOLDFIELDS EXPLORATION

ACN 008 560 978

ANNUAL REPORT

TASMANIAN GOLD PROJECT

EL 8/96

SOUTH HENTY

Vol 1 of 2
Text and Enclosures 1, 2, 3 and 4

MINERAL RESOURCES
EL 8/96 PT 2
30 MAY 1999
See folio 29

HELD BY: RESOLUTE LTD.

MANAGER & OPERATOR: GOLDFIELDS EXPLORATION LTD.

MICROFILMED
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AUTHOR(s): Tim Callaghan

20 May, 1999

PROSPECTS: Lake Newton prospect, Howard's Anomaly, Spillway Horizon

MAP SHEETS:

1:25,000: Tyndall, Oceana
Dundas

1:100,000: Sophia

GEOGRAPHIC COORDS

Min East: 379,000mE
Min North: 5,356,000mN

Max East: 382,000mE
Max North: 5,352,000mN

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

KEY WORDS: Central Volcanic Complex, Tyndall Group, Yolande River Sequence, Henty Gold Mine, Mt Lyell

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ANNUAL REPORT-SOUTH HENTY
EL 8/96 - RESOLUTE LTD
T CALLAGHAN

Vol 1 of 2

SUMMARY

Goldfields Exploration became operators of EL 8/96 'South Henty' after completion of JV negotiations with Resolute Ltd. in March 1998. The principal target sought by Goldfields is Henty Style volcanogenic gold mineralisation. In the first year of operation a large copper-gold mineralising system centred on the Lake Newton Prospect was confirmed from drillhole SHD16.

Work in the second year of operation involved an extensive, first pass CSAMT survey, downhole EM, outcrop mapping and the completion of one diamond drillhole.

The CSAMT survey covered the entire South Henty EL on 400m spaced E-W lines. Results were being processed at the time of reporting but results to hand suggest a broad anomaly is associated with the Lake Newton Prospect.

Downhole EM of drillholes completed in 1998 and a review of the existing DHEM data identified many offhole conductors in the Lake Newton Prospect area. Outer Rim were completing surveys with extra loop positions to characterise the anomalies at the time of reporting. The results will be documented in next years annual report.

One diamond drillhole, SHD19 was targeted on a conceptual model where alteration in the Lake Newton Prospect formed the footwall feeder zone for a possible orebody located higher in the stratigraphic sequence, close to the inferred volcanics-seawater interface. However no alteration was intercepted at the target horizon or in the underlying CVC volcanics. A large intrusive of suite II quartz-feldspar-hornblende porphyry extended further down dip than anticipated but no alteration was intersected in the CVC volcanics on the eastern side of the porphyry. Strong hematite alteration in the porphyry was not anomalous in gold or basemetals. The hole was not extended to test the downdip extension of the Lake Newton Prospect as the target was considered too deep to be viable for what so far appears to be a large, low grade disseminated system.

Since completion of the drillhole, drilling on the Henty Mine Lease indicates that the alteration hosting the Henty Deposits crosscuts the stratigraphy suggesting gold rich mineralisation can form below the inferred seawater interface. This suggests the Lake Newton Prospect may yet host high grade mineralisation.

Further drillholes will be targeted on the Lake Newton Prospect, Howard's Anomaly and possibly the southern extension of the Henty-Mt Julia system in the next year. Targets will be finalised after analysis of the geophysical data and completion of the current Mt Julia drilling program.

CONTENTS

- 1.0 Introduction
 - 1.1 Tenure
 - 1.2 Location and Access
 - 1.3 Topography and Vegetation
- 2.0 Regional Geology
 - 2.1 Regional stratigraphy
 - 2.2 Regional Structure
 - 2.3 Tectonic History
- 3.0 Previous Exploration
- 4.0 Local Geology
 - 4.1 Stratigraphy
 - 4.2 Structure
- 5.0 Work Completed
 - 5.1 Mapping
 - 5.2 Rockchip sampling and lithogeochemistry
 - 5.3 Diamond Drilling
 - 5.4 CSAMT Survey
 - 5.5 DHEM Survey
 - 5.5.1 Sth Henty DHEM compilation
 - 5.5.2 DHEM Surveys
 - 5.6 IP Compilation
 - 5.7 Sulphur Isotopes
 - 5.8 Alteration Geochemistry
- 6.0 Discussion

LIST OF FIGURES

1. Location Map
2. Regional Geology
3. Section 5258900, SHD1, SHD14 and SHD14.
4. Oblique Section, SHD2, SHD16 and SHD19.

LIST OF ENCLOSURES

- Enclosure 1. Maps.
Enclosure 2. Oblique Section, SHD2, SHD16 and SHD19.
Enclosure 3. Prospect Location and Alteration Map.
Enclosure 4. Imaged IP chargeability and resistivity maps.

LIST OF APPENDICES

- Appendix 1. Rockchip samples and analysis.
Appendix 2. SHD19 – logs, survey, collar and assay data.
Appendix 3. Basin Lake and Sth Henty Project CSAMT, Chris Dauth 1999.
Appendix 4a. Sth Henty DHEM – SHD15, SHD16 and SHD18, Chris Dauth 1999.
Appendix 4b. Sth Henry DHEM Compilation, Chris Dauth 1999.
Appendix 4c. Preliminary Report on Sth Henty DHEM, Mike Asten 1999.
Appendix 5. Sth Henty and Mt Julia Sulphur Isotope Study, Tim Callaghan 1999.
Appendix 6. Sth Henty Alteration Study, Mike Vicary 1999.

1.0 INTRODUCTION

1.1 Tenure

E.L. 8/96 "South Henty" was granted to Resolute Ltd. on the 14th of June 1996. Resolute was granted the licence as the result of a tendering process in which Resolute committed to spending \$1.4M in two years. After 18 months of exploration and an expenditure of \$1.0M, a downturn in the gold price resulted in Resolute negotiating a joint venture with Goldfields Exploration to complete expenditure commitments and continue exploration.

Joint Venture negotiations were completed by March 1998 under the following terms and conditions:

Stage 1 Goldfields will spend \$1.5 million (the Stage 1 expenditure) on the Project to earn a 60% equity Interest in the Tenement within a two year period. A minimum of \$400,000 would be spent prior to 30 June 1998 to fulfil work commitments to the Mines Department.

A minimum of \$500,000 (including the \$400,000 above) will be spent within 12 months of execution of a farm-in and joint venture agreement. Prior to expending the entire Stage 1 Expenditure Goldfields will not have earned an Interest in the Project. Goldfields may withdraw at any time after spending the first \$500,000.

Upon Goldfields having earned its 60% equity Resolute will have the opportunity to elect, within 30 days of notification by Goldfields that its 60% interest has been earned, to contribute at the 40% level. If Resolute elects to contribute the Joint Venture will be constituted and a Joint Venture Management Committee shall be formed. Decisions by the Joint Venture Committee will be by simple majority vote.

If Resolute elects, or is deemed to have elected, not to contribute to project expenditure at the 40% level Goldfields will continue sole funding Stage 2.

Stage 2 During Stage 2, which will commence at the end of Stage 1, Goldfields may sole fund to earn an additional 20% equity by expending a further \$1.5 million over a further two year period.

Once Goldfields has earned its 80% equity, Resolute may elect to contribute proportionally to ongoing budgets or dilute as below.

In addition:

- In the event of a Party defaulting in making cash contributions that party's interest will dilute at the rate of one percentage point for each \$40,000 spent by the non defaulting Party. Any Party whose Interest is diluted to below 5% will be deemed to have withdrawn from the Joint Venture and

that Party will immediately transfer its remaining Interest to the remaining Party.

- Goldfields will be entitled to have its Interest registered on the titles at the completion of Stage 1.
- The Parties will have pre-emptive rights over any dealings involving the project by any Party wishing to sell its interest.
- Goldfields will determine and manage the budget and program for the Project during the sole funding period. Goldfields will provide Resolute with regular reports on the work carried out.
- Resolute warrants that at the date of signing of the Farm-in Agreement that the tenements are in good standing.
- If a decision is taken to develop a mine on the tenement, the area containing the proposed mine will be excised from the tenement and a development JV will be negotiated.
- Goldfields will charge an overhead fee of 15% on direct costs.

The JV conditions were renegotiated during the past year with Goldfields being able to proceed directly to 80% ownership after meeting expenditure commitments. The renegotiated deal involved the signing of a JV deal with Resolute on tenements held by Goldfields in the Narromine district of NSW.

The license area consists of crown land and land vested in the HEC, both land uses coming under the mines act. The western part of the tenement is part of the Mt. Read Recommended Area for Protection (RAP) but doesn't preclude exploration. Any disturbances in this area require notification and approval from both MRT and the Department of Environment and Land Management (DELM).

The Henty Gold Mine has an easement right for a tailings dam over much of the E.L. to the north of Lake Newton. The Goldfields-Resolute JV has the mineral rights for the area.

The land vested in the HEC includes Lake Newton and associated pump station and access roads, the Henty Canal and service track and the high tension power lines and their services tracks.

1.2 Location and Access

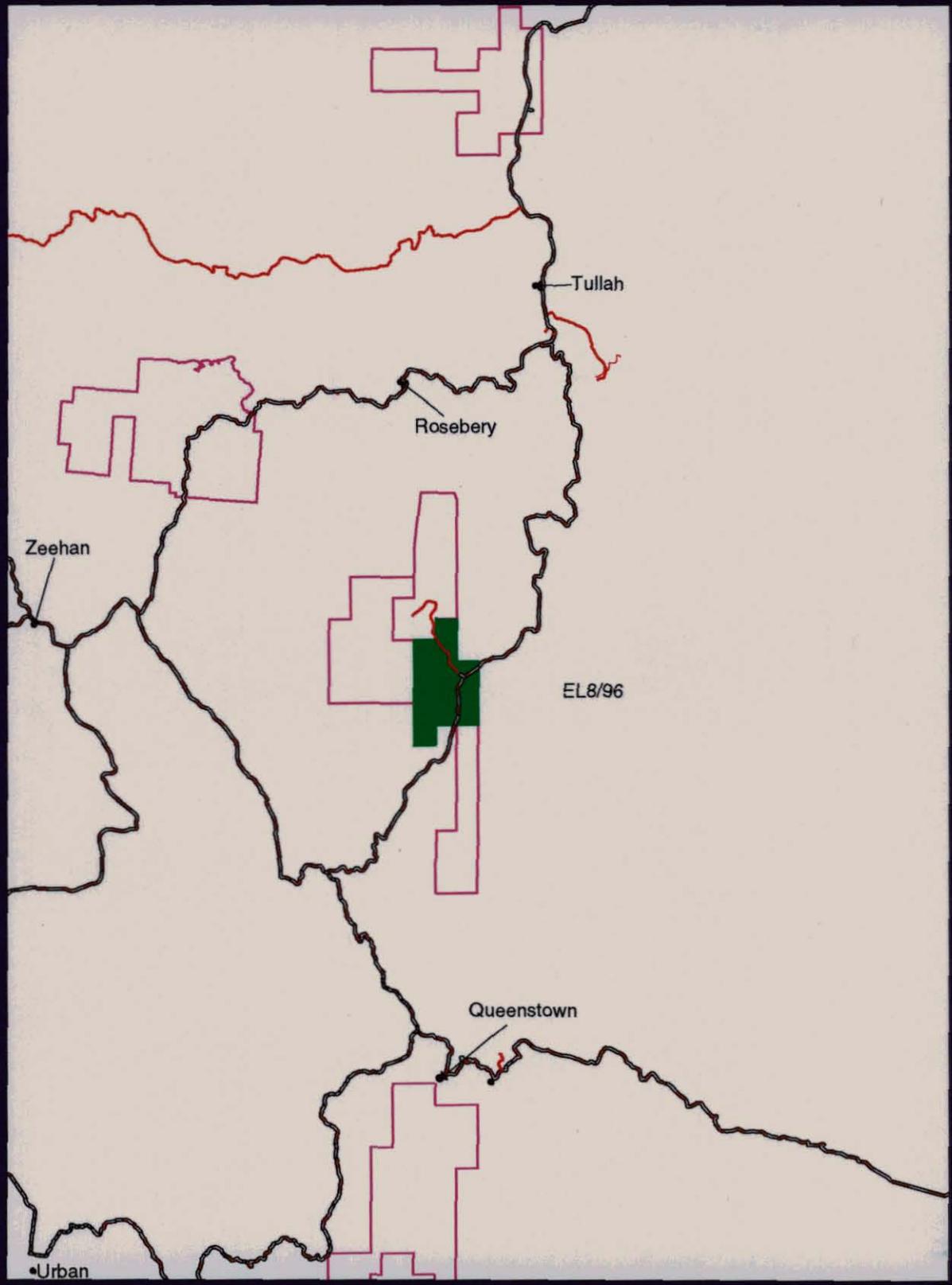
South Henty E.L. 8/96 lies midway between Queenstown and Tullah on Tasmania's west coast (figure 1.). The EL's northern boundary abuts the Henty Mine Lease.

The E.L. is accessible by bitumen road (Anthony Road) and a number of two wheel and four wheel drive dirt roads. The western third of the E.L lies in the Henty Gorge and access is by foot only. The E.L. is well gridded on 200m line spacings providing easy foot access to most of the E.L.



Project Title

Figure 1. Location map of EL 8/96



1.3 Topography and Vegetation.

Most of the prospective part of the South Henty E.L. occupies a peneplain at around 500mRL. The western third of the E.L plunges steeply down 300m to the Henty Gorge, which occupies the South Henty Fault lineament. The eastern margin of the E.L. is bound by the Tyndall Ranges rising to approximately 1000m.

Much of the northern peneplain is covered by button grass and low tea-tree scrub whilst the Henty Gorge and southern EL are covered by temperate rainforest.

The area receives a high annual rainfall of around 3m.

2 REGIONAL GEOLOGY

2.1 Regional Stratigraphy

The South Henty E.L. is hosted in the Cambrian Mt. Read Volcanics. The Mt Read volcanics are an arcuate belt of acid to intermediate volcanics occupying the eastern margin of the Dundas Trough. They are bounded to the east by Precambrian basement rocks of the Tyennan Region and younger Cambro-Ordovician siliciclastics and appear to interfinger with fossiliferous volcanosedimentary rocks of the Dundas Group and Western Sedimentary Sequence to the west.

A major north south striking structure, the Henty Fault divides the Mt Read Volcanics into two parts, north and west of the Henty Fault and south and east of the Henty Fault. Within the Henty Fault are rocks of the Henty Fault Sequence to the south of Mt Murchison, and the Farrell Slates to the north near Tullah. The Mt. Read Volcanics north and west of the Henty Fault (figure 2) host the Pb-Zn rich polymetallic volcanogenic massive sulphide (VHMS) deposits of Rosebery, Hercules, Que River and Hellyer while the volcanics south and east host the Henty Gold Mine, Mt Julia Prospect and copper gold deposits of the Mt. Lyell Field.

The Mt. Read Volcanics south and east of the Henty fault are divided into four lithological groups (Corbett 1992),

- 1) Central Volcanic Complex (CVC) consisting of mainly rhyolitic to andesitic volcanics with minor sediments and mafic units.
- 2) Eastern Quartz Phyric Sequence of quartz porphyritic lavas and volcanoclastics.
- 3) Tyndall Group comprising mainly quartz-phyric felsic and intermediate extrusives and volcanoclastics with interbedded epiclastics.
- 3) Western Sequence of volcanosedimentary siltstones, shales, quartzose and volcanoclastic turbidites and felsic porphyry intrusives.

The oldest rocks belong to the CVC and Western sequence. The CVC is thought to underly and partially interfinger with the Western sequence to the west, and the

Eastern Quartz Phyrlic Sequence to the east. Recent investigations on the South Henty E.L. suggest the CVC overlies the Western sequence. The Tyndall Group overlies the CVC both conformably and unconformably.

Overlying the Mt Read Volcanics are the Cambro Ordovician siliciclastics of the Owen Conglomerate which have an unconformable to interdigitating relationship.

2.2 Regional Structure

The NNE trending, 70° west dipping Henty Fault dominates the Mt Read Volcanic Belt for at least 60km. The Henty Fault divides into the North and South Henty Faults near Mt. Read. The Great Lyell Fault splays off the Henty Fault somewhere in the vicinity of Mt. Murchison and trends in a southerly direction to the south of Mt Lyell. Both of these structures bound the western margin of thick sequences of Owen Conglomerate.

The Cambrian and younger (to early Middle Devonian) rocks in western Tasmania have been effected by widespread Devonian folding of the Tabberabberan Orogeny. The Tabberabberan Orogeny was a multiphase deformation event, with an early phase of NNW folding (D₁) and a later NW to WNW (D₂) trend recognised in the region (Williams, 1989). This has produced open upright folding in competent siliciclastic units but tight folding in phyllosilicate rich volcanics. Reverse faulting is common and the rocks have developed a pervasive regional foliation. Metamorphism was of prehnite-pumpellyite to lower greenschist facies.

2.3 Tectonic History

Basement rocks of western and central Tasmania comprise Late Proterozoic sediments multiply deformed in the Late Proterozoic Penguin Orogeny. A following rift phase deposited continental shelf sequences followed by extensive tholeiitic volcanism (Crawford & Berry 1992). Eastern Australia's passive margin collided with an oceanic arc thrusting slices of ultramafic to mafic forearc sequences over most of western Tasmania (Crawford & Berry 1992).

Middle Middle Cambrian extensional tectonism associated with the Delamerian Orogeny resulted in rapid deposition of sediments and calc-alkaline volcanics (Mt. Read Volcanics), particularly along the eastern margin of the newly formed Dundas Trough (Berry 1994). Late reactivation of extensional faults as reverse faults formed open north trending folds and the uplift and erosion of the Tyennan Block forming the Owen Conglomerate (Berry 1994).

Continued sag phase sedimentation continued to the Middle Devonian with the exception of a hiatus in deposition during the Silurian (Berry 1994).

Deposition ceased in the middle Devonian with the onset of the Tabberabberan Orogeny. In western Tasmania north trending Cambrian folds were tightened with a NNW striking cleavage. Locally developed WNW trending folding and cleavage is associated with NNE trending compression. Late to post orogenic granitoids intruded the West Coast region with associated mineralisation (eg Renison Bell).

3.0 PREVIOUS EXPLORATION

Good summaries of previous exploration are available in Lewis (1995b), Quayle (1995), Fitzgerald (1987), and Donaldson (1993).

The South Henty EL. has been prospected since late last century to the present. Only minor workings are evident from very early exploration. Small pits and minor shafts are located on minor disseminated and vein sulphides, and barite outcrops at Howard's Anomaly, Tyndall Creek and near the southern wall of the Henty Mine tailings dam. The Tyndall Mine appears to be located on the Henty Horizon and consists of several costeans, adits and shafts, apparently on quartz-galena veins (Donaldson, 1993).

Pickands Mather explored the region in the late 50's/early 60's. Reporting from this era is almost non-existent, but apparently they used EM, mapping and soil and rock chip sampling and located the Howard's Anomaly gossan associated with the barite-base metal veins located in Tyndall Creek (MacDonald, 1996).

Goldfields Exploration (formerly Mt Lyell Mining and Railway Co.) explored much of the district as EL 9/66 between 1966 and 1984. EL 9/66 covered a vast area from just south of Mt Darwin to Mt Read. Their intention was to find Rosebery style zinc-rich volcanic hosted massive sulphide or Mt Lyell style Cu-Au mineralisation. Reconnaissance exploration involving gridding, soil sampling, and IP surveys resulted in the drilling of HA1/2, HA3 and HA4 on coincident IP/soil geochemical anomalies between 1966 and 1979.

HA4 intersected significant silver mineralisation associated with barite-haematite and calcite. This intersection became the focus of Howard's Anomaly work which included further IP and soil surveys and the drilling of HA5 at Howard's Anomaly and HA6 further north.

A review of the large EL in 1983 (Purvis, Fitzgerald and Komyshan, 1983) delineated both the silver-barite-haematite zone and a sulphide zone at the confluence of Tyndall Creek and Newton Creek (now Lake Newton) identified from IP surveys and anomalous soil geochemistry. HA7 and HA8 were drilled into this zone, both intersecting strong sericite-silica-pyrite-carbonate alteration with HA8 intersecting 232m @ 0.2% Zn including 15m @ 0.1 g/t Au. Goldfields were required to relinquish the ground in 1985 after completing eight drillholes.

The current EL was split into two halves in 1985 after a tendering process. East of 380 000mE (AMG) was granted to CRAE (EL 5/85 "Lake Margaret") while the western half was granted to Arimco/EZ (EL11/85 "Yolande River"). Exploration on the EL's was initiated in the late 1980's. CRAE conducted A-horizon soil sampling on 400m spacings and complete UTEM coverage before signing a joint venture agreement with Aberfoyle in 1989.

Pasminco Exploration took control of the Arimco/EZ JV in 1990 and carried out systematic C-horizon soil sampling, mapping, rock sampling, helimag and blanket

UTEM east of the Henty River. After recognition of the Spillway Horizon stratigraphic sequence, a systematic drilling program ensued from 1992 to 1995. A total of 4412.7m was drilled in 16 diamond drillholes. Drillholes YNC3 to 15 were stratigraphic holes designed to test the spillway horizon massflows hosting massive sulphide clasts outcropping in the Lake Newton Spillway (Poltock and Fitzgerald, 1991; Poltock, 1992; Quayle, 1993; Quayle, 1994; Quayle, 1995). YNC16 was drilled into the Henty Horizon based on a stratigraphic model of the Henty deposit. YNC1,2 and 3 were targeted on anomalous soil/rock geochemistry near the Henty Gorge.

Aberfoyle continued exploration on EL 5/85 with further 200m spaced soil sampling, helimagnetics and litho-geochemistry, petrology and isotope geochemistry (Richardson, 1991; Sharpe, 1993). Five short holes (TC1-5) were drilled under the Tyndall Creek barite-sulphide outcrop with some high grade intersections (2.1m @ 5% Pb and 7% Zn) (Lewis, 1994). Four deep diamond drillholes (NC1-4) were drilled in the last two years of the licence life. Although not stated, the target is assumed to have been the intersection of the base of the Tyndall Group with the Great Lyell Fault (Lewis 1995a and Lewis 1995b). DHEM and side grind geochemistry was completed on all four holes.

Both EL 11/85 and EL 5/85 expired in 1995. After a fiercely competitive tendering process, the two EL's were combined and granted to Resolute Ltd. in June 1996 to form the current EL 8/96 "South Henty".

After thorough collation and analysis of the available data (Herrmann and MacDonald, 1996) the Spillway Horizon and the Henty-Comstock horizon were identified as favourable target horizons for VHMS-volcanogenic gold mineralisation as well as other minor structurally controlled gold targets near Tyndall Creek, the Newton Dam Access Road and the Henty Canal.

Resolute completed localised, detailed infill C-Horizon soil sampling (wacker samples) and IP surveys on the Henty canal, Tyndall Creek and Access Road Prospects.

A total of 4984.5m of drilling from 14 diamond drillholes was completed by Resolute up to September 1997 (MacDonald, 1997). Most of the work concentrated on the Lake Newton Prospect magnetic anomaly, centred on and below the Henty Comstock Horizon including drillholes SHD1, 10, 11, 13 and 14. No mineralisation was identified on the Henty Horizon, but a significant zone of anomalous alteration was intersected in the underlying CVC in SHD1 (94m @ 0.2% Zn, 0.13% Pb and 0.04g/t Au). This alteration zone is an extension of the zone identified in HA7 and HA8 by Goldfields Exploration in the 1980's.

Two drillholes were targeted on the Spillway Horizon, SHD2 and SHD12 with another two SHD8 and SHD9 intersecting the horizon although based on a different model (Access Road alteration, structurally controlled Au mineralisation). The last two holes were drilled on IP and Soil geochemical anomalies. Little indication of the source of the massive sulphides was indicated but a significant alteration zone was intersected in SHD2 with a best result of 0.5m @ 0.13% Cu, 11.7% Pb, 18.2% Zn, 3.42 g/t Au and 220 g/t Ag. SHD8 also intersected anomalous Au mineralisation (3m @ 0.8 g/t Au) in

similar pumice breccias as the alteration intersected in SHD2. It is now apparent that all the alteration is related to the one system as discussed below.

Drillhole SHD6 was designed to test outcropping alteration and coincident IP soil anomalies near the Henty Canal after infill surveys by Resolute Ltd. The Lower Tyndall group including the Henty Horizon was intersected with some Henty style albite-silica alteration being intersected. No significant assays were returned. A black siltstone explains the IP response but the geochemical anomaly remains unresolved.

Four short holes were drilled on the interpreted Tyndall Creek Fault after gridding and soil and IP surveys identified several significant anomalies. Minor pyrite veining was intersected in SHD4, SHD5 and SHD7 but only low level Au and basemetal values were returned.

Resolute Ltd. signed a JV partnership with Goldfields Exploration with Goldfields as managers of the partnership in March 1998. Exploration recommenced immediately.

Goldfields first year of operating the South Henty EL involved:

Orientation mapping of EL8/96.

Rock Chip Sampling.

Diamond drilling, four holes, SHD15, SHD16, SHD17, SHD18 for 2426.4m.

Downhole EM, SHD15, SHD16 and SHD18.

Lithochemistry.

Goldfield's work identified a large alteration zone anomalous in copper and gold at the Lake Newton Prospect in drillhole SHD16 with best results of :

615-736, 121m @ 0.2 g/t Au

770.8-791.8, 21m @ 0.4 g/t Au.

These alteration zones include best intersections of :

654.3-672.6, 18.3m @ 0.4 g/t Au.

683.8-694.0, 10.2m @ 0.4 g/t Au.

622.2-626.2, 4.0m @ 0.5 g/t Au.

771.8-775.8, 4.0m @ 1.4 g/t Au.

Best Cu assays include:

667.3-672.6, 5.3m @ 1.9% Cu.

719.5-721.5, 2.0m @ 1.3% Cu.

It is apparent that the alteration drilled in the previous Mt Lyell, Pasmenco, Aberfoyle and Resolute programs is all related to a single, zoned hydrothermal system and not several unrelated horizons as previously thought. The Lake Newton Prospect consists of a high grade Cu-Au anomalous core of dominantly silica-sericite-pyrite alteration surrounded by an extensive halo of blebby carbonate and carbonate-sericite alteration with anomalous Pb-Zn values averaging 0.2%. It is probable that the alteration system

is related to a regional copper gold mineralising event including the Henty Gold Mine and Mount Lyell field and has the potential to host similar deposits.

4.0 LOCAL GEOLOGY

4.1 Stratigraphy

The stratigraphy of the South Henty lease has been well documented by Resolute geologists (Herrmann and MacDonald, 1996) with the help of litho-geochemistry, detailed mapping and graphical logging. Goldfield's work to date has not altered the stratigraphy to any great degree and is summarised below. Goldfields stratigraphic codes are included.

Tyndall Group	Zig Zag Hill Fm	Post-eruptive rhyolitic, volcanolithic conglomerate and qtz-crystal rich sandstone. Ctc
	Mt Julia Member	Syn-eruptive qtz-feld crystal rich sandstone. Ctt Massive qtz-phyric rhyolitic lavas, breccias and intrusions. Ctl
	Lynchford Member	Syn-eruptive feld crystal rich volcanoclastic sandstone. Cttl Massive carbonate and marly sediments. Ccarb Dacitic volcanoclastic sediments. Cttld Howard's Basalt. Fine grained basaltic andesite dykes, lavas and lithic breccias. Cb
CVC (Suite II)	Suite II Porphyry	Qtz-feld-hbl porphyry. Intrusive, fractionated. Cp
	Anthony Road Andesite	Feld-hbl phyric andesite and breccia, extrusive and intrusive. Ca
CVC (Suite I)	Newton Creek Dacites	Dacitic to andesitic volcanoclastic sediments. Ccv Dacitic, feld phyric to aphyric lavas, breccias and intrusions. Ccvi Dacitic volcanoclastic pumice breccias. Ccv
	Spillway Breccia	Coarse polymict and dacitic massflows with some sulphide clasts. Ccvag
	Spillway Basalt	Massive to stratified monomictic "fire fountain" basalt breccia. Cb
Yolande River Sequence	Footwall pumice breccia	Massive feld-phyric pumice breccia. Cymf Vitric siltstones and sandstones. Cys

4.2 Structure

Two major faults control the geology of the South Henty Lease, the South Henty Fault to the west and the Great Lyell Fault to the east. The South Henty Fault is a steeply west dipping (60-90°) major regional structure extending for approximately 70km of strike length dividing the geology of the Mt Read Volcanics into distinct terrains. It forms the western boundary of the Yolande River Sequence, CVC and Tyndall Group rocks on the South Henty Lease and Henty Mine Lease. The Great Lyell Fault is a

large west dipping reverse fault with several hundred metres of displacement. The rocks of exploration interest lie between these two structures.

Bedding consistently faces east and is steeply east dipping to overturned west dipping on most of the EL. Bedding generally trends north, north-westerly and is truncated at low angles by the South Henty Fault. A tight, shallow north plunging syncline is located near the Great Lyell Fault in the south east of the lease and may be a southern extension of the Mt Julia syncline. The major regional S₂ foliation overprints most rocks and has a north westerly strike and steep southwest dip.

A prominent displacement/flexure in the stratigraphy is evident in the middle of the lease. This structure is strongly controlled by the morphology of both the Mt Julia Rhyolite and the Suite II porphyry, several late east-west faults and possibly the surface expression of some syn-intrusive/growth faults. The syn intrusive/growth faults are evident on sectional interpretations (figures 3 & 4) as shallowly west dipping structures displacing the lower stratigraphic units and intrusives but to a lesser extent the overlying Tyndall Group. These structures seem to occur around intrusive margins. Although they are difficult to pinpoint accurately, they are characterised by stratigraphic variations including rapid local thickening of the basal Lynchford Member volcanoclastics, increased thickness and number of basaltic andesite flows, dacite domes and rhyolite domes.

Extensive ductile deformation has focused on the Howard's basalt horizon, particularly in the southeast corner of the lease in the Howard's Anomaly area. The localised deformation has resulted in a strongly developed foliation and down dip stretching lineation in the softer basaltic breccias grading into brittle faulting and kinking of the earlier foliation. The fault represents the extended limb and hinge of a series of NNW trending asymmetric folds located in the SE corner of the EL and extending onto the Anthony EL. These structures mark the change from dominantly east facing-steeply dipping bedding strongly influenced by the Henty Fault in the west to flatter lying strata, disrupted by N to NNW trending open to tight folds and associated faulted limbs with wavelengths of approximately 200m in the east.

Many minor, late, east-west trending brittle faults with displacements of less than ten metres disrupt the stratigraphy.

5.0 WORK COMPLETED

In the period June 1998 to May 1998 the following work was completed:

Mapping of the southern part of EL8/96 and minor reinterpretation of the northern sheet.

Rock Chip Sampling and lithogeochemistry.

Diamond drilling, one hole SHD19 for 750.4m.

Downhole electro-magnetics.

CSAMT survey.

Compilation of previous IP data.

Sulphur Isotope Study

Alteration Geochemistry Study

Sth Henty Section 5358900N

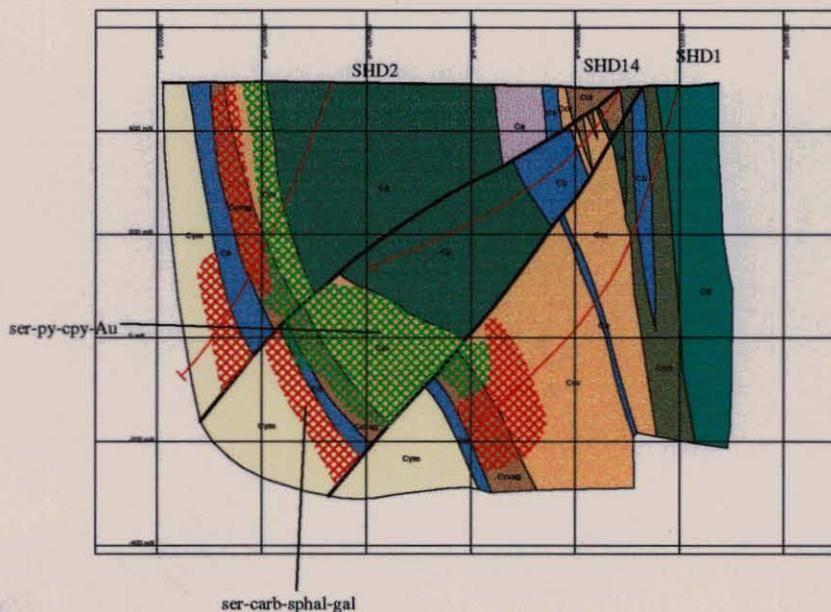


Figure 3. Section 5358900. SHD1, SHD2 and SHD14 schematic alteration and geology.

(For map units, see Enclosure 1)

5.1 Mapping

The updated map sheet for the northern part of EL8/96 and the newly compiled southern sheet are located in Enclosure 1. The interpretive map was compiled from outcrop mapping, sectional interpretations, aeromagnetic and IP interpretation and lithogeochemistry.

5.2 Rock Chip sampling and Lithogeochemistry.

Eight rockchip samples were taken during the period. These were submitted to Analabs for lithogeochemical analysis. Elements analysed include Ti, Zr, V, P by XRF, Cu, Pb, Zn, Ag and As by AAS and Au by fire assay. Results and sample locations are listed in Appendix 1.

Several samples of the Howard's basalt from SHD19 were submitted and analysed for Ti, Zr, V and P by XRF to aid identification of these units. Results are listed with the SHD19 data located in Appendix 2.

Lithogeochemical sampling of the South Henty EL was initiated by Aberfoyle and Pasmenco but was first comprehensively analysed by Resolute Ltd. Geologists (Herrmann and MacDonald, 1996). They used geochemistry and petrology to characterise the stratigraphy of the EL. The entire database has been compiled into Goldfields' database along with selected samples analysed from rockchips and drillcore obtained during the past year. A discussion of lithogeochemical groups by Mike

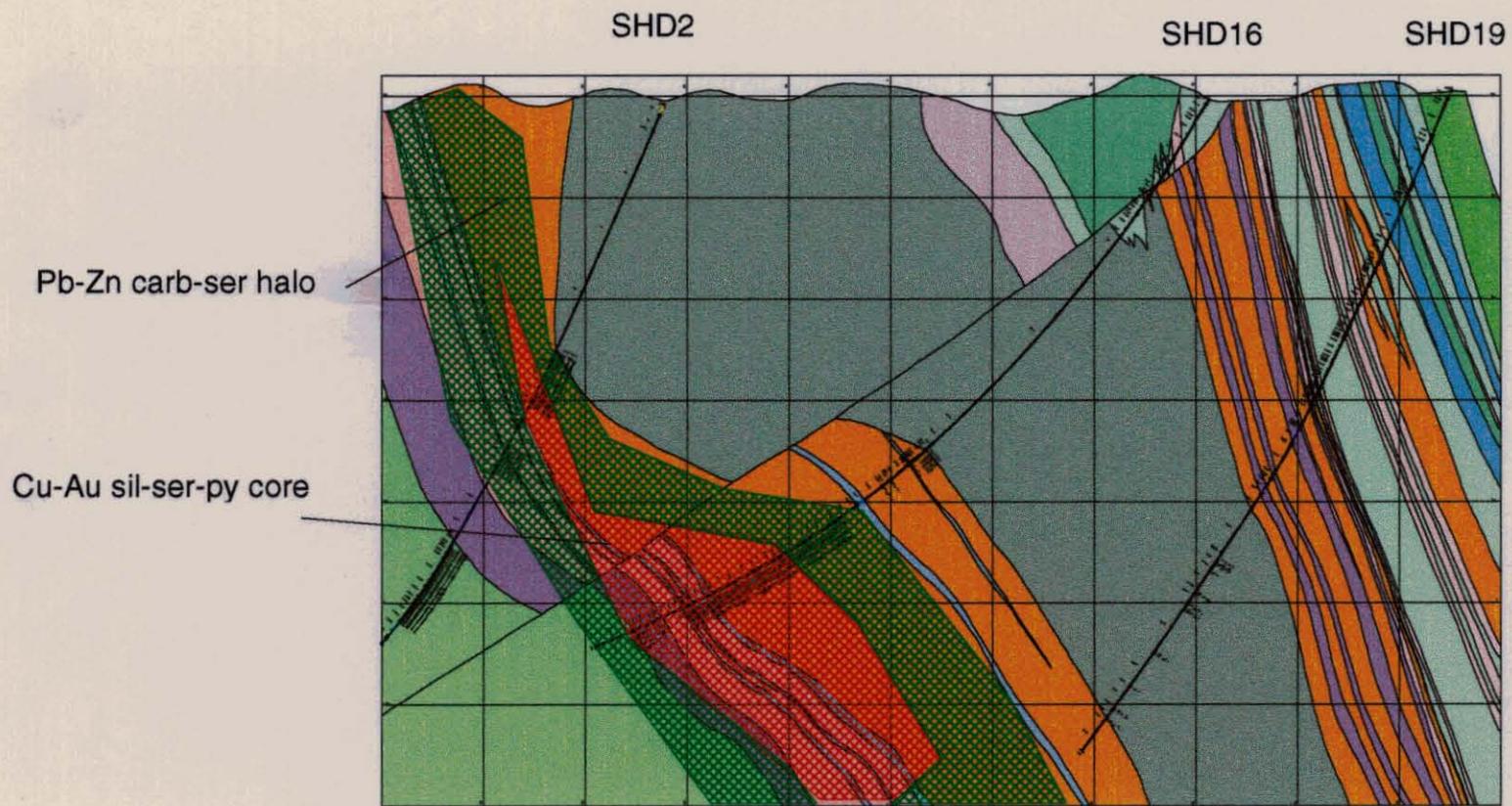


Figure 4. SHD2, SHD16, SHD19, Schematic alteration and geology.

584017

Vicary is included in last years annual report, Appendix 4 and 5 (Callaghan, 1998). It was concluded that the immobile elements Ti, Zr and P₂O₅ were excellent discriminators of volcanic suites.

5.3 Diamond Drilling.

One diamond drillhole, SHD19 was completed during the period for a total of 750.4m. A hole location plan is displayed in Enclosure 3.

Drill logs, collar, survey and assay data for the hole are listed in Appendix 2. Selected half drillcore was submitted to Analabs, Burnie for analysis. Elements analysed include Au by fire assay Ag, Cu, Pb, Zn, Bi and As by AAS and P, Ti, V and Zr by XRF. A cross section for the drillhole is shown in figure 4 and Enclosure 2.

SHD19

The current interpretation for the Lake Newton Prospect is documented in the 1998 Annual Report (Callaghan, 1998) and is briefly summarised here. The Lake Newton Prospect is part of a large, zoned, epigenetic Cu-Au hydrothermal system, the centre of which appears to be close to SHD16 in the Lake Newton Prospect.

The prospect has many similarities with the Western Tharsis deposit of the Mt Lyell Field. The entire alteration zone extends over a strike length of at least 2kms, varies between 30m to over 200m in width and is open at depth. The alteration zonation from the outer halo moving inwards is:

Fe-Mn carbonate-chlorite halo
carbonate-sericite± sphalerite±galena±barite
sericite-pyrite-carbonate
sericite-silica-pyrite±chalcopyrite±gold

The only hole intersecting significant copper-gold mineralisation is SHD16, most of the other holes intersected the low grade (<0.2% Zn) basemetal-carbonate-sericite halo. The copper gold zone is closed off to the north by SHD17 and updip by the Suite II quartz-feldspar-hornblende porphyry but remains open downdip, to the south and for a limited extent to the north.

Diamond drillhole SHD19 was designed to test a conceptual model where the SHD16 intersection represents deeper, upwelling Cu-Au brines. It was hoped the hydrothermal fluid reached higher stratigraphic levels and a potential seafloor position at the CVC-Tyndall Group boundary (Henty position) up stratigraphy from SHD16 section and deposited economic mineralisation. The Suite II porphyry has been demonstrated to pinch out at depth on section 5358900N (figure 4) which may have allowed the upwelling hydrothermal fluids to reach the potential seafloor position further to the north in the SHD16 vicinity.

However SHD19 intersected a thick intrusion of Suite II porphyry before entering unaltered CVC pumice breccias. No significant alteration or mineralisation was encountered at the CVC-Tyndall Group boundary, Suite II porphyry or the underlying

pumice breccias. Obviously the hydrothermal system did not approach the seafloor position in this area. The porphyry had patchy, intense hematite and carbonate alteration but was not anomalous in Au or basemetals.

Although it is very likely the alteration extends downdip from SHD16, it was not considered worthwhile extending SHD19 to 1000m to test low grade, disseminated mineralisation 700m below surface.

Further holes will be targeted on the Cu-Au core of the Lake Newton Prospect during the next year after the CSAMT and DHEM data has been reviewed.

5.4 CSAMT Survey

The similarities of the Lake Newton Prospect with the Western Tharsis deposit on the Mt Lyell Field were documented in the 1998 South Henty Annual Report (Callaghan, 1998) and briefly summarised in section 5.3. Copper Mines of Tasmania (CMT), the previous operators of the Mt Lyell Mine had some success with CSAMT in defining high grade copper (and gold) zones within the extensive barren pyrite halos of the Mt Lyell field, particularly the deep, Western Tharsis deposit. After discussions with CMT and group geophysicists Chris Dauth and Steve Mudge, it was decided to conduct a CSAMT survey over the entire South Henty grid on 400m spaced lines.

Zonge were contracted to conduct the survey which was completed in March 1999. Mike Asten, a consultant working for Flagstaff GeoConsultants has been employed to process and analyse the data. The survey completes the coverage at 400m spaced lines of the South Henty, Anthony and Basin Lake EL's, the last two EL's previously surveyed by Billiton during the 1980's.

Good geological control is provided by drill intersections over some lines on the South Henty EL, particularly over the SHD16 intersection which should provide good insight into the resolution of the technique. In addition an orientation line was completed on the Henty Mine Lease over the Mt Julia Deposit to see if it could be detected with CSAMT at 600m depth.

Details of the proposed survey including lines and transmitter position are reported in a technical note by Chris Dauth in Appendix 3. The survey recommended approximately 24 line km on 14 E-W lines of 400m spacings. Recommended station and receiver dipole spacings were 50m and a transmitter of 1.8km length, oriented E-W on 5350600mN extending from 379100mE to 380900mE was designed. The results for the survey were being processed at the time of writing and will be included in next years annual report.

5.5 DHEM Surveys

Downhole electromagnetic surveys of three diamond drillholes holes, SHD15, SHD16 and SHD18 were completed during the year. Details of the surveys and results are reported in a technical note by Chris Dauth and are located in Appendix 4a. All previous South Henty DHEM surveys have been compiled by Chris Dauth and are

included in Appendix 4b. A preliminary report on the new and existing data by consultant Geophysicist Dr. Mike Asten is included in Appendix 4c.

5.5.1 South Henty DHEM Data Compilation.

The South Henty DHEM data compilation was completed by Chris Dauth to assist the transfer of Goldfields Exploration Tasmania geophysical projects to out sourced consultants as a result of staff relocations during the RGC/Goldfields Exploration split.

The data compilation is documented in a Technical Note by Chris Dauth dated 14 January, 1999 and is included as Appendix 4b to this report.

5.5.2 DHEM Surveys.

DHEM surveys were completed on diamond drillholes SHD15, SHD16 and SHD18 during May 1998. Details and results of the survey are documented in Appendix 4a. A preliminary investigation of the data was made by Chris Dauth before passing the information on to Mike Asten for further analysis. A first pass study of the new and existing data has been made by Mike Asten, the report from which is contained in Appendix 4c. A brief summary of the report and its recommendations are included here.

SHD2

Re-analysis of the DHEM survey of SHD2 completed by Resolute Ltd defines a conductor coincident with the Lake Newton Alteration Zone at 230m depth and a further conductor identified below the hole at 600m depth. It is likely the off hole conductor is related to the stronger alteration intersected in SHD16 (see figure 4 for section). It was recommended that the hole be resurveyed with an additional loop (Loop 9) to characterise the anomaly. This was being followed up at the time of writing and the results will be included in next years annual report. The additional survey may help target higher grade Cu-Au mineralisation within the Lake Newton Prospect.

SHD16

An off hole conductor is suggested at the bottom of the survey. This anomaly is more or less coincident with the anomaly detected in the SHD2 hole. The SHD16 survey did not extend to the bottom of the hole (due to shallowing inclination of the hole). It is likely the survey is picking up an EM anomaly associated with the Cu-Au sulphide mineralisation of the Lake Newton prospect located at the bottom of the hole.

SHD12

Reinterpretation of the DHEM survey completed by Resolute Ltd. in 1996-97 identified a possible west dipping offhole conductor at the base of this hole. It has been recommended that the hole be resurveyed with an additional loop placed further to the east (Loop10). Although this hole did not intersect any alteration or mineralisation, the Lake Newton Prospect is located just northeast of the hole and is possibly stoped out by the large intrusion of Suite II porphyry intersected in this hole. The extra DHEM survey may help target an additional hole in this area. The survey is being conducted at the time of reporting.

SHD18

No anomalies detected.

SHD1

A weak conductor was identified below and east of the SHD1 hole. This hole intersected the outer carbonate-base metal halo of the Lake Newton Prospect. But this was not detected in the DHEM survey. Drillhole SHD13 was drilled below SHD1. It intersected no alteration zone but some black shales were present which may be responsible for the weak offhole anomaly in that position. The hole is being resurveyed with a different loop configuration to try and detect the Lake Newton Prospect alteration. Preliminary results suggest an off hole conductor is present off the end of the hole. The hole intersected the outer Pb-Zn-carbonate halo of the Lake Newton Prospect and the survey may well be seeing the stronger alteration in the Cu-Au mineralised core. The results will be included in next years report when the survey is completed.

SHD19

At the time of writing, SHD19 was being surveyed by Outer Rim. Results to hand indicate no conductors are present in the vicinity of the hole. The final report will be included in the next annual report.

5.6 IP Compilation

Several IP surveys have been completed over the South Henty EL and adjoining EL's over the last 30 years. During the past year, Goldfields personnel and contractors have compiled and imaged the existing IP surveys available from previous reports. Digital data for the IP survey conducted by Resolute Ltd. has not yet been obtained for this compilation.

The northing and easting coordinates of the data points were digitised and the resistivity and chargeability averaged for each survey. Each survey was then normalised to a common average so that the resistivity and chargeability for each point was in a common range and the surveys could be stitched together. The imaged resistivity and chargeability compilations are located in Enclosure 4.

5.7 Sulphur Isotope Study.

A limited sulphur isotope study of the Lake Newton Prospect and Mt Julia Deposit was conducted during the past year. A detailed report on the study is included in Appendix 5. A distinct zonation of $\delta^{34}\text{S}$ within the Lake Newton Prospect was obvious with the Cu-Au mineralised core having lighter $\delta^{34}\text{S}$ than the surrounding Pb-Zn anomalous halo. This supports the other evidence (geochemical and alteration zonation, geophysical anomalies etc.) suggesting the SHD16 intersection represents a proximal part of a large Cambrian hydrothermal system. Although demonstrating good zonation, the technique is of more academic interest than of direct use to exploration for this particular deposit as the zonation is more readily defined by basemetal geochemistry and alteration mapping. A follow up study is being conducted by Mathew street who is completing a B.Sc. Honours degree on the prospect. The

sulphur isotopes suggest the deposit may have formed through the mixing of upwelling magmatic fluids or evolved seawater with subsurface reduced Cambrian seawater. These hypotheses are discussed further in Appendix 5.

5.8 Alteration Geochemistry.

A reconnaissance geochemical study of the alteration zonation at the Lake Newton Prospect was completed during the past year. The study included trace element abundances in pyrite, trace element abundances in carbonate and F content in sericite. Details and results of the study are included in Appendix 6.

The results confirm that the alteration intersected in SHD16 has intersected a potentially more prospective part of the alteration system. The results of this preliminary study will be examined in more detail as a BSc (Hons) project of the Lake Newton Prospect by Mathew Street.

6 DISCUSSION

The South Henty EL hosts three significant prospects:

- The southern extension of the Henty-Mt Julia alteration zone (Au only).
- The Lake Newton Prospect (Cu-Au) (including Howard's Anomaly).
- The Spillway Horizon (polymetallic massive sulphide).

Each requires a different exploration strategy. A map of prospect locations is provided in Enclosure 3.

Southern Extension of the Henty-Mt Julia Alteration Zone.

Diamond drilling to the south of the Mt Julia resource commenced in July 1998. Up to the time of writing the alteration zone hosting the gold deposits of the Henty Mine (A-Zone) has been demonstrated to continue to within 500m of the Mine Lease Boundary (Enclosure 3). Drilling to the Mine lease boundary was proceeding at the time of writing.

Recent drilling demonstrates that A-Zone is not stratabound but crosscuts the stratigraphy. In the north of the Mt Julia resource it is hosted in dacitic hyaloclastites and volcanoclastics just below the distinctive feldspar crystal-lithic volcanoclastic sandstones of the Lynchford Member. In the southern Mine Lease it is hosted in dacitic volcanics of the CVC Newton Creek dacites, 200m lower in the stratigraphy. Several basaltic andesite flows and intrusives of dacite and Suite II porphyry are located in the overlying stratigraphy. The alteration still appears to be strongly controlled by the South Henty Fault.

The southernmost drillhole, MJ023 intersected a large sericite-pyrite alteration zone with below detection Au values. The intersection is much broader and is offset to the east 100m from the northerly trend of A-Zone. Marked facies changes in the CVC stratigraphy are also apparent suggesting a synvolcanic discontinuity, probably a

Cambrian fault located somewhere between this intersection and the MJ022 intersection to the north.

Two more parent holes have been collared at the time of writing, one to test the updip extension of the MJ023 intersection, the other to test the southern continuity of A-Zone at depth to the EL boundary. The results of these will strongly influence any exploration program designed to test the southern extension of A-Zone onto the South Henty EL.

Depending on the results of the two current mine lease drillholes (MJ024 and MJ025), a deep diamond drillhole of approximately 1200m length is recommended from the YNC16 collar site. This hole will test for possible extensions to A-Zone and may possibly test the intersection of the sulphide clast bearing Spillway Horizon massflows with the South Henty Fault. If this hole is successful, Goldfield's will need to apply for a retention licence on the South Henty EL to provide time for resource delineation prior to application for a Mining Lease.

Lake Newton Prospect

The previous years exploration (1997-98) concluded that most of the low grade Pb-Zn mineralisation associated with carbonate and carbonate-sericite alteration was the outer halo of a large Cu-Au hydrothermal system, the centre of which appears to be close to SHD16 in the Lake Newton Prospect.

The alteration system is a well zoned, epigenetic, low grade (so far), disseminated copper gold system of considerable size that has many similarities with the Mt Lyell and Henty-Mt Julia copper gold deposits of the district. The entire alteration zone extends over a strike length of at least 2kms, varies between 30m to over 200m in width and is open at depth. The alteration is well zoned from the outer halo moving inwards in the following order:

Fe-Mn carbonate-chlorite halo
carbonate-sericite± sphalerite±galena±barite
sericite-pyrite-carbonate
sericite-silica-pyrite±chalcopyrite±gold

The only hole intersecting significant copper-gold mineralisation is SHD16, most of the other holes intersected the low grade (<0.2% Zn) basemetal-carbonate-sericite halo. The copper gold zone is closed off to the north by SHD17 and updip by the Suite II quartz-feldspar-hornblende porphyry but remains open downdip, to the south and for a limited extent to the north.

The alteration is dominantly hosted in the polymict to dacitic massflows of the Spillway Horizon and overlying massive dacitic pumice breccias of the CVC, but also overprints the Spillway Basalt and extends down into the underlying Yolande River Sequence rhyolitic pumice breccias and vitric siltstones. The alteration partially overprints the boundary of the Suite II porphyry implying a syn to post porphyry timing of the hydrothermal event. Because the Suite II porphyry has peperitic contacts with the overlying Lynchford Member (as seen in SHD17), it would appear that the

porphyry and therefore the alteration postdate the carbonates of the Henty-Comstock Horizon. This has been verified by the Mt Julia drilling program (MJ022) where the Suite II porphyry has intruded dacitic hyaloclastites overlying exhalative carbonates.

Although the mineralisation is diffuse and low grade, the Cu-Au rich hydrothermal fluids identified in SHD16 are capable of forming economic deposits if the right physical and/or chemical conditions existed.

The CVC-Lynchford member boundary or Henty-Comstock Horizon has been extensively tested on the South Henty EL with no alteration intersected above the CVC pumice breccias with the exception of Howard's Anomaly. Recent drilling on the Henty Mine Lease has demonstrated that A-Zone is not stratabound at this horizon but does crosscut the stratigraphy and is hosted in the CVC Newton Creek dacites. The stratigraphic position of the Lake Newton Prospect and the southern extension of A-Zone is similar with the exception of a distinctive facies change from proximal dacitic volcanics in the north to massive, graded pumice breccias in the south.

All the geochemical and geophysical evidence to hand suggests the SHD16 intersection is the most proximal drillhole to the hydrothermal source in the lake Newton Prospect. It is possible that the SHD16 intersection lies on the periphery of higher grade disseminated mineralisation within the CVC. This style of mineralisation is likely to be of Mt Lyell type although the Cu/Au ratio of the system appears to be more similar to Mt Julia than Mt Lyell. Further holes around SHD16 would be required to help vector in to any higher grade zones. A target of this style, 300m below surface would have to be of a large size and/or exceptional grade to be economically viable. The Henty, Mt Julia and some of the Mt Lyell deposits clearly indicate the potential of the region.

Three diamond drillholes testing the Cu-Au core of the Lake Newton Prospect and one further south testing below Howard's Anomaly are recommended. Drill targets will be finalised after analysis of the results of the CSAMT and DHEM surveys.

The magnetic low targeted by Resolute lies just to the south of the SHD16 intersection and still remains largely untested at depth. Offhole conductors are present in all drillholes surveyed in this region. A deep drillhole collared on Jasper Point (HA7 collar) is recommended to test the southern extension of this zone and provide more information on the system.

A hole collared from the SHD16 site and drilled due west AMG would provide another intersection 200m north of the Cu-Au core and test the preliminary CSAMT anomaly associated with the alteration zone on line 5359400N.

The SHD14 hole drilled by Resolute Ltd. was left uncased with PVC to allow later extension of the hole. This hole was stopped in the Suite II quartz-feldspar-hornblende phytic porphyry at 616m, about 100-200m short of the interpreted western boundary of the intrusive (Figure 3). The porphyry was altered with minor silica-pyrite-albite with a best assay of 2m @ 0.48g/t Au. An offhole conductor in SHD2 is located in the vicinity of this hole. It is recommended the hole be extended 300m to test the Lake Newton Prospect in the underlying dacitic pumice breccias.

Howard's Anomaly stands out on IP and soil geochemical surveys as being highly anomalous. Several drillholes have been targeted on IP anomalies and the Lynchford Member-CVC contact. However no drillholes test the underlying CVC which hosts both the Lake Newton Prospect and the southern extension of A-Zone. The Anthony Road Andesite and Suite II porphyries pinch out at depth to the north and under Lake Newton. It is possible they do the same under Howard's Anomaly, opening up a broad area of prospective ground below the shallow HA1 and 2 holes. It is recommended the CSAMT survey be reviewed and if anomalies exist, a deep hole should be collared from the NC1 drill pad.

Spillway Horizon Massive Sulphides

The stratigraphic sequence and volcanic facies hosting the Spillway Horizon Breccia and sulphide clasts is well understood largely due to the drilling program conducted by Pasminco in the early 1990's. The source of the massive sulphide clasts is yet to be identified.

Exploration for the massive sulphide source within the South Henty EL must concentrate on two areas, the largely unexplored south western corner of the lease and the Spillway Breccia-South Henty fault contact in the north.

The southwestern corner of the lease requires grass roots exploration involving following the prospective horizon and trying to identify favourable structures and anomalous alteration. Three 400m spaced CSAMT lines have been completed over this horizon. It is recommended the three new lines cut in the southwestern corner of the lease be followed up with 25m spaced C-horizon soil samples. The samples should be assayed for Au, Cu, Pb, Zn and As as well as Ti, Zr, V and P by XRF to aid litho-geochemistry and mapping of the EL.

The Spillway Horizon has been extensively tested in the north of the EL. The only untested target to the north is the intersection of the Spillway Breccia with the Henty Fault (a known fluid conduit at Henty). This area is complicated by voluminous coherent dacite domes. The target will be tested by the Mt Julia Drilling program in the vicinity of the Mine Lease boundary.

Summary of Recommendations

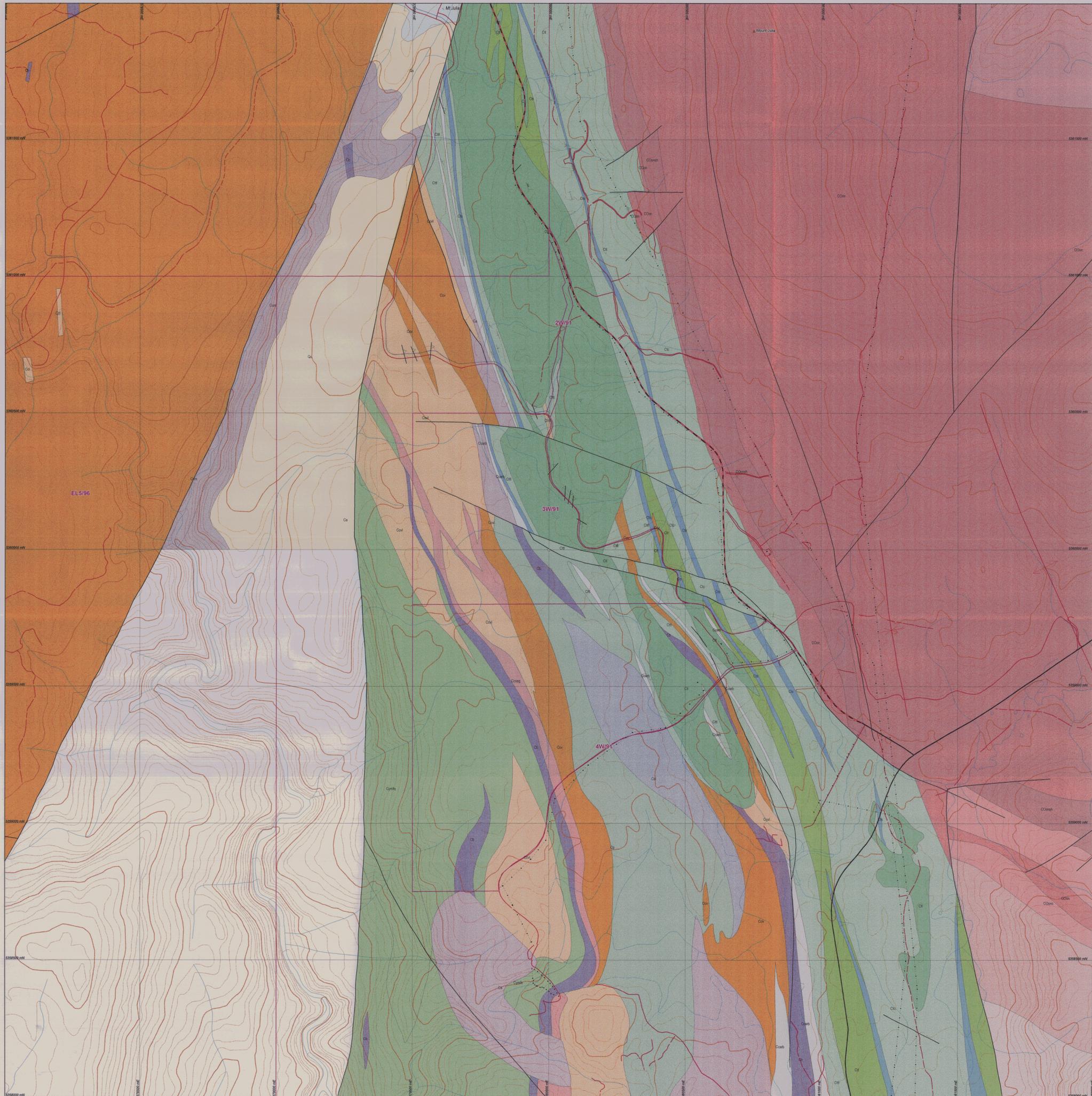
1. Finalise CSAMT and DHEM surveys.
2. Deep drillhole from Jasper Point targeting the Lake Newton Prospect under HA7 and HA8.
3. Diamond drillhole to test Lake Newton Prospect 200m north of SHD16
4. Extension of SHD14 to test DHEM anomaly in SHD2 and Lake Newton Prospect.

5. Deep diamond drillhole from YNC16 drillpad to test A-Zone extension and Spillway Horizon-South Henty Fault contact.
6. Deep drillhole on Howard's Anomaly under HA1 and HA2.
7. C- Horizon soil sampling of the southwestern corner of the EL.

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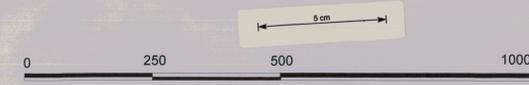
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- Q_u Undifferentiated Quaternary sediments
- C_{gl} Mainly limestone commonly decomposed to black clay "pug"
- C_{OUu} Upper Owen correlates in Tyndal Range - Mt Murchison area. Predominately pink sandstone & granite - pebble conglomerate, includes granule - pebble conglomerate (C_{OUcu}) & grey sandstone and conglomerate (C_{OUg}).
- C_{OUg} Upper Owen correlates in Tyndal Range - Mt Murchison area. Predominately pink sandstone and granule - pebble conglomerate, includes granule - pebble conglomerate (C_{OUcu}) & grey sandstone and conglomerate (C_{OUg}).
- C_{OUcu} Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (C_{OUms}).
- C_{OUms} Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble-boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (C_{OUms}).
- C_{OUm} Mainly thinly bedded quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.
- C_{OUeh} Mainly thinly bedded siltstone, quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.
- C_{OUoc} Mainly pebble conglomerate with minor thinly bedded quartzitic sandstone & pebbly sandstone - Newton Creek Sandstone.
- C_U Mainly volcanioclastic conglomerate with minor siltstone and volcanioclastic sandstone.
- C_{Uu} Bedded sandstone - siltstone units
- C_{Uc} Mainly crystal - rich volcanic sandstone (quartz-feldspar phyrlic), Comstock Tuff and correlates.
- C_{Uf} Chert rich mass flow horizon. Basal unit to Comstock Tuff.
- C_{Uv} Crystal - rich volcanic sandstone (feldspar-pyroxene phyrlic), lithic-rich bases with minor ash, sandstone & limestone. Lynchford Tuff & correlates.
- C_{Uq} Quartz phyrlic lava & tuff. Possibly equivalent to Lower Tyndal Group.
- C_U Quartz-feldspar phyrlic lava
- C_{Ug} Graded crystal-rich volcanic sandstone (feldspar-quartz phyrlic) with interbedded black siltstone (Lynchford Tuff correlate)
- Sulphide Lenses
- C_A Andesitic to basaltic intrusive bodies with lavas & clastic units. Includes feldspar-hornblende-pyroxene-phyric & feldspar-pyroxene phyrlic types & small chlorite altered dykes.
- C_{As} Thinly bedded black pyrite siltstone
- C_{Av} Andesitic to basaltic clastic units
- C_B Basalt. Henry Dyke Swarm
- C_{Bv} Interbedded basaltic lava & volcanioclastic sediments
- C_{Bs} Interbedded basaltic lava & volcanioclastic sediments
- C_D Interbedded dacitic volcanioclastic sandstone and siltstone
- C_{Dv} Mainly felsic pyroclastic rocks, dominantly feldspar phyrlic, including pumice bearing tuff & breccia, crystal vitric tuff, vitric tuff & minor shale & sandstone
- C_{Dm} Mainly felsic feldspar phyrlic lava & intrusives; massive to flow banded or autobrecciated, with rare columnar jointing
- C_{Du} Mainly felsic feldspar phyrlic lava and intrusives; massive to flow banded or autobrecciated, with rare columnar jointing
- C_U Units of bedded siltstone, sandstone, tuff & agglomerate
- C_U Undifferentiated massflows, sandstones & black siltstones
- C_U Ashy siltstone
- C_U Felsic porphyry bodies, intrusive & partly extrusive.
- C_U Units of bedded siltstone, sandstone
- C_U Black siltstone
- C_U Dominantly greywacke & mudstone with some interbedded vitric tuff, crystal tuff & crystal-lithic tuff
- C_U Interbedded vitric tuff, crystal tuff, siltstone, slate, sandstone & agglomerate.
- C_U Volcanioclastics
- C_U Undifferentiated Lower White Spur Formation
- C_U Crystal rich volcanioclastics sandstone
- C_U Siltstone & sandstone

- Geological boundary, accurate
- Geological boundary, inferred
- Fold feature
- Fault, position accurate
- Inferred Fault
- Concealed Fault
- Underground Mine
- Open Cut Mine
- Mineral Deposit
- Mineral occurrence
- Prospect, explored
- Abandoned Mine
- Bull up populated area
- Homestead (Pasture)
- Building
- Railway Station
- Beacon, Lighthouse
- Airport or Aerodrome
- Bridge
- Road Tunnel
- Monument, Status Cross
- Landmark Object
- Named Peak/Feature
- Mountain or mountain range
- Pass
- Cliff, Escarpment, Breakaway
- Sand Ridge or Sand Dunes
- Spur, Spur line
- Rock
- Platform
- Monument, Status Cross
- Landmark Object
- Cave, Cavern
- Island
- Pier
- Pier, Pier, Wharves, Boatwharf
- Swamp
- Waterfall
- Dam
- Spring
- Furl
- Marina, Mooring, Pier, Post
- Highway
- Secondary
- Minor Road
- Vehicle Track
- Railway
- Landing Quai
- Powerline
- Contour line
- Watercourse
- Perennial L



Scale 1 : 5 000

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

1 : 5 000 Sheet Index

Copper Knob 55	Mount Read 34	13
Moores Pimple 54	Henry 33	The Red Hills 12
White Spur 53	Mount Julia 32	Julia Peak 11
Howard's Road 52	31	Mount Tyndall 10
Henry Gorge 51	Poole's Hill 30	The Bastion 9



Mt Read Volcanics Belt Tasmania

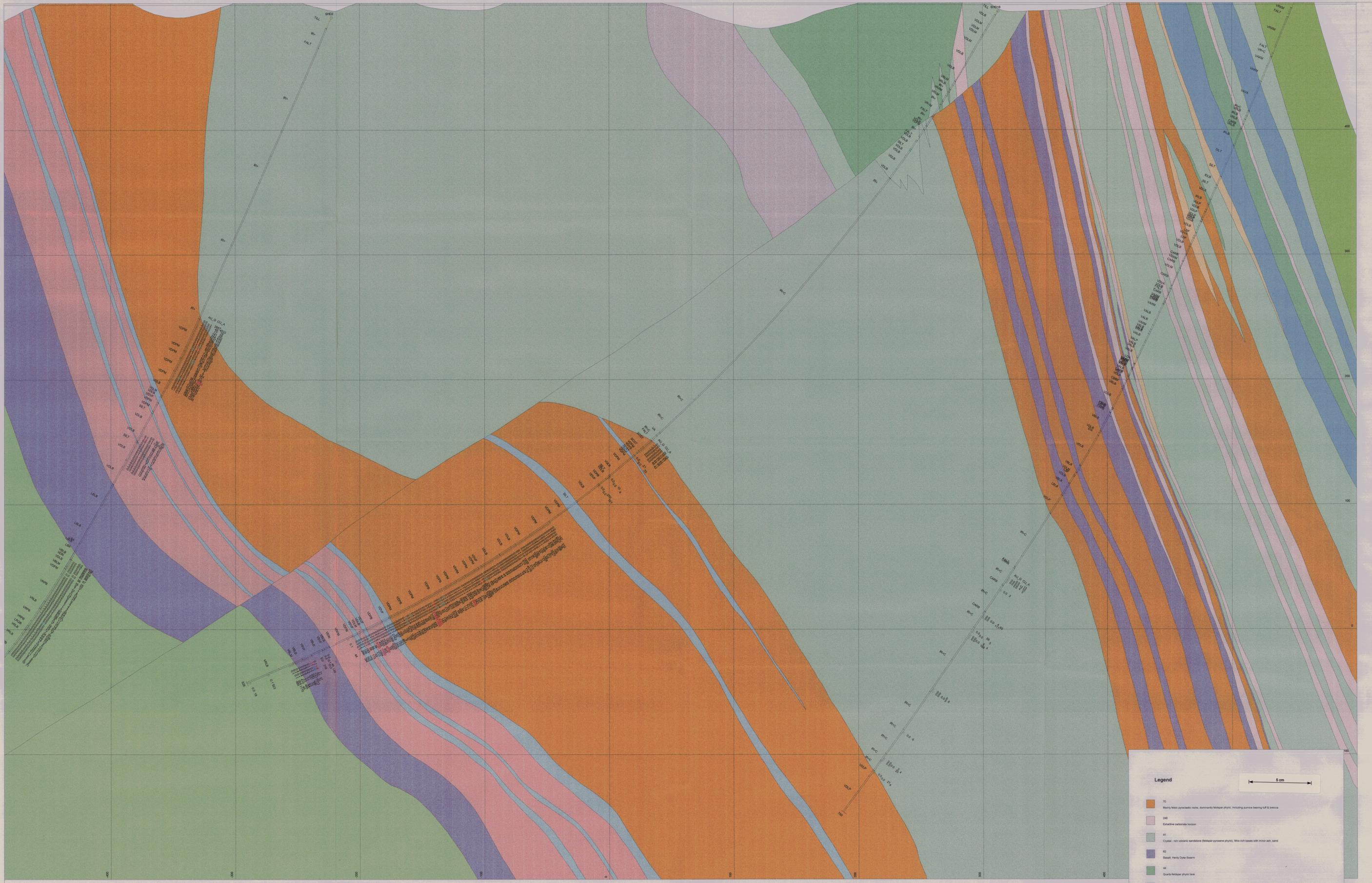
**SHEET 32
Mount Julia**

GEOLOGICAL INTERPRETATION

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Page Setup: A0 and landscape
Date: August 1997

ENCLOSURE 1

ANNUAL REPORT SOUTH-EASTERN
TASMANIA
T. COLLIERSON
1997



Legend

5 cm

- 70 Many thin pyroclastic rocks, dominantly tephritic phytic, including pumice-bearing tuff & breccia
- 248 Euhelitic carbonate horizon
- 41 Crystalline volcanic sandstone (tephritic pyroclastic phytic), silty-rich bases with minor ash, sand
- 62 Basalt, Healy Dyke Swarm
- 44 Quartz-tephritic phytic tuff
- 38 Bedded sandstone - siltstone units
- 0
- 38 Many coarse - rich volcanic sandstone (quartz tephritic phytic), Cornish tuff and conglom.
- 47 Quartz tephritic phytic
- 73 Lithic breccia & agglomerate
- 87a Rhyolite-dacite tuffaceous, commonly graded
- 56 Anorthitic to basaltic rhyolite bodies with tuff & dacitic units, includes tephritic hornblende py.

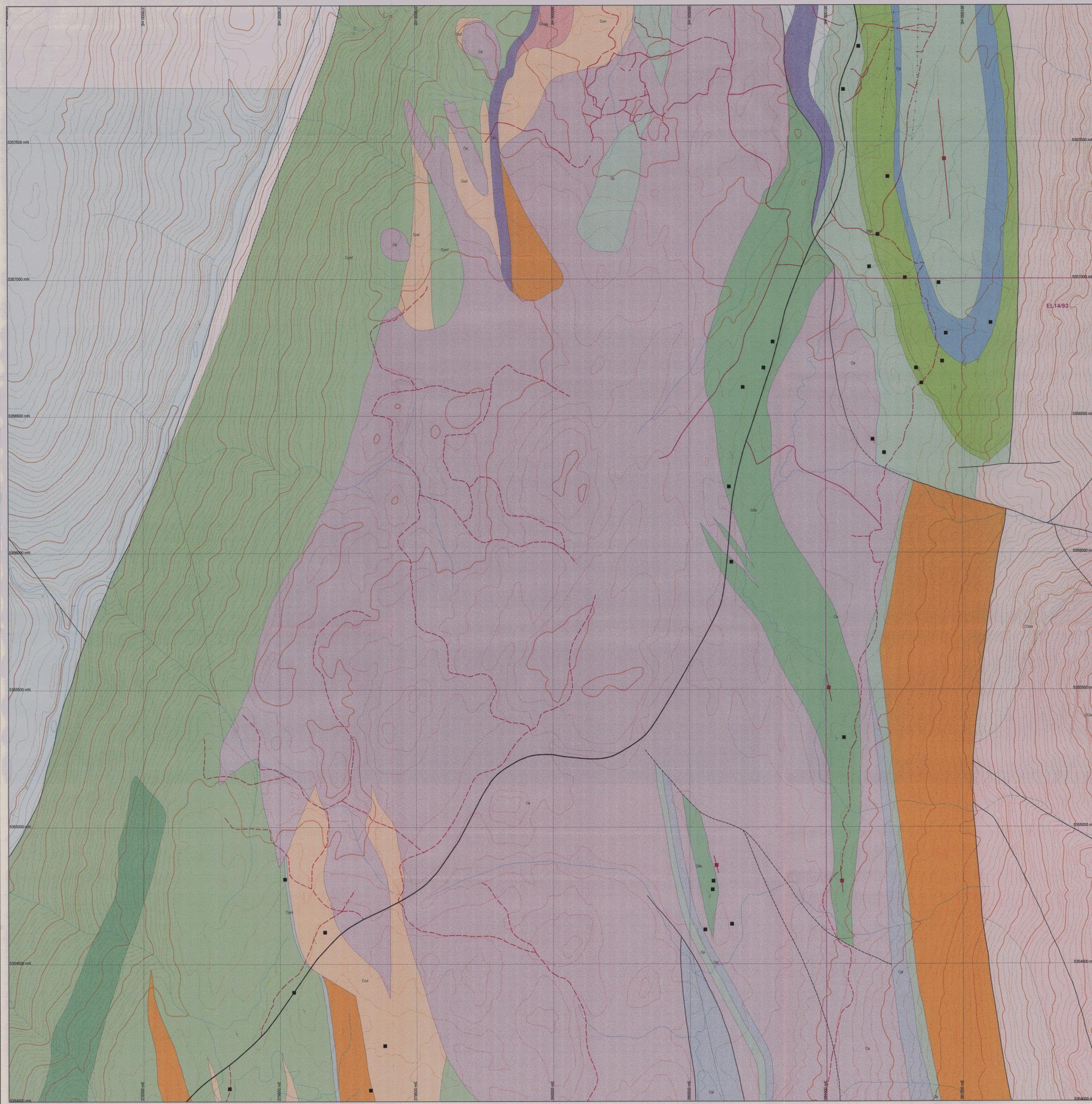
99-4333
 ANNUAL REPORT-SOUTH HENTY
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 Vol 1 of 2

ENCLOSURE 2

Oblique Section, SHD2, SHD16, SHD19.

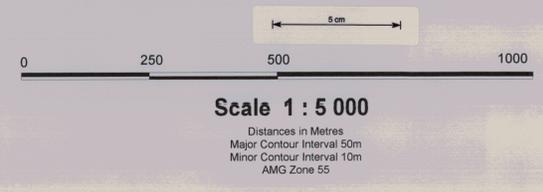
South Henty 1:1000.

Origin 5359100N, 380450E, 045Azm



- Undifferentiated Quaternary sediments
- Mainly limestone commonly decomposed to black clay "pug"
- Upper Owen conglomerates in Tynstell Range - Mt Murchison area. Predominately pink sandstone & granite - pebble conglomerate, includes granite - pebble conglomerate (COuag) & grey sandstone and conglomerate (COug).
- Upper Owen conglomerates in Tynstell Range - Mt Murchison area. Predominately pink sandstone and granite - pebble conglomerate, includes granite - pebble conglomerate (COuag) & grey sandstone and conglomerate (COug).
- Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COcoms).
- Mainly pink to cream coloured, thickly bedded pebble-cobble to cobble boulder conglomerate. Includes a lower unit of interbedded conglomerate & sandstones (COcoms).
- Mainly thin to thickly bedded quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.
- Mainly thin to thickly bedded siltstone, quartzitic sandstone & pebbly sandstone with bands of pebble conglomerate - Newton Creek Sandstone.
- Mainly pebble conglomerate with minor thinly bedded quartzitic sandstone & pebbly sandstone - Newton Creek Sandstone.
- Mainly volcanioclastic conglomerate with minor siltstone and volcanioclastic sandstone.
- Bedded sandstone - siltstone units
- Mainly crystal - rich volcanic sandstone (quartz-feldspar phytic). Comstock Tuff and comelates.
- Chert rich mass flow horizon. Basal unit to Comstock Tuff.
- Crystal - rich volcanic sandstone (feldspar-pyroxene phytic), lithic-rich bases with minor ash, sandstone & limestone. Lynchford Tuff & comelates.
- Quartz phytic lava & tuff. Possibly equivalent to Lower Tynstell Group.
- Quartz-feldspar phytic lava
- Graded crystal-rich volcanic sandstone (feldspar-quartz phytic) with interbedded black siltstone (Lynchford Tuff comelate)
- Sulphide Lenses
- Andesitic to basaltic intrusive bodies with lavas & clastic units. Includes feldspar-hornblende-pyroxene-phyric & feldspar-pyroxene phytic types & small chlorite altered dykes.
- Thinly bedded black pyrite siltstone
- Andesitic to basaltic clastic units
- Basalt. Henry Dyke Swarm
- Interbedded basaltic lava & volcanioclastic sediments
- Interbedded basaltic lava & volcanioclastic sediments
- Interbedded dacitic volcanioclastic sandstone and siltstone
- Mainly felsic pyroclastic rocks, dominantly feldspar phytic, including pumice bearing tuff & breccia, crystal vitric tuff, vitric tuff & minor shale & sandstone
- Mainly felsic feldspar phytic lava & intrusives, massive to flow banded or subrecrystallized, with rare columnar jointing
- Mainly felsic feldspar phytic lava and intrusives, massive to flow banded or subrecrystallized, with rare columnar jointing
- Units of bedded siltstone, sandstone, tuff & agglomerate
- Undifferentiated massflows, sandstones & black siltstones
- Ashy siltstone
- Felsic porphyry bodies, intrusive & partly extrusive.
- Units of bedded siltstone, sandstone
- Black siltstone
- Dominantly greywacke & mudstone with some interbedded vitric tuff, crystal tuff & crystal-lithic tuff
- Interbedded vitric tuff, crystal tuff, siltstone, slate, sandstone & agglomerate.
- Volcaniclastics
- Undifferentiated Lower White Spur Formation
- Crystal rich volcanoclastic sandstone
- Siltstone & sandstone

- Geological boundary - accurate
- Geological boundary - inferred
- Fault feature
- Fault, position accurate
- Inferred Fault
- Concealed Fault
- Underground Mine
- Open Cut Mine
- Mineral Occurrence
- Prospect, explored
- Abandoned Mine
- Bull up paymarked area
- Homestead (Pastoral)
- Building
- Railway Station
- Beacon Lighthouse
- Airport or Aerodrome
- Bridge
- Road barrier
- Monument, Stake, Cross
- Landmark Object
- Named Relief Feature
- Mountain or mountain range
- Pier
- C&P Equipment Obstacle
- Sand Ridge or Sand Dunes
- Spur Fire
- Road
- Pathway
- Valley
- Gully Gap
- Cave Cavern
- Island
- Pier
- Pool, Pond, Waterhole, Rockhole
- Swamp
- Waterfall
- Dam
- Spring
- Pool
- Valley
- Marine, Mooring Pier, Post
- Highway
- Secondary Road
- Minor Road
- Vehicle Track
- Railway
- Landing Ground
- Pipeline
- Contour line
- Watercourse
- Perennial Lake



1 : 5 000 Sheet Index

Moores Pimple 50	Henry 33	The Red Hills 12
White Spur 53	Mount Julia 32	Julia Peak 11
Howard's Road 52	31	Mount Tynstell 10
Henry Gorge 51	Poets Hill 30	The Bastion 9
50	Crown Hill 29	Mount Cyril 8



**Mt Read Volcanics Belt
Tasmania**

SHEET 31

GEOLOGICAL INTERPRETATION

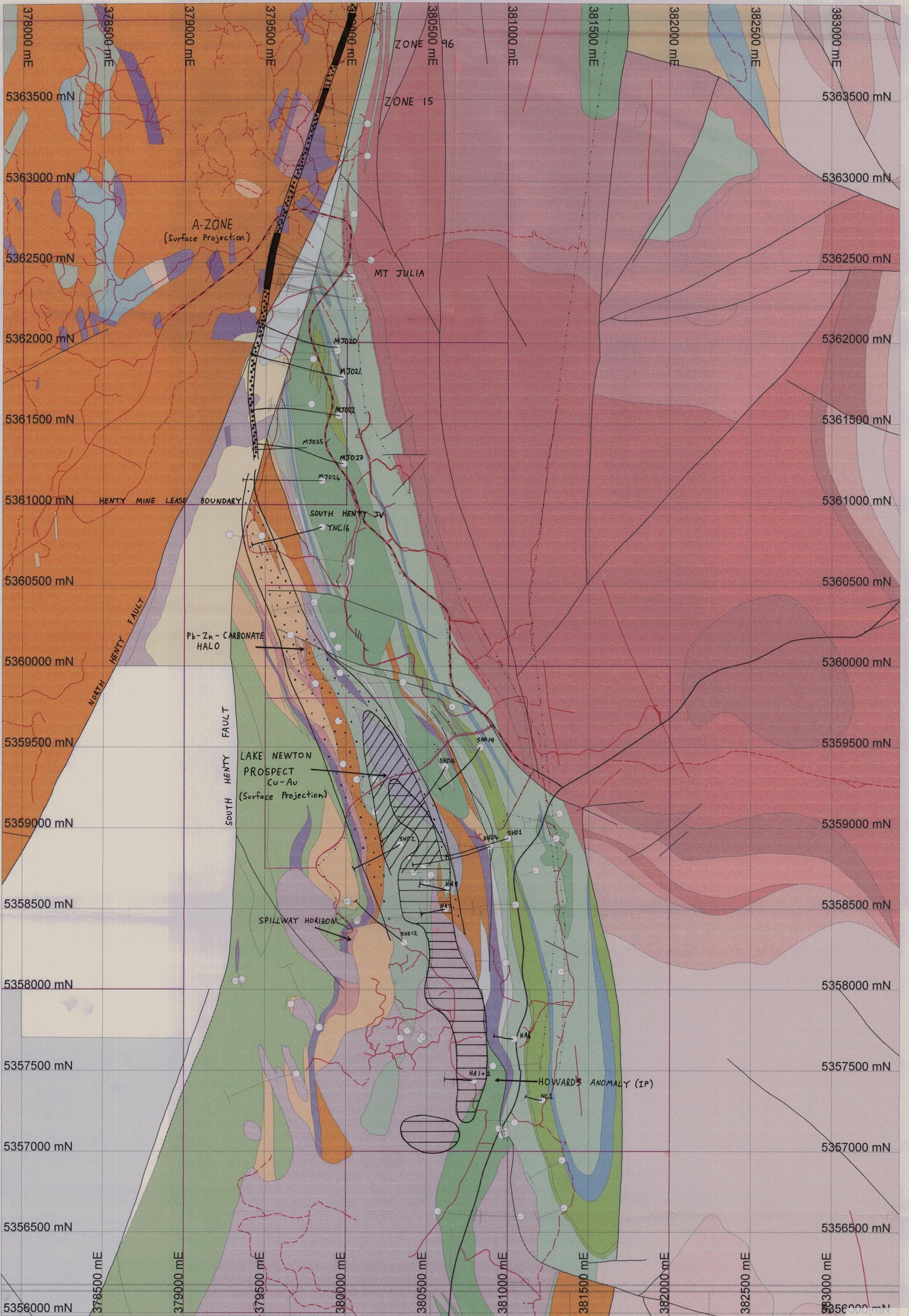
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Date: October 1997

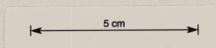
ENCLOSURE 1

ANNALEE HERBERT SOUTH HENRY
 107 COLLINGWOOD
 TAS 7246
 99-4333



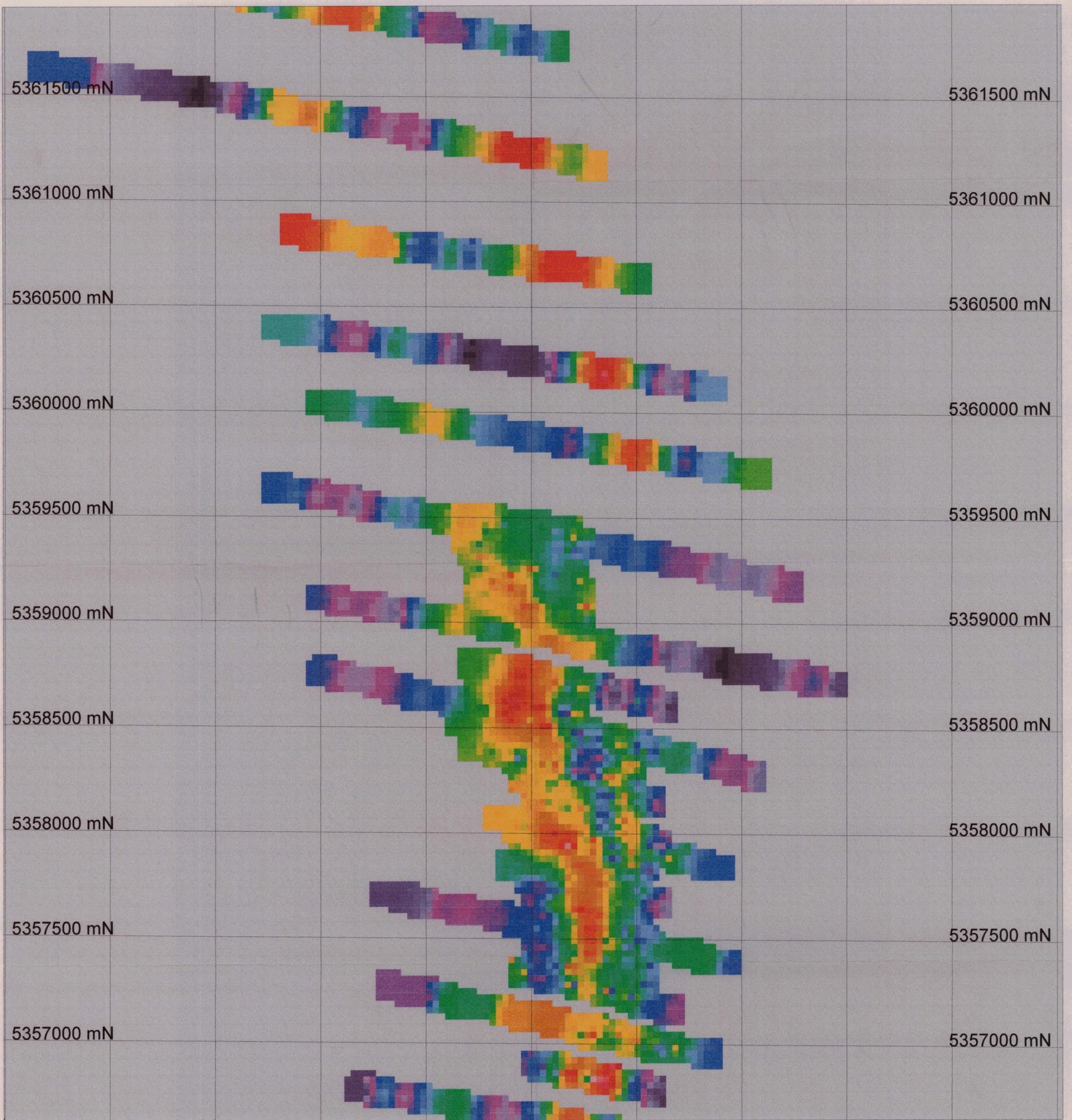
Henty Mine Lease and Sth Henty Geology 1:10 000

Prospect location and schematic surface projection of alteration zones.

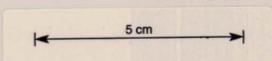


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 2011



Imaged, compiled IP Chargeability Data for South Henty.



1:10 000

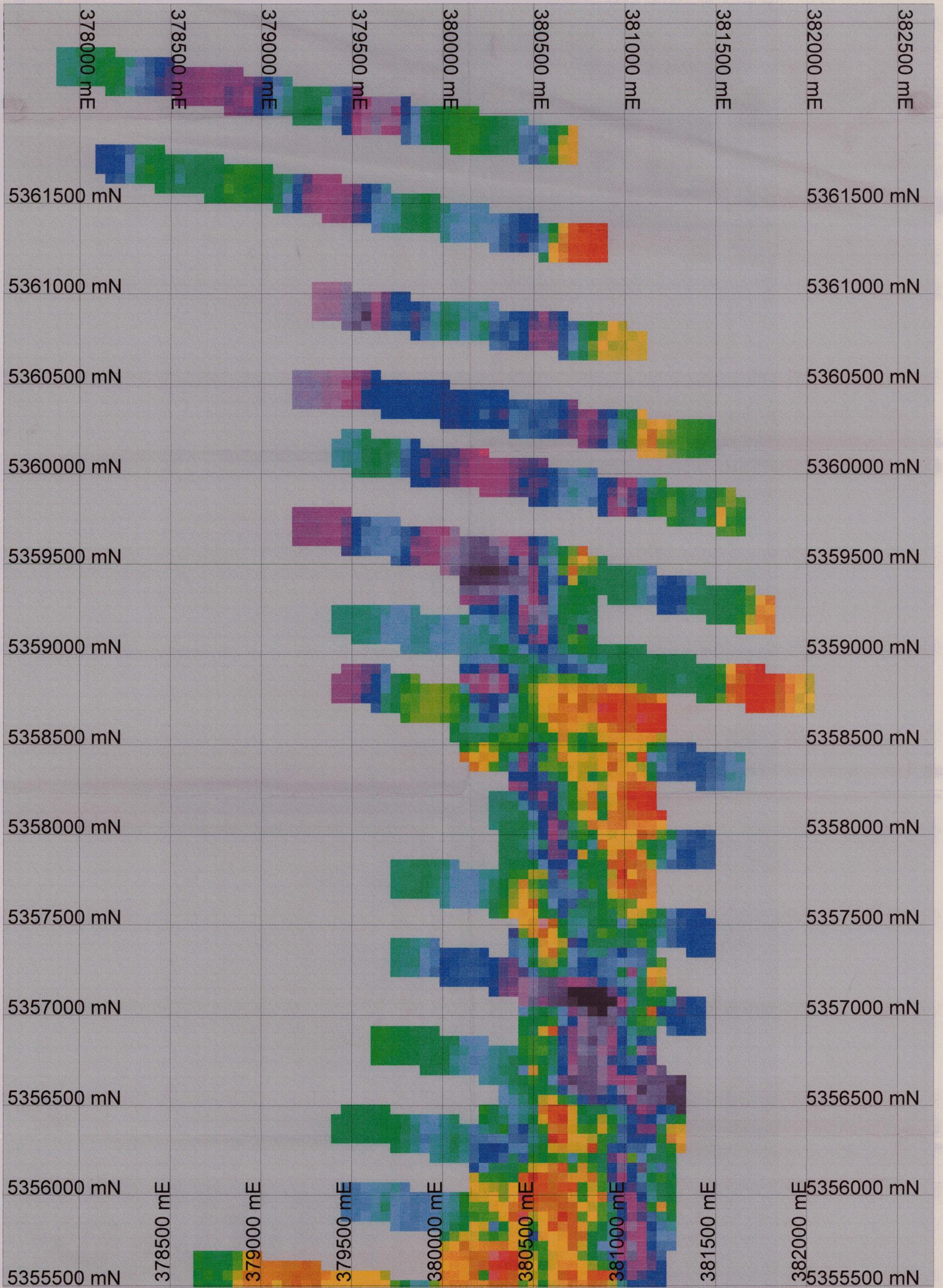
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ENCLOSURE 4

Handwritten signature



Compiled, imaged South Henty Resistivity Data

5 cm
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ENCLOSURE 4

Vol. of 2

99-4333 ^{Vol 2 of 2}



GOLDFIELDS EXPLORATION

ACN 008 560 978

ANNUAL REPORT

584035

TASMANIAN GOLD PROJECT

EL 8/96

SOUTH HENTY

**Vol 2 of 2
Appendix 1 - 6**

MINERAL RESOURCE
EL 8/96
30/05/1999
See folio 29

HELD BY: RESOLUTE LTD.

MANAGER & OPERATOR: GOLDFIELDS EXPLORATION LTD.

**MICROFILMED
FICHE No. 015216-20**

AUTHOR(s): TIm Callaghan

20 May, 1999

PROSPECTS: Lake Newton Prospect, Howard's Anomaly, Spillway Horizon

MAP SHEETS: 1:25,000: Tyndall, Oceana Dundas 1:100,000: Sophia

**GEOGRAPHIC COORDS Min East: 379,000mE Max East: 382,000mE
Min North: 5,356,000mN Max North: 5,352,000mN**

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

KEY WORDS: Central Volcanic Complex, Tyndall Group, Yolande River Sequence, Henty Gold Mine, Mt Lyell

Distribution:

- o RGC Exploration Information Centre Refer
- o Goldfields Exploration Zeehan
- o Department of Mineral Resources, Tasmani
- o Resolute Ltd, Perth.

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^{Vol 2 of 2}

584036

APPENDIX 1
Rockchip Samples and Analysis

												Ti/Zr	P2O5/TiO2
1080084	5359442	380737	Lynchford Member Feld xtal VC	-1	3	-3	64	319	3928	138	215	18.3	0.11
1080085	5359442	380737	Lynchford Member Feld xtal VC	-1	4	5	46	134	1581	16	270	5.9	0.12
1080091	5357000	379030	Mt Julia Rhyolite, Tyndall Mine	-1	3	4	13	145	1740	13	295	5.9	0.11
1080092	5356600	379360	Feld xtal pumice lithic breccia	-1	8	23	72	275	3280	88	230	14.3	0.12
1080093	5356250	380000	Hbl-Feld phyric Andesite, sil-py alt.	-1	48	9	75	1340	2760	218	141	19.6	0.67
1080094	5356200	379380	Massive, aphyric andesite?	-1	20	7	59	685	3450	244	134	25.7	0.27
1080095	5356200	379120	Feld-pumice Brxx, chl-lim alt.	-1	9	12	61	455	2890	92	233	12.4	0.22
1080096	5357600	379200	Feld-pumice Brxx	-1	16	12	52	1110	3580	220	229	15.6	0.43

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APPENDIX 2

SHD19, Logs, survey, collar and assay data.

584039

Diamond Drillhole Log SHD19

SHD19	380830.00	5359500.00	505.00	750.40
-------	-----------	------------	--------	--------

0.00	212.00	-67
15.00	212.00	-67
30.00	212.00	-67
60.00	212.00	-67
90.00	214.00	-66.8
120.00	214.00	-66.5
150.00	216.00	-66
180.00	216.00	-66.5
210.00	218.00	-65.5
240.00	218.00	-65
270.00	218.00	-64.5
300.00	221.00	-64
330.00	220.00	-64
360.00	221.50	-63
390.00	224.00	-60.5
420.00	226.00	-57.8
450.00	226.00	-57
480.00	230.00	-56
510.00	230.00	-56
540.00	230.00	-56
570.00	231.00	-55.5
600.00	231.00	-55.5
630.00	232.00	-55
660.00	232.00	-54
720.00	234.00	-53

SHD19 Assay data

1080087	367.15	367.25	1	-50							592	2778	199	139
1080088	417.00	417.20	1	-50							2506	5037	129	286
1080089	438.90	439.05	1	-50							932	6090	105	355
11020467	520.00	521.00	1	-50	0.01		-10	13	7	68				
11020468	521.00	522.00	1	-50	0.01		-10	12	4	63				
11020469	522.00	523.00	1	-50	0.01		-10	10	3	55				
11020470	523.00	524.00	1	-50	0.01		-10	4	4	61				
11020471	524.00	525.00	1	-50	0.01		-10	3	3	103				
11020472	532.00	533.00	1	-50	0.01		-10	3	3	121				
11020473	556.00	557.00	1	-50	0.01		-10	4	3	110				
11020474	557.00	558.00	1	-50	0.01		-10	60	4	100				
11020475	558.00	559.00	1	-50	0.01	0.01	-10	111	3	111				
11020476	571.00	572.00	1	-50	0.01		-10	58	3	39				
11020477	572.00	573.00	1	-50	0.01		-10	5	3	119				
11020478	576.00	577.00	1	-50	0.01		-10	6	3	112				
11020479	577.00	578.00	1	-50	0.01		-10	4	3	88				
11020480	578.00	579.00	1	-50	0.01		-10	168	3	46				
11020481	628.00	629.00	1	-50	0.01	0.01	-10	6	3	61				
11020482	629.00	630.00	1	-50	0.01		-10	6	6	84				
11020483	630.00	631.00	1	-50	0.01		-10	5	4	64				
11020484	670.00	671.00	1	-50	0.01		-10	6	5	55				
11020485	696.00	697.00	1	-50	0.01		-10	3	4	72				
11020486	697.00	698.00	1	-50	0.01		-10	4	6	100				
11020487	698.00	699.00	1	-50	0.01	0.01	-10	20	19	88				
11020488	709.00	710.00	1	-50	0.01		-10	21	3	33				
11020489	710.00	711.00	1	-50	0.01	0.01	-10	4	3	16				

584040

Goldfields Tasmania MRV Formation Codes

Tyndall Group	Zig Zag Hill Fm	Post-eruptive rhyolitic, volcanolithic conglomerate and qtz-crystal rich sandstone. Ctc
	Mt Julia Member	Syn-eruptive qtz-feld crystal rich sandstone. Ctt Massive qtz-phyric rhyolitic lavas, breccias and intrusions. Ctl
	Lynchford Member	Syn-eruptive feld crystal rich volcanoclastic sandstone. Cttl Massive carbonate and marly sediments. Ccarb Dacitic volcanoclastic sediments. Cttd Howard's Basalt. Fine grained basaltic andesite dykes, lavas and lithic breccias. Cb
CVC (Suite II)	Suite II Porphyry	Qtz-feld-Hbl porphyry. Intrusive, fractionated. Cp
	Anthony Road Andesite	Feld-Hbl phyric andesite and breccia, extrusive and intrusive. Ca
CVC (Suite I)	Newton Creek Dacites	Dacitic to andesitic volcanoclastic sediments. Ccv Dacitic, feld phyric to aphyric lavas, breccias and intrusions. Ccl
	Spillway Breccia	Dacitic volcanoclastic pumice breccias. Ccv Coarse polymict and dacitic massflows with some sulphide clasts. Ccvag
	Spillway Basalt	Massive to stratified monomictic "fire fountain" basalt breccia. Cb
Yolande River Sequence	Footwall pumice Breccia	Massive feld-phyric pumice breccia. Cymf Vitric siltstones and sandstones. Cys

RGC EXPLORATION (ZEEHAN) - ROCK CODES

TYPE

- U - Volcanic (general)
- V - Volcaniclastic
- E - Epiclastic
- L - Lava
- I - Intrusive

COMPOSITION

- R - Rhyolite
- Y - Rhyodacite
- D - Dacite
- A - Andesite
- B - Basaltic
- F - Felsic
- M - Mafic
- U - Ultramafic

CRYSTAL TYPE

- X - Crystal rich
- A - Aphyric
- F - Feldspar phyrlic
- < - Feldspar - quartz phyrlic
- > - Quartz - feldspar phyrlic
- Q - Quartz phyrlic
- H - Hornblende phyrlic
- P - Pyroxene phyrlic
- B - Biotite phyrlic
- V - Vitric / glassy
- L - Lithic rich
- R - Reworked, commonly with Carbonate matrix

OTHERS

- TILL - Glacial moraine
- CLAY - Glacial clays
- SILT - Black pyritic siltstone
- FALT - Fault
- CARB - Massive Carbonate
- CBBX - Carbonate breccia
- VEIN - Vein
- GWAC - Greywacke
- CONG - Siliciclastic Conglomerate
- SAND - Siliciclastic Sandstone
- XXXX/YYYY - Interbedded units

GRAINSIZE

- B - Breccia
- C - Coarse
- M - Medium (Sandy)
- F - Fine (Silty)
- V - Very fine (Shaley)
- A - Ashy
- / - Undifferentiated
- X - Crystal Rich
- P - Pumiceous

ALTERATION

- P - Pyrite
- \$ - Mineralised
- Q - Quartz
- O - Chlorite
- C - Carbonate
- H - Hematite
- S - Sericite
- K - K feldspar
- A - Albite
- E - Epidote
- F - Fuchsite
- M - Magnetite
- L - Limonite

N - Scale

- 1 - Very Weak
- 3 - Weak
- 5 - Moderate
- 7 - Strong
- 9 - Intense

eg. AOC7

Strong albite-chlorite-carbonate alteration
(albite>chlorite>carbonate, albite = 7)

SHD19 Geology

584043

0.00	8.60	Qg	TILL	
8.60	14.00	Ctt	VRXM	O5A3
14.00	16.50		FALT	
16.50	43.10	Ctt	VRXM	A9O5
43.10	47.90		FALT	
47.90	51.00	Ctt	VR<C	A9
51.00	59.10	Cttl	VAXM	O5
59.10	72.50	Cttl	VAXM	O5A3
72.50	97.90	Cts	VAVA	O5A5
97.90	98.30	Ctl	IR>C	A7
98.30	102.50	Cttl	VRLB	
102.50	105.50	Ctl	IRLB	
105.50	109.50	Cttl	VRLB	
109.50	113.20	Ccarb	CARB	
113.20	114.00	Ctl	VRLB	
114.00	128.70	Ctl	IRLB	
128.70	144.80	Cts	SILT	
144.80	155.30	Cts	SILT	
155.30	163.00	Ccl	IDLB	
163.00	165.50	Cts	SILT	
165.50	175.50	Cttl	VDLB	
175.50	179.60	Ctl	IRLB	
179.60	184.40	Ccv	VDLP	
184.40	186.20	Cttl	VDLB	
186.20	191.50	Ccv	VDLP	
191.50	193.10	Ccv	VDLP	
193.10	194.70	Cttl	VDLB	
194.70	195.20	Ccv	VDLP	
195.20	198.50	Cttl	VDLB	
198.50	204.60	Cttl	VDLB	
204.60	207.60	Ccl	LDF	
207.60	209.50	Cts	VDVA	
209.50	214.90	Ccl	LDF	
214.90	217.20	Cttl	VDLB	
217.20	224.20	Ccv	VDLB	
224.20	229.60	Ccarb	CARB	
229.60	230.40	Ccv	VDXM	
230.40	236.10	Ccarb	CARB	
236.10	240.40	Cttl	VDLM	
240.40	251.80	Ccarb	CARB	
251.80	254.00	Cts	VDVA	
254.00	257.10	Cttl	VDLB	
257.10	257.50		FALT	
257.50	262.60	Ccarb	CARB	
262.60	264.60	Cttl	VAXM	A7O7
264.60	265.50	Ccarb	CARB	
265.50	266.80	Cttl	VAXM	
266.80	267.50	Ccarb	CARB	
267.50	274.70	Cttl	VAXM	
274.70	281.80	Cttl	VALB	
281.80	286.30	Cttl	VALB	
286.30	290.20	Cttl	VAXM	
290.20	292.10	Cttl	VALB	

584044

292.10	294.00	Cttl	VALB	
294.00	294.50	Cttl	VALB	
294.50	301.50	Cttl	VALB	
301.50	304.50	Cttl	VALP	
304.50	307.90	Cttl	VALB	
307.90	309.30	Cttl	VALB	
309.30	315.60	Cttl	VALB	
315.60	320.60	Ccl	LDA	
320.60	320.80	Cttl	VAXM	
320.80	321.30	Ccarb	CARB	
321.30	322.20	Cttl	VAXM	
322.20	324.20	Ccarb	CARB	
324.20	324.90	Cttl	VAXM	
324.90	325.80	Cb	VLB	
325.80	330.30	Cttl	VALB	
330.30	331.00	Ccarb	CARB	
331.00	332.20	Cb	VLB	
332.20	336.20	Ccv	VDLB	
336.20	340.60	Ccarb	CBBX	
340.60	343.30	Cb	VLB	
343.30	360.50	Ccv	VDLB	
360.50	360.90	Cb	VLB	
360.90	361.80	Ccarb	CARB	
361.80	364.20	Cb	VLB	
364.20	364.60	Ccarb	CARB	
364.60	381.30	Cb	VLB	
381.30	382.90	Ccv	VDLB	
382.90	385.30	Ccl	IDA	
385.30	413.40	Ccv	VDLB	
413.40	420.00	Cb	VLB	
420.00	422.50	Ccv	VDLM	
422.50	423.70	Cb	LBF	
423.70	430.10	Ccv	VDLB	
430.10	433.80	Cb	VLB	
433.80	441.50	Cb	LBLB	
441.50	458.80	Ccv	VDLP	
458.80	509.70	Cp	IR>C	H5
509.70	510.40	Cp	FALT	
510.40	511.60	Ccarb	CARB	
511.60	527.80	Cp	IR>C	
527.80	528.30	Ccarb	CARB	
528.30	553.00	Cp	IR>C	H5
553.00	553.60	Ccarb	CARB	
553.60	568.90	Cp	IR>C	H5
568.90	631.50	Cp	IR>C	H7
631.50	668.30	Cp	IR>C	H7
668.30	672.10	Cp	IR>C	C7H3
672.10	692.30	Cp	IR>C	H5C5
692.30	699.00	Cp	IR>C	H7
699.00	709.00	Cp	IR>C	H3C3
709.00	715.10	Ccv	VDLP	C7
715.10	750.40	Ccv	VDLP	O3

RGC EXPLORATION PTY LTD

DRILL HOLE No SHD19 **584045**

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚡ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▩ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT	: 5 th Henry
PROSPECT	:
DATE	: 18-1-99
LOGGED BY	: T. Callaghan

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	Py.		ROCK	ALTERATION
0								<p>Glacials.</p> <p>Qg T14L</p>		
10								<p>8.6 Fold, xtal rich vc sst. moderate chl. alt. palely alt. Massive, grain supported</p> <p>6.0 Broken core, chloritic altered sst.</p>	<p>GR</p> <p>VRM</p>	
20								<p>16.4 Intense albite-chlorite altered vc sst? Ferruginous cream alb ± chl veins + overprint. Massive brecciated. Dominantly Fold ss Qk xtal sst ± rhyolite clasts. Albite alt. almost texture destructive</p>	<p>GR</p> <p>VRM</p>	
30										
40										

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No SHDM

584046

SHEET _____ OF _____

- Bedding
- ⊥ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚠ Breccia
- ⊠ Broken core
- ⋯ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT	: 5 th Healy
PROSPECT	:
DATE	:
LOGGED BY	: T. Callaghan

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION	GEOLOGY NOTES	SUMMARY	
							ROCK	ALTERATION
40				1 16		43.1 Broken, foliated chl. altered Fault		
50			Broken Core	1 4 1 4 16 32		42.7 Pink, albitized qtz-feld-lithic rhyolitic Breccia. Porphyry ± Ect xtal sst? Albitized rhyolite s. clasts. Minor chert Feld xtal rich sst. Intense chl alteration. Porphyry qz-feld porphyry clasts. Albitized. Decreasing Qtz porphyry porphyry	Ect IRK	VAKM
60						59.1 Massive, Feld xtal rich sst ± increasingly rhyolite lithic at base. Pervasive chl. alteration. Selective albitization of qtz porphyry clasts.	Ect	VAKM
70						72.5 vitic siltstone. ash rich. albitized. Minor diffuse bedding and weak grading.	Ect	VAVA
80			BCA = 45					

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No SHD19 **584047**

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚡ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▩ Pervasive
- ↖ Narrow vein
- * Visible gold

SHEET _____ OF _____

PROJECT	: 5 th Henry
PROSPECT	:
DATE	:
LOGGED BY	: T. Callaghan

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
80				1 1 4 16 22						
90				BCA = 10°						
100								97-9 Qtz-porphyrific rhyolite dyke 98-5 Fine grained vc silt ± abundant vibric siltstone intraclasts. Qtz-phyric rhyolite clasts. EEEI	IRPC	A
								102-5 Massive rhyolite sandstone ± Rhyolite peperite clasts. EEEI	IRLB	
								105-5 Fine grained, well sorted rhyolite sandstone. Occasional, large Qtz-held (= H61?) Porphyry clasts. Carbonate breccia at base	URLB	
110								109-5 Massive, white to purple Carbonate and carbonate breccia. Possibly fossiliferous. Ecarb	CARB	
								113-2 Polymict Breccia, Rhyolite Porphyry 114-0 EEEI	URLB	
120										

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No SH019 **584048**

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚡ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▩ Pervasive
- ↘ Narrow vein
- * Visible gold

SHEET _____ OF _____

PROJECT : <u>5th Henly</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
120								<p>Autoclasic, pale grey, alb. tised qtz-told phytic rhyolite</p> <p style="text-align: right;">EE1</p>	IRLB	
130								<p>128.7 Mixed, black, graphitic shale and grey rhyolitic sandstone. Fluidised, sedimentary breccia, debris flow.</p> <p>Mostly shale clasts + breccia - ve sst unky</p> <p style="text-align: right;">EE5</p>	SIL7	
140								<p>144.8 graphitic Black shale Brcc. ve sst (dacitic?) and graphitic shale debris flows. Fluidised Breccias.</p> <p style="text-align: right;">EE5</p>	SIL7	
150								<p>155.3 Dacitic hyaloclastite. Residual Feldspar phytic. Carbonate veins Breccia in fill.</p> <p style="text-align: right;">EE1</p>	IRLB	
160										
REMARKS										

RGC EXPLORATION PTY LTD

DRILL HOLE No SND 19 584049

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚡ Breccia
- ▨ Broken core
- ◻ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

SHEET _____ OF _____

PROJECT : <u>5th Henry</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PT.		ROCK	ALTERATION
160				1 16 1 4 1 4 16 32				163 Disseminated graphitic shale and ve sst. Stump Breccia? EE5	BILT	
170				1 16 1 4 1 4 16 32				169.5 Blasphemetized. Partially ve-worked? EE61 Mostly siliceous clasts & shreds but some vitric sst clasts are included.	VOLD	
180				1 16 1 4 1 4 16 32				175.5 Rhyolite Autobreccia. Porphyritic vitric siltstone inclusions. EE1	IRLB	
190				1 16 1 4 1 4 16 32				179.6 Pumice breccia ± rhyolite clasts + feld xcls. Some Cu vitric rich lapilli.	VOLD	
200				1 16 1 4 1 4 16 32				184.4 Poly-mict. ve BAXX. Carb-sst & dust. clast in sandy matrix. EE4 186.2 Massive, dominantly Pumice-feld litic Breccia. CCV	VOLD	
210			BFA = 70°	1 16 1 4 1 4 16 32				191.5 Weakly graded feld-pumice litic breccia CCV 193.1 EE61	VOLD	
220				1 16 1 4 1 4 16 32				174.7 Pumice Breccia. CCV 195.2 Vitric ash, vitric concretions and litic rich breccia. EE2 198.5	VOLD	

REMARKS

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⬢ Breccia
- ⊞ Broken core
- ⊞ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

SHEET _____ OF _____

PROJECT : 5 th Henty
PROSPECT :
DATE :
LOGGED BY : T. Callaghan

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	BY.		ROCK	ALTERATION
200				1 1 4 4 16 32 				Coarse, lithic VC Breccia in dacite peperitic intrusion. VC = vitric clasts, sand, shards + dacite lithic ECC1 V008		
								204.6 Autobrecciated dacite lava. Feld phytic, oxidised + haematized Cel = scuffor weathering LDF		
								207.6 Pale grey, vitric siltstone. EES V00A		
210								208.9 Dacite peperite in vitric siltstone. Feld phytic dacite Ecl LDF		
								214.9 Pale grey, vitric siltstone matrix & poly-ict clasts. Cmb, dacite ECC1 V008		
								217.2 Purple + green, dacitic lithic Breccia. Possibly some basalt?? Purple haematite alteration = scuffor weathering. Purple haematite clasts in green Feld rich matrix. Eev V005		
220								224.2 Purple to pink limestone. Coarse grained calc arenite. Eevb CARB		
								229.6 dacitic VC sst. Eev V00M		
230								230.4 Pink carbonate/calc arenite Eevb CARB		
								236.1 dark grey dacitic(?) volcaniclastic sst and calc arenite gradational lower contact. ECC1 V00M		
240										

REMARKS

PCA = 10

RGC EXPLORATION PTY LTD

DRILL HOLE No 5H019

584051

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- △ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>5th Henty</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION	GEOLOGY NOTES	SUMMARY	
							ROCK	ALTERATION
240					SIL. SER. PY.	240-2		
250						251.5 Grey, laminated, vitric rich VC siltstone. E65 254 Polyrich, VC-lithic breccia Matrix supported. Clasts of dacite, CO ₂ + siltstone. EEEI 257.1 Fault Broken Ground 257.2 Pale grey, sthylobitic carbonate. Mostly massive, some minor sst lenses and carb brnx. Ecarb 262.6 Aligned, CO ₂ impregnated + veined Feld xtal rich VC sst. chl. int. EEEI 264.6 pink white, massive carb. Fossil. Ecarb 265.1 Pale green, Feldspathic xtal rich sst. Anhydrite. Albite-coq. all. EEEI 266.3 Massive, carb. Ecarb 267.3 Massive, dark green, feld xtal rich VC sst. Minor albite clasts. Pervasive chl. all. EEEI 274.7 Massive, feld xtal rich sst/brnx polyrich clasts of carbonate, rhyolite and vitric siltstone Pervasive chl. alteration, minor CO ₂ cement EEEI	VDF A VDF B FA 27 CARB VAX M CARB VAX M CARB VAX M CARB VAX M CARB	
260								
270								
280								

REMARKS

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⬢ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>5th Heaty</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
280								281.8 Massive, graded, polymict VC Brex Feld xtal rich matrix. Prominent carb concretions. chl with glass fragments. EEEI	VALB	
								286.3 Carbonate impregnated feld xtal sst. EEEI	VAXM	
290								290.2 Massive, polymict VC Breccia. Abundant carb. clasts EEEI	VALB	
								292.1 graded VC sst ± carbonate clasts rich base. Andesitic, feld xtal rich E EEEI	VALB	
								294.9 graded VC Brex. cc, clasts at base. EEEI	VALB	
300								302.5 Massive, polymict VC Breccia. carb clasts + VC siltstone interbedded in Andesitic matrix. EEEI	VALB	
								307.5 Massive, feld, siltstone base. chl with pumice clast. EEEI	VALP	
								309.3 Massive, intraclast rich, polymict VC Breccia EEEI	VALB	
310								315.6 Massive, auto brecciated, flow banded and spherulitic lava sparsely feld phyr. Dacite? EEEI	VALB	
320										

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No 511019 **534051**

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ⚡ Breccia
- ▣ Broken core
- ▨ Disseminated
- Massive
- ▩ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>5th Henry</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION	GEOLOGY NOTES	SUMMARY	
							ROCK	ALTERATION
360					SIL. SER. PY.	360.5 Purple, horn alk. basaltic(?) brx. EB 360.9 Purple, Carb brx + hornlt brx. Ecub 361.8 Purple, hornalised basaltic, lithic brx. Flatland clasts. Possibly dacite? SB 364.2 Carbonat + carb brx Ecub 366.6 Purple, hornalised basaltic(?) lithic breccia. Abundant CO ₂ veins. EB	VPLB CBBX VBLB COBX VBLB	
370						381.7 dacitic lithic brx. calc. (?) Ecub 382.9 fine grained to aphyric dacite dyke? Cc1 385.3 Polymich. ve breccia. Dominantly dacite clasts + fragments. ± up to 10% carb + vitric. siliceae intercalated. Ccu	VBLB IDA VBLB	
380								
390								
400								

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No 54219 **584055**

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- △ Breccia
- ▣ Broken core
- ▤ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <i>ME Julia</i>
PROSPECT :
DATE :
LOGGED BY : <i>T. Callaghan</i>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
400										
410								<p>413-4 haematized, basaltic (?) breccia.</p>	E6	VOL 1
420								<p>420-5 VC sandstone feld xhls + shards. (CU)</p> <p>422-8 Basaltic dyke (?) purple haematized</p> <p>423-7 Possibly quartz feld ph...</p>	E6	LBF
430								<p>430-1 mixed diorite/basaltic breccia.</p>	C6V	VOL 2
440								<p>430-1 Basaltic? Litic breccia haematized + foliated. CO₂ veins, brecciated</p> <p>432-8 Basaltic porphyry/hyaloclastic chert haem. altered. Possibly feld phytic = diorite?</p>	E6	VOL 6
REMARKS										

RGC EXPLORATION PTY LTD

DRILL HOLE No 511019

584056

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- △△△ Breccia
- ▨ Broken core
- ▤ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>5th Henty</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
440				<div style="display: flex; justify-content: space-around; font-size: 8px;"> 1/16 1/4 1 4 16 32 </div>				<p>441.5</p> <p>Massive, dacitic, VC Breccia. Variably chlorite - weak sericite alteration. Feld xhls, dacite shreds, dacite lithics, dacite pumice clast.</p> <p style="text-align: right;">Cv</p>	VOLP	
450										
460								<p>458.5</p> <p>Massive Qtz - Feld ± Hbl phyric suite II porphyry. Haematite altered Coarse Qtz mega crystals.</p> <p style="text-align: right;">Ep</p>	IR7C	
470										
480								<p>CC Vein</p>		

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No 5N019 584057

SHEET _____ OF _____

- | | |
|----------------|----------------|
| — Bedding | Disseminated |
| └ Cleavage | Massive |
| ▲ Foliation | Pervasive |
| ~ Fault, Shear | Narrow vein |
| Breccia | * Visible gold |
| Broken core | |

PROJECT	: <u>5th Henry</u>
PROSPECT	:
DATE	:
LOGGED BY	: <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
480								pervasive haematite alteration. occasional matrix inclusions.		
490								max. large (~ 10mm) CO ₂ veins, white		
500										
510								504-7 CO ₂ + Qtz field - 1161. porphyry breccia. 510-4 Peggy 511-6 matrix, stylolite carbonate, porphyry red-purple, qtz field - 1161 phyric porphyry. matrix inclusions. Pervasive haematite alteration. Suite II porphyry	FALTS CARB Ep	IR > C
520										

REMARKS

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- △△△ Breccia
- ▨ Broken core
- ⋯ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT :	5 th Henry
PROSPECT :	
DATE :	
LOGGED BY :	T. Gallagher

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	P.Y.		ROCK	ALTERATION
520										
530								527.8 stylitic CO ₂ vein 528.3 Qtz-feld-rtbt porphyry. Mn in inclusions, pervasive haem. all. Occasional, zoned, white carb veins zones of strong, red haemulite alteration.	Emb	CA80
540										
550								553 massive CO ₂ vein white-purple 553.6 massive Qtz-feld-rtbt porphyry. haemulite. CO ₂ veins to 20cm. Red-purple colour.	Emb	CA88
560										

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No 54019 **584059**

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ▽ Breccia
- ▨ Broken core
- ⋯ Disseminated
- Massive
- ▩ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <i>5th Henry</i>
PROSPECT :
DATE :
LOGGED BY : <i>T. Callaghan</i>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION				GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.	CO.		ROCK	ALTERATION
560									5689 Red, massive, qtz-feld-Hbl porphyry. Pervasive hematite strongly oxidised. Red leucopyrite and stockwork veins. Matrix inclusions.		
570											
580											
590											
600											

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No SH019 534060

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ▽ Breccia
- ▨ Broken core
- ◻◻◻◻ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>5th Henty</u>
PROSPECT :
DATE :
LOGGED BY : <u>T Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY	
					SIL.	SER.	PY.		ROCK	ALTERATION
600				<div style="display: flex; justify-content: space-around; font-size: 8px;"> 1/161/4141632 </div>						
610										
620								<p>631.5 Purple, massive qtz fold. Hbl phos porphyry. Has disseminated/replaced Hbl. less (or no) Hbl. Ej</p>		
630										

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No 58019 534061

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ▽△▽△ Breccia
- ▨ Broken core
- ⋯ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT : <u>Sth Henry</u>
PROSPECT :
DATE :
LOGGED BY : <u>T. Callaghan</u>

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION					GEOLOGY NOTES	SUMMARY		
					SIL.	SER.	PHY.	(G)	Heph		ROCK	ALTERATION	
640				<div style="display: flex; justify-content: space-around; font-size: 8px;"> 1/16 1/4 1 4 16 32 </div>									
650													
660													
670										<p>668.3</p> <p>Foliated, CO₂ altered Qtz field -Hbl porphyry. Now all Hbl. CO₂ in pressure shadows of large Qtz megacrysts.</p> <p style="text-align: center;">↕</p> <p>Pale pink, Mod CO₂ Hem alt. Qtz field. Hbl porphyry. No inclusions.</p>	EP	IAD	
680													

REMARKS

RGC EXPLORATION PTY LTD

DRILL HOLE No SHD19

534062

SHEET _____ OF _____

- Bedding
- └ Cleavage
- ▲ Foliation
- ~ Fault, Shear
- ▽ Breccia
- ▨ Broken core
- ◻ Disseminated
- Massive
- ▨ Pervasive
- ↘ Narrow vein
- * Visible gold

PROJECT	: s ¹⁷ Henty
PROSPECT	:
DATE	:
LOGGED BY	: T. Cullaghan

HOLE DEPTH	SAMPLE No PREFIX	ASSAY RESULTS	STRUCT.	GRAPHIC LOG	ALTERATION			GEOLOGY NOTES	SUMMARY		
					SIL.	SER.	PT.		ROCK	ALTERATION	
680											
690								692.7 Qtz-feld. Hll porphyry 2-5% Hac. veins. Dark red colour.	EP	IR>C	H
700								694 Pale red, qtz-feld. Hll porphyry. Pale red colour. Minor qtz-hacm. veins.	EP	IR>C	H
710								709 Qtz-ser. alb. dacitic fumeo, little siccina Hornfelsed contact later ser-co ₂ altered.	CU	VO-P	C
720								715.1 Dacitic feld, fumeo little volcanoclastic siccina. clear at top siphic dacite	CU	VO-P	O

REMARKS

584064

APPENDIX 3

Basin Lake and Sth Henty project CSAMT

Chris 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

TECHNICAL NOTE

goltecs.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 it 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 RGCLtd. 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 volcanics, 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 microveins. 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

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 as 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.

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 be 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

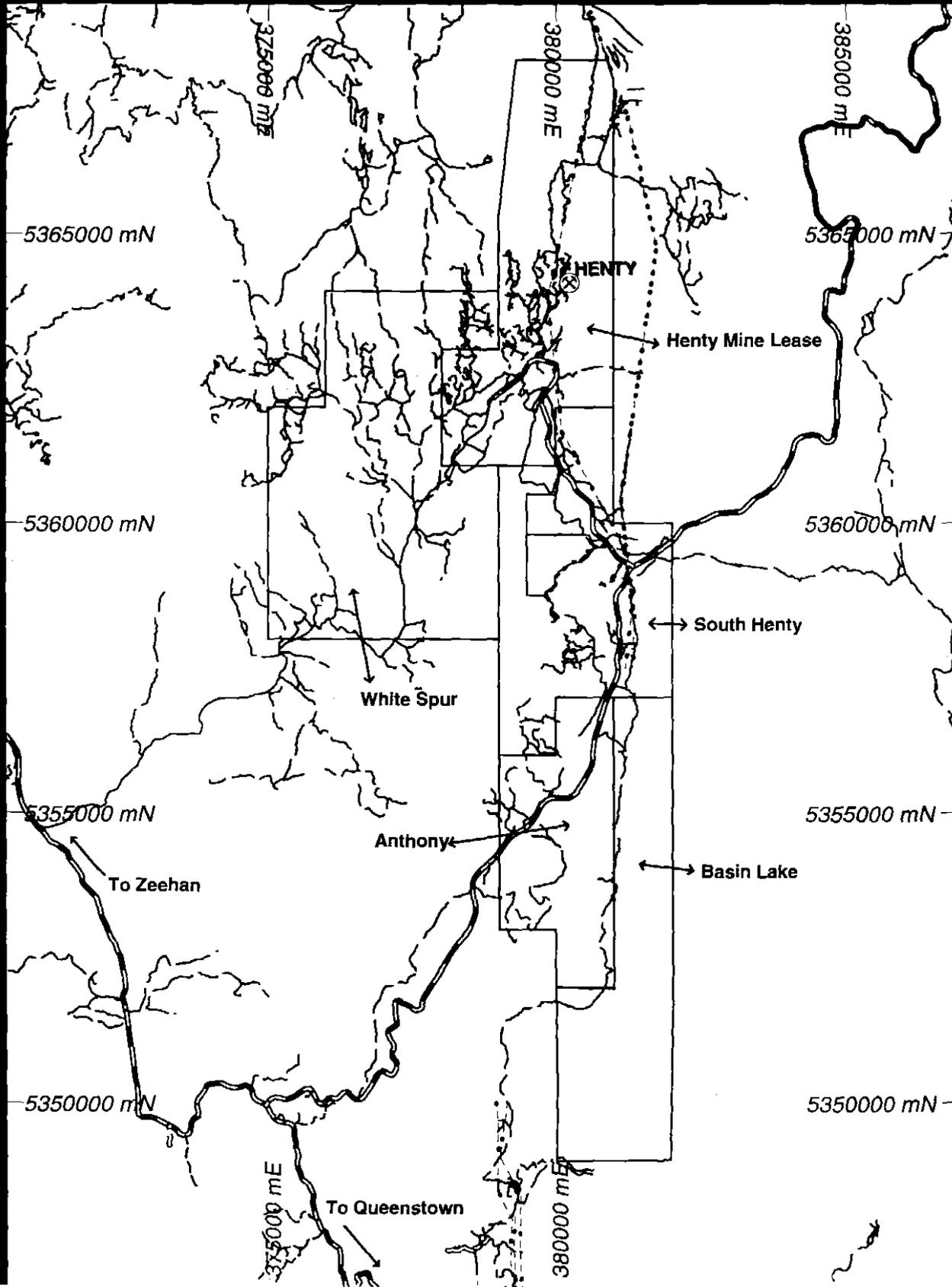
Creagh, C. J., and Hungerford, N., 1990, E.L. 103/87 - Basin Lake, Progress report on Exploration for the period Ending 21st April 1990; TCR Report No. 90-3099

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



Figure 1. Location Diagram



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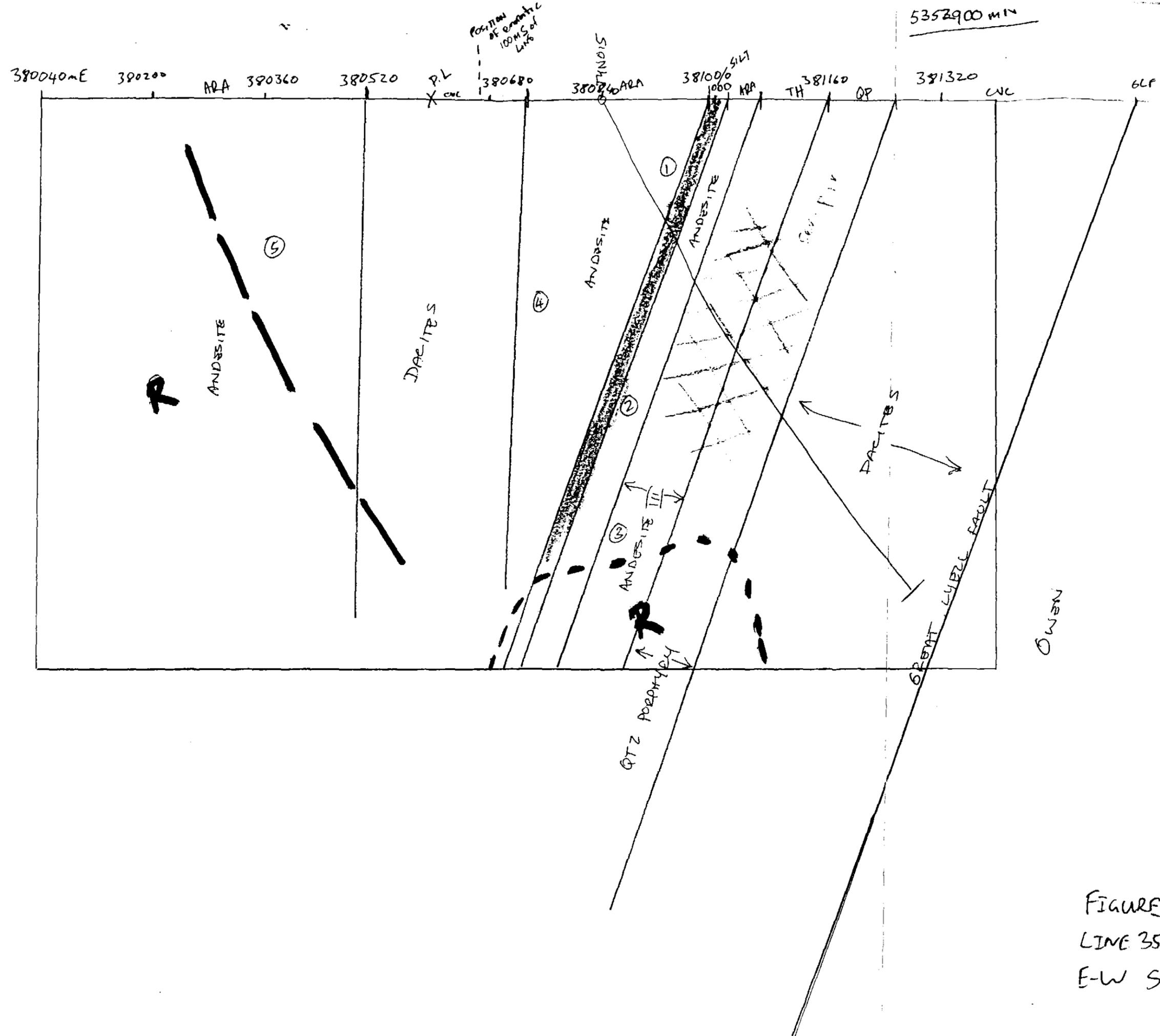
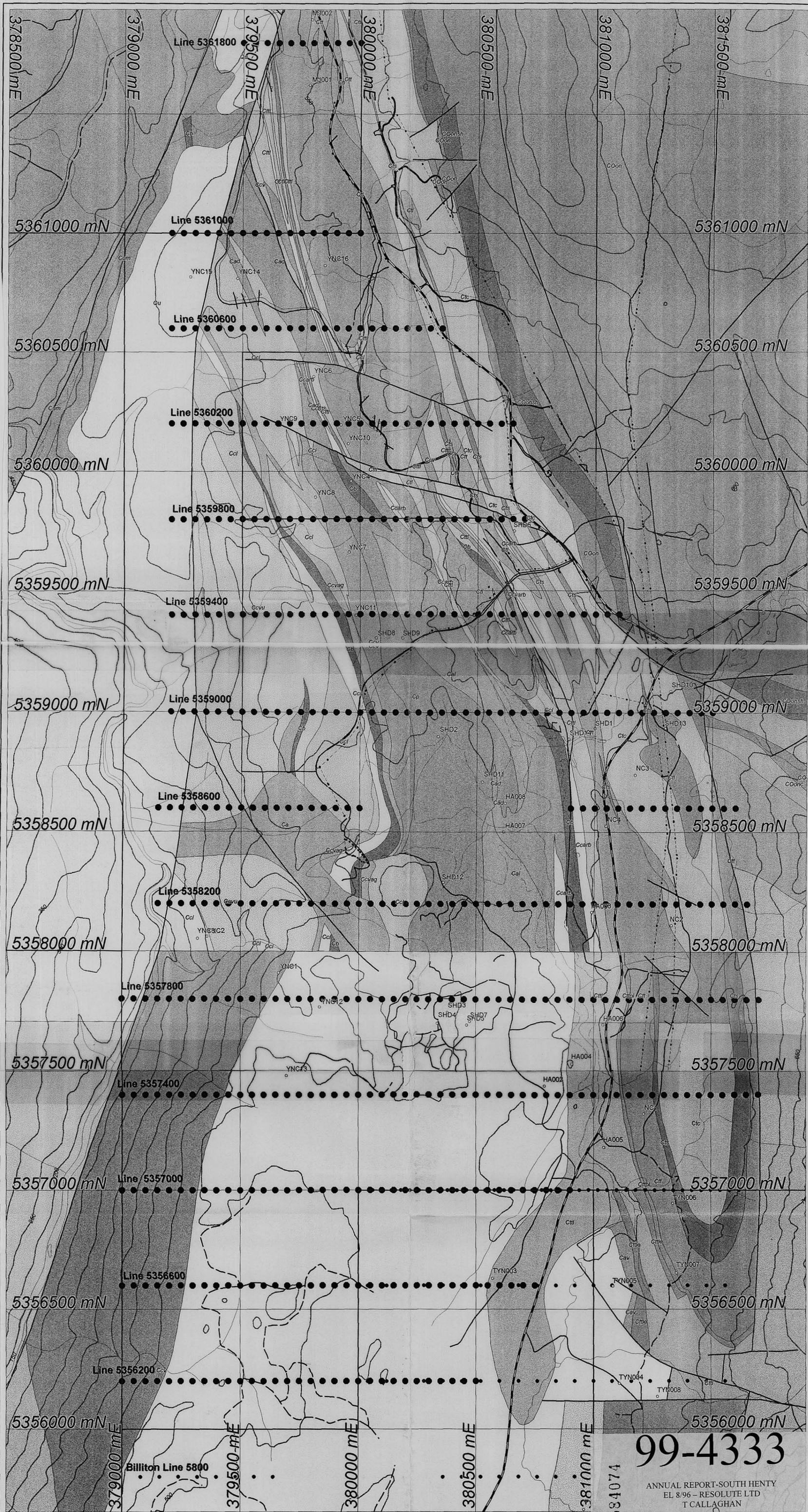


FIGURE 3
LINE 353000N
E-W Section



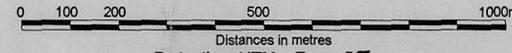
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ANNUAL REPORT-SOUTH HENTY
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Geology Legend

- | | |
|---|---|
| Ccl
Metasedimentary to diatritic lenses | Cov
Mafic to pink to cream coloured, thickly bedded pebble cobble to cobble-southern conglomerate. Includes a lower unit of interbedded conglomerate & sandstone (COOCC). |
| Ca
Andesitic to basaltic intrusive bodies with lens & diatritic units. Includes felsic and/or andesitic pyroclastic and/or andesitic to basaltic pyroclastic and/or andesitic to basaltic pyroclastic. | Cav
Andesitic to basaltic diatritic units |
| Cya
Interbedded andesitic tuff, andesitic tuff, sandstone, siltstone, sandstone & siltstone. | Cba
Felsic to mafic volcaniclastic sandstone, Lynchford Tuff & congl. |
| Cs
Bedded sandstone - siltstone units | Ccr
Crystal - rich volcanic sandstone (andesitic pyroclastic), 180-200 m basal with minor ash, sandstone & limestone, Lynchford Tuff & congl. |
| Cm
Mafic to crystal - rich volcanic sandstone (andesitic pyroclastic), Conestock Tuff and congl. | Ccu
Upper Oleni congl. in Tindal Range - Murchison area. Presumably pink andesite & granite - pebble conglomerate. Includes granite - pebble conglomerate (COOCC) & grey sandstone and conglomerate (COOCC). |
| Cch
Chert rich mass flow horizon. Basal unit to Conestock Tuff. | Ccs
Thinly bedded black pyrite siltstone |
| Cci
Mafic volcaniclastic conglomerate with minor siltstone and volcaniclastic sandstone. | Ccv
Mafic to basaltic pyroclastic rocks, dominantly mafic pyroclastic including pumice bearing tuff & breccia, crystal ash, tuff, tuff & near shore & sandstone |
| Cst
Siltstone, sandstone & greywacke | Cco
Undifferentiated Central Volcanic Sequence |
| Ccp
Quartz, felsic porphyry | |

Scale 1:10,000

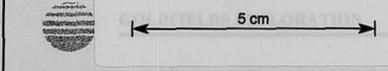
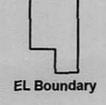


Distances in metres
Projection: UTM Zone: 58
Grid: AMG Datum: ADG84

CSAMT Survey Details

Date: 1989-90
Contractor: ZONGE
Receiver Dipole: 80m
Receiver: GDP163
Transmitter Location 1: 5359500mN 1.5km E-W
Transmitter Location 2: 5351600mN 1.5km E-W
Job #: 864 and 958

- 1989 Billiton CSAMT receiver station location
- 1999 Proposed Goldfields CSAMT receiver station location



**South Henty Project Tasmania
Proposed Goldfields CSAMT Survey
Receiver Station Locations
50m Topographical Contours**

Scale 1:10,000
Compiled by C Dauth

PLAN 2
January 1998

584075

APPENDIX 4

Sth Henty DHEM. SHD15, SHD16 and SHD18, Chris Dauth, 1999.

Sth Henty DHEM Compilation, Chris Dauth, 1999.

Preliminary Report on Sth Henty DHEM, Mike Asten, 1999.



GOLDFIELDS EXPLORATION

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TECHNICAL NOTE

goltecs.dot

To : Michael Vicary
cc : RGC Exploration Information Centre Reference:
From : Chris Dauth
Date : 14 January, 1999
Subject : South Henty DHEM on SHD15, 16, and 18

INTRODUCTION

This TECHNICAL NOTE presents downhole electromagnetic survey data (DHEM) acquired at the South Henty Project in Western Tasmania. The South Henty Project is situated within the Mt Read Volcanics of Western Tasmania, and is currently being explored by Goldfields Exploration in JV with Resolute Ltd for its potential to host Henty style Au, Mt Lyell style Cu-Au, and Rosebery style VHMS basemetals mineralisation.

DHEM has been utilised on several holes at the prospect with the aim of identifying off-hole electromagnetic conductors associated with conductive massive sulphide mineralisation. Three holes drilled by Goldfields Exploration, SHD15, SHD16, and SHD18, were logged with the CRONE three component system during May 1998.

DRILLHOLE DETAILS

Downhole details, collar locations, and geological summary logs are provided for SHD15, SHD16, and SHD18 below (taken directly from MEMO's provided by the Project Geologist, T. Callaghan).

SHD15

Collar	5360647.59mN	380032.04mE	490mRL
SHD15	Depth	Azm	Dip
	15	273	-59.8
	30	273	-59.25
	46	273	-58
	72	273	-57
	100	275	-56.5
	130	276	-56
	160	278	-55.5
	190	278	-54.5
	220	276.5	-52

250	274	-49
280	274	-46.5
310	275	-45
340	272	-42

Summary Log SHD15

0-185.5 Qtz-feld porphyry
 185.5-232.3 Mixed andesitic-dacitic massflows, py-sericite altered. Zone of interest although no significant assays were returned from the altered zone..
 232.3-281 Shales, carbonates and volcanoclastics, including minor black shales.
 281-322.9 Andesites
 322.9-337.7 Carbonates and dacitic sst/massflow.
 337.7-384.5 Dacites and dacitic volcanoclastics.

SHD16

Collar	5359380.01mN	380612.01mE	445mRL
SHD16	Depth	Azm	Dip
	30	209	-58
	60	209	-58
	90	210	-56
	120	210	-55
	149	212	-53.2
	179	213	-51
	209	213	-51
	239	214.5	-50
	280	216	-48.5
	311	218	-47.5
	341	219	-45.5
	371	220	-45
	401	222	-43.5
	431	221	-42.5
	461	223	-41
	492	223	-39
	522	223	-37
	552	223	-35
	582	224	-33
	612	224	-32
	642	224	-29.5
	672	224.5	-28.5
	702	225	-27
	732	226	-26
	762	226	-24.5
	792	226	-23.5
	822	227	-22.5

Summary Log SHD16

0-50m Volcanoclastic massflows. Dacitic to andesitic, crystal lithic massflows.
 50-66.8 Carbonates.
 66.8-161.4 Volcanoclastic massflows and sandstones.

- 161.4-438.5 Qtz-feld porphyry.
 438.5-462.8 Altered dacitic volcanoclastics, mostly graded pumiceous breccias. Dissem Py, pervasive ser-chl.
 462.8-552.2 Altered dacitic pumiceous breccias with altered zones of sericite-pyrite-carbonate. 0.5% disseminated pyrite.
 552.2-589.4 Strongly silica-sericite-pyrite±chalcopyrite altered dacitic pumiceous breccias. Disseminated mineralisation. Disseminated pyrite 2-5%.
 589.4-620.2 Strongly carbonate-sericite-pyrite altered dacitic pumiceous volcanoclastics. Disseminated pyrite 2-5%.
 620.2-750 Strongly silica-sericite-pyrite±chalcopyrite and carbonate-sericite-pyrite alteration. Dacitic pumice breccias. Zoned alteration. Disseminated sulphides to 5%.
 750-755.8 Massive quartz vein.
 755.8-771.8 Carbonate-chlorite altered basaltic breccia. Minor pyrite alteration and chalcopyrite vein at 771m.
 771.8-787.8 Vitric siltstone. Carbonate chlorite altered. Disseminated pyrite to 776m.
 787.8-828 Massive pumiceous breccia. Polymict top grading to monomict base. Moderate carbonate-chlorite alteration.

There is a lot of disseminated sulphide mineralisation (py>>cpy) in this hole between 446m and 776m. Alteration is zoned from moderate carbonate-sericite alteration to strong silica-sericite-pyrite±chalcopyrite alteration. The location and style of mineralisation has many similarities with some of the Mt. Lyell deposits.

SHD18

Collar	5359100N	380180E	505mRI
Downhole Surveys			
Depth	Azm	Dip	
0	309	-58	
30	309	-58	
50	309	-58	
93	308	-57.5	
123	308	-56.5	
153	308	-55.5	
183	308	-54.5	
213	309	-53	
243	308	-52	
273	308	-51	
303	308	-50	
333	308	-49.5	
363	309	-49	
393	309	-48	

A summary log is as follows:

Drillhole SHD18 is designed to intersect the spillway horizon 500m north of the outcropping sulphide clasts. The hole summary is as follows:

- 0 - 151.2 Qtz-Feld-Hbl porphyry.
 151.2 - 163 Intensely altered and foliated indeterminate volcanics (dacites?). Chl-carb-ser. altered.

163 - 200	Intensely altered hyaloclastic dacite. Minor sphalerite and chalcopyrite veins.
200 - 260	Intense carbonate alteration of fine grained, hyaloclastic dacite. Minor sphalerite-galena veins. Possibly the Spillway Horizon .
260 ~ 320?	Dacitic sandstones
320? ~ 400?	Spillway Basalt. Carbonate altered.
400? ~ ?	Rhyolitic pumice breccias and vitric siltstones. Possibly altered.

The intense carbonate alteration associated with minor basemetal mineral mineralisation may indicate proximity to the hydrothermal system responsible for the outcropping massive sulphide clasts in the Spillway Horizon. The hole will be terminated at around 450m if the underlying volcanoclastics are unaltered.

SHD16 and SHD18 intersected a significant alteration system with associated pyrite, chalcopyrite and minor galena-sphalerite veining.

SHD15 did not intersect significant alteration.

SURVEY SPECIFICATIONS (these are all outlined further in the OUTER RIM report in the APPENDIX)

DHEM survey specifications are outlined below:

System: CRONE PEM 3 component

Contractor: OUTER RIM Exploration Services

Rx Coil Effective Area: 6500m²

Polarity: +ve up in Tx loop

Ramp: 0.5msec

Channels: 31 (measured after ramp)

Time Base: 20msec

It should be pointed out that the CRONE coordinate definition does not comply with that commonly accepted by the author as defined by the axis of the borehole. The CRONE Z component is more commonly referred to as the A (axial) component positive up the drillhole. The CRONE X component is most commonly referred to as the U component (where U is in the vertical plane pointing upwards at 90° to the borehole axis). The CRONE Y component is most commonly referred to as the V component (which is normal to the plane containing A and U, positive to the left pointing downhole). Reference, Bishop 1996.

RESULTS

Location diagrams outlining the collar positions, and EM transmitter loop layouts are presented in Figure 1 and Plan 1 for SHD15, and SHD16 and SHD18 respectively. Hardcopy plots of data have not been reproduced for this report due to time constraints at the time of writing. Plots provided by the contractor are provided in the back of the TECHNICAL NOTE. A floppy disk containing digital data is provided with this TECHNICAL NOTE.

SHD15 exhibits non-anomalous DHEM response. No further work is recommended on the results.

SHD16 was logged using one relatively large transmitter loop (500mx600m). The position of the loop was not optimal, however logistical obstacles (a dam) provided limitations to where wire

could be layed. Part of the southern side of the transmitter loop wire was floated out across a lake using an inflatable dinghy to complete the loop.

SHD16 results exhibit three apparent anomalous responses.

The first is centred at about 310m downhole. It is a broad (150m wavelength) negative trending trough in the axial component. This response is very subtle, and a self-response has not been discounted as the source. Further investigation would be warranted.

The second DHEM response in SHD16 is very short in wavelength (<50m), and most apparent in the Y (V) component as an early time positive to negative cross-over centred at 560-570m downhole. This position corresponds with a zone of intense silica-sericite-pyrite +/- chalcopyrite alteration and is interpreted to be attributed to a zone of more massive sulphide accumulation a short distance off-hole to the north-west. The response is very subtle in the Z (A) component, and difficult to distinguish in the X (U) component. The source is most likely too small to be of exploration interest.

The third anomalous DHEM response in SHD16 is observed as a mid-channel (channels 12-18) migration from positive to negative polarity readings towards the bottom of the hole. Primary field observations discount the possibility that this could be attributed to probe "self-response". The lack of corresponding identified response in the X (U) and Y (V) components, and the very broad wavelength (> 300m) make interpretation of the source very difficult. Further work, including re-plotting of all data at suitable scales, and comparison with Resolute Ltd's drillhole DHEM results from nearby drilling is recommended.

Approximately half a day was spent with Flagstaff Geoconsultants consultant Dr M. Asten discussing the results from SHD16 and DHEM surveying in general. Several recommendations and comments were made, and are documented as follows:

- Re-plotting of the data using common scales for all three components is required.
- Filtering of data both downhole and along time channels may assist with reducing the noise envelope.
- Several transmitter loop positions are generally required to allow a meaningful interpretation as to the nature of an off-hole DHEM response.
- Use of smaller transmitter loops than the 500m x 600m loop used for SHD16 (300m x 300m might be suitable).
- Measuring the axial component only, and then logging with the X and Y component where axial anomalous response has been observed may assist with survey cost effectiveness. It was his opinion that if an axial component response could not be identified, then it was unlikely that the X and Y components would show anomalous response.

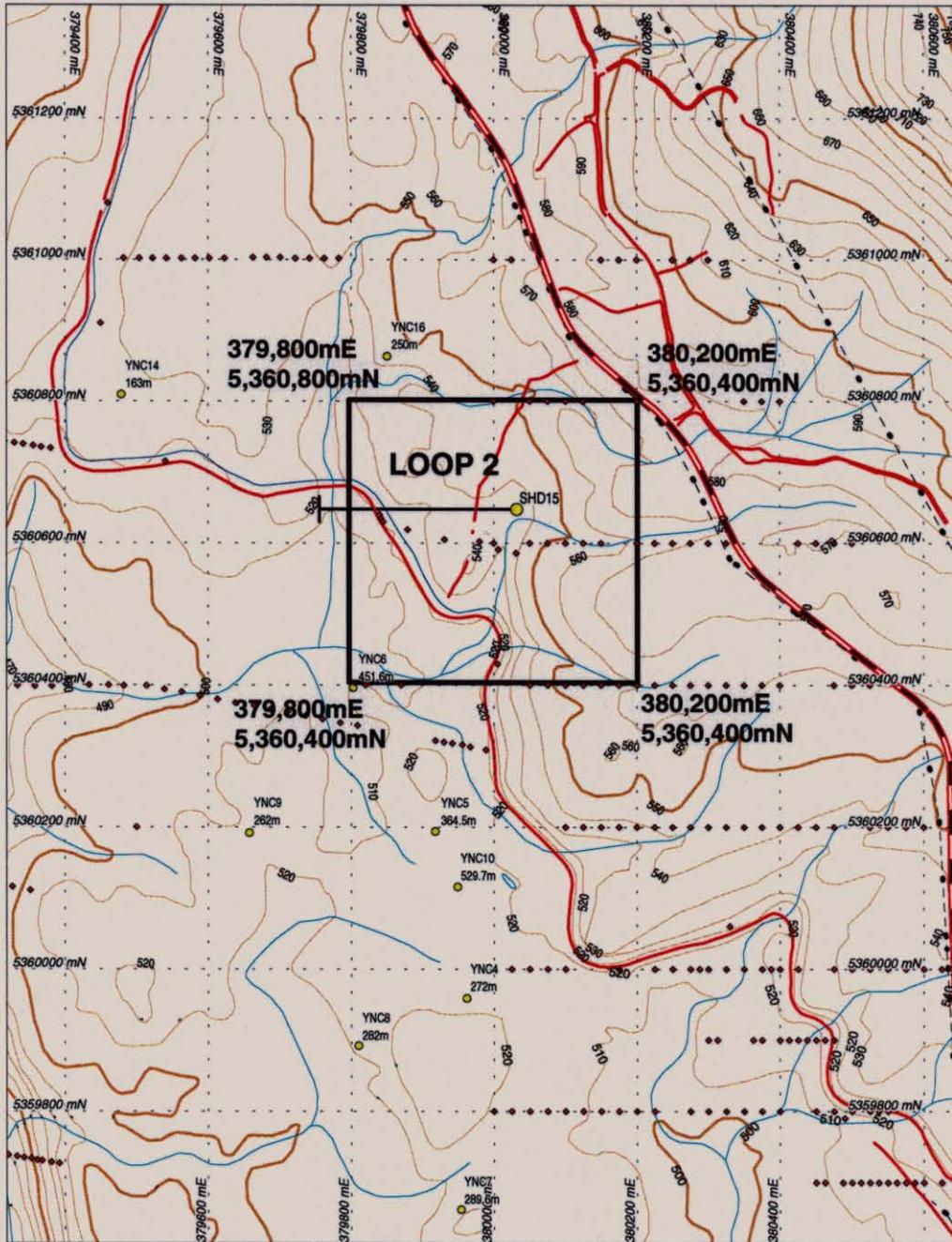
No DHEM anomalies worthy of further investigation were detected in the results from SHD18.

RECOMMENDATIONS

Brief analysis of nearby drillholes logged with DHEM by Resolute (SHD1, SHD2, SHD12 and SHD13) show some similar responses to those observed in SHD16. Given the encouraging geological results (alteration and Au assays) returned from SHD16, it would be warranted to spend some time compiling all DHEM results for interpretation and possibly modelling of responses considered worthy of drill testing.

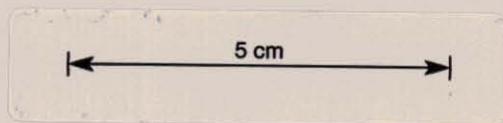
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Bishop, J. R., 1996, Introduction to the special volume on DHEM, Exploration Geophysics, 27, 37-39

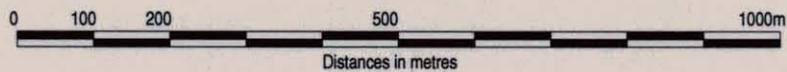


— DHEM Transmitter Loop

Figure 1.
SHD15 Transmitter
Down-hole EM Survey
400x400m loop

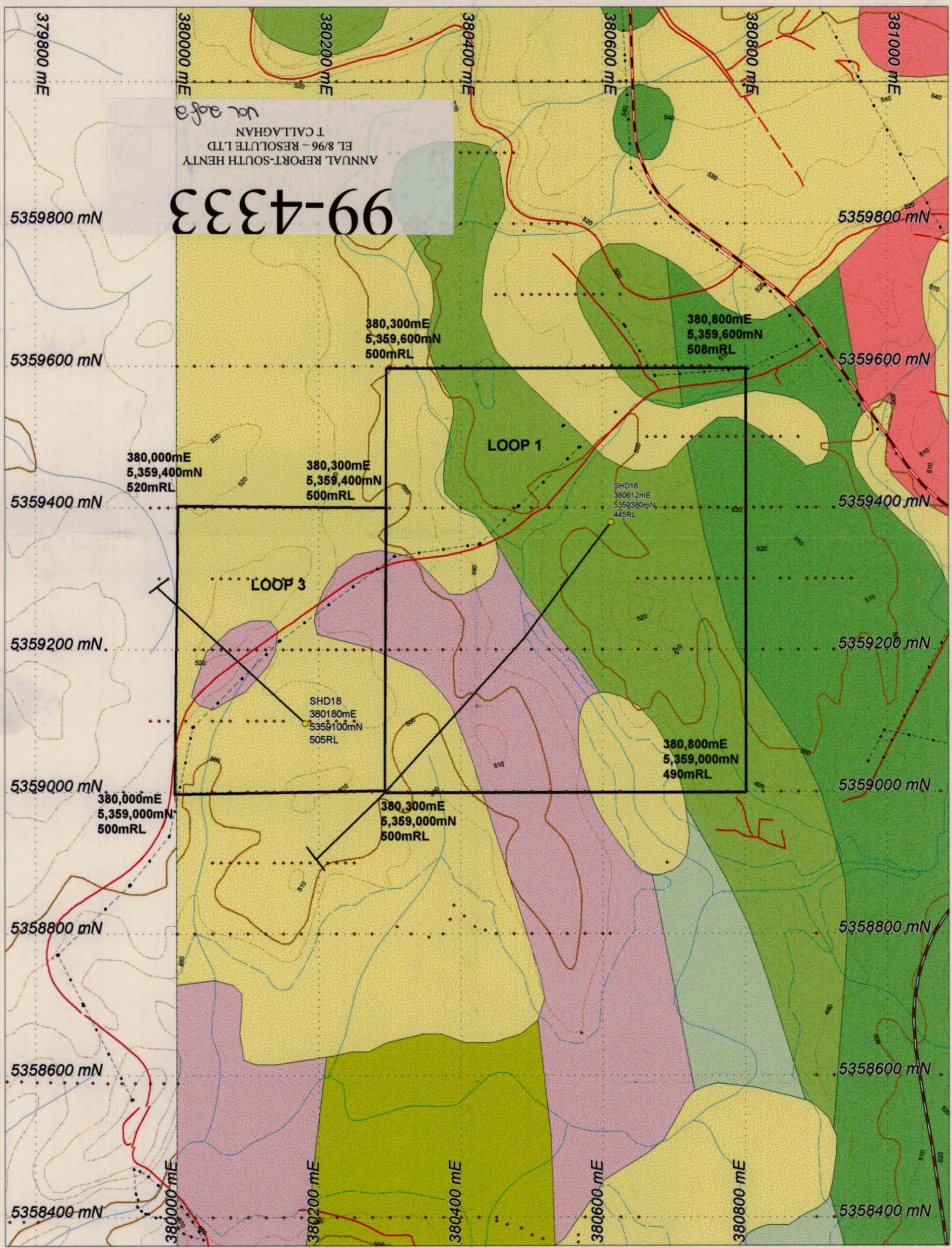


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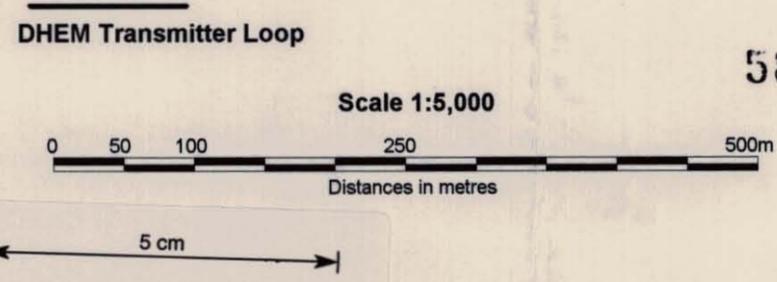


Distances in metres

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GOLDFIELDS EXPLORATION
 Plan 1.
 SHD16 and SHD18
 Down-hole EM Survey
 Transmitter Loop Layout



584083

- Gg
Pleistocene glacial deposits.
- Con
Interbedded micaceous sandstone siltstone & siliclastic pebble conglomerate. Trace fossils widespread. Slump structures & graded bedding common. Newton Creek Sandstone and correlates.
- Cqf
Quartz-feldspar porphyry - dominantly intrusive.
- Ct
Tynndal Group volcanics and volcanoclastic rocks undifferentiated.
- Cvlq
Felsic lava usually quartz-feldspar-phyric within Tynndal Group. Commonly flow-banded and subvolcanic.
- Cvs
Andesitic breccia and volcanoclastic sandstone in lower part of Tynndal Group.
- Cvw
Andesitic volcanics mostly lavas and breccias within Central Volcanic Complex.



OUTER-RIM EXPLORATION SERVICES

ACN 059 220 192

35 Fleming Street,
(P.O. Box 1754)
ATKENZA, QLD. 4814

Geophysical Contracting Services

100% Australian Owned

Tel: 07 4725 3544
Fax: 07 4725 4805
Mob: 0412 54 9980
Email: oreserv@ozemail.com.au5th June, 1998

Mr Chris Dauth
RGC Exploration Pty. Ltd.
89 Burswood Road
VICTORIA PARK, W. A. 6100

Dear Chris,

Enclosed is the report on the DHEM surveys recently completed South Henty in Tasmania, including daily logs, plots, copies of the digital data, plans and sections, and the invoice. As previously, I have presented the digital data in the AMIRA format - .TEM files. I presume you didn't have any problems with it last time.

Please don't hesitate to contact me as usual, if you require any additional information or plots.

Yours sincerely,

David Lemcke
Manager.

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Volume 1 of 1

Client : Goldfields Exploration Pty Ltd

Prospect : South Henty.

Area : Zeehan, Tas.

Survey : Borehole PEM Survey

Survey Period : 27th to 31st May 1998.

Operator : Alistair McMillan.

DAILY LOG: Goldfields Exploration Pty Ltd - May, 1998

DATE	COMMENTS	CHARGES
------	----------	---------

27-05-98	<p>Departed from the motel at 7:00am, organised fuel and food for the day and arrived at the RGC Exploration office at 7:40am. Met Bruce and Scott and travelled out to the South Henty grid - approximately 40 km from Zeehan. Dummied the hole which, due to the shallow dip and the fact that the hole was making water, we were only able to get down to 680m. It was decided that this would be enough and that the hole could be logged. Located the transmitter site and started to lay out Loop #1 (600 x 500m). Bruce returned to Zeehan to pick up some wire to lay across the lake. We completed the loop shortly after lunch and logged SHD-16 to a depth of 260m using 1024 stacks and two readings per station in an attempt to reduce the noise caused by the movement of water in the hole and called it a day at 5:00pm.</p>	
----------	---	--

SURVEY PARAMETERS:

Loop #1 :600 x 500m
 380300E; 5359600N: 380300E; 5359000N
 380800E; 5359000N: 380800E; 5359600N

Current :14 Amps

Time Base :20 ms

Ramp Time :0.5ms

Sync :Cable

Hole No. :SHD-16

380612.01E, 5359380.01N

Depth :260m

Channels :31

Components :Z

1 Survey day \$1250.00

1 Field Assist. day \$ 180.00

28-05-98	<p>Departed the motel at 7:15am and organised some lunch before dropping into the RGC office to swap radios for the day. Travelled out to the site and continued logging SHD-16 from 270m to 678m (the probe would go no further). Recovered the Z probe and started logging the hole with the X-Y probe. Logged the hole from 200m to 310m. While I logged the hole Heath, Bruce and Scott layed out loops #2 and #3. Loop #2 consisted of RGC wire to speed things up so that we could move from hole to hole without having to worry about laying loops. Called it a day 5:20pm.</p>	
----------	---	--

SURVEY PARAMETERS:

Loop #1 :600 x 500m
 380300E; 5359600N: 380300E; 5359000N
 380800E; 5359000N: 380800E; 5359600N
Current :14 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. :**SHD-16**
 380612.01E, 5359380.01N
Depth :678m
Channels :31
Components :Z,X,Y

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

29-05-98 Departed motel at 7:20am, picked up some lunch and travelled out to the site. Completed logging the X-Y components for SHD-16 from 320 to 678m using 1024 stacks and two readings per component to help overcome noise from water movement. Dummied SHD-18 to 415m, recovered the dummy probe and called it a day at 5:30pm.

SURVEY PARAMETERS:

Loop #1 :600 x 500m
 380300E; 5359600N: 380300E; 5359000N
 380800E; 5359000N: 380800E; 5359600N
Current :14 Amps
Time Base :20 ms
Ramp Time :0.5ms
Sync :Cable

Hole No. :**SHD-16**
 380612.01E, 5359380.01N
Depth :678m
Channels :31
Components :X,Y

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

30-05-98 Departed motel at 8:00am, pick up some lunch and travelled out to the site. Recovered the equipment from site #1 and moved up to site #3. The access to site 3 was very boggy and there was no way we could get the 4WD into the hole so we had to use a 4WD motorcycle to ferry all the equipment into the hole - this took a couple of hours by the time we had everything in and we were able to start surveying. Surveyed the Z component on SHD-18 from 20m to 415m, then and

started the X-Y survey and read to 300m before calling it a day at 5:30pm. Heath recovered loop #1.

SURVEY PARAMETERS:

Loop #3 :400 x 300m
380000E; 5359400N: 380000E; 5359000N
380300E; 5359000N: 380300E; 5359400N

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

Hole No. :SHD-18
380180E, 5359100N
Depth :415m
Channels :31
Components :Z,X,Y

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

31-05-98

Departed motel at 7:45am, picked up lunch and travelled out to the site. Completed the X-Y on hole SHD-18, recovered the probe, packed up and ferried all the equipment back out to the vehicle through the bog. Moved to SHD-15, set up and dummied the hole which was open to 383m. Surveyed the Z component but there was no apparent response so I decided that there was no point in reading the X-Y. Heath recovered the wire from loop #3. Packed up the vehicle and returned to Zeehan.

SURVEY PARAMETERS:

Loop #3 :400 x 300m
380000E; 5359400N: 380000E; 5359000N
380300E; 5359000N: 380300E; 5359400N

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

Hole No. :SHD-18
380180E, 5359100N
Depth :415m
Channels :31
Components :X,Y

Loop #2 :400 x 400m
379800E; 5360800N: 379800E; 5360400N
380200E; 5360400N: 380200E; 5360800N
Current :11 Amps

584089

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

Hole No. :SHD-15
380032.04E, 5360647.59N
Depth :380m
Channels :31
Components :Z

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

01-06-98 Dropped into the RGC office and gave the data for holes SHD-18 and SHD-15 to Bruce, said our farewells and departed for Devonport.

1/2 Mob. day \$ 275.00

APPENDIX

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

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that utilizes an alternating pulsed
secondary field across a series
e. A portable power source feeds
apparatus is moved along surface

seconds, a constant current, abrupt
milliseconds. The EMF created
setting-up a secondary magnetic
amplitude of the secondary field
which is synchronized to the off-
coil or borehole probe. These

ramp times are selectable by the
pend on the loop size and current
ly compared.

early channel responses on scale
enhance the early time responses.
spectrum is desired.

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nal time bases used in the analog
eight time bases are as follows:
ms, 16.66ms, & 33.33ms; 50hz

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ver channel measurements. It is
p times and fine tuning for any

which occupy most of the off-time
e numbered in sequence with "1"
The digital receiver, being under
number of channels.

he current ramp and storing this
ed or unnormalized formats, and
de useful diagnostic information

ary 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.

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.

584096

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
- replacable 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
- replacable 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

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PLOTS

CONTENTS

Plan No.	Plan Type	ID.	Description	Scale
1	Plan	SHD-15	Hole location plan	1:5000
2	Section		Primary Field plot	1:5000
3	Header	SHD-15	Header information	N/A
4	Profile	(#2)	Z - Log plot	1:2000
5			- Linear, Ch1-15, 1:250	1:2000
6			- Linear, Ch15-25, 1:5	1:2000
7			- Linear, Ch25-31, 1:2	1:2000
8	Plan	SHD-16,18	Hole location plan	1:5000
9	Section	SHD-16	Primary Field plot	1:5000
10		SHD-18	Primary Field plot	1:5000
11	Header	SHD-16	Header information	N/A
12	Profile	(#1)	Z - Log plot	1:3000
13			- Linear, Ch1-15, 1:800	1:3000
14			- Linear, Ch15-25, 1:5	1:3000
15			- Linear, Ch25-31, 1:2	1:3000
16			X - Log plot	1:3000
17			- Linear, Ch1-15, 1:800	1:3000
18			- Linear, Ch15-25, 1:5	1:3000
19			- Linear, Ch25-31, 1:2	1:3000
20			Y - Log plot	1:3000
21			- Linear, Ch1-15, 1:800	1:3000
22			- Linear, Ch15-25, 1:5	1:3000
23			- Linear, Ch25-31, 1:2	1:3000
24			Total Field plot	1:3000
25	Header	SHD-18	Header information	N/A
26	Profile	(#3)	Z - Log plot	1:2000
27			- Linear, Ch1-15, 1:1000	1:2000
28			- Linear, Ch15-25, 1:5	1:2000
29			- Linear, Ch25-31, 1:2	1:2000
30			X - Log plot	1:2000
31			- Linear, Ch1-15, 1:1000	1:2000
32			- Linear, Ch15-25, 1:5	1:2000
33			- Linear, Ch25-31, 1:2	1:2000
34			Y - Log plot	1:2000
35			- Linear, Ch1-15, 1:1000	1:2000
36			- Linear, Ch15-25, 1:5	1:2000
37			- Linear, Ch25-31, 1:2	1:2000
38			Total Field plot	1:2000

379800E 379900E 380000E 380100E 380200E

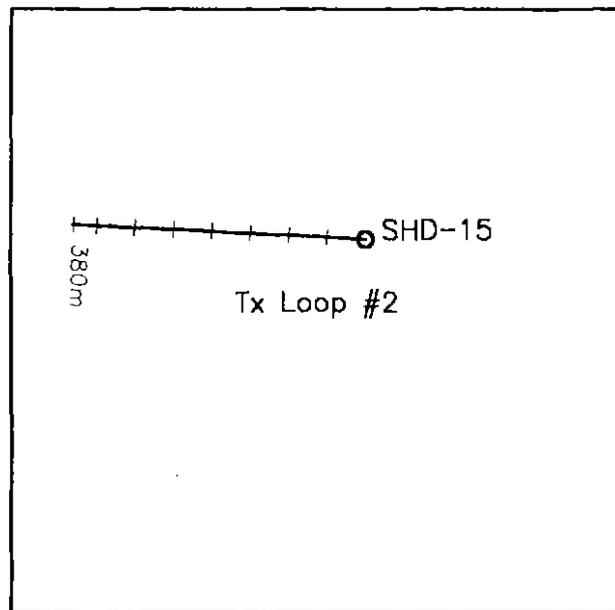
5360800N -

5360700N -

5360600N -

5360500N -

5360400N -



Scale 1:5000
50 0 50 100
(metres)

5 cm

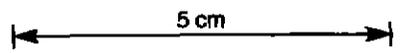
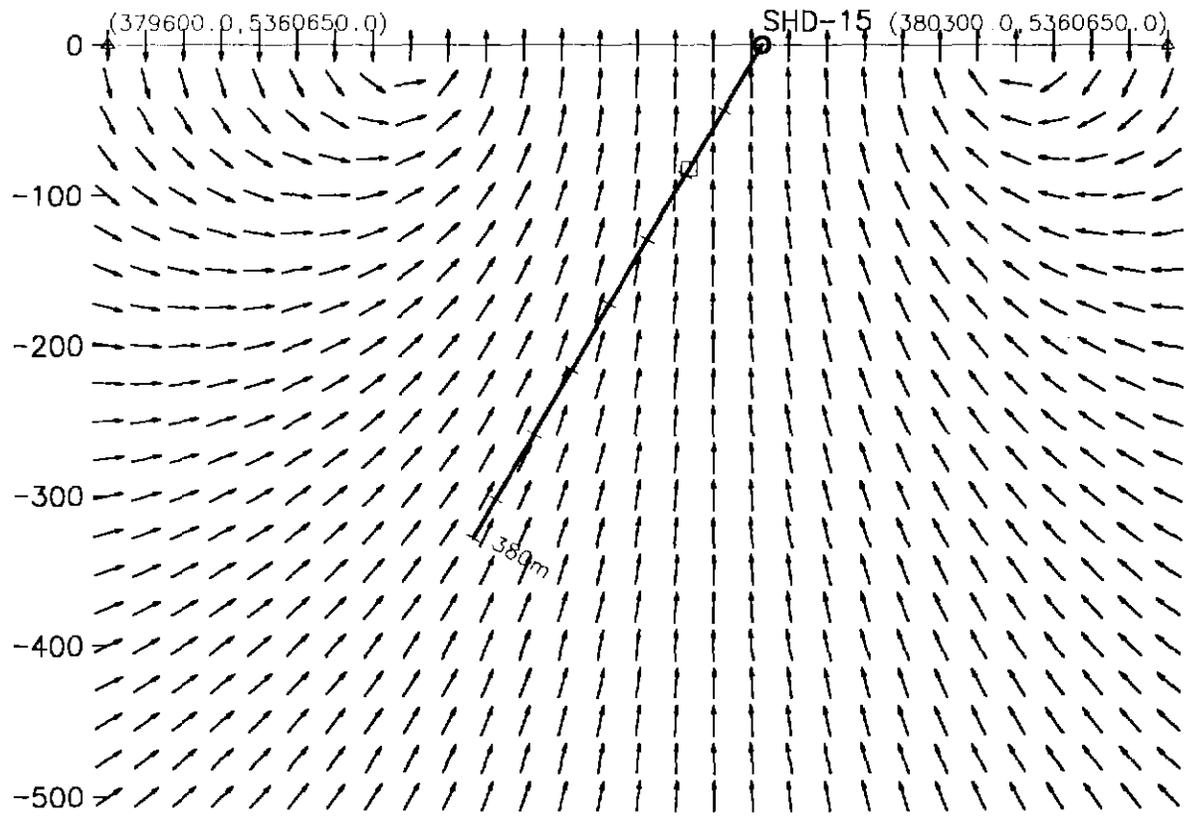
Goldfields Exploration P/L
South Henty

3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: SHD-15
Survey Date: May 31, 1998

Outer-Rim Exploration Services

534099



<i>Goldfields Exploration P/L</i>
South Henty
3-D Borehole Pulse EM Survey
Hole Section with Primary Field
Hole: SHD-15
Survey Date: May 31, 1998
Outer-Rim Exploration Services

584100

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Goldfields Exploration P/L	Hole	: SHD-15
Grid	: South Henty	Tx Loop	: #2
Date	: May 31, 1998	File name	: SHD15Z.PEM
Time Base	: 20.00 ms	# Readings	: 33
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 #105
Current	: 11 Amps	Operator	: Al McMillan

Loop Coordinates (X,Y,Z)

1. 379800m, 5.3608e+06m, 0m	2. 379800m, 5.3604e+06m, 0m
3. 380200m, 5.3604e+06m, 0m	4. 380200m, 5.3608e+06m, 0m

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

1. 380032m, 5.36065e+06m, 0m	2. 273deg, 59.8deg, 380m
------------------------------	--------------------------

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				

584101

OUTER-RIM EXPLORATION SERVICES

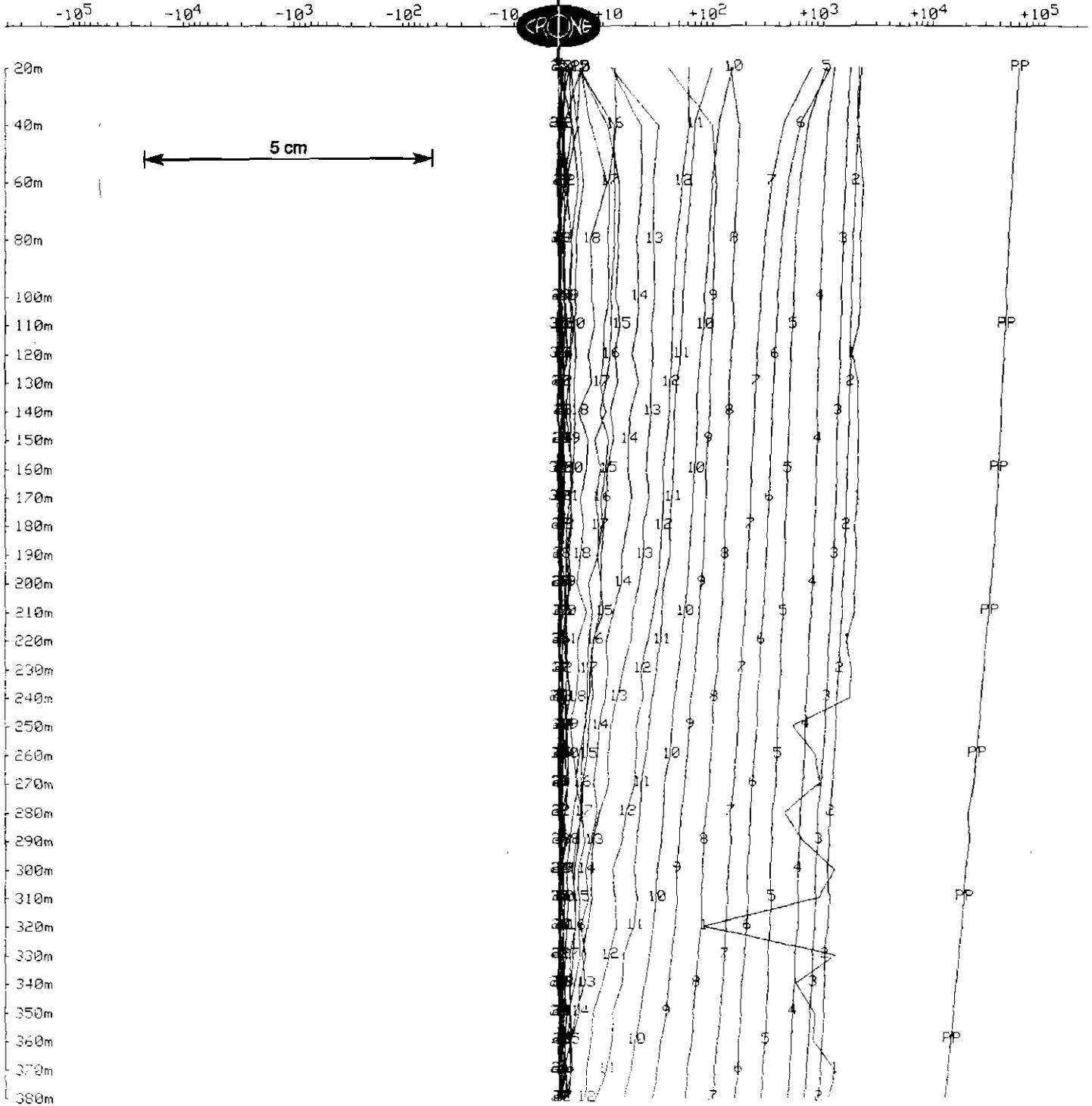
Operating Crone PEM System

BOREHOLE PEM

Client : Goldfields Exploration P/L Hole : SHD-15
 Grid : South Henty Tx Loop : #2
 Date : May 31, 1998 File name : SHD15Z.PEM

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

Scale: 1:2000



584102

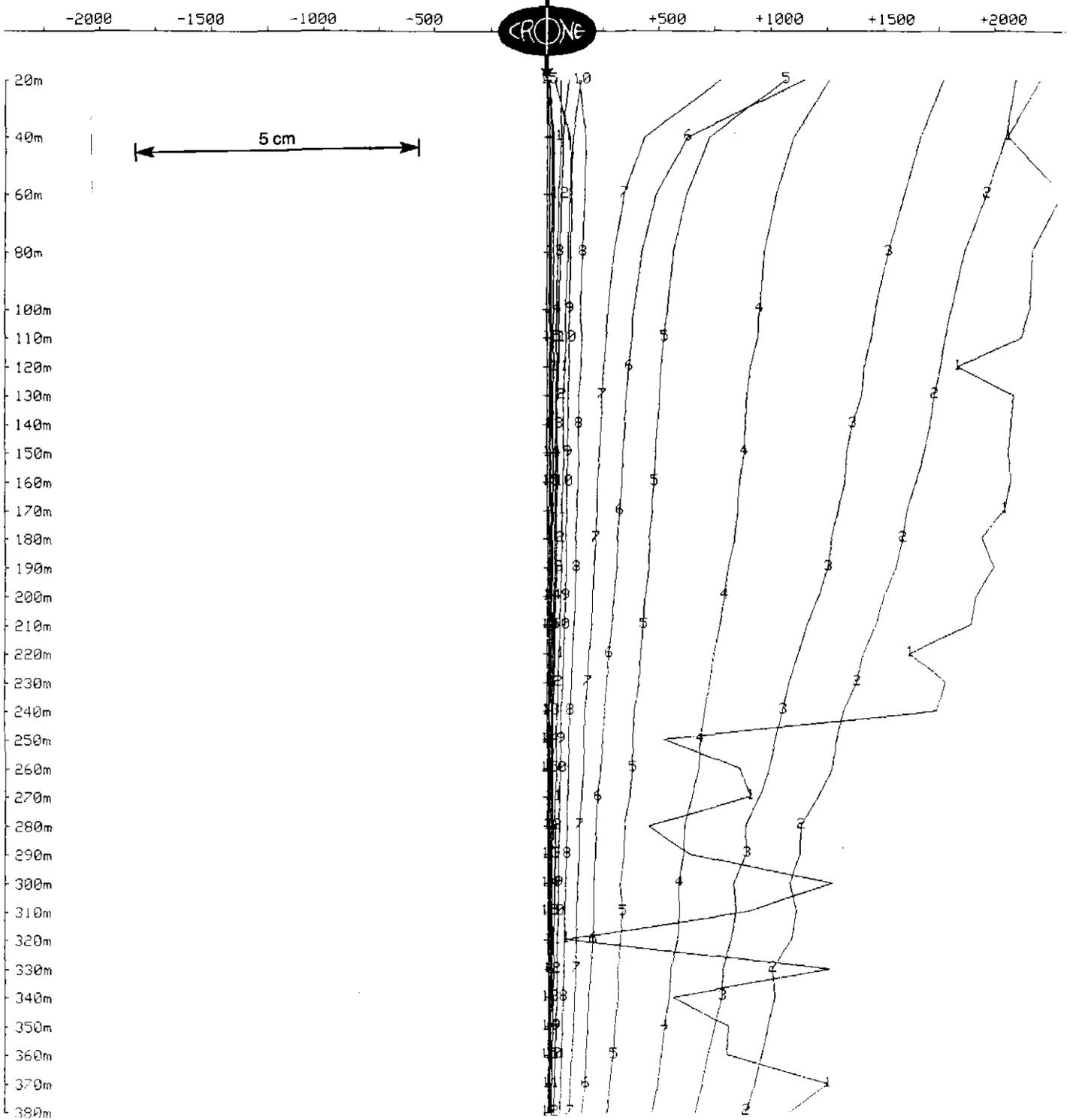
OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Goldfields Exploration P/L Hole : SHD-15
Grid : South Henty Tx Loop : #2
Date : May 31, 1998 File name : SHD15Z.PEM

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

Scale: 1:2000

Unit Scale: 1cm = 250 nT



534103

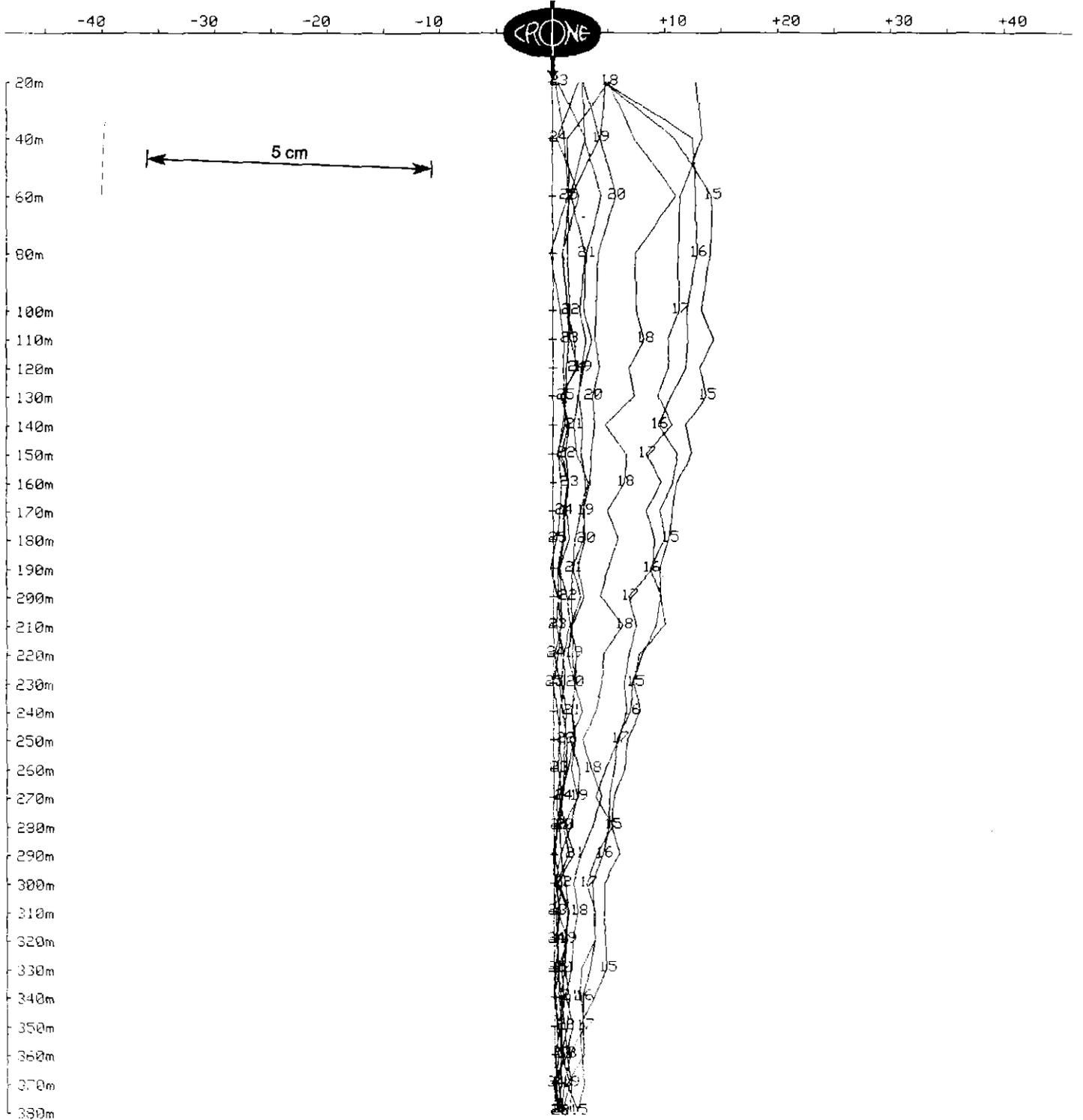
OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Goldfields Exploration P/L Hole : SHD-15
Grid : South Henty Tx Loop : #2
Date : May 31, 1998 File name : SHD15Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 5 nT



534104

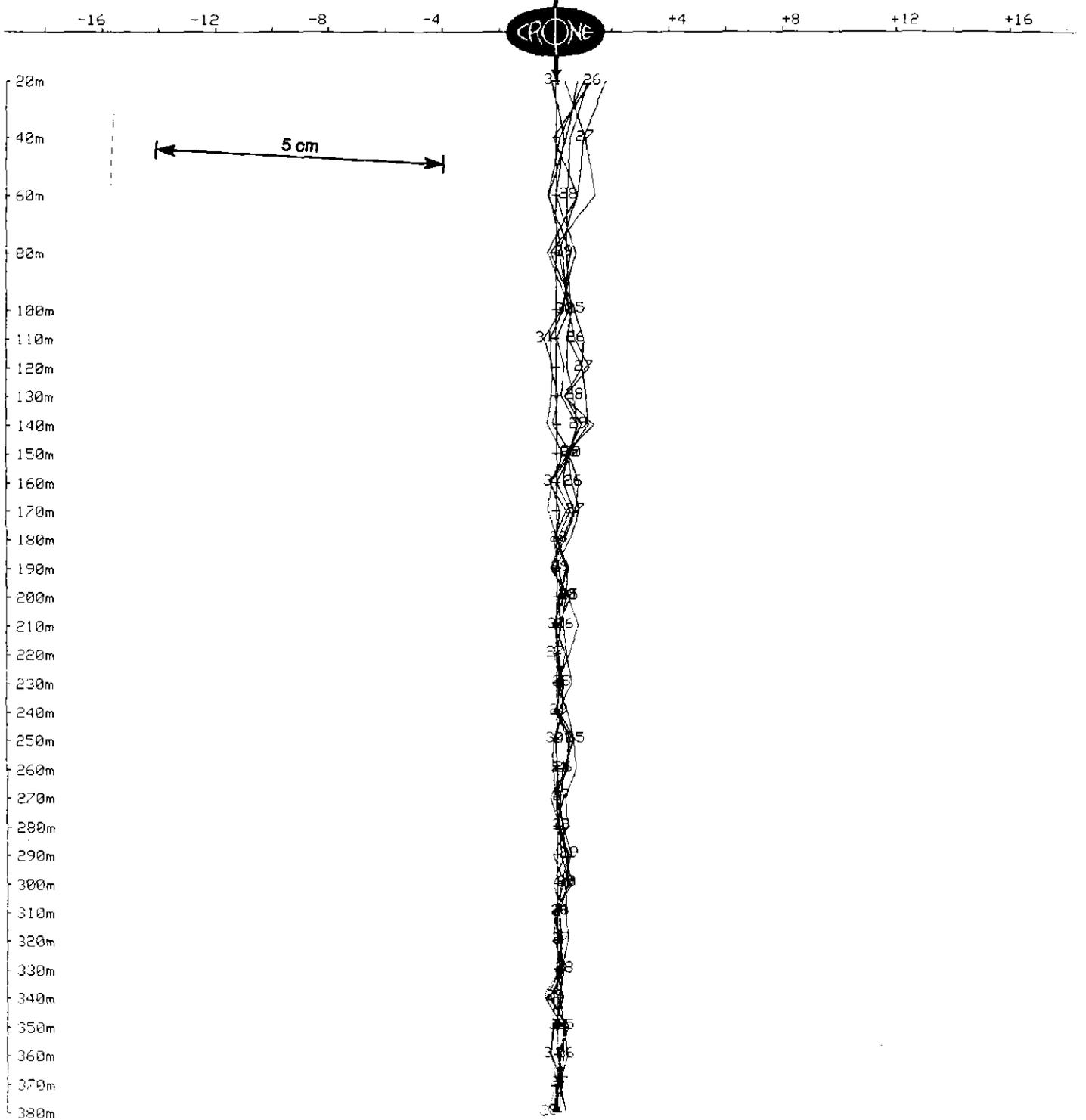
OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client : Goldfields Exploration P/L Hole : SHD-15
Grid : South Henty Tx Loop : #2
Date : May 31, 1998 File name : SHD15Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 2 m



584105

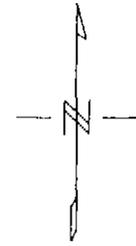
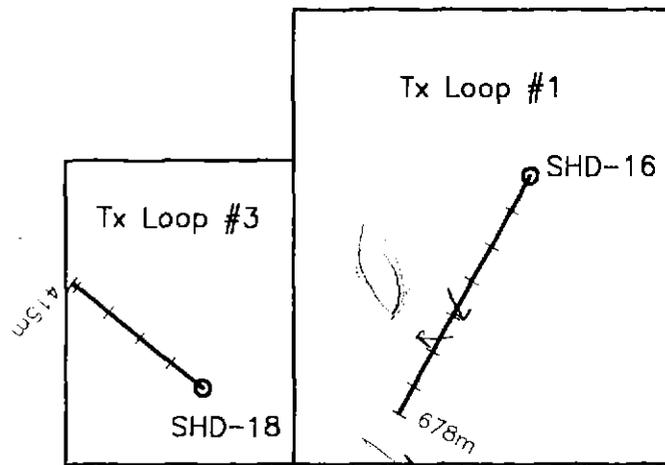
380000E 380200E 380400E 380600E 380800E

5359600N -

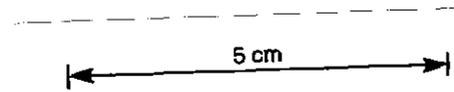
5359400N -

5359200N -

5359000N -



Scale 1:10000
100 0 100 200
(metres)



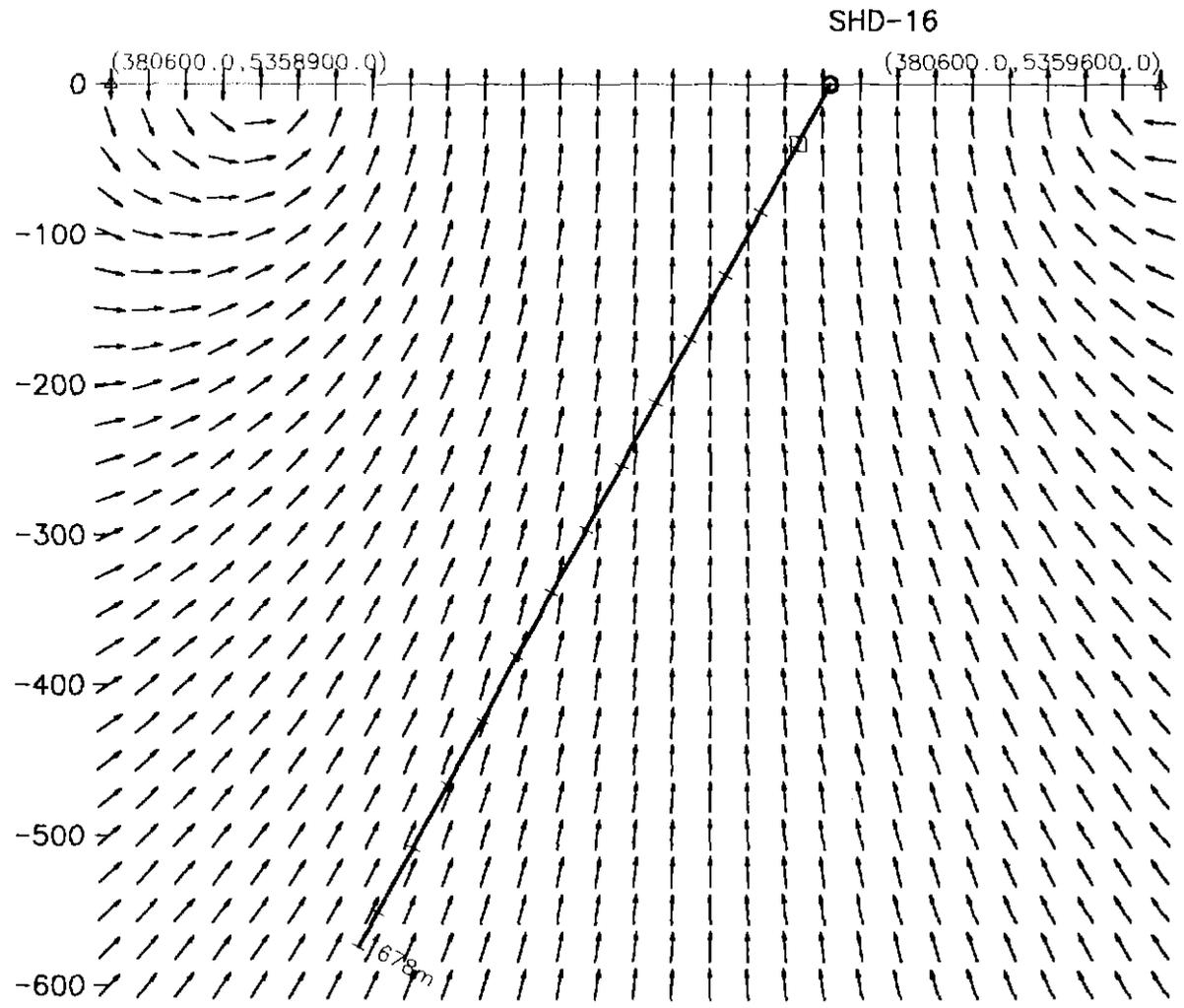
Goldfields Exploration P/L
South Henty

3-D Borehole Pulse EM Survey
Borehole & Loop Location Map

Hole: SHD-16 & SHD-18
Survey Date: May 27/30, 1998

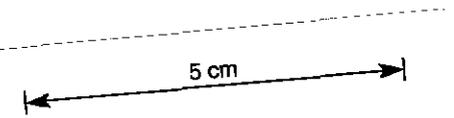
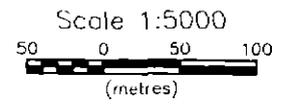
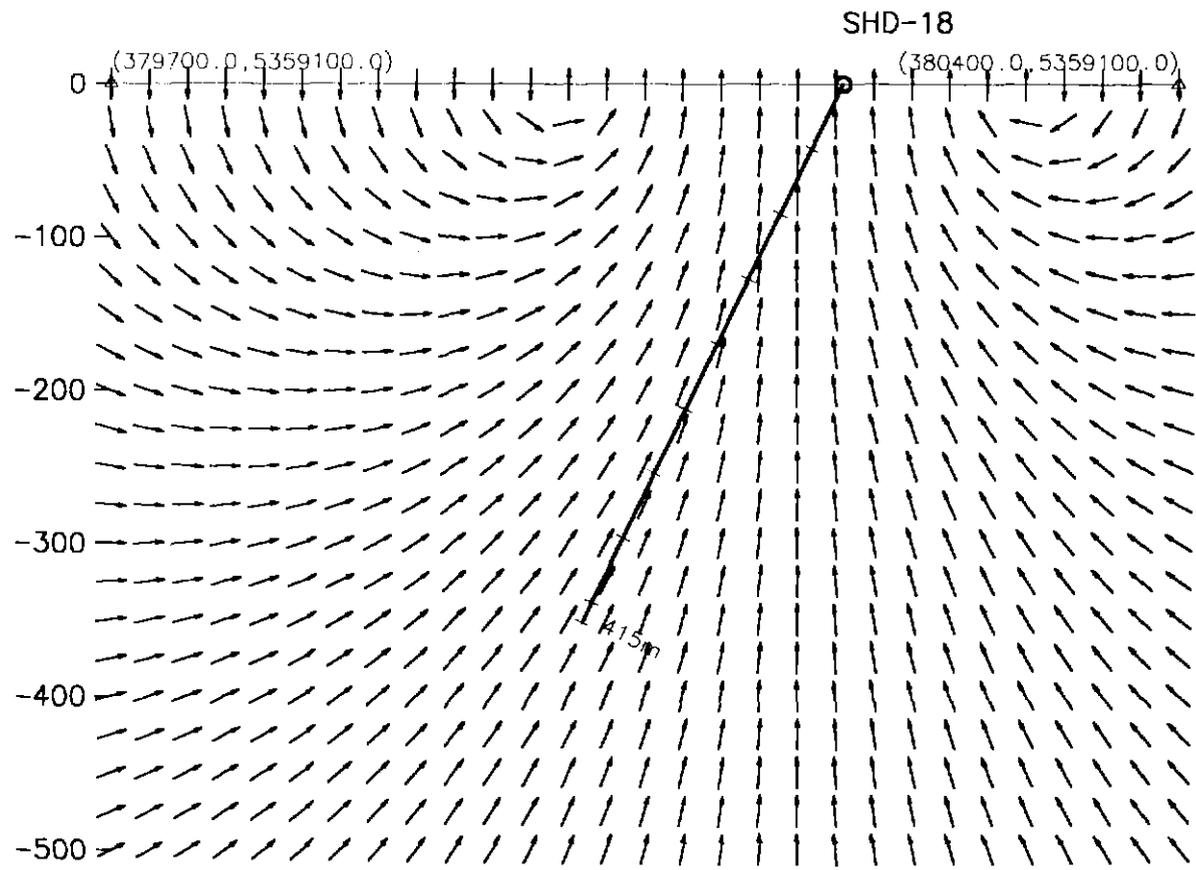
Outer-Rim Exploration Services

534106



<i>Goldfields Exploration P/L</i>
South Henty
3-D Borehole Pulse EM Survey
Hole Section with Primary Field
Hole: SHD-16
Survey Date: May 27, 1998
Outer-Rim Exploration Services

534107



<i>Goldfields Exploration P/L</i>
South Henty
3-D Borehole Pulse EM Survey
Hole Section with Primary Field
Hole: SHD-18
Survey Date: May 30, 1998
Outer-Rim Exploration Services

584108

OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

Client	: Goldfields Exploration P/L	Hole	: SHD-16
Grid	: South Henty	Tx Loop	: #1
Date	: May 27, 1998	File name	: SHD16Z.PEM
Time Base	: 20.00 ms	# Readings	: 58
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 31	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 600m X 500m	Receiver	: Digital #105
Current	: 14 Amps	Operator	: Al McMillan

Loop Coordinates (X,Y,Z)

1. 380300m, 5.3596e+06m, 0m	2. 380300m, 5.359e+06m, 0m
3. 380800m, 5.359e+06m, 0m	4. 380800m, 5.3596e+06m, 0m

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

1. 380612m, 5.35938e+06m, 0m	2. 209deg, 58deg, 678m
------------------------------	------------------------

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				

584109

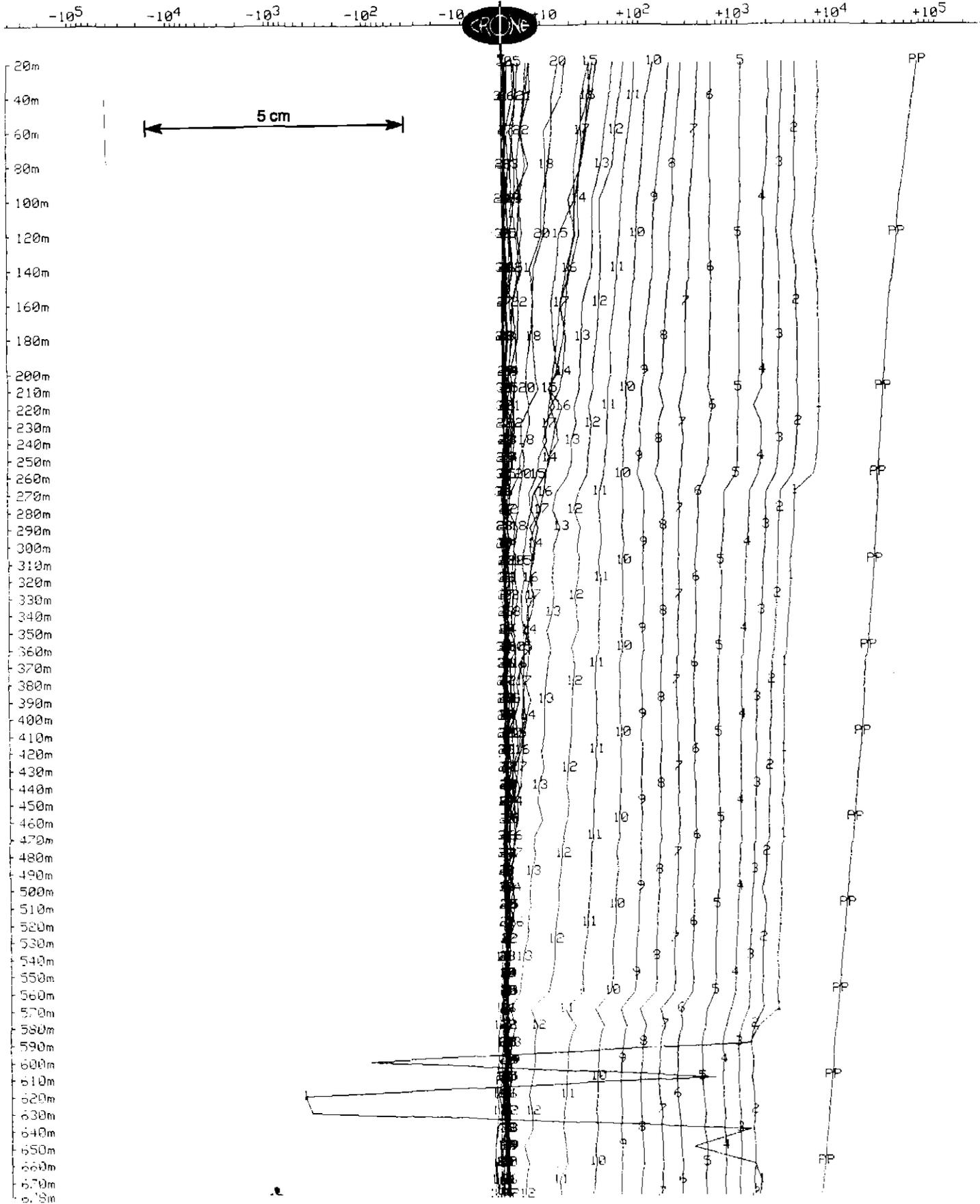
OUTER-RIM EXPLORATION SERVICES Operating Crone PEM System BOREHOLE PEM

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 27, 1998 File name : SHD16Z.PEM

594110

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

Scale: 1:3000



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

BOREHOLE PEM

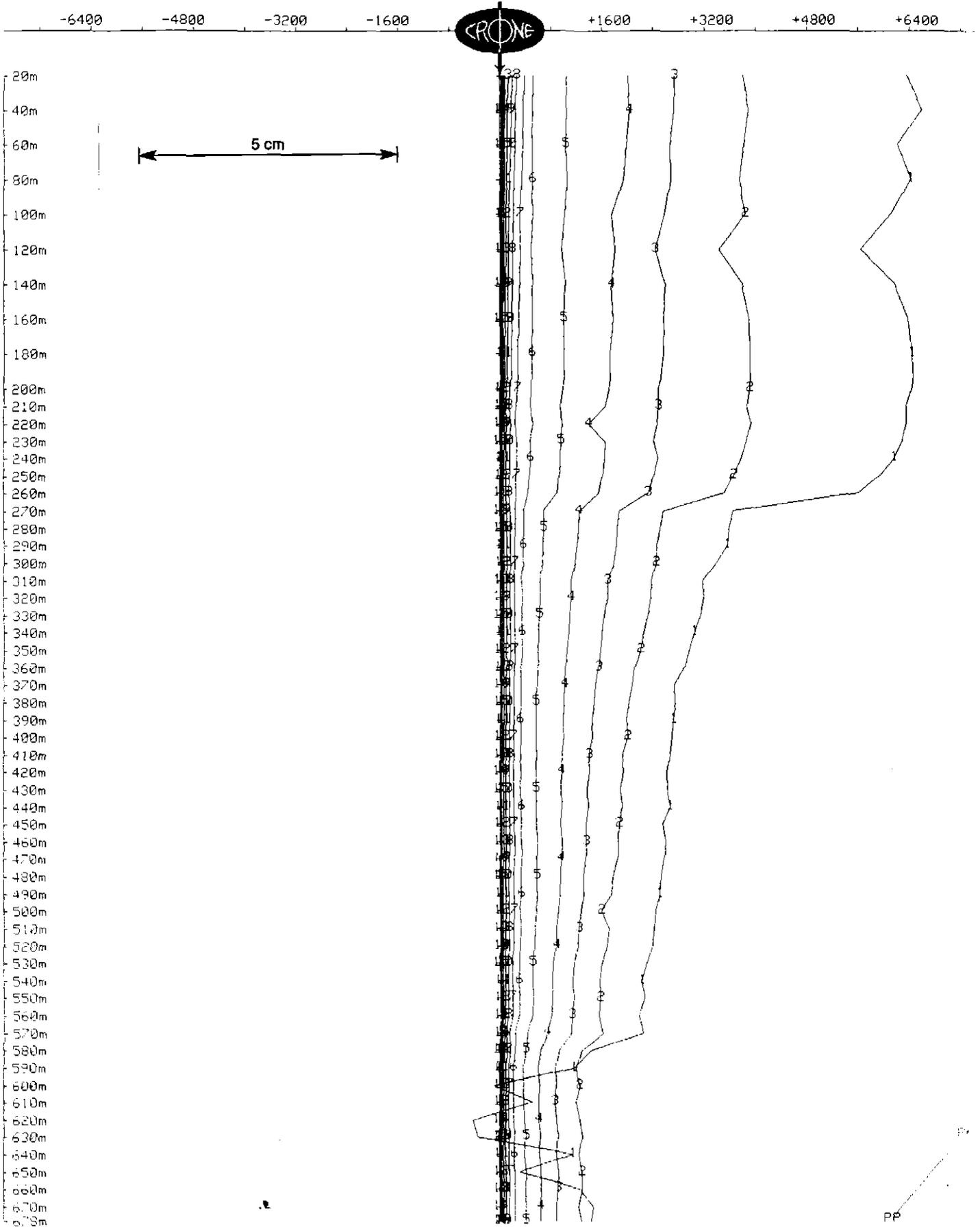
584111

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 27, 1998 File name : SHD16Z.PEM

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

Scale: 1:3000

Unit Scale: 1cm = 800 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

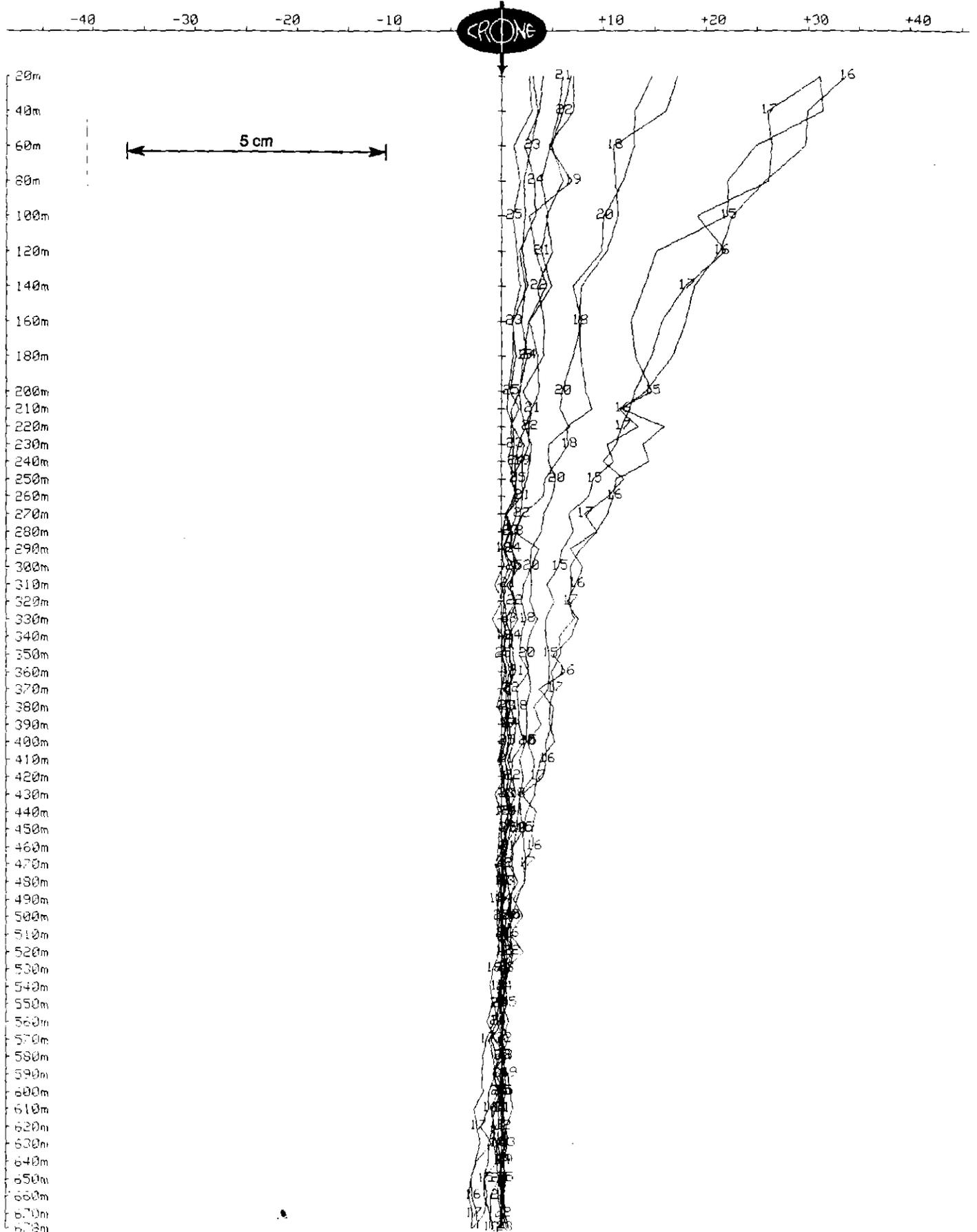
584112

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 27, 1998 File name : SHD16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:3000

Unit Scale: 1cm = 5 n



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

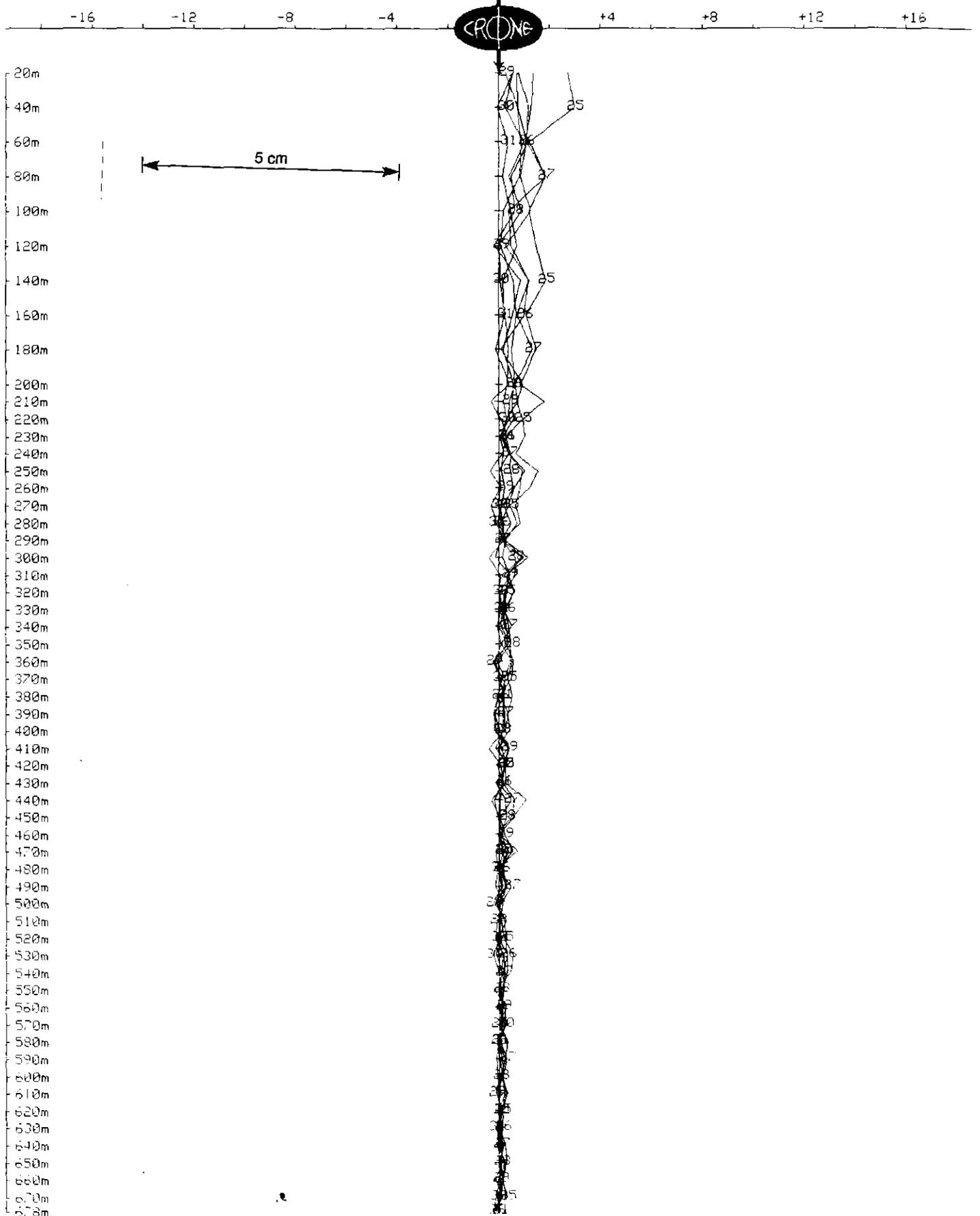
534113

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 27, 1998 File name : SHD16Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:3000

Unit Scale: 1cm = 2 nT



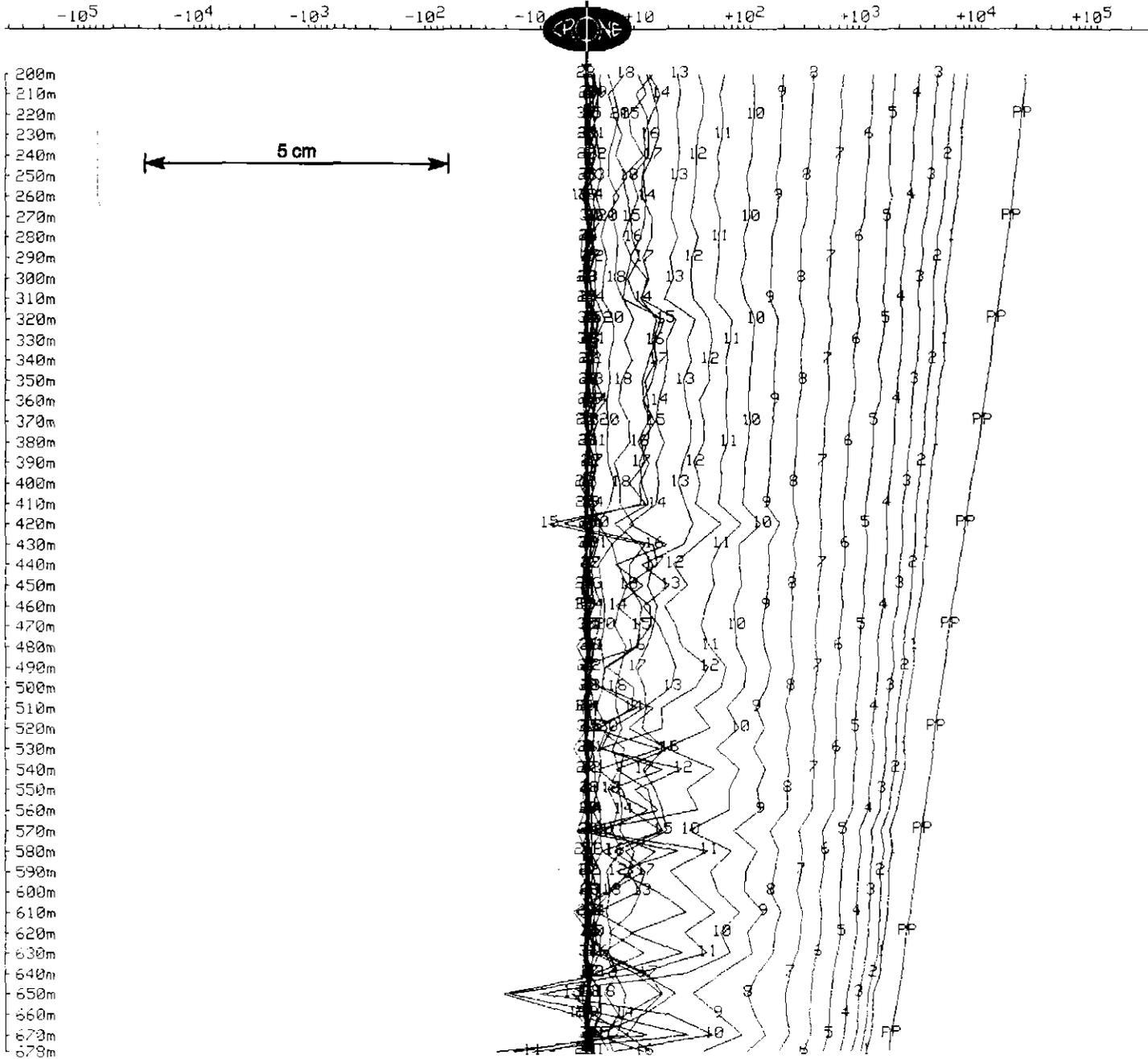
OUTER-RIM EXPLORATION SERVICES Operating Crone PEM System BOREHOLE PEM

534114

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:3000



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

BOREHOLE PEM

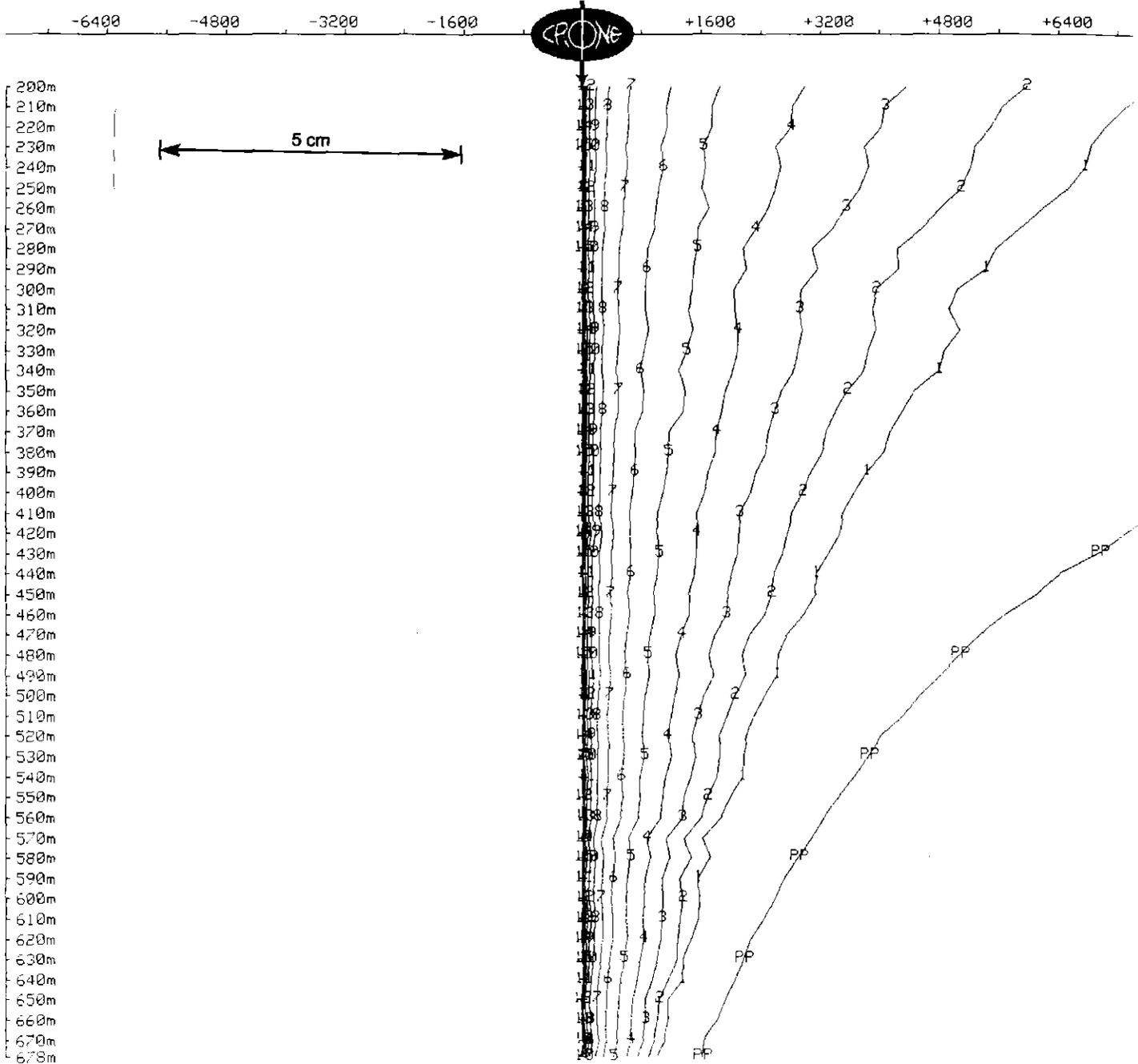
534115

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:3000

Unit Scale: 1cm = 800 nT



OUTER-RIM EXPLORATION SERVICES Operating Crone PEM System BOREHOLE PEM

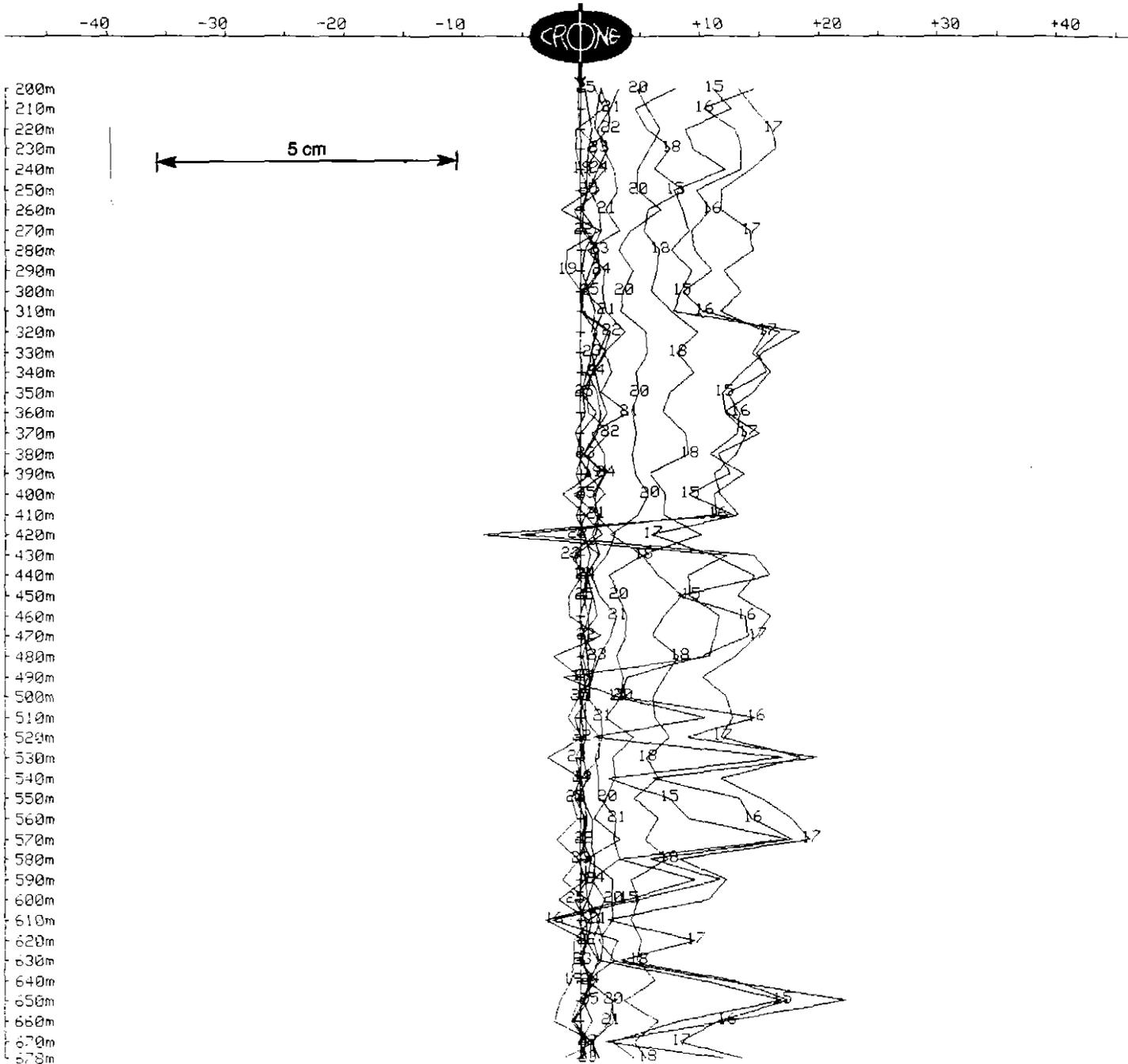
584116

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 X COMPONENT dBx/dt nanoTesla/sec - 31 channels

Scale: 1:3000

Unit Scale: 1cm = 5 nT



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

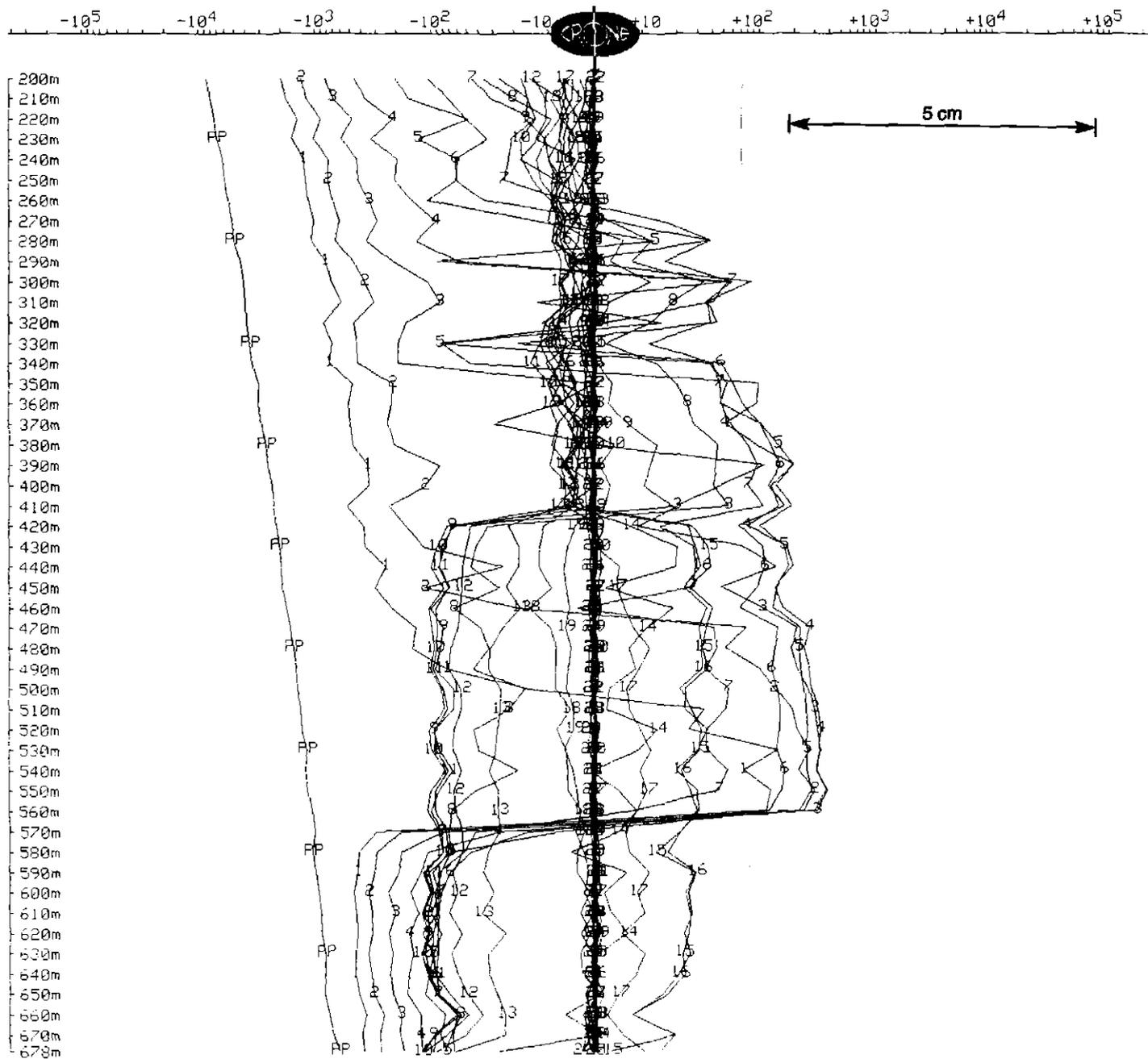
BOREHOLE PEM

534118

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels and PP

Scale: 1:3000



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

BOREHOLE PEM

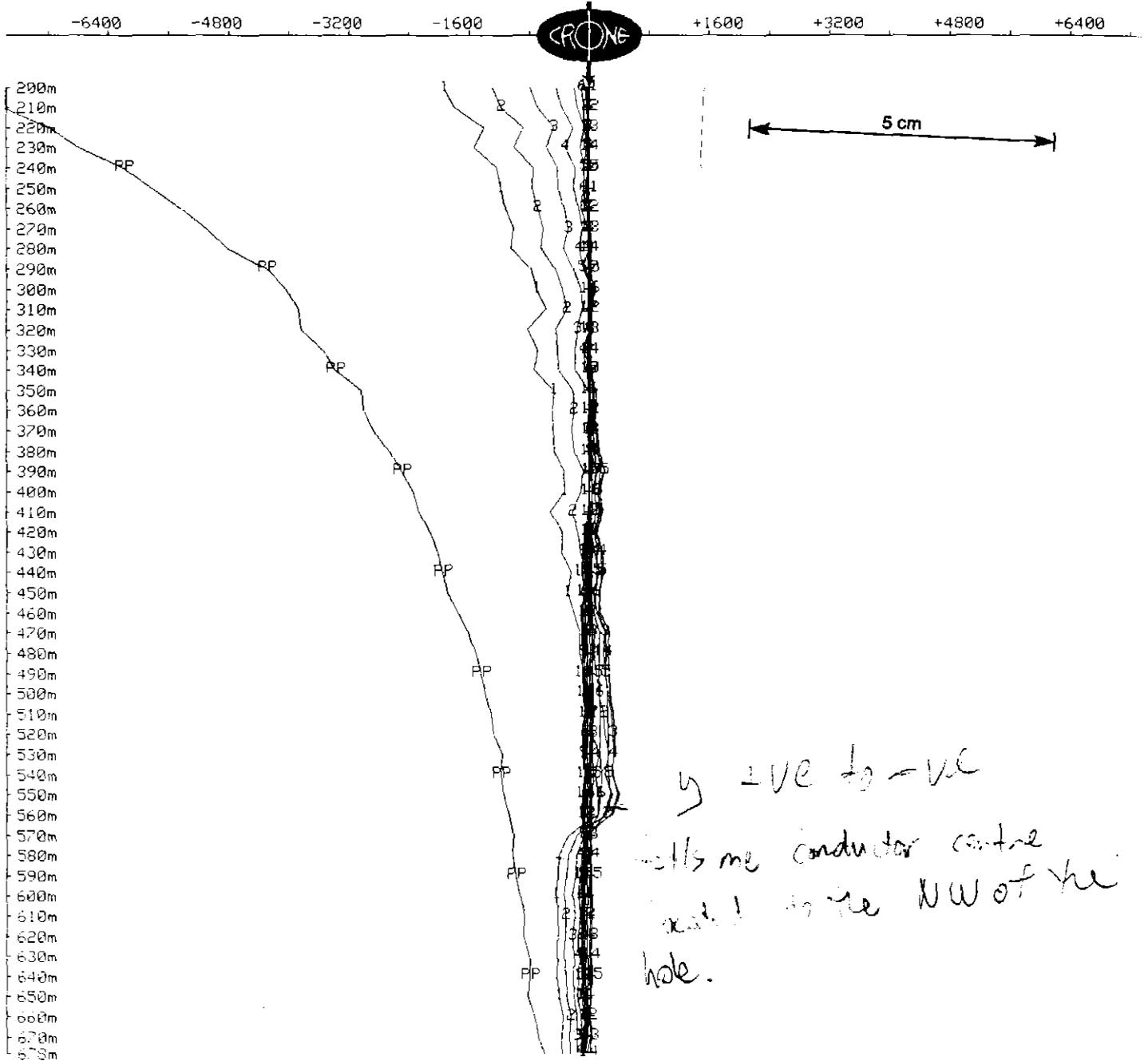
584119

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels and PP

Scale: 1:3000

Unit Scale: 1cm = 800 m



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

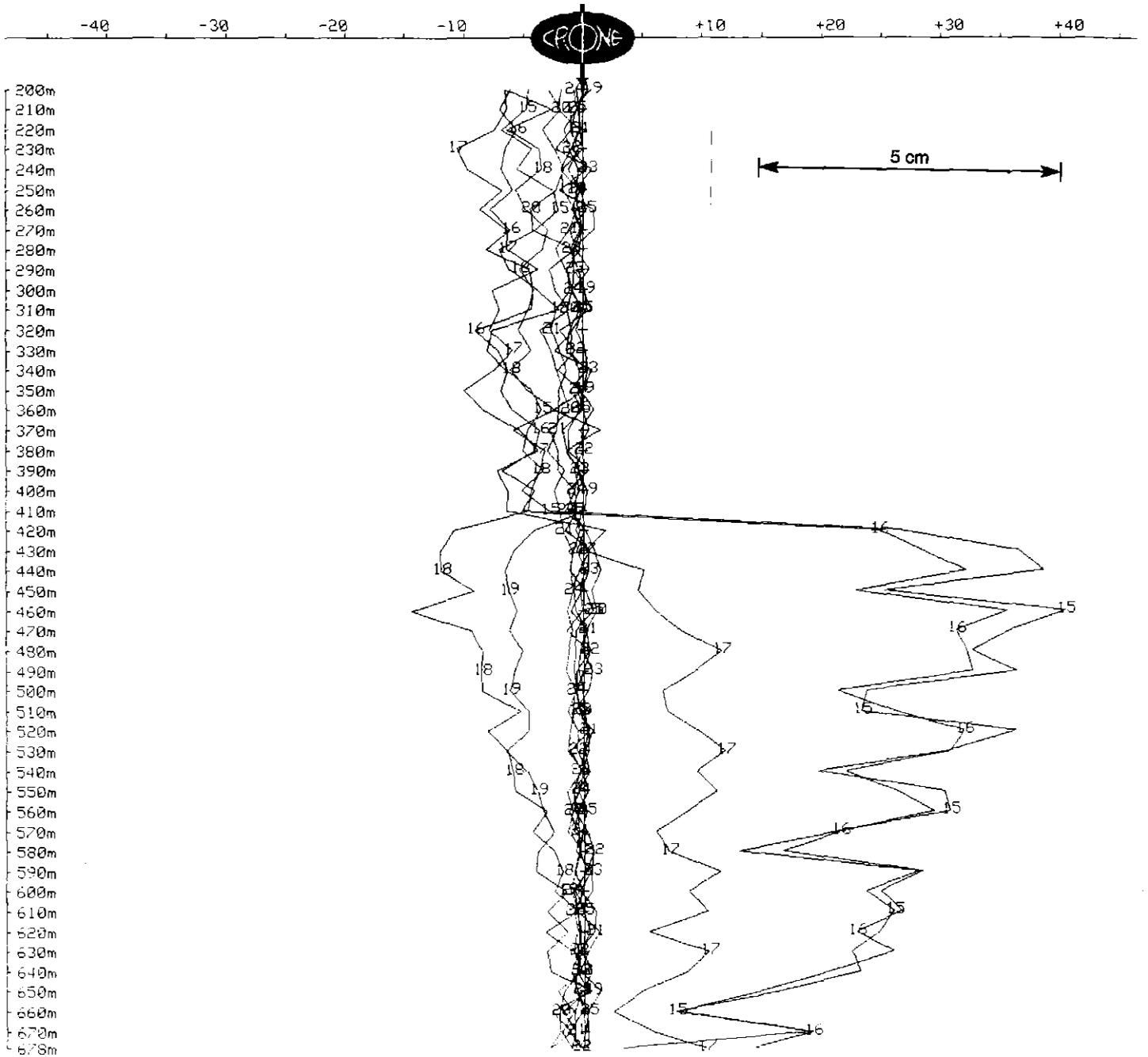
534120

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels

Scale: 1:3000

Unit Scale: 1cm = 5 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

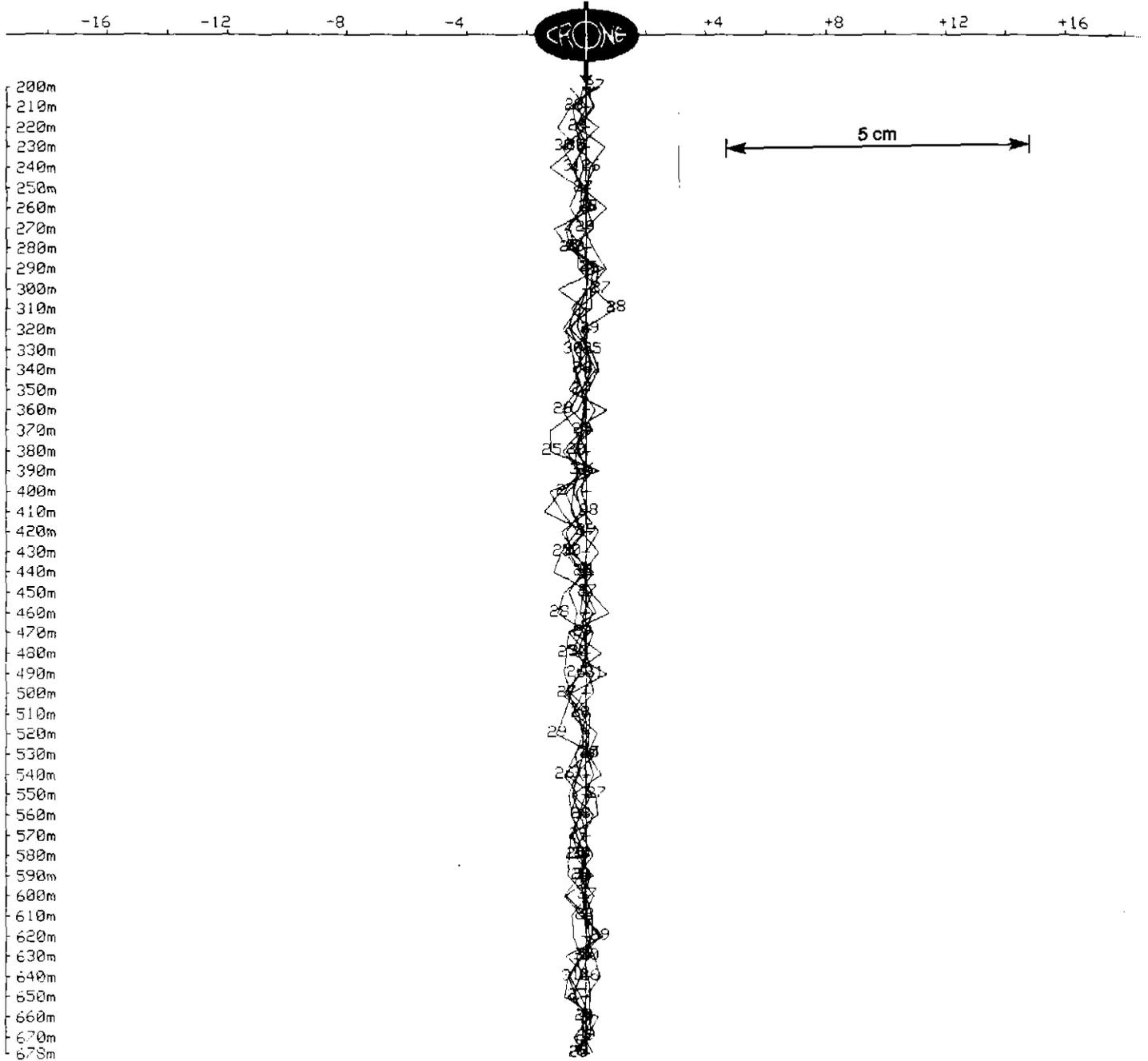
584121

Client : Goldfields Exploration P/L Hole : SHD-16
Grid : South Henty Tx Loop : #1
Date : May 28, 1998 File name : SHD16XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
Y COMPONENT dBy/dt nanoTesla/sec - 31 channels

Scale: 1:3000

Unit Scale: 1cm = 2 nT



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

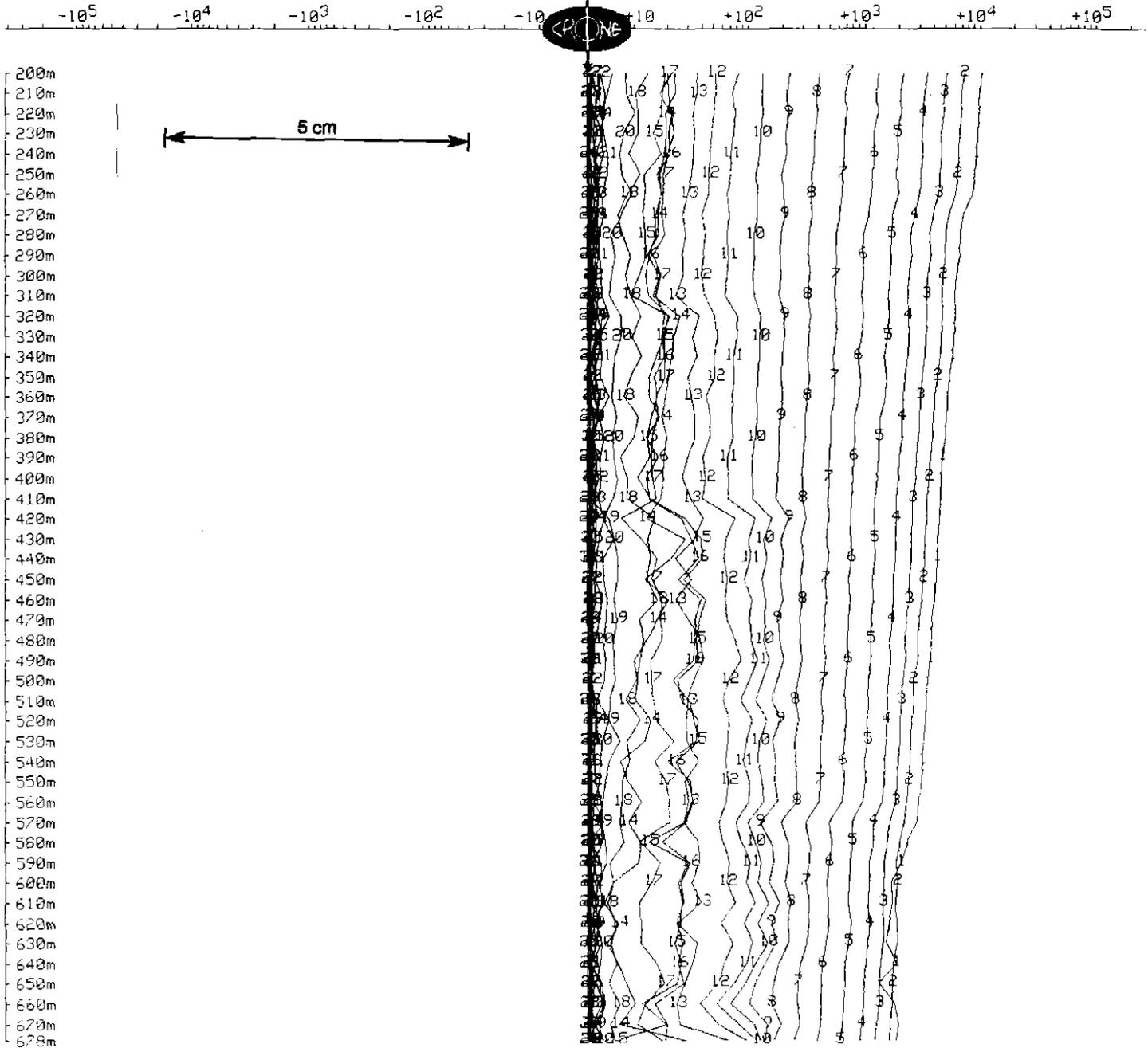
BOREHOLE PEM

584122

Client : Goldfields Exploration P/L Hole : SHD-16
 Grid : South Henty Tx Loop : #1
 Date : May 28, 1998 File name : SHD16XYZ.PEM

TOTAL FIELD dBxyz/dt nanoTesla/sec - 31 channels

Scale: 1:3000



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

534123

Client	: Goldfields Exploration P/L	Hole	: SHD-18
Grid	: South Henty	Tx Loop	: #3
Date	: May 30, 1998	File name	: SHD18Z.PEM
Time Base	: 20.00 ms	# Readings	: 37
Ramp Time	: 0.50 ms	Stn Units	: Metric
# Channels	: 31	Coil Area	: 6500 sq m
Sync Type	: Cable	Polarity	: +
Loop Size	: 300m X 400m	Receiver	: Digital #105
Current	: 16 Amps	Operator	: Al McMillan

Loop Coordinates (X,Y,Z)

1. 380000m, 5.3594e+06m, 0m	2. 380000m, 5.359e+06m, 0m
3. 380300m, 5.359e+06m, 0m	4. 380300m, 5.3594e+06m, 0m

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

1. 380180m, 5.3591e+06m, 0m	2. 309deg, 58deg, 415m
-----------------------------	------------------------

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				

OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

BOREHOLE PEM

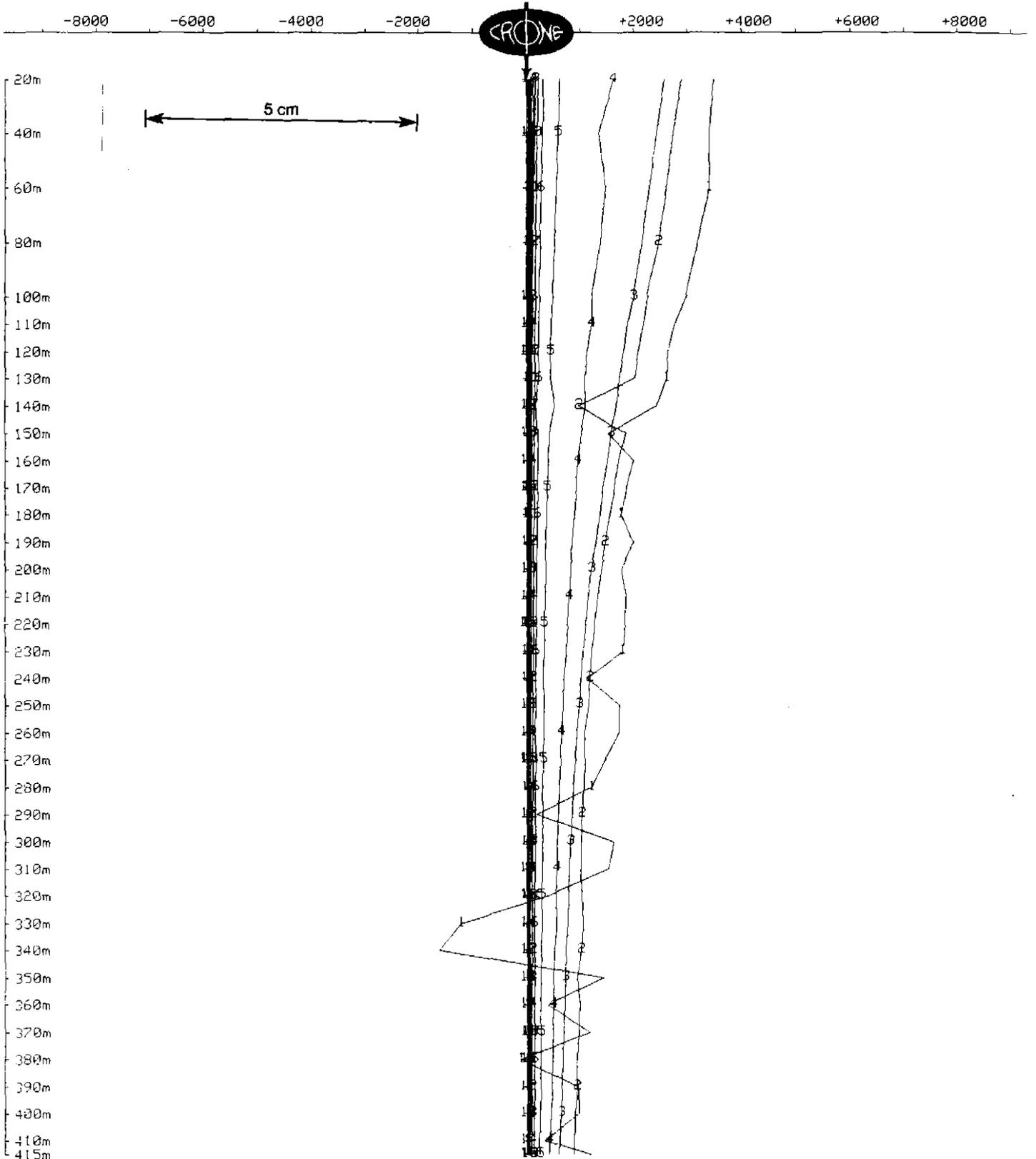
584125

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18Z.PEM

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

Scale: 1:2000

Unit Scale: 1cm = 1000 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

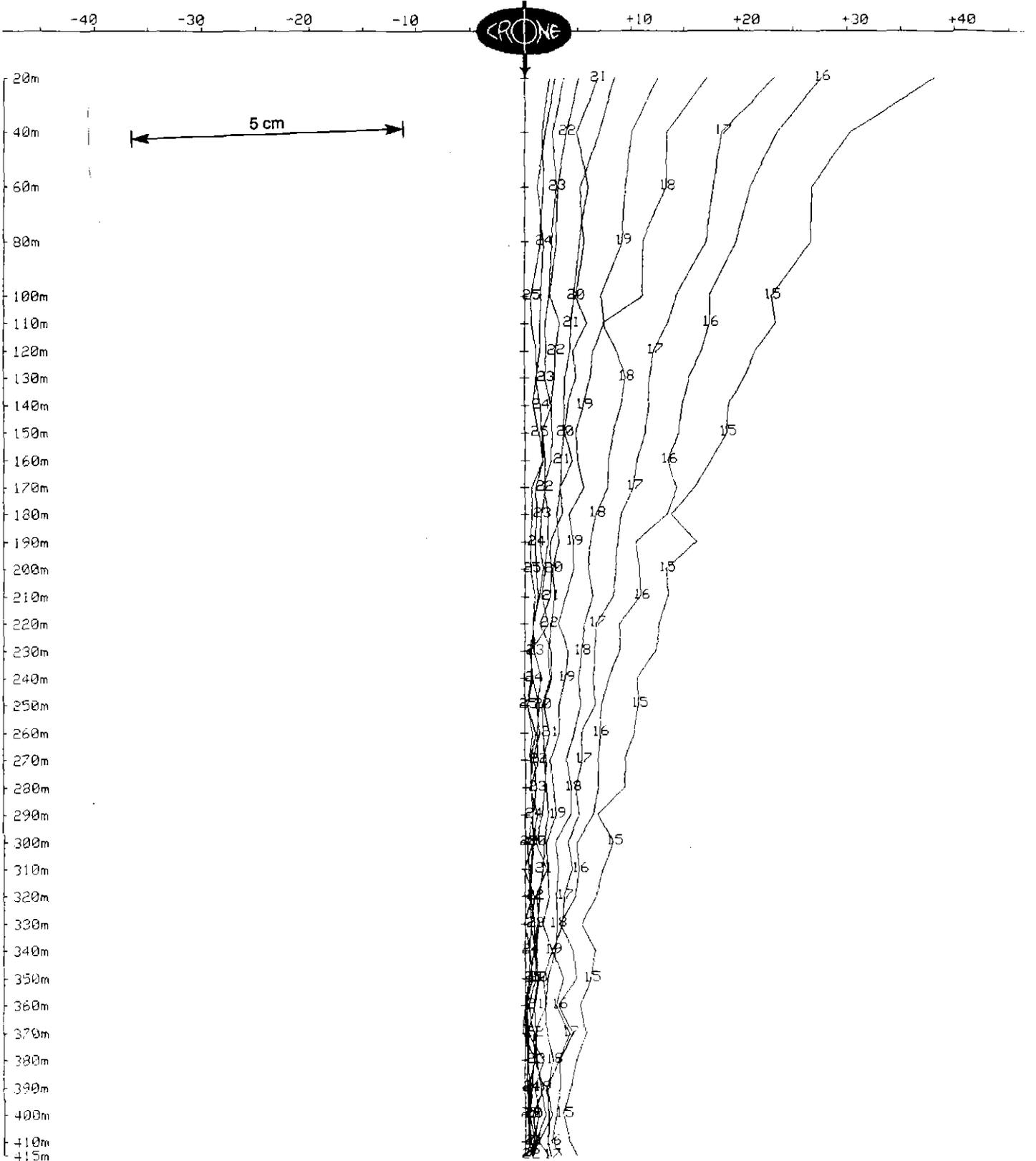
584120
021435

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 5 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

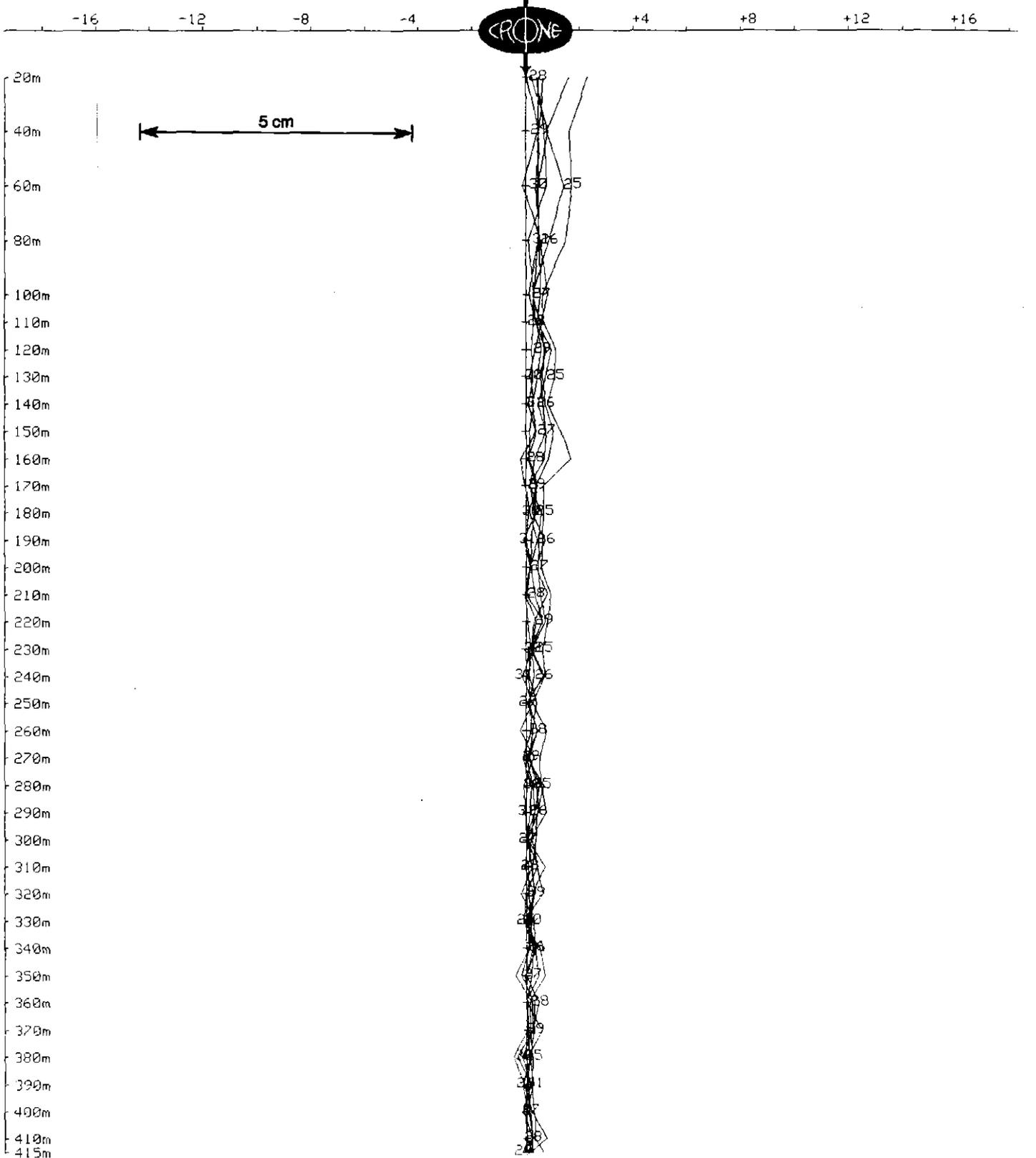
584127

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18Z.PEM

Z COMPONENT dBz/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 2 nT



SERVICES
System

584128

: SHD-18
: #3
me : SHD18Z.PEM

channels
Unit Scale: 1cm = 2 nT

-8 +12 +16

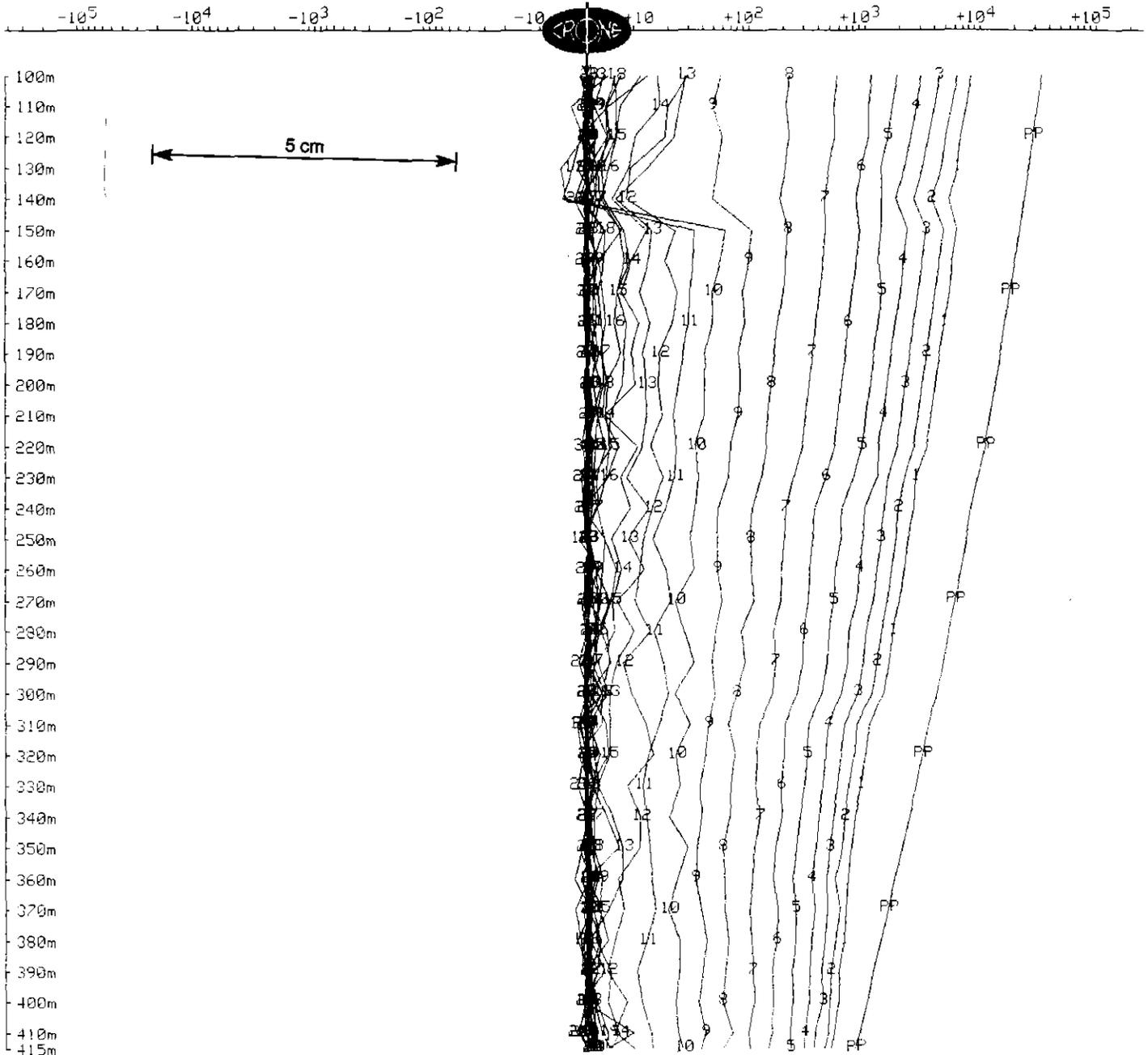
OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

524129

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

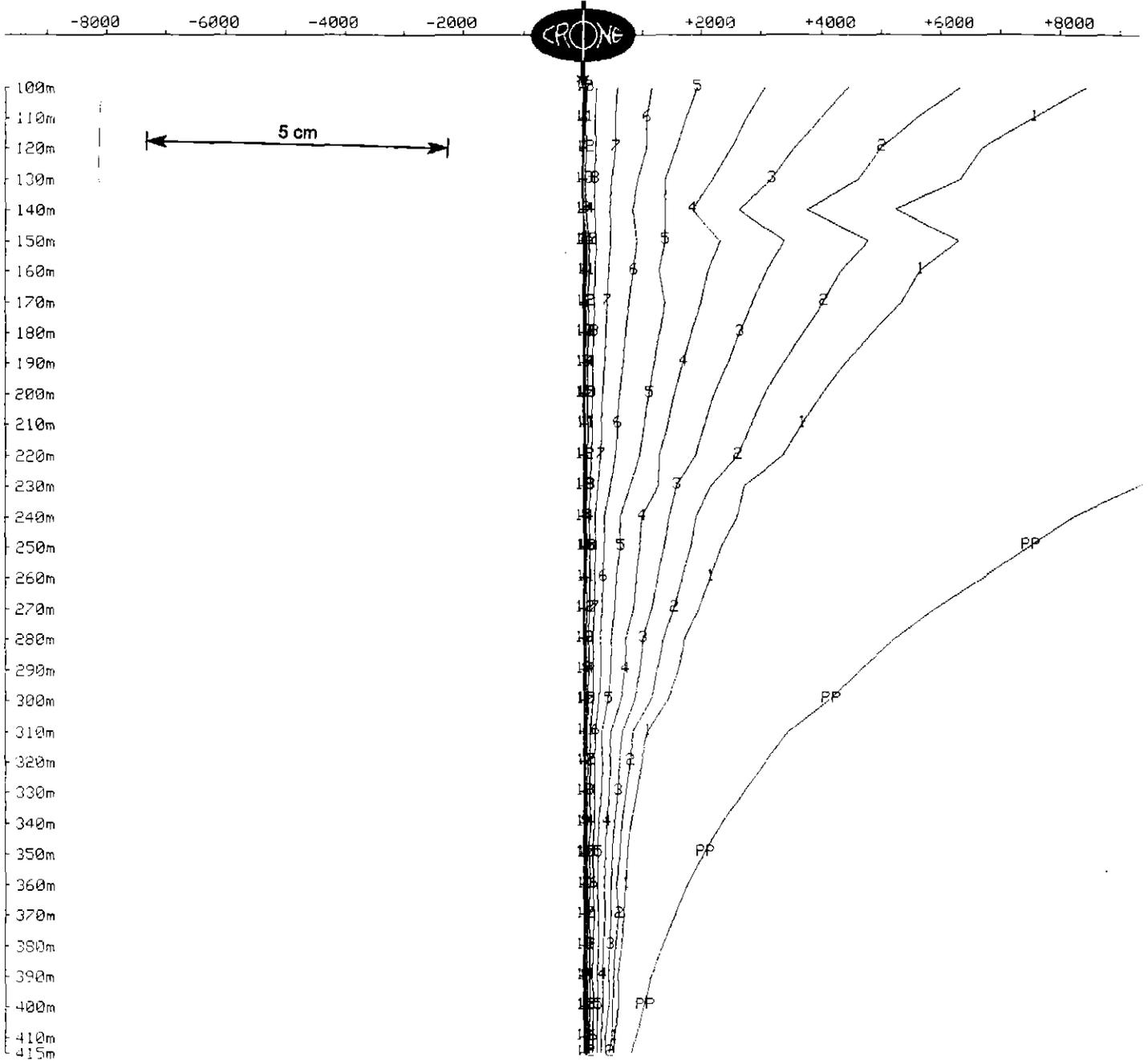
534150

Client : Goldfields Exploration P/L Hole : SHD-18
Grid : South Henty Tx Loop : #3
Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
X COMPONENT dBx/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000

Unit Scale: 1cm = 1000 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

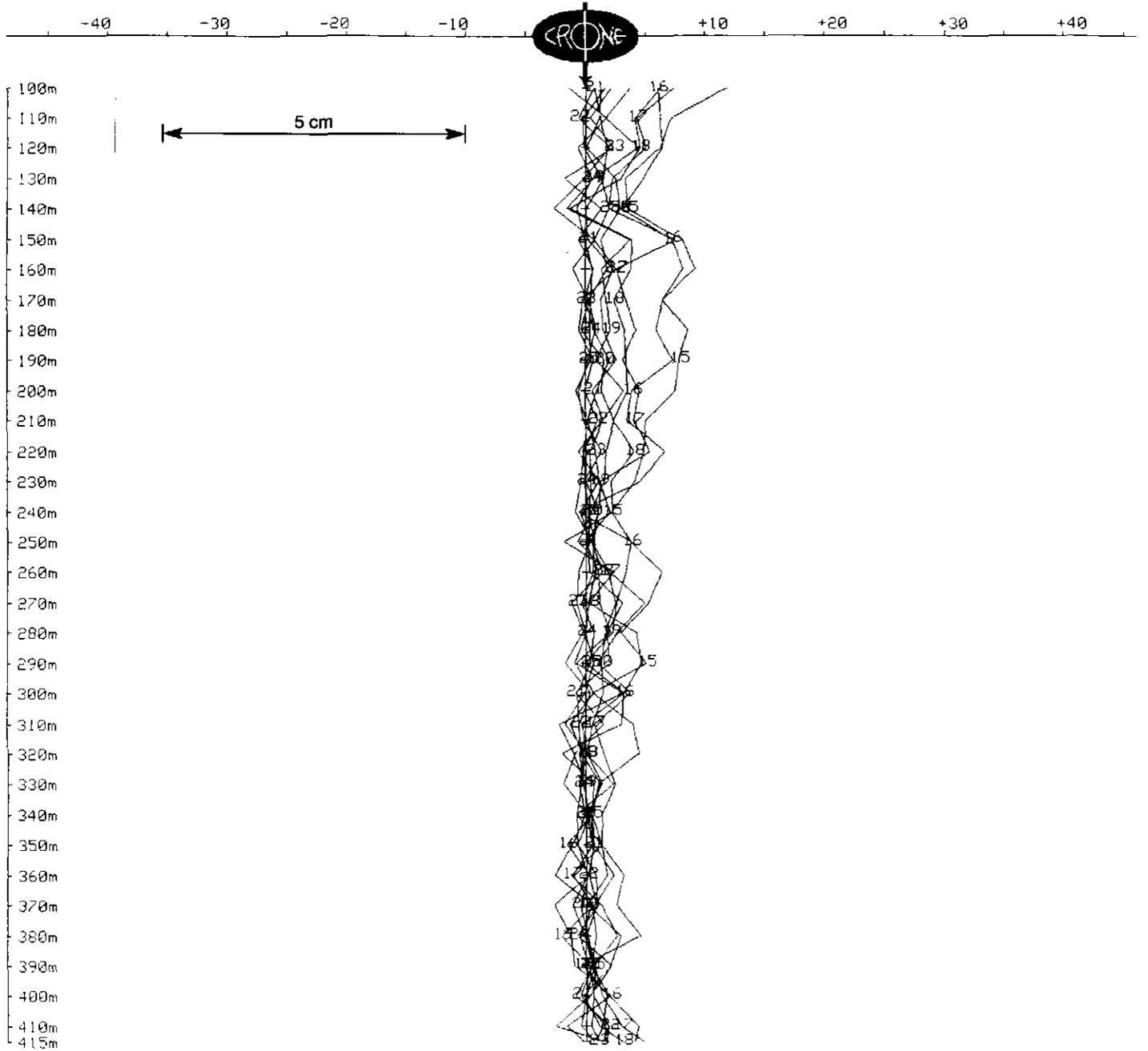
534131

Client : Goldfields Exploration P/L Hole : SHD-18
Grid : South Henty Tx Loop : #3
Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
X COMPONENT dBx/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 5 nT



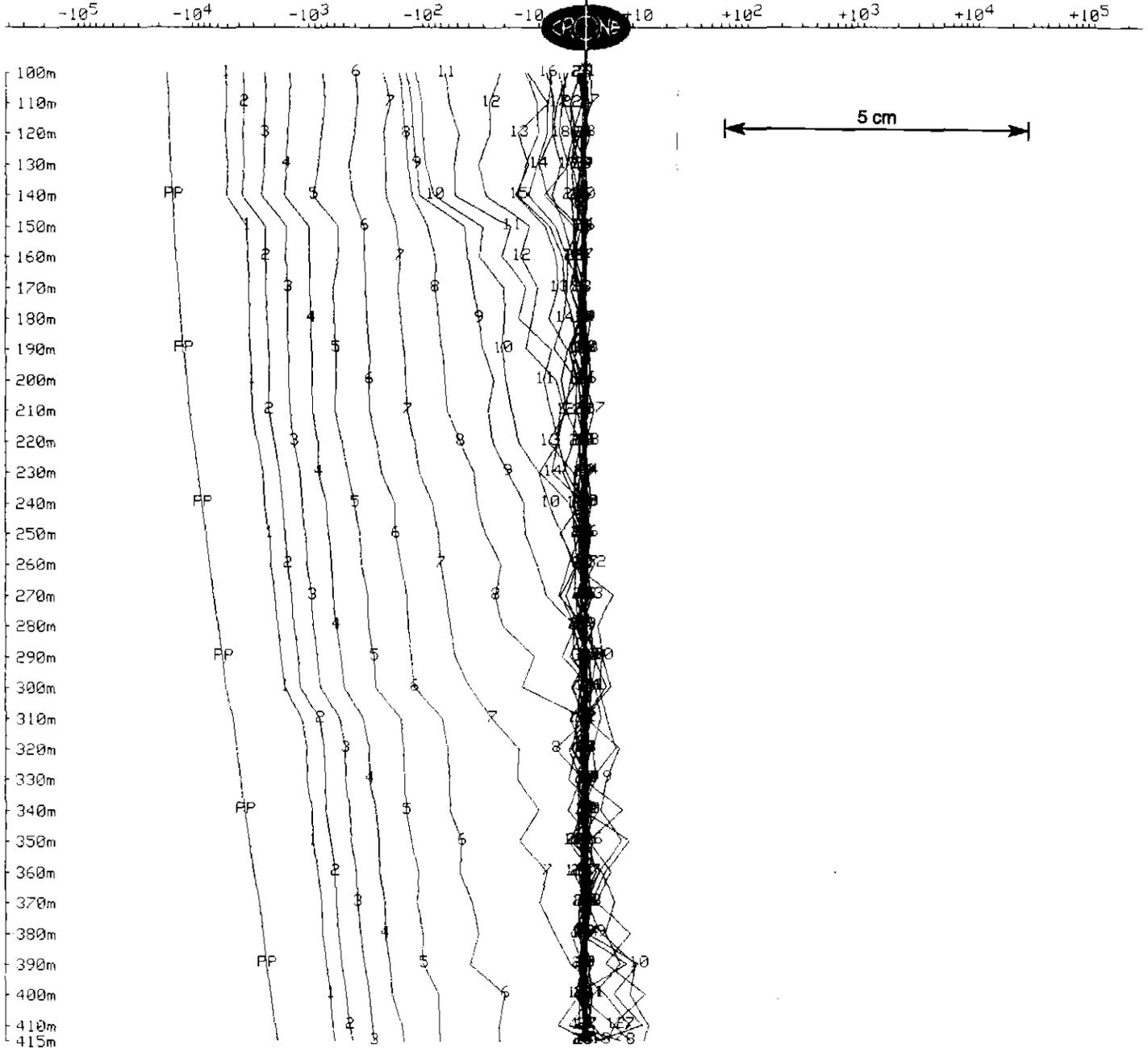
OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

584133

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

584134

Client : Goldfields Exploration P/L Hole : SHD-18
Grid : South Henty Tx Loop : #3
Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
Y COMPONENT dBy/dt nanoTesla/sec - 31 channels and PP

Scale: 1:2000

Unit Scale: 1cm = 1000 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

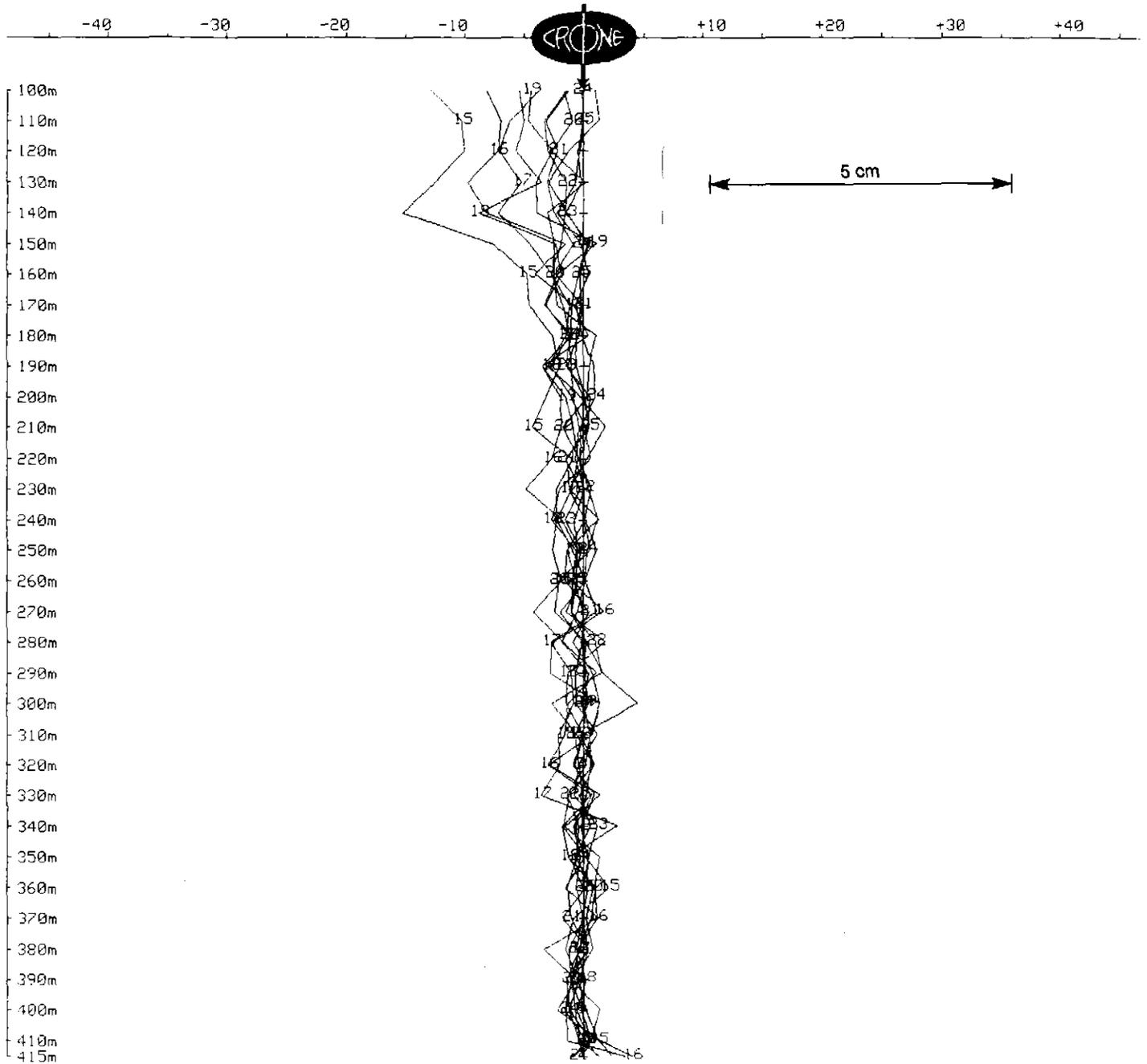
534135

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 5 nT



OUTER-RIM EXPLORATION SERVICES
Operating Crone PEM System
BOREHOLE PEM

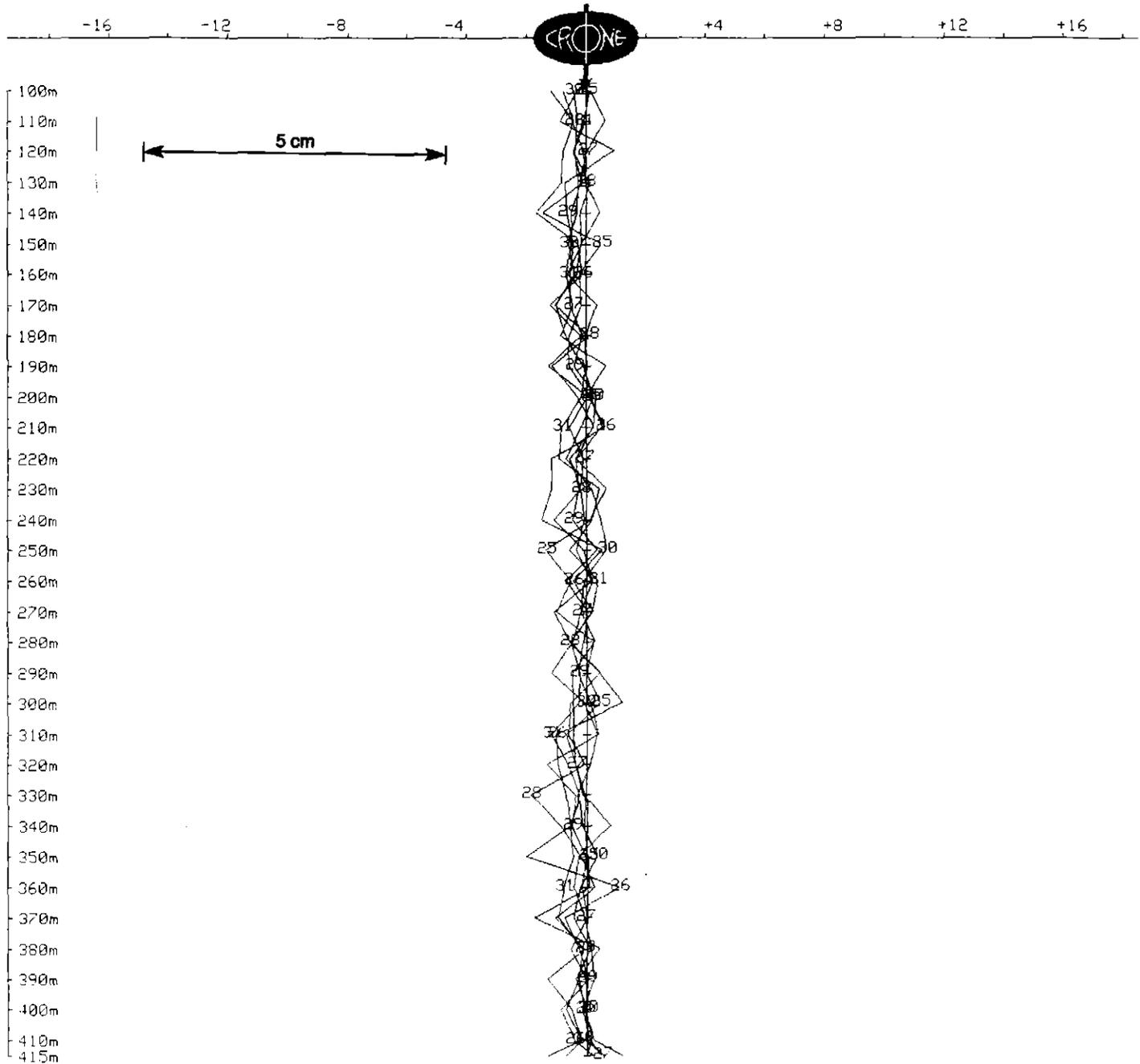
584136

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18XY.PEM

Data Corrected for Probe Rotation using Orientation Tool #2
 Y COMPONENT dBy/dt nanoTesla/sec - 31 channels

Scale: 1:2000

Unit Scale: 1cm = 2 nT



OUTER-RIM EXPLORATION SERVICES

Operating Crone PEM System

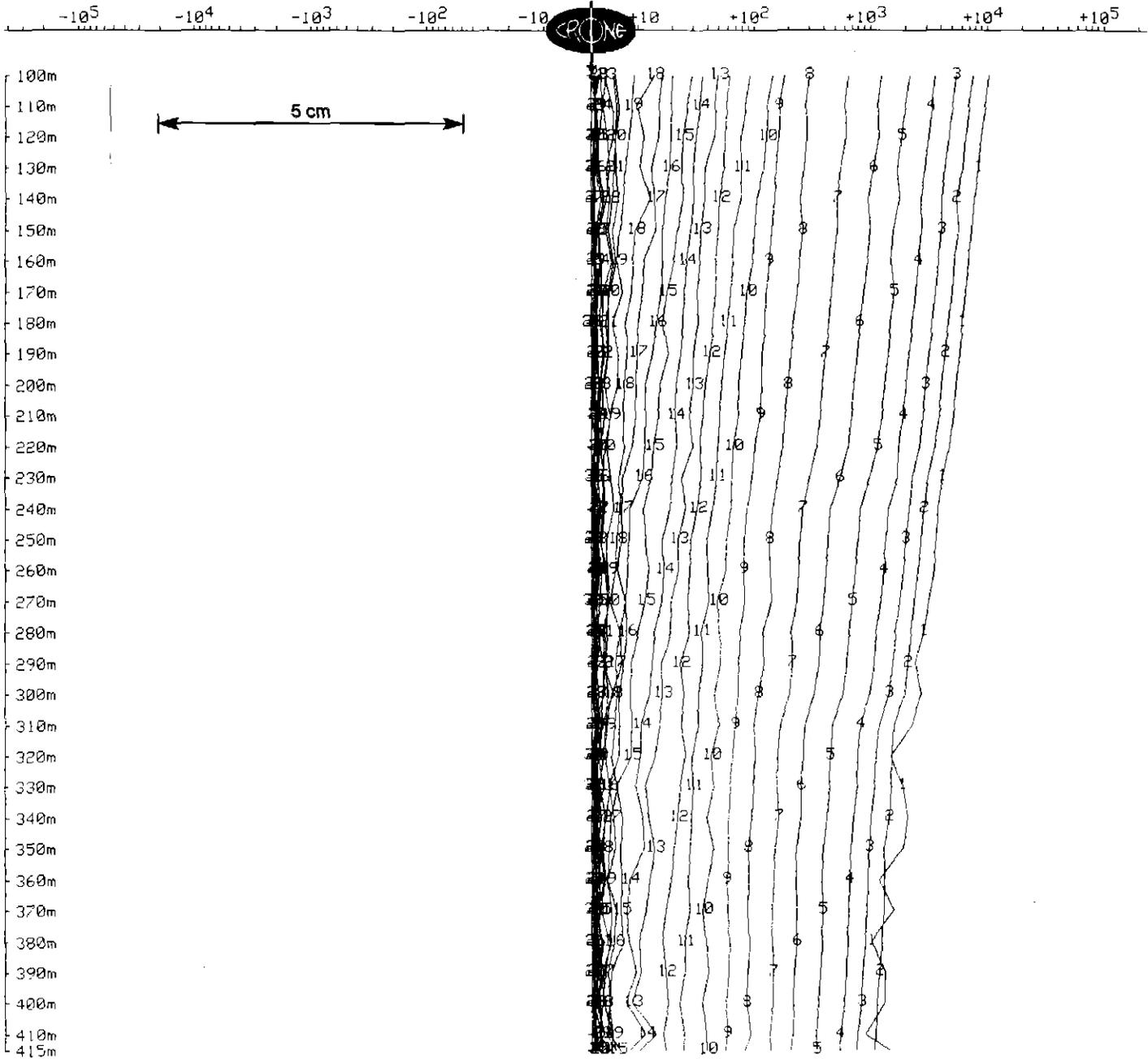
BOREHOLE PEM

584137

Client : Goldfields Exploration P/L Hole : SHD-18
 Grid : South Henty Tx Loop : #3
 Date : May 30, 1998 File name : SHD18XYZ.PEM

TOTAL FIELD dBxyz/dt nanoTesla/sec - 31 channels

Scale: 1:2000





GOLDFIELDS EXPLORATION

GOLDFIELDS EXPLORATION PTY LTD

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524138

TECHNICAL NOTE

goltecs.dot

To : Michael Asten

cc : Michael Vicary, RGC Exploration Information Centre Reference:

From : Chris Dauth

Date : 14 January, 1999

Subject : South Henty DHEM data compilation

INTROCUPTION

This TECHNICAL NOTE has been written to assist with transferring of Goldfields Exploration Tasmanian geophysical project work to out-sourced consultants as a consequence of geophysical staff relocations in the RGC/Goldfields Exploration Perth Group. The purpose of this particular TECHNICAL NOTE is to compile data from down-hole electromagnetic (DHEM) surveys conducted in 1997-98 by Resolute Ltd and Goldfields Exploration in the Tyndall Mine region of the South Henty Project in Western Tasmania. The South Henty Project is a JV between Resolute Ltd (who operated the exploration prior to 1998) and Goldfields Ltd. Goldfields Exploration currently manage the exploration activities. A location diagram (Figure 1) shows the location of the project with respect to the Henty Mine, and other nearby projects operated by the RGC/Goldfields Exploration Group.

DHEM results are provided for six diamond drillholes that were targeted on two prospective horizons, the Spillway Horizon, and the Henty-Comstock Horizon within about a 1km radius at the South Henty Project. These horizons have been identified as prospective for VHMS-volcanogenic gold mineralisation. Intersections have included significant silica-sericite-pyrite +/- chalcopyrite alteration with some associated encouraging gold and minor basemetal mineralisation. Regional geology and drill logs are well documented by Callaghan 1998.

WORK COMPLETED

Drillholes SHD1, SHD2, SHD12, and SHD13 were completed by Resolute Ltd during 1997. DHEM surveys using the CROME PEM three component downhole system were conducted on all holes by OUTER RIM Exploration Services. Three component data utilising two transmitter loop positions were surveyed for each hole. It is the understanding of the author of this TECHNICAL NOTE that J Bishop (of Mitre Geophysics Pty Ltd) was the geophysical consultant acting on behalf of Resolute Ltd with regard to survey design and data interpretation.

Drillholes SHD16 and SHD18 were completed by Goldfields Exploration during 1998. DHEM surveys using the CROME PEM three component downhole system were conducted on both holes by OUTER RIM Exploration Services in 1998. Three component data utilising one

transmitter loop position for each hole were acquired. Surveys were designed by C. Dauth and S. Mudge (in C. Dauth's absence on leave) of Goldfields Exploration.

Transmitter loop location in the West Coast of Tasmania is difficult at the best of times due to problems associated with steep topography and dense vegetation. Surveys at South Henty are additionally complicated due to the presence of Hydro Scheme Water Dams and high voltage overhead electric cables. Transmitter loop locations were severely hampered due to a water storage dam situated relatively central to all of the drillhole collars. Transmitter loop wire was layed out across the surface (by Goldfields Exploration using floats), and within the dam (Resolute) for position of several of the EM transmitter loops. The location of drillhole collars and all utilised transmitter loop layouts is presented in Plan 1. Transmitter loops have not historically been labelled with a consistent naming system that would facilitate a compilation of all results. To avoid any confusion, and hopefully not create more, transmitter loops have been relabelled from their previous names to a chronological numbering system outlined in Table 1. The new names have been labelled in Plan 1.

Table 1. DHEM transmitter loop nomenclature.

Old Tx Name	Re-named Tx	Holes Logged
East	1	SHD1, SHD2
West	2	SHD1, SHD2
1	3	SHD12
2	4	SHD12
13E	5	SHD13
13W	6	SHD13
1	7	SHD16
3	8	SHD18

Drillhole details indicating hole location, depths drilled and logged, and DHEM transmitter loops utilised are tabulated in Table 2.

Table 2. Drillhole details.

Hole	East (AMG)	North (AMG)	RL	Depth Drilled	Depth logged	Tx Loops	Components
SHD1	381000	5358935	485	779	775	1, 2	UVA
SHD2	380335	5358900	485	665	640	1, 2	UVA
SHD12	380360	5358295	490	643	640	3, 4	UVA
SHD13	381300	5358935	510	1051	1045	5, 6	UVA
SHD16	380612	5359380	495	828	678	7	UVA
SHD18	380180	5359100	495	441	415	8	UVA

DHEM survey specifications are outlined below:

System: CRONE PEM 3 component

Contractor: OUTER RIM Exploration Services

Rx Coil Effective Area: 6500m²

Polarity: +ve up in Tx loop

Ramp: 0.5msec

Channels: 17 for SHD12; 20 for SHD13; and 31 for SHD1, SHD2, SHD16, and SHD18

Time Base: 10 msec for SHD12; and 20 msec for SHD1, SHD2, SHD13, SHD16, and SHD18;

It should be pointed out that the CRONE coordinate definition does not comply with that commonly accepted by the author as defined by the axis of the borehole. The CRONE Z component is more commonly referred to as the A (axial) component positive up the drillhole.

The CRONE X component is most commonly referred to as the U component (where U is in the vertical plane pointing upwards at 90° to the borehole axis). The CRONE Y component is most commonly referred to as the V component (which is normal to the plane containing A and U, positive to the left pointing downhole). Reference, Bishop 1996.

RESULTS

A complete report on the Resolute Ltd DHEM results was not able to be located. Some notes on results and modelling of data compiled by J Bishop are "loosely" provided within the Goldfields South Henty geophysical database in the Goldfields Zeehan Office. Brief comments on the results are however included within the annual report to the Mines Department completed for the period 1996-97 by Resolute Ltd, McDonald 1997 (a copy of this report is held by the Goldfields Exploration Zeehan Office).

Results of the Goldfields DHEM surveys at the South Henty Project in 1998 (three holes in total) have been summarised into an internal Goldfields Exploration TECHNICAL NOTE, Dauth 1999.

Data have not been replotted in hardcopy format for detailed interpretation (hence the need for this compilation of data and survey layout to facilitate such a process).

A brief summary of results follows. This section is intended only as an introduction to survey results and should by no means be addressed as a final interpretation.

SHD1 features a broad wavelength negative trending trough in the axial component. It is centred at approximately 500m down-hole for channel 10 (0.328 msec) and migrates down the hole later in time. The cross-over from positive to negative response at about 500m in channels later than CH15 (0.850 msec) should discount "self-response" as the source since the primary field always has a positive axial component for Loop 1. Further investigation is warranted.

SHD2 features a relatively early time short wavelength (about 60m peak to peak) response centred at 270m downhole. The DHEM anomaly is apparent in all three acquired components. Brief discussion with a consultant from Flagstaff Geoscience Consultants (Dr M. Asten) proposed a possible current channelling effect as the anomalous source. Further investigation is warranted. The viability of conducting a down-hole magneto-metric resistivity survey (DHMMR) as a follow-up was discussed.

SHD12 results have no readily identifiable anomalies considered worthy of follow-up.

SHD13 DHEM data feature a similar broad wavelength negative trending "anomaly" in the axial component centred at approximately 600m down-hole to that observed in SHD1.

SHD16 DHEM data exhibit three apparent anomalous responses. The first is centred at about 310m downhole. It is a broad (150m wavelength) negative trending trough in the axial component. This response is very subtle, and a self-response has not been discounted as the source. Further investigation would be warranted. The second DHEM response in SHD16 is very short in wavelength (<50m), and most apparent in the Y (V) component as an early time positive to negative cross-over centred at 560-570m down-hole. This position corresponds with a zone of intense silica-sericite-pyrite +/- chalcopyrite alteration and is interpreted to be attributed to a zone of more massive sulphide accumulation a short distance off-hole to the north-west. The response is very subtle in the Z (A) component, and difficult to distinguish in the X (U) component. The source is most likely too small to be of exploration interest. The third

anomalous DHEM response in SHD16 is observed as a mid-channel (channels 12-18) migration from positive to negative polarity readings towards the bottom of the hole. Primary field observations discount the possibility that this could be attributed to probe "self-response". The lack of corresponding identified response in the X (U) and Y (V) components, and the very broad wavelength (> 300m) make interpretation of the source very difficult. The nature of this anomaly is very similar to that observed in SHD1 and SHD13 and requires adequate explanation.

No DHEM anomalies worthy of further investigation were detected in the results from SHD18.

DIGITAL DATA

Digital data provided on floppy disks in the sleeve of this report have been separated into three file sets for each hole.

1. RAW format files. These are the raw CRONE instrument output dump files in ASCII format.
2. PEM format files. These are processed CRONE DHEM format ASCII files.
3. TEM AMIRA format files. These have DHEM data sorted into a clean column delimited ASCII format, most suitable for re-plotting (Goldfields Exploration drillholes SHD16 and SHD18)
or
3. XYZ ASCII column delimited format files, again most suitable for data re-plotting (Resolute drillholes SHD1, SHD2, SHD12, and SHD13).

REFERENCES

Bishop, J. R., 1996, Introduction to the special volume on DHEM, Exploration Geophysics, 27, 37-39

Callaghan, T., 1998, Annual Report Tasmanian Gold Project EL8/96 South Henty, Goldfields Report to the Department of Mineral Resources Tasmania, Internal Report No. 1603-9801

Dauth, C., 1999, DHEM on SHD15, 16, and 18, South Henty Project Internal Goldfields Exploration TECHNICAL NOTE

McDonald, G., 1997, EL 8/96 South Henty, Annual Report on Exploration, June 96 to June 97, Resolute Ltd (unpublished)

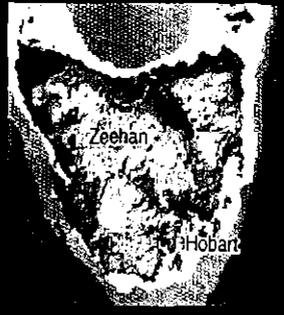
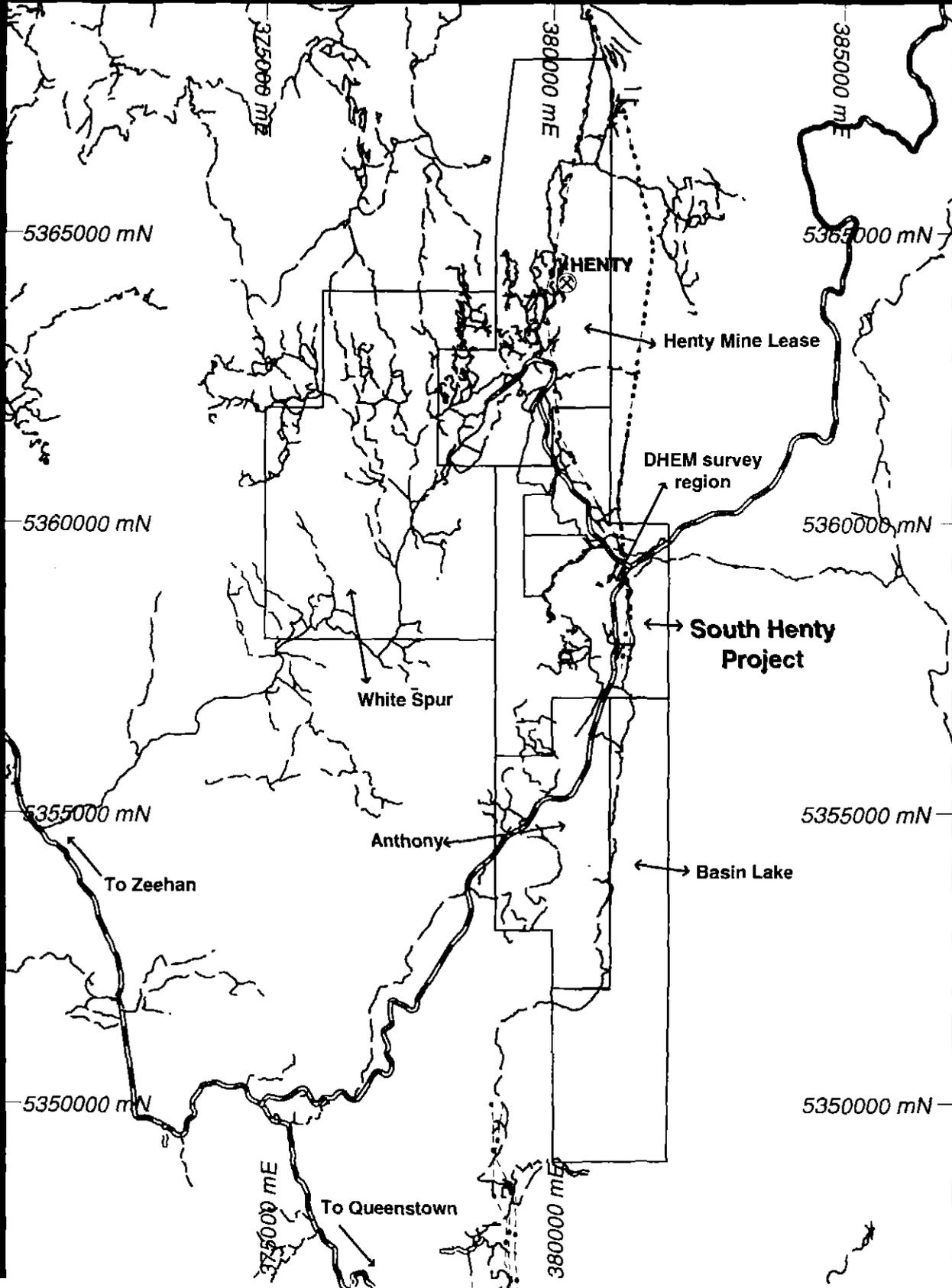
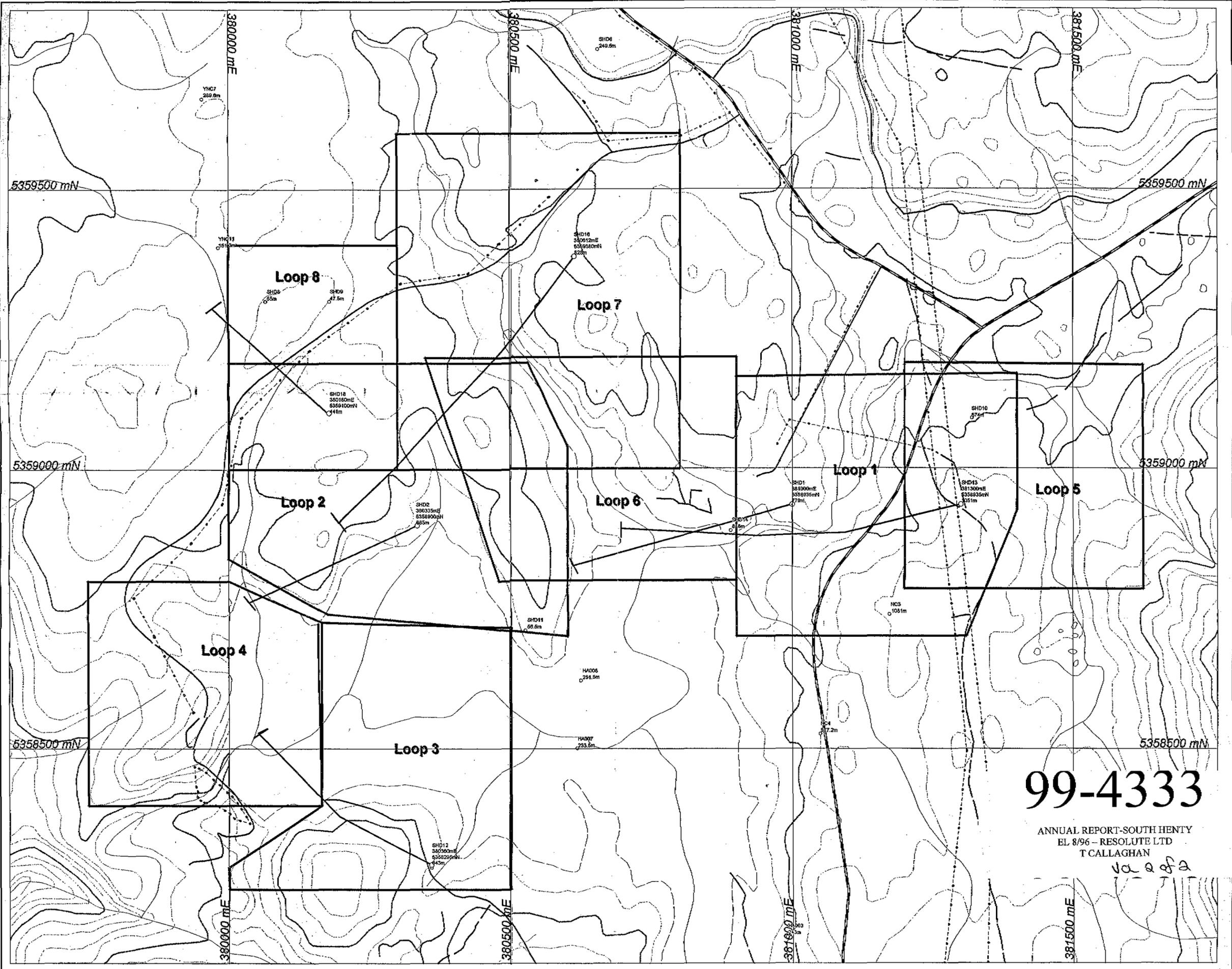


Figure 1. Location Diagram





99-4333

ANNUAL REPORT-SOUTH HENTY
EL 8/96 - RESOLUTE LTD
T CALLAGHAN

va 2 of 2



Scale 1:5,000
Distances in metres
Projection: UTM
Datum: AGD84
Zone: 55

584143

GOLDFIELDS EXPLORATION
Plan 1.
South Henty Project
Tyndall Mine Region
Down-hole EM Surveys 1997-98
Transmitter Loop Layout
Topography and Cultural Effects
Compiled by C Dauth January 1999

584144

Flagstaff GeoConsultants



FACSIMILE TRANSFER

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

To: Tim Callaghan

From: M Asten

Attention:

Date: 27/4/99

Fax No.:

No. of pages 3 (including this page)

ANY QUERY ABOUT THIS TRANSMISSION, PLEASE CALL (03) 9421 1000
OR FAX (03) 9421 1099

Borehole EM South Henty

I have made a first-pass study of the existing data, as a part of designing the survey for hole SHD19. My comments are preliminary, in that I do not have sections or survey files for the boreholes (other than your sketch for holes 2&16) and hence actual locations down-hole cannot be estimated. This preliminary study uses axial DHEM data only; the X and Y component DHEM data has useful additional information but needs to be reviewed with borehole survey data in hand.

The data contains strong primary-field signatures (a consequence of the resistive host), and is noisy at the late sample times where off-hole signatures are most likely to be detected. I have used proprietary filtering procedures to reduce the noise levels and enhance what I believe to be interesting conductor responses.

I would like to discuss the recommendations with you in the light of total known geology and structures for the area.

Hole SHD2

Moderately conductive zone is intersected at about 230 m and extends below the hole in the zone of py-cpy-ser-silica alteration. A stronger conductor appears to lie below the hole at 600 m depth which deserves additional DHEM logging to characterise it.

Recommendation: Log SHD2 with loop 9 (west of loop 4) to confirm/characterise the above conductors.

Hole SHD16

Some suggestion of an offhole conductor beyond the end of the hole. This is consistent with the conclusion re hole SHD2.

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Hole 16 also shows a weak off-hole conductor at 300m depth; is there possibly a conductor within the porphyry?

Hole SHD12

Evidence for a conductor near base of hole and dipping west (not east). Needs further study – it may be worth re-surveying this hole with DHEM using loop 10 (south of loop 1).

Hole SHD18

No anomalies detectable, even after filtering.

Hole SHD1

Hint of a conductor (after heavy filtering of noise) below and east of the base of the hole, flat-lying. Possibly support from hole 13, but I need a section for these two holes to discuss further. Is it possible for a host horizon to exist this far east? What alteration exists in these holes?

Hole 19

I have designed loops 11 and 12 making use of existing loop tracks and tracks as marked on the 1:5000 map supplied. I note from your cross-section sketch that hole 19 does not reach the py-cpy alteration zone intersected by hole 16, but it does traverse the porphyry, which appears to contain a weak conductor seen from hole 16.

Regards,

Michael Asten
Consulting Geophysicist

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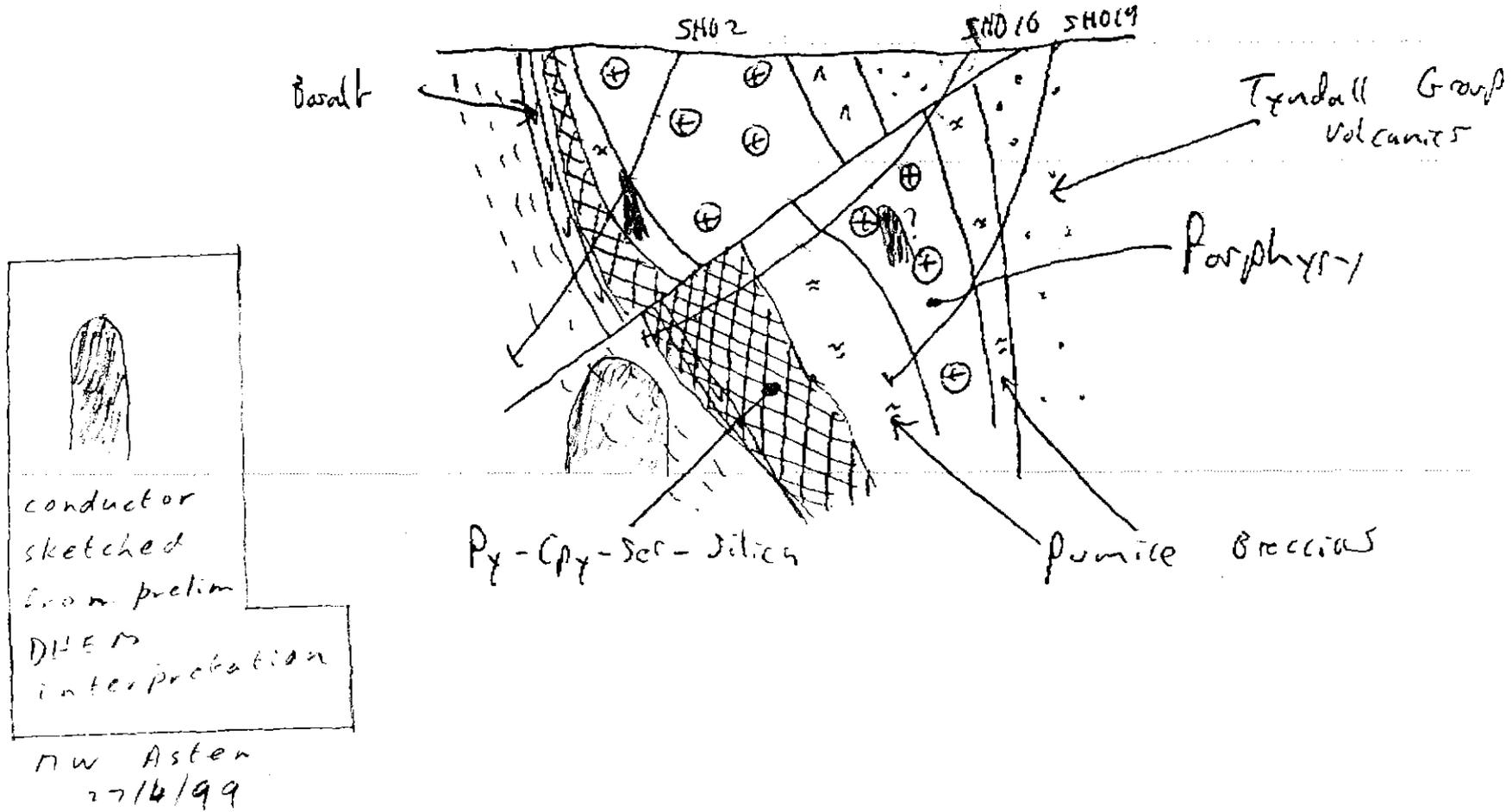
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SHO 19 OBLIQUE Section.



584146

584147

APPENDIX 5

Stn Henty and Mt Julia Sulphur Isotope study, Tim Callaghan, 1999.



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TECHNICAL NOTE

sulphur1.doc

To : Mike Vicary, Scott Halley, Rob Taylor

cc : RGC Exploration Information Centre Reference:

From : Tim Callaghan

Date : 19 May, 1999

Subject : South Henty and Mt Julia Sulphur Isotopes

INTRODUCTION

During June 1998 fourteen samples from Mt Julia and Sth Henty were submitted to the University of Tasmania CSL for analysis of stable isotopes of sulphur. The aims of the investigation were to:

- 1) Signature the sulphur in the deposits and provide an idea of the fluid source and depositional processes.
- 2) Identify zonation patterns that may provide useful vectors to aid exploration for high grade parts of the system.

Samples were selected from drillcore intersections and the sulphides for analysis marked before despatch. Table 1 lists sample locations, sulphide types, a brief description of the samples and the $\delta^{34}\text{S}$ value obtained for each analysis (reported in ‰ CDT).

Location	Sample ID	Depth (m)	Grade (g/t)	Sulphide Type	$\delta^{34}\text{S}$ (‰)	Description
STHHENTY	1080025	SHD17	681.10	Pyrite	13.79	Minor Py-Sphal-Gal in dacites.
STHHENTY	1080026	SHD17	655.90	Pyrite	10.98	Minor Py-Sphal-Gal vns in dacites.
STHHENTY	1080027	SHD16	567.50	Pyrite	6.66	Disseminated Py-Cpy in CVC
STHHENTY	1080028	SHD16	661.40	Pyrite	5.96	Disseminated Py-Cpy in CVC.
STHHENTY	1080029	SHD16	704.30	Pyrite	6	Disseminated Py-Cpy in CVC.
STHHENTY	1080030	SHD16	714.30	Pyrite	8.01	Disseminated Py-Cpy in CVC.
STHHENTY	1080031	SHD16	775.00	Pyrite	5.95	Pyrite bands in vitric siltstone.
STHHENTY	1080074	SHD1	676.3	Barite	44.43	Barite vein in altered pumice breccias.
MTJULIA	1080032	MJ005A	913.20	Pyrite	-3.25	Pyrite in MV/MQ.
MTJULIA	1080033	MJ005C	874.00	Pyrite	9.94	MQ with Minor MV, Py
MTJULIA	1080033b	MJ005C	874.00	Chalcopyrite	8.75	MQ with minor MV, Cpy
MTJULIA	1080034	MJ006A	955.70	Pyrite	11.19	MV, Cpy-py rich
MTJULIA	1080034b	MJ006A	955.70	Chalcopyrite	9.83	MV, Py-Cpy rich
MTJULIA	1080035	MJ006B	829.40	Pyrite	7.72	MQ

Table 1. Sample locations, descriptions and $\delta^{34}\text{S}$ analysis.

RESULTS

South Henty

Exploration of the South Henty EL has identified a large, low grade alteration zone within dacitic pumice breccias, dacitic lavas and basaltic andesites of the Central Volcanic Complex known as the Lake Newton Prospect. The alteration zone extends for over three kilometres and may be semi-continuous with the Henty-Mt Julia alteration zone just to the north of the EL and Howard's Anomaly to the south.

The alteration is zoned from an outer halo of pervasive sericite-carbonate, to an intermediate zone of sericite-carbonate-pyrite, to an inner halo of sericite-silica-pyrite. Sulphide mineralisation is also well zoned with disseminated, blebby and vein style pyrite-sphalerite-galena associated with the outer carbonate halo, pyrite with the intermediate zone and pyrite-chalcocopyrite-gold within the inner halo. The sulphides are disseminated and constitute approximately 1-5% of the sulphidic alteration facies. Figures 2 and 3 demonstrate the alteration zonation and antipathetic relationship between Zn and Cu sulphide mineralisation respectively.

Sth Henty Oblique Section

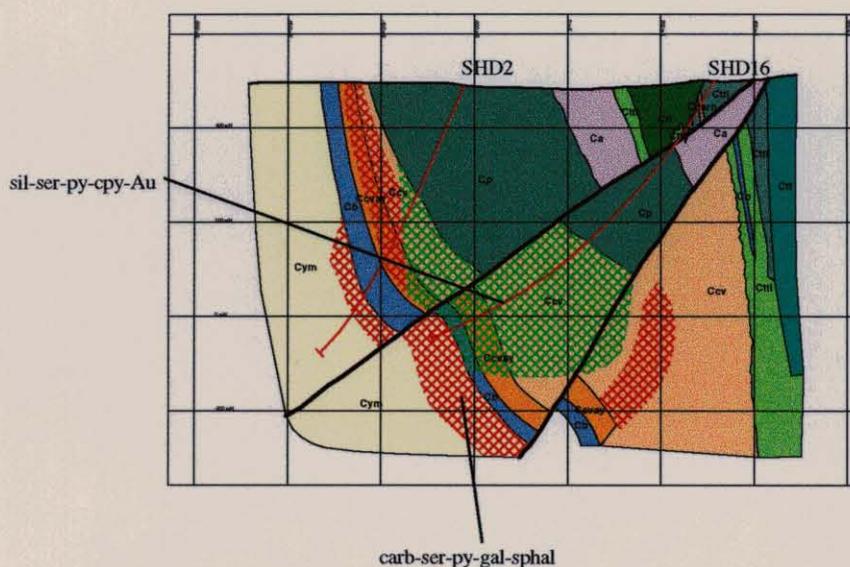


Figure 2. Schematic section of South Henty alteration zonation.

The outer halo has been extensively drilled by Pasminco and Resolute Ltd, but so far there is only one significant intersection of the inner silica-sericite-pyrite-copper-gold zone (SHD16). The alteration system has many similarities with some of the Mt Lyell deposits, particularly Western Tharsis as is documented in the 1998 Annual Report for the South Henty EL (Callaghan, 1998a).

The sulphur isotope samples associated with the outer halo were obtained from pyrite samples in drillhole SHD17. A barite sample from the outer halo was taken from SHD1. Samples from the inner zone were obtained from pyrites in SHD16.

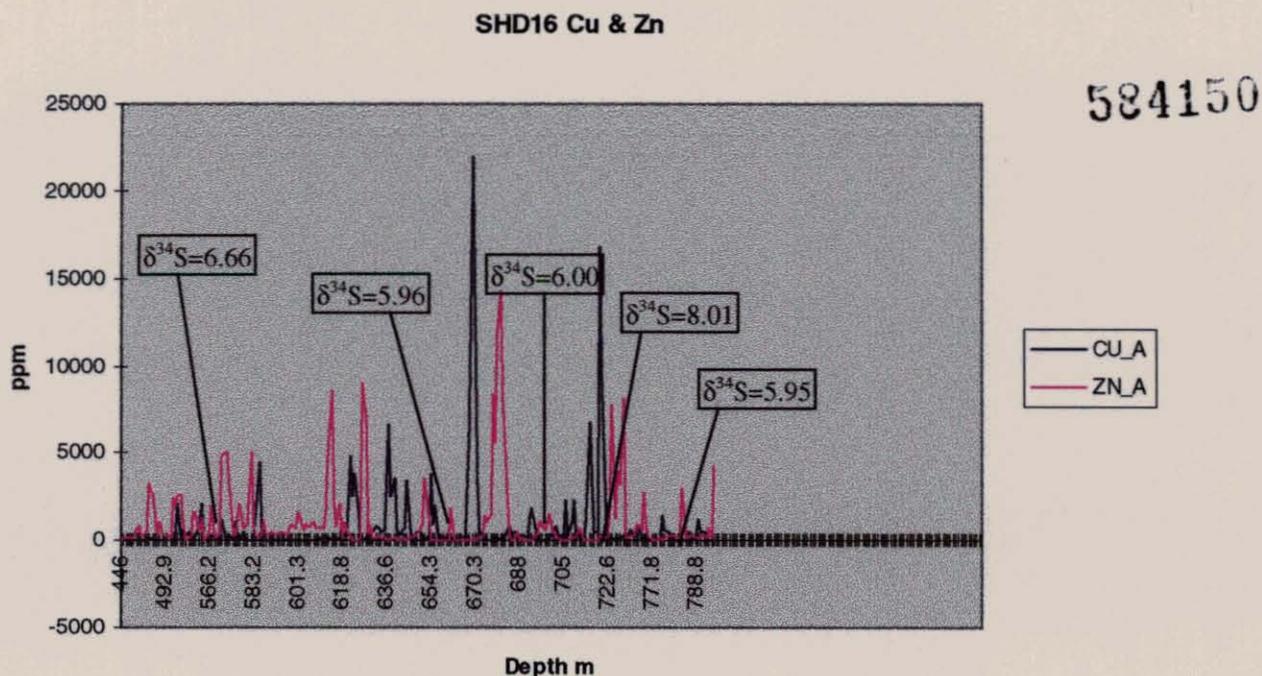


Figure 3. Antipathetic relationship between Cu and Zn sulphides in SHD16. Sphalerite occurs with carbonate-sericite-chlorite alteration and chalcopyrite is associated with silica-sericite-pyrite alteration.

The alteration system crosscuts the stratigraphy of the CVC but is mainly concentrated in dacitic pumice breccias and coherent dacites of the Newton Creek Dacites.

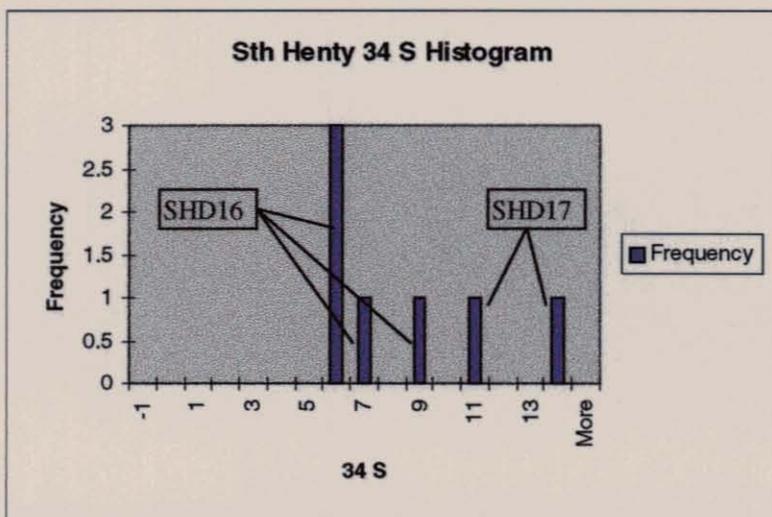


Figure 3. Histogram of $\delta^{34}\text{S}$ from Lake Newton Prospect alteration.

The sulphur isotopes sampled vary from $\delta^{34}\text{S}$ of 5.95 to 13.79. The copper-gold zone has distinctly lighter $\delta^{34}\text{S}$ (~6) than the outer carbonate basemetal zone (~12). Only one sample of heavier $\delta^{34}\text{S}$ (8) was obtained from SHD16. This sample was associated with the blebby carbonate alteration more commonly developed in the outer halo.

There are two possible explanations for the zonation of $\delta^{34}\text{S}$ in the Lake Newton mineralisation:

1. The hydrothermal fluid is of VHMS type, dominated by convective seawater. The fluid contains a mixture of reduced Cambrian seawater sulphate and scavenged volcanic rock sulphide, resulting in a fluid with lighter $\delta^{34}\text{S}$ than what would be predicted from straight reduction of Cambrian seawater sulphate. Gemmell and Large (1992), use this model to explain the lighter $\delta^{34}\text{S}$ found in the inner zone of the Hellyer footwall alteration pipe. The heavier $\delta^{34}\text{S}$ of the outer halo (at both Hellyer and Lake Newton) has the typical isotopic signature of reduced Cambrian seawater sulphate (Ohmoto and Rye, 1979).
2. The hydrothermal fluid is of magmatic origin ($\delta^{34}\text{S} = 0$) and demonstrates fluid mixing with reduced seawater sulphate in the zone of deposition and alteration. The lighter $\delta^{34}\text{S}$ of the inner halo suggests a higher magmatic sulphur/seawater sulphur ratio.

Deposition of metals as a result of fluid mixing between the hydrothermal fluid and cooler reduced seawater circulating through the permeable volcanics is apparent from the metal, alteration and $\delta^{34}\text{S}$ zonation using either model.

The single barite sample from SHD1 has heavier $\delta^{34}\text{S}$ (44.43‰) than contemporaneous Cambrian seawater (30‰, Ohmoto and Rye, 1979). Heavy $\delta^{34}\text{S}$ are also noted at both Rosbery (Green et. al., 1981) and Hellyer (Gemmell and Large, 1992). This phenomenon has been attributed to the incomplete reduction of seawater sulphate in the volcanic pile, resulting in partitioning of heavier $\delta^{34}\text{S}$ into the remaining sulphate.

Although the sulphur isotopes do provide a vector towards hotter parts of the system, cheaper and more efficient vectors are provided by alteration mapping and routine analysis for the standard suite of metallic elements. Further sampling may provide subtle vectors but will probably be of more academic interest than of use to exploration.

Mt Julia

Earlier sulphur isotope studies of the Henty deposits have been documented by Yeats, (1989) and Taheri and Green (1992). Studies have not been extended to Mt Julia previously so four samples were submitted along with the South Henty samples as an orientation study. Two of the samples were analysed for both pyrite and chalcopyrite $\delta^{34}\text{S}$.

Most of the sulphur isotopes have the reduced Cambrian seawater signature ($\delta^{34}\text{S} = 8-12$ ‰) with the exception of one sample with a negative $\delta^{34}\text{S}$ of -3.25‰. No obvious trend between $\delta^{34}\text{S}$ and gold grade is evident in Table 2.

BHID	Depth	Mineral	$\delta^{34}\text{S}$	Au g/t	Comments
MJ005A	913.2	pyrite	-3.25	2.9	MV/MQ
MJ005C	874.0	pyrite	9.94	1.0	MQ, minor MV
MJ005C	874.0	chalcopyrite	8.75	1.0	MQ, minor MV
MJ006A	955.7	pyrite	11.19	2.9	MV, cpy-py rich.
MJ006A	955.7	chalcopyrite	9.83	2.9	MV, cpy-py rich.
MJ006B	829.4	pyrite	7.72	8.7	MQ

Table 2. Mt Julia $\delta^{34}\text{S}$ and Au grade.

From the limited sampling conducted it would appear that most of the sulphur is derived from reduced Cambrian seawater. This is consistent with the $\delta^{34}\text{S}$ values for the Zone 96 and Sill

Zone deposits (Yeats, 1989, Taheri and Green, 1991). However the single negative value from MJ005A needs follow up sampling to verify this result. The lower $\delta^{34}\text{S}$ may indicate some magmatic sulphur is present in the system.

DISCUSSION

The similarities of the Henty-Mt Julia alteration system with the Comstock Deposit of the Mt Lyell Field, particularly the alteration facies, volcanic environment and stratigraphic relationships has long been recognised by Goldfields Geologists (eg. Halley and Roberts, 1997). It is becoming increasingly apparent that the copper gold deposits located to the southeast of the South Henty Fault may be related to a regional Cu-Au mineralising event. During the 1980's and early 1990,s VHMS models for Mt Lyell and Henty were favoured (eg. Walshe and Solomon, 1981, Halley and Roberts, 1997) although involvement of magmatic components was considered a possibility. Recent work suggests a stronger magmatic signature to the deposits as evidenced by alteration mineralogy, immobile element geochemistry, stable isotopes of carbon and oxygen, metal zonation and ore mineralogy (Huston and Kamprad, 1998, Callaghan 1998b).

A review of the stable isotopes from sulphides in the Mt Lyell field demonstrates a broad spectrum of results from deposits with possible magmatic sulphur signatures to those with reduced seawater sulphate signatures, to some very negative values (-10) (figures 4-8). Walshe and Solomon (1981) suggest the lower $\delta^{34}\text{S}$ values from some of the deposits could result from higher $\text{SO}_4/\text{H}_2\text{S}$ ratios. The presence of barite in the mineralisation assemblage supports their hypothesis. Alternatively, if a fluid mixing model for the deposits is hypothesised, the results could be interpreted to reflect different seawater/hydrothermal fluid ratios in the depositional environment of the deposits. The mineralogy of the different deposits supports either possibility. Davidson and Kitto, (1997) suggest some of the very negative $\delta^{34}\text{S}$ values found in Cambrian rocks result from partial leaching of igneous sulphur by low temperature, oxidised waters leaving a residuum of light sulphide. This process occurs near surface where Cambrian seawater permeates the volcanic pile. Mixing of magmatic volatiles and fluids with these ground waters could result in the range of $\delta^{34}\text{S}$ found in these deposits.

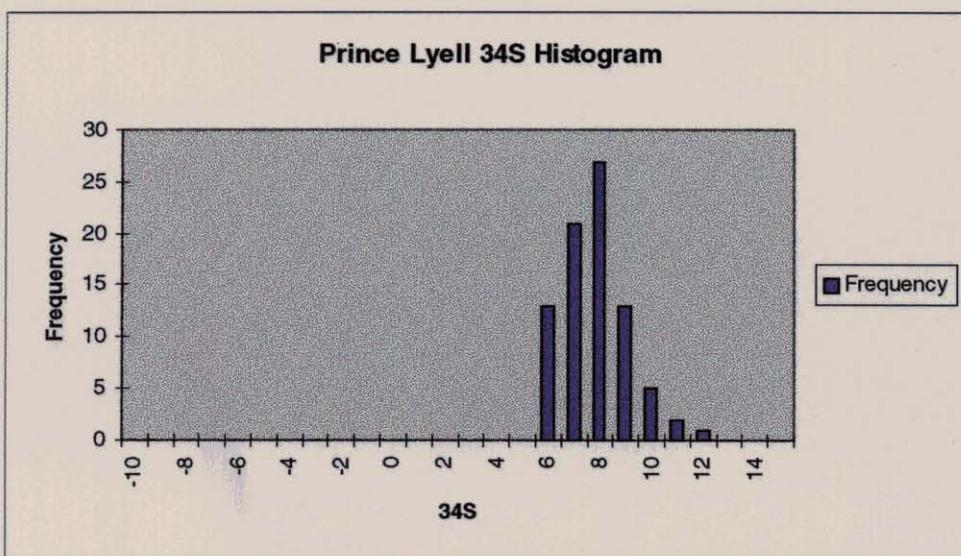


Figure 4. Histogram of pyrite $\delta^{34}\text{S}$ from Prince Lyell. Note similarities with Lake Newton Histogram (data from Walshe and Solomon, 1981).

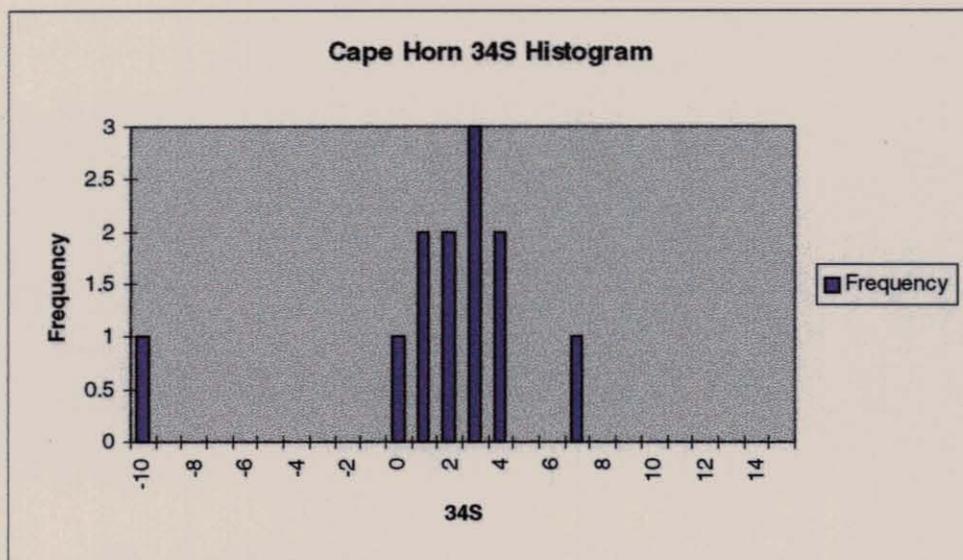


Figure 5. Histogram of $\delta^{34}\text{S}$ from Cape Horn pyrites (data from Walshe and Solomon, 1981). Note that $\delta^{34}\text{S}$ fall within the range of magmatic sulphur values with a slight bias toward positive values suggesting a high magmatic/seawater ratio in the depositional environment.

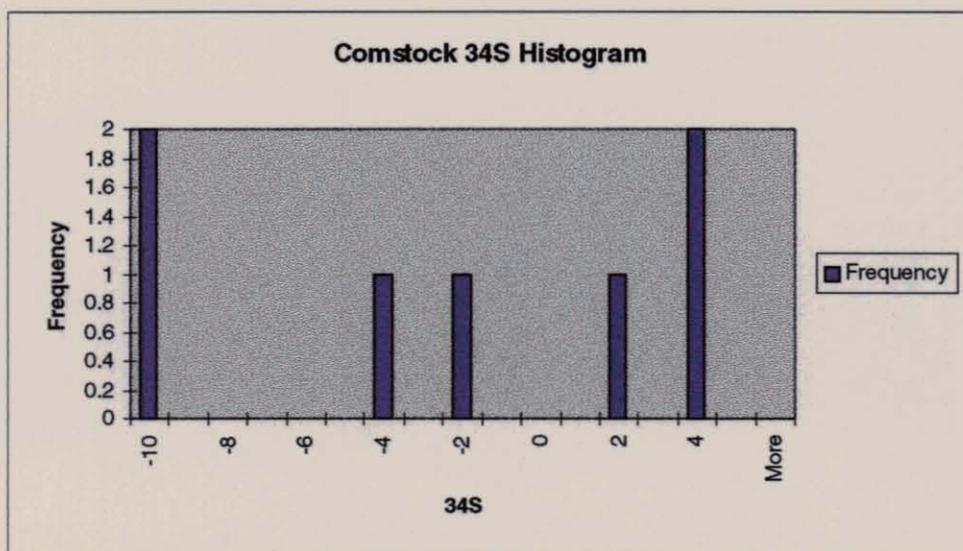


Figure 6. Histogram of $\delta^{34}\text{S}$ from Comstock pyrites (data from Walshe and Solomon, 1981). Note that $\delta^{34}\text{S}$ fall within the range of expected magmatic sulphur values. Negative values result from incomplete oxidation of volcanic sulphur by low temperature, oxidised fluids permeating the volcanic pile. Mixing of these two fluids may be responsible for the deposition of metals in the deposit.

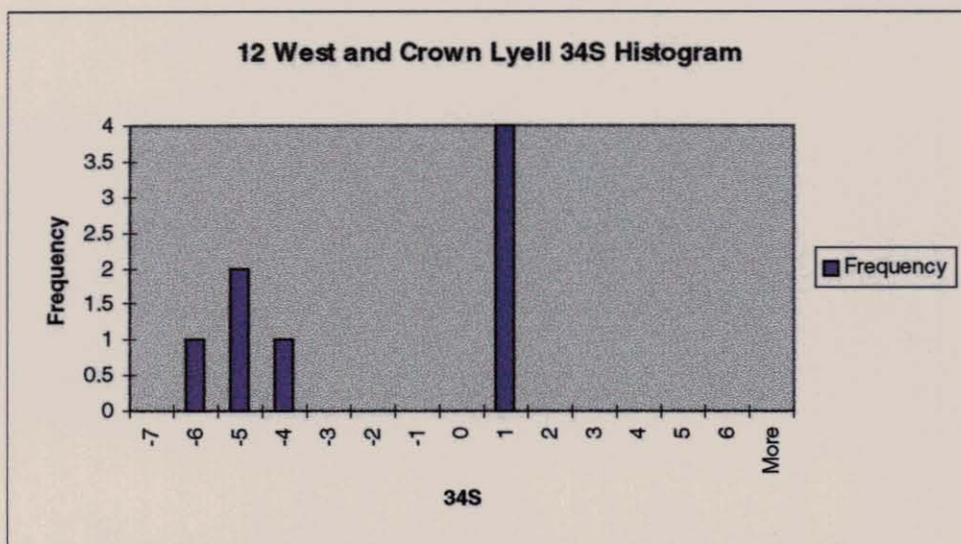


Figure 7. Histogram of $\delta^{34}\text{S}$ from 12 West and Crown Lyell orebodies (data from Walshe and Solomon, 1981). Note that $\delta^{34}\text{S}$ fall within the range of magmatic sulphur values for these orebodies.

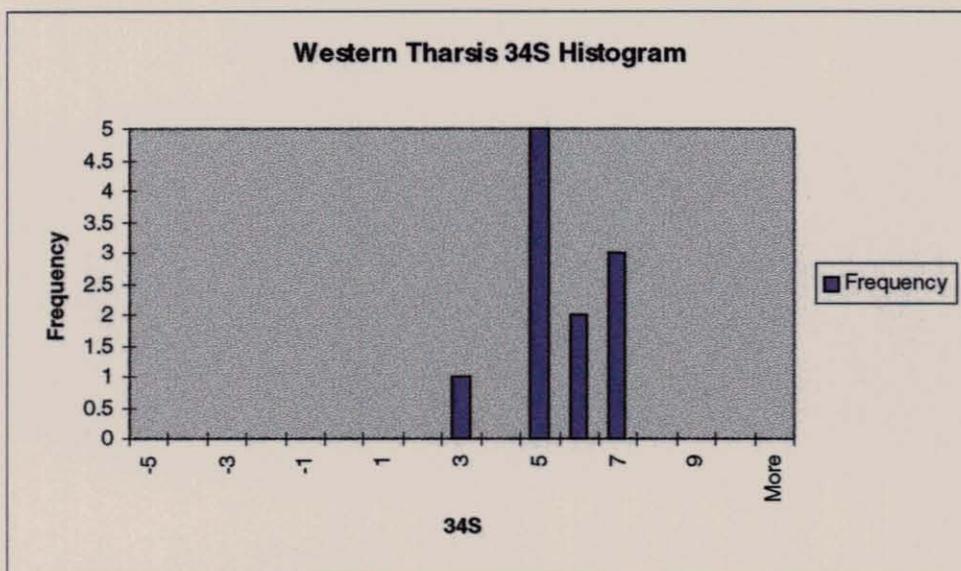


Figure 8. Histogram of $\delta^{34}\text{S}$ from Cape Horn pyrites (data from Walshe and Solomon, 1981). Note that $\delta^{34}\text{S}$ fall within the range of magmatic sulphur values with a slight bias toward positive values suggesting a high magmatic/seawater ratio in the depositional environment.

CONCLUSIONS AND RECOMMENDATIONS

The South Henty, Mt Julia, Henty and Mt Lyell sulphur isotopes suggest these deposits have formed through fluid mixing between magmatic volatiles and brines with reduced Cambrian seawater circulating through unconsolidated volcanics in a submarine environment. This model is

supported by the geological environment, alteration and metal associations, immobile element geochemistry and stable isotopes of carbon and oxygen (Callaghan 1998b, Huston and Camprad, 1998).

Although sulphur isotopes do provide a vector to mineralisation (lighter $\delta^{34}\text{S}$ indicates higher hydrothermal fluid/seawater ratios), alteration mapping and standard metallic element analysis is cheaper and more efficient. Sulphur isotope studies will be of more academic interest than immediate practical use for exploration. It is recommended limited sulphur isotope studies of different styles of alteration within the district be completed as part of sponsored research projects.

A district wide mineralising event with porphyry copper-epithermal characteristics has effected the Cambrian volcanics just prior to and during deposition of the Tyndall Group. Very few ancient submarine epithermal-porphyry style deposits have been recorded in the literature.

This district has the potential to host a variety of deposits including large low grade copper-gold deposits (eg Prince Lyell), high grade copper deposits (eg North Lyell), high grade Henty style deposits and potentially Lihir type deposits. The source of the hydrothermal fluids has not yet been identified but could include any of the complex rock suites found at the CVC/Tyndall Group boundary or even the Cambrian granites occurring just to the east of the mineralised strip of volcanics.

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APPENDIX 6

Sth Henty Alteration Study, Mike Vicary 1999.

South Henty Alteration Study

Introduction

To develop an understanding of the chemical zonation at South Henty a largely reconnaissance geochemical study was completed. This research is aimed at using a variety of advanced relatively low cost analytical techniques to determine mineralogical and geochemical vectors that could be used to locate potential high grade zones of mineralisation within the Lake Newton alteration system. These techniques include:-

- **Trace element abundances in pyrite.**

Pyrite is selectively leached from the sample by digestion in Aqua Regia and analysed for S by Leco, Fe, Cu, Pb and Zn by AAS and Co, Ni and Se by ICP-MS. Variations in trace element concentration will provide a potential "geothermometer" to target high grade areas within an alteration zone.

- **Trace element abundances in carbonate.**

To investigate potential vectors in the outer carbonate zone, samples are digested in hot HCl and analysed for Ca, Fe, Mn, Mg, and Sr by ICP-AES and total C.

- **F content in sericite.**

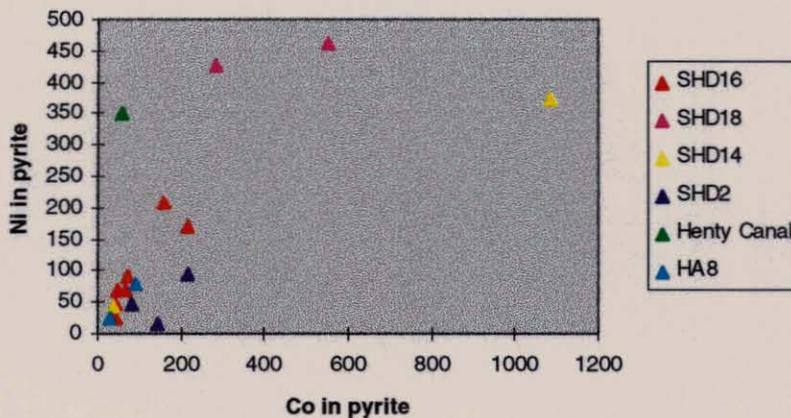
The F content in sericite has been documented as a potential vector for massive sulphide mineralisation (Lavery, 1985 J.Geochem.Explor., V23, pp35-60) but conclusive studies are rare. At Henty Mine fluorite veining is relatively common and is believed to be derived from a primary magmatic source. Alternatively, it has been suggested that the fluorite veining has been remobilised from F rich sericite during Devonian deformation. The F rich sericite are also believed to be sourced from the same magmatic fluid. To date no F analyses have been made at the Henty and the study at South Henty is very much a reconnaissance. Samples are digested in a total acid soluble digest and F analysed by ion specific electrode. Na, Al, Ba and K are analysed by ICP-AES to provide a control on the amount of sericite in the sample.

Results

- **Trace element abundances in pyrite.**

The results for the trace element in pyrite study are tabulated in Table 1. The figure below shows the variation of Co and Ni contents of pyrite from the South Henty EL. The data exhibits a range in both Co and Ni values. The tight cluster of data points below 100 ppm Ni and Co are typical of pyrite from Henty and Rosebery while values greater than this range are more commonly associated with Prince Lyell style mineralisation (Kitto, P.A., Trace element investigation of pyrite: a discriminator for Cambrian and Devonian mineralisation and fault histories. CODES:AMIRA Project P291A - Structure and Mineralisation of Western Tasmania. March 1997 Final Report (Supplementary Report)).

South Henty Alteration Study - Trace metals in pyrite



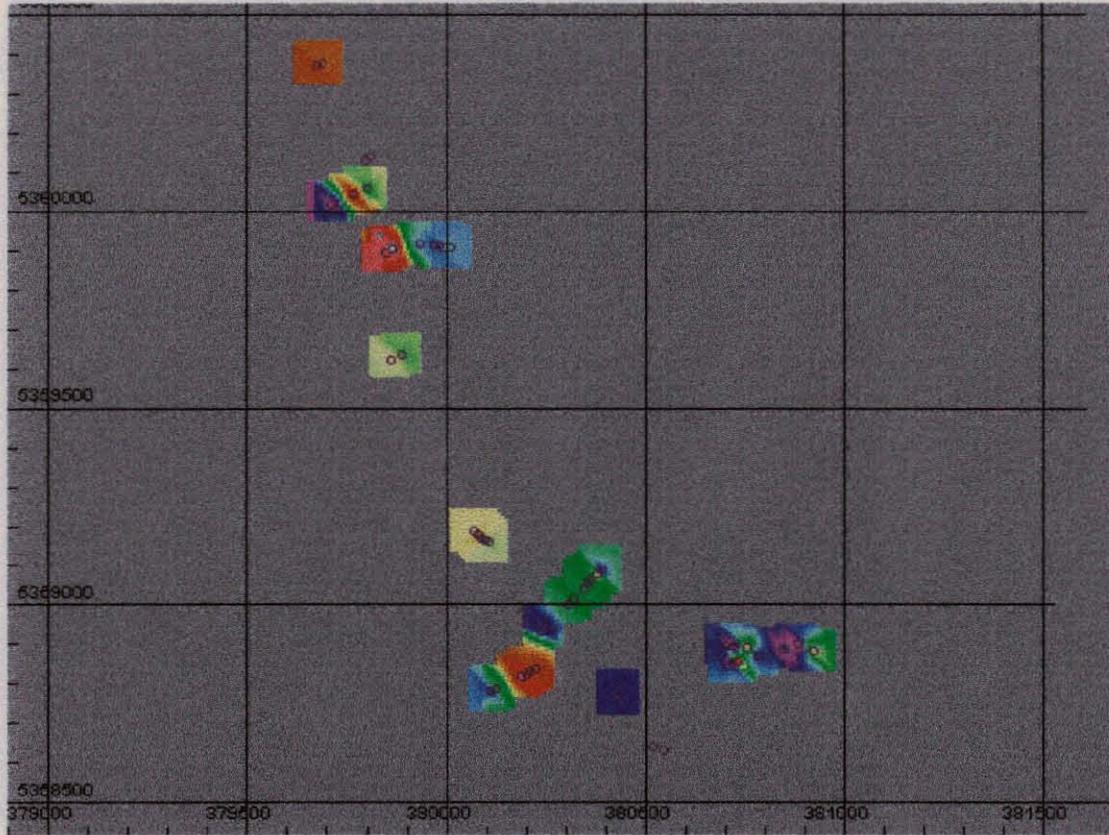
• **Trace element abundances in carbonate**

The results for the 47 carbonate samples analysed for this study are tabulated in Table 2. The data is presented on the following colour images in plan view and long section and on the carbonate triangular plot below.

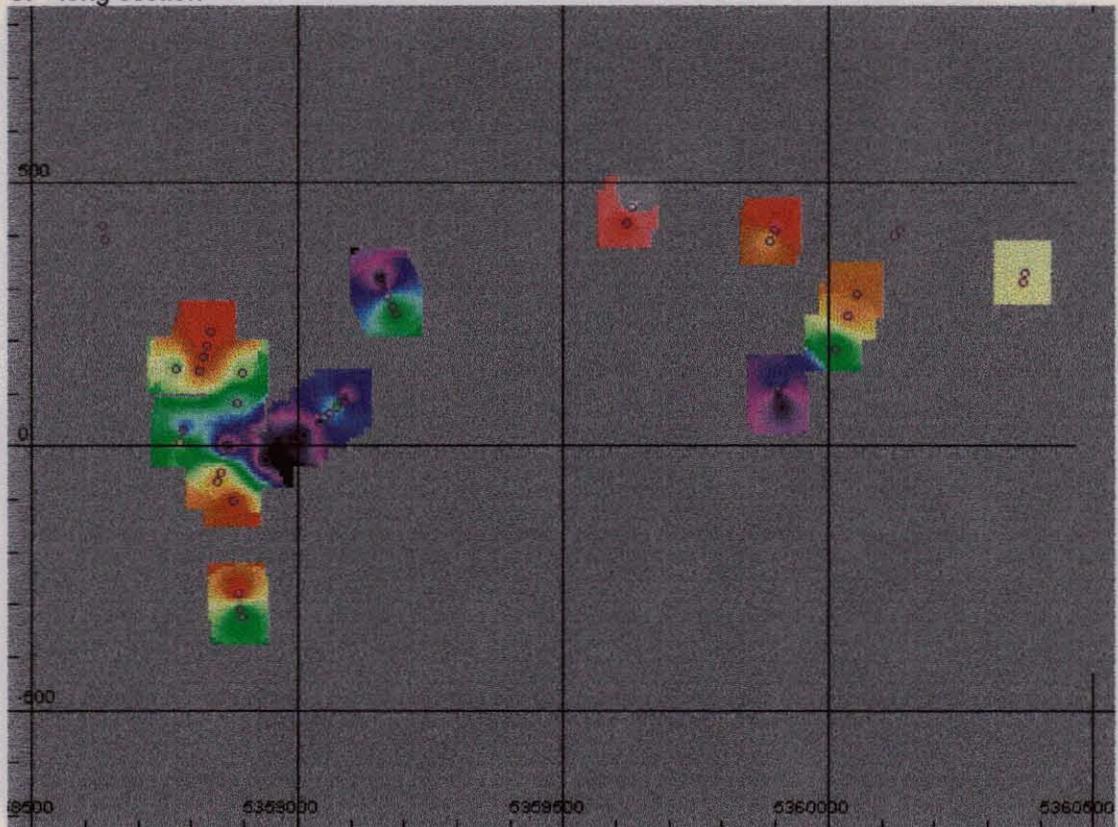
The figures show large scale variation in carbonate chemistry across the Lake Newton alteration system. The most obvious trend is the apparent depletion of Sr and Ca in carbonates in drill holes SHD16, SHD17 and SHD18. SHD16 and SHD2 also exhibit strong Mg enrichment. The Fe and Mn contents of carbonates are generally quite variable and do the reflect the apparent zonation displayed by Sr, Ca and Mg.

The increase in Mg in the carbonate from SHD16 implies a greater proportion of dolomite in the system while carbonates from the more distal drill hole generally have a lower Mg content more typical of ankerite. The change in the Mg contents of the carbonate reflects the zonation in temperature across the alteration zone with the most Mg rich carbonate depositing in the hotter more proximal areas. Such a zonation is common in both porphyry and volcanic hosted massive sulphide systems.

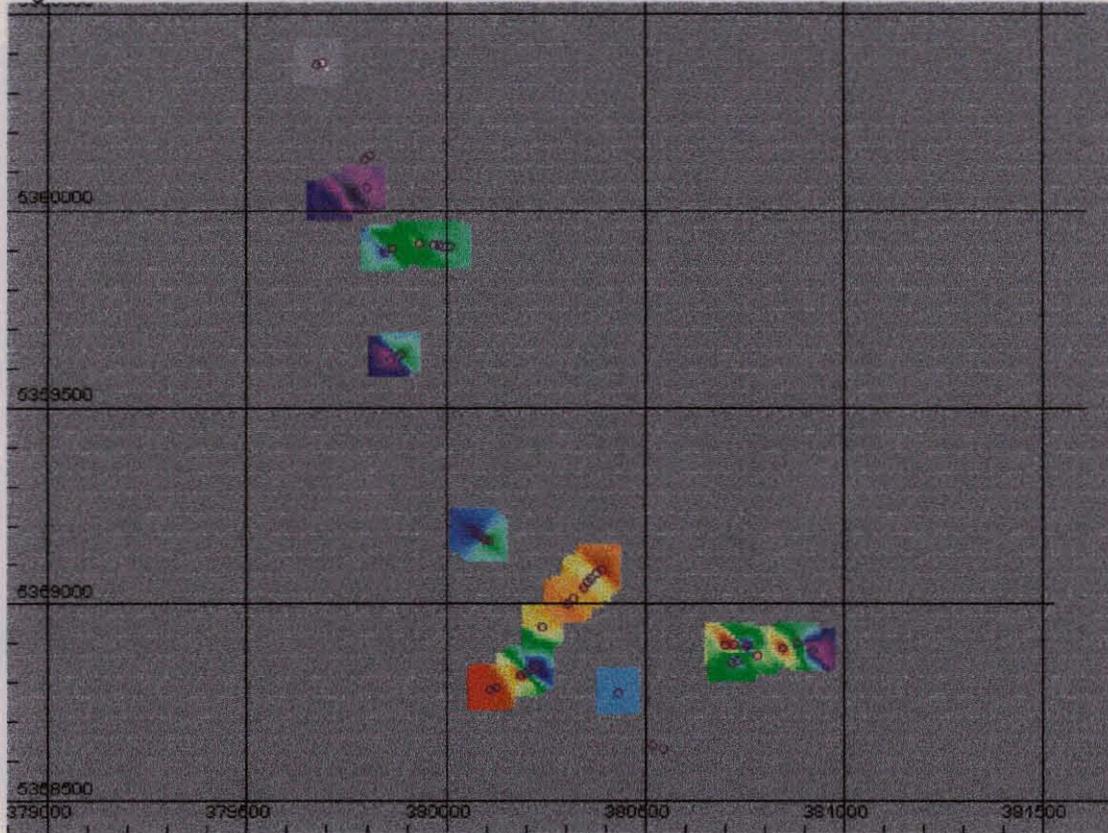
Mn#



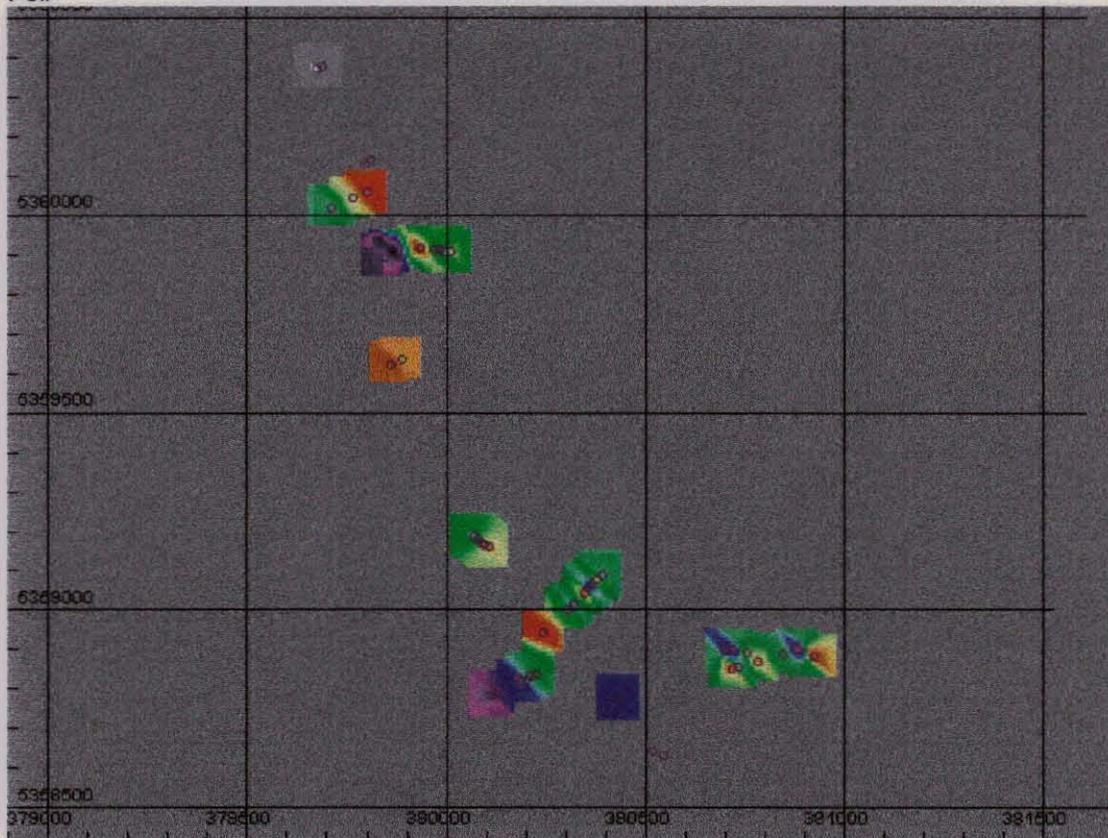
Sr - long section



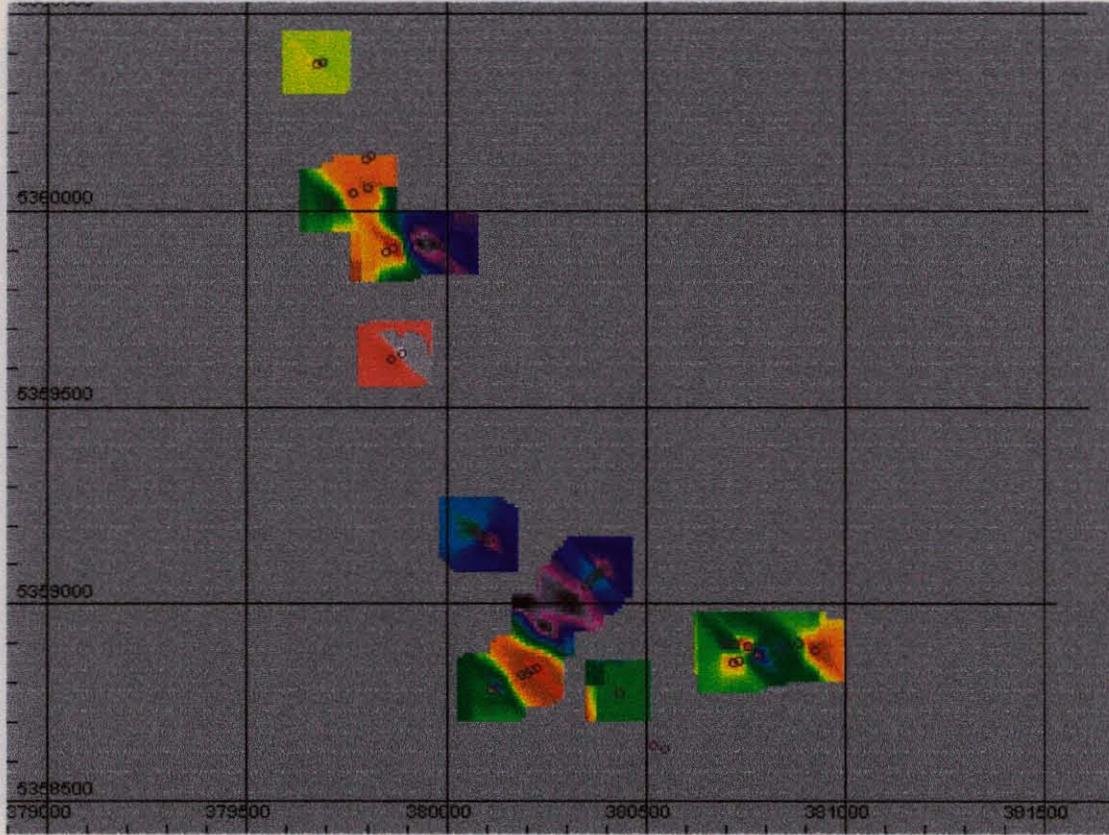
Mg#



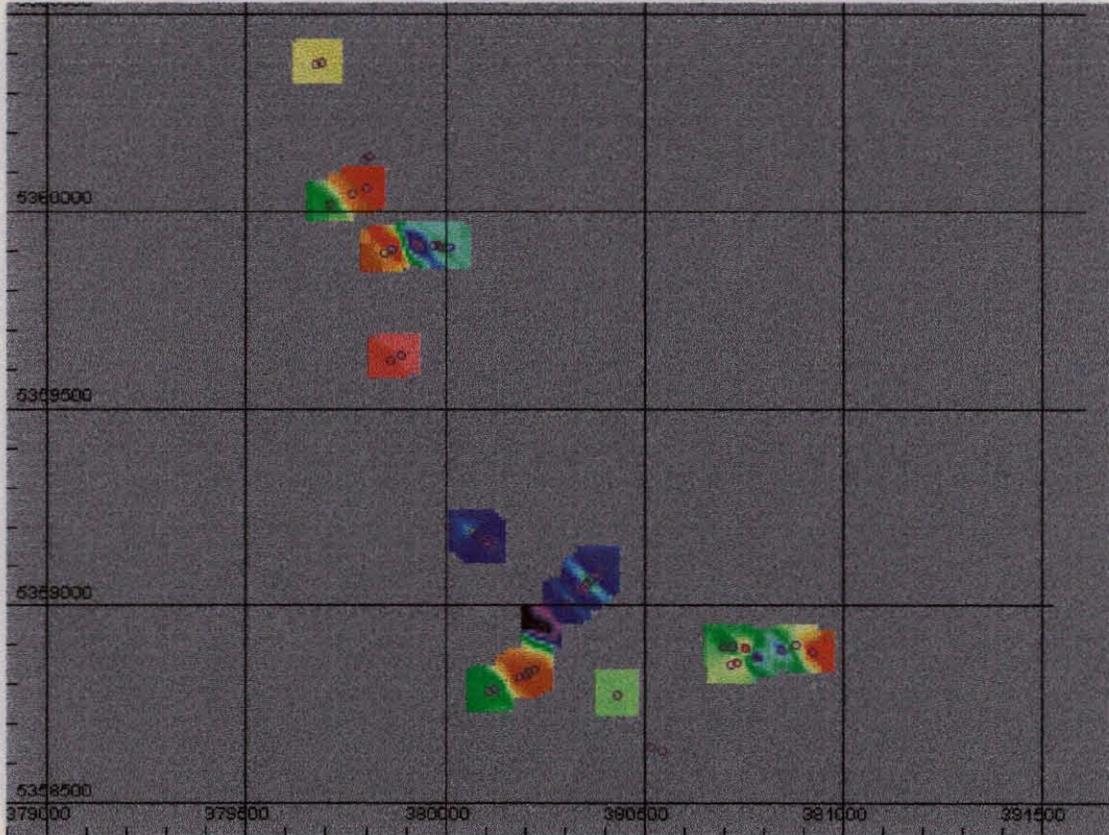
Fe#



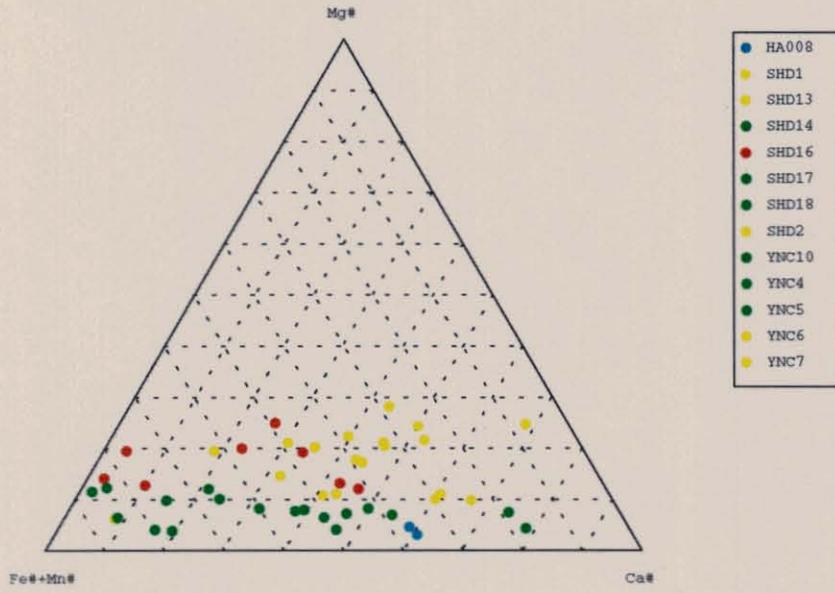
Sr



Ca#

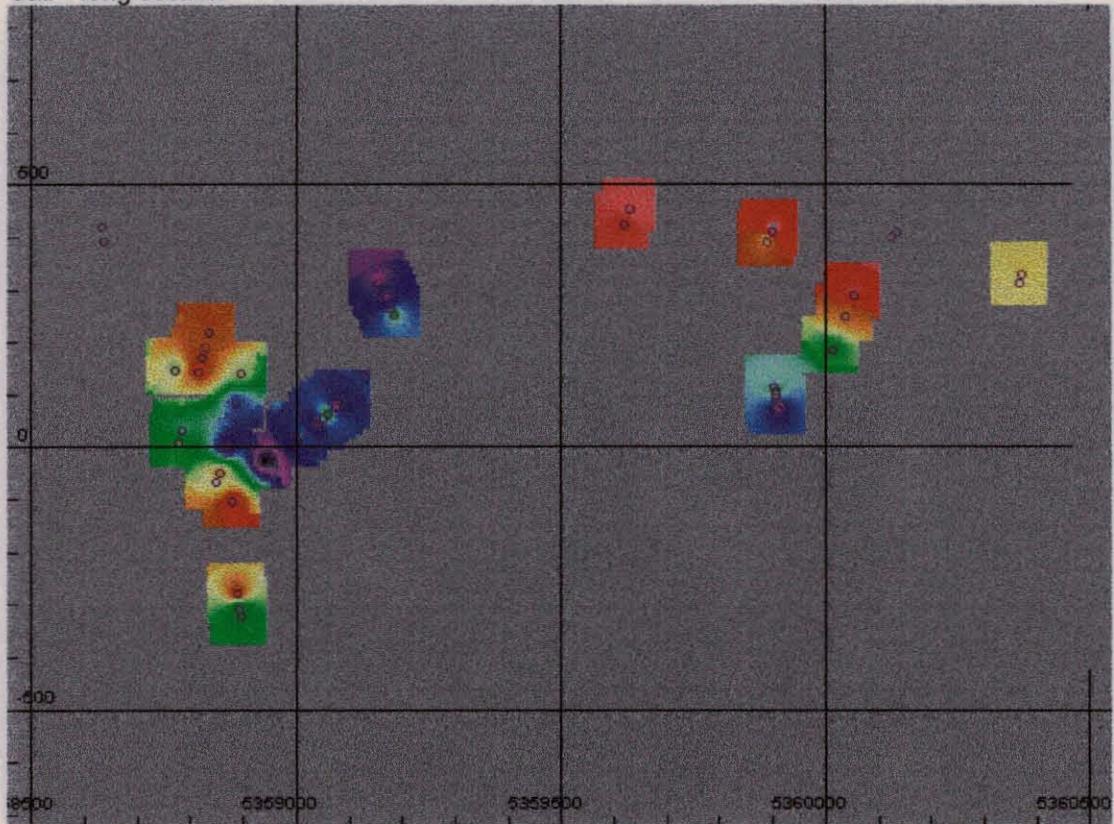


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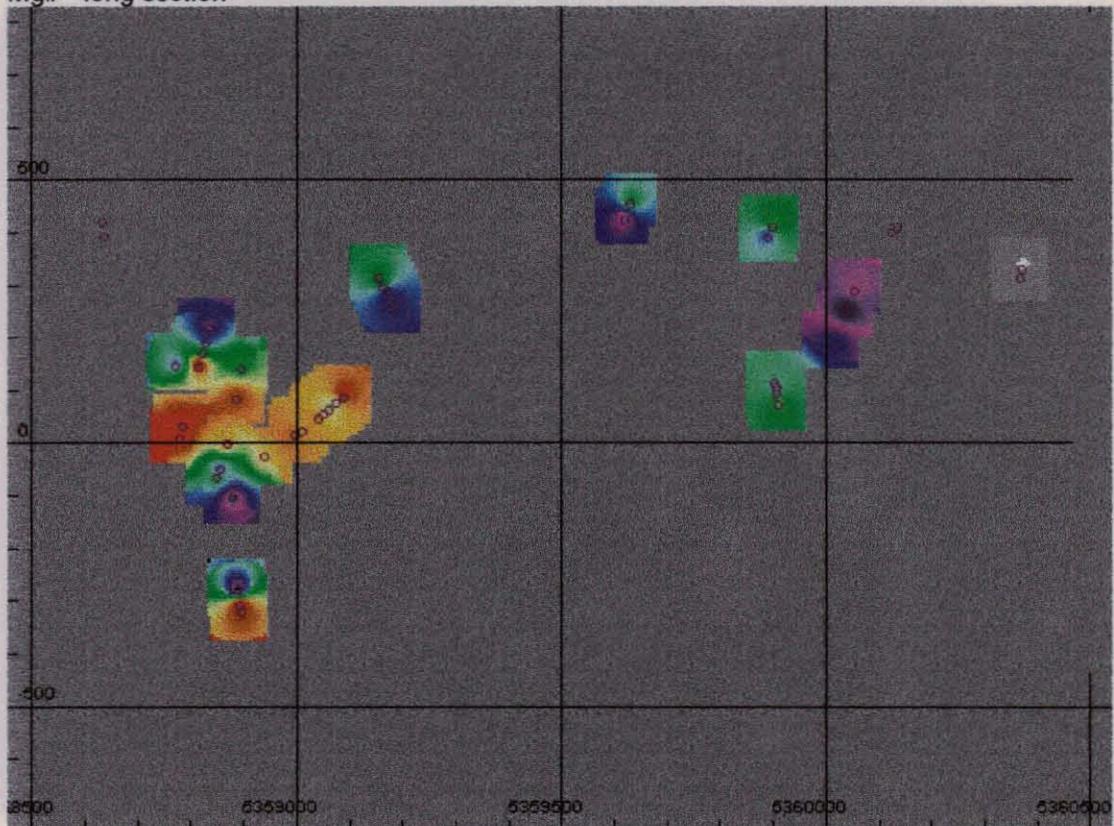


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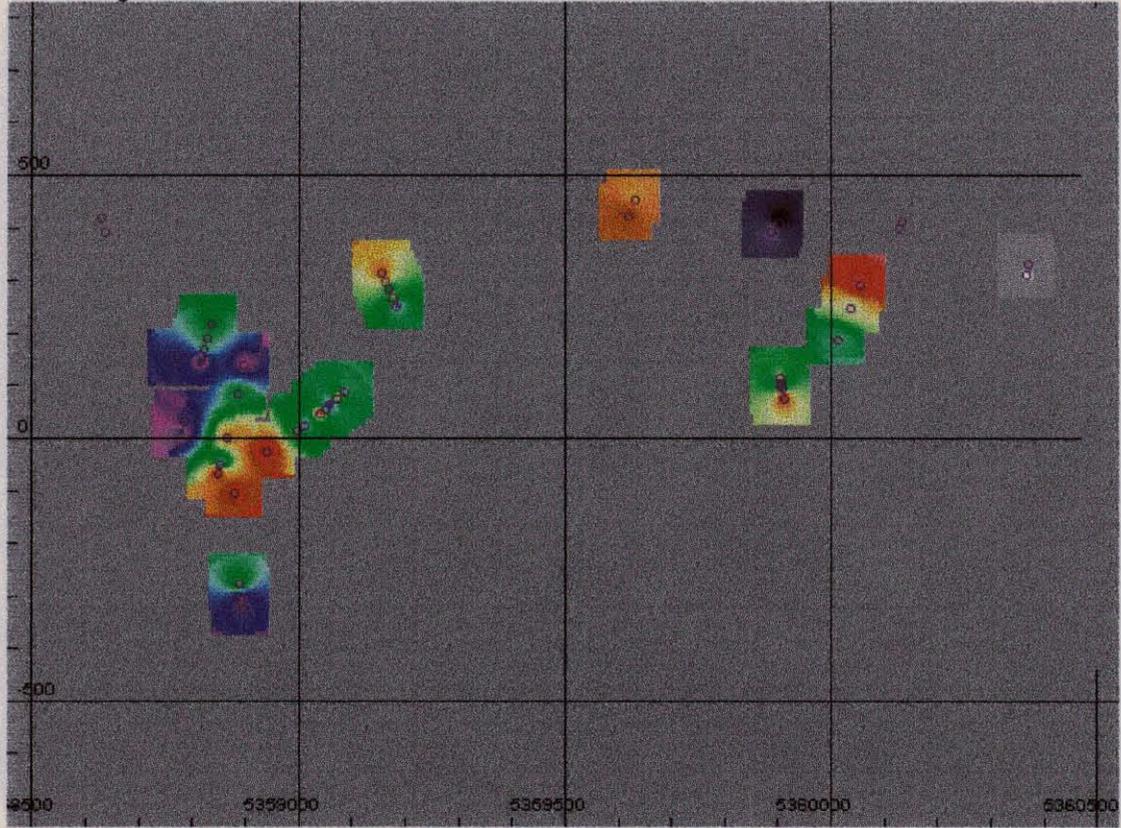
Ca# - long section



Mg# - long section



Fe# - long section



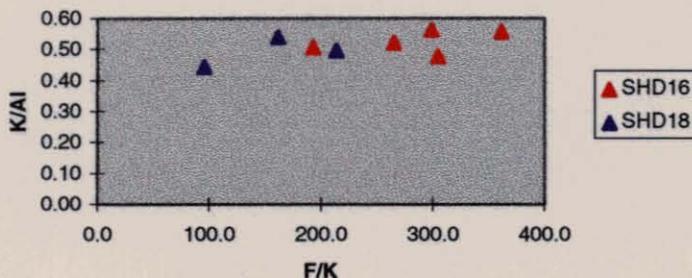
Mn# - long section



- **F content in sericite.**

Eight samples from drill holes SHD16 and 18 were submitted to Analabs for analysis. The results are tabulated in Table 3. In general F contents from the sericite-pyrite alteration zone in SHD16 had F values that range from 1050 to 1250 ppm while samples with a higher proportion of carbonate had lower F contents between 325 and 800ppm. This relationship is also shown in the following graph of K/Al versus F/K with the samples from SHD16 having a higher F/K ratio. The K/Al ratio is consistently about 0.5 which suggests that major phyllosilicate phase in the rock is muscovite or sericite.

South Henty Alteration Study - F in sericite



Conclusion

This study of the mineral chemistry across the Lake Newton alteration system was aimed at using a series of low cost analytical techniques to determine mineralogical and geochemical vectors that could be used to locate potential high grade zones of mineralisation within the Lake Newton alteration system. The results have confirmed that the alteration intersected in SHD16 is quite distinct when compared to the other holes drilled in the South Henty area. The SHD16 intersection is characterised by an abundance of sericite-pyrite, a higher Au and Cu content, a higher proportion of dolomitic carbonate, an increase in the F content of sericite and the lower sulphur isotopic signature compared to other intersections. These observations suggest that SHD16 has intersected a potentially more prospective part of the alteration system.

The results of this preliminary study will be examined in more detail by Mathew Street who will complete a BSc(hons) project at South Henty in 1999.

Table 1. Trace element abundances in pyrite.

HOLE	FROM	TO	EAST	NORTH	PL	METHOD	SAMPLE	CO	NI	SE	S	FE	ZN	PB	CU
HENTY CANAL	na	na	380470	5359788	510	PYRITE LEACH	41738	1.7	10	-10	1.52	3.3	14	23	60
SHD2	316.0	316.05	380220.86	5358834	203.01	PYRITE LEACH	1080048	41.6	24	33	26.79	24.3	158	85	534
SHD2	282.4	282.45	380234.28	5358841	232.99	PYRITE LEACH	1080067	53.9	24	-10	13.36	17.8	494	111	450
SHD2	288.1	288.15	380232.05	5358840	227.87	PYRITE LEACH	1080068	78.6	8	21	29.61	24.2	668	2831	170
SHD14	170.9	171.0	380791.86	5358850	351.45	PYRITE LEACH	1080069	81.5	28	-10	4.03	9.19	392	57	96
SHD14	610.3	610.4	380418.34	5358773	139.11	PYRITE LEACH	1080070	14.2	16	20	19.9	18.4	104	727	1696
SHD16	567.2	568.2	380384.94	5359079	77.17	PYRITE LEACH	1021181	10.5	6	15	12.46	12.2	2030	316	208
SHD16	587	588	380373.48	5359068	66.29	PYRITE LEACH	1020802	7.5	10	-10	5.86	6.13	418	71	958
SHD16	647	648	380337.87	5359031	35.12	PYRITE LEACH	1020863	15.1	12	-10	3.74	8.27	286	11	30
SHD16	662.3	663.3	380328.54	5359021	27.69	PYRITE LEACH	1020880	11.5	12	-10	9.4	8.54	18	26	52
SHD16	704	705	380302.63	5358995	8.18	PYRITE LEACH	1020923	11.1	16	-10	12.22	12.7	78	888	102
SHD16	720.5	721.5	380292.13	5358985	0.78	PYRITE LEACH	1020939	9.1	10	-10	12.43	13.1	264	38	10162
SHD16	781.4	782.4	380252.48	5358946	-25.02	PYRITE LEACH	1020969	15.3	20	-10	5.15	10	170	93	34
SHD18	183	184	380101.57	5359162	301.22	PYRITE LEACH	1020628	6.6	10	-10	1.33	6.88	344	61	666
SHD18	238	239	380075.8	5359183	257.18	PYRITE LEACH	1020686	7.2	6	-10	0.95	8.74	4254	2637	48
HA008	108.6	108.65	380552.83	5358633	421.65	PYRITE LEACH	1080078	19.1	16	91	33.51	27.3	162	1788	5500
HA008	178.4	178.5	380504.59	5358643	372.16	PYRITE LEACH	1080081	21	18	-10	12.42	10.1	1913	867	70

Laboratory Method	Analabs M104	Analabs M104	Analabs M104	Analabs V821/V826	Analabs A117/A103	Analabs A117	Analabs A117	Analabs A117/A103
Units	ppm	ppm	ppm	%	%	ppm	ppm	ppm/%
Detection	0.2	2	10	0.01/0.05	0.01	2	3	2/0.01

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Table 2

SAMPLE	HOLE	FROM	TO	EAST	NORTH	RL	COMMENTS	Ca	Fe	Mn	Mg	Sr	TotC
1020615	SHD18	171	172	380107.04	5359157.85	311.01	NODULAR CARBONATE IN SER-(CHL) VOLCANIC	9700	50600	15600	3800	-10	1.23
1020636	SHD18	191	192	380097.9	5359165	294.72	NODULAR CARBONATE IN CHL+SER VOLCANIC	15100	46400	11100	3900	-10	1.05
1020652	SHD18	206	207	380090.95	5359170.54	282.64	CARBONATE VEINS IN COHERENT DACITE	15500	59200	46200	2400	31	2.38
1020676	SHD18	229	230	380080.12	5359179.23	264.3	COLLOFORM VEINS IN COHERENT DACITE	15000	53200	30300	1900	53	1.91
1020696	SHD18	248	249	380070.95	5359186.44	249.31	STOCKWORK VEINS IN COHERENT DACITE	29400	30300	16700	2700	78	1.67
1020811	SHD16	596.4	597.4	380367.98	5359061.84	61.22	CARBONATE SPOTS IN SERICITIC - PYRITIC VOLCANIC	26400	23900	8790	4200	21	1.34
1020825	SHD16	610	611	380359.99	5359053.57	53.95	CARBONATE SPOTS IN SERICITIC - PYRITIC VOLCANIC	16700	17200	6730	3100	37	0.91
1020843	SHD16	627.2	628.2	380349.8	5359043.01	44.99	NODULAR CARB IN SER-(PYR) VOLCANIC	2000	49400	8110	6300	-10	0.97
1020895	SHD16	676.6	677.6	380319.75	5359012.12	20.85	NODULAR CARB IN SER-(PYR) VOLCANIC	16700	23400	9300	5800	-10	1.11
1020914	SHD16	696	697	380307.66	5358999.93	11.82	NODULAR CARB IN SER VOLCANIC	16500	47200	10200	8800	-10	1.4
1020977	SHD16	789.8	790.8	380246.94	5358940.84	-28.4	NODULAR CARB IN ASHY SILTSTONE	1800	72500	7320	5900	-10	1.44
1021130	SHD14	591	592	380435.67	5358774.35	146.33	CARBONATE VEINS IN QP	16600	13000	3300	1300	103	0.6
1021164	SHD16	552.2	553.2	380393.42	5359088.48	85.65	CARBONATE SPOTS IN SERICITIC VOLCANIC	10600	23500	4380	6100	-10	0.62
1021190	SHD16	574.2	575.2	380380.92	5359075.26	73.28	CARBONATE SPOTS IN SERICITIC VOLCANIC	1300	9300	4370	1000	55	0.21
1080036	SHD17	565.8	566.0	380011.64	5359905.17	113	NODULAR CARBONATE IN CHL-SER VOLCANIC	20800	46400	8590	3300	11	0.98
1080037	SHD17	582.8	582.9	379997.01	5359906.45	104.54	NODULAR CARBONATE IN CHL-SER VOLCANIC	27200	29400	7880	2600	22	1.13
1080038	SHD17	597.5	597.7	379984.19	5359907.62	97.34	NODULAR CARBONATE IN CHL-SER VOLCANIC	25000	39500	7420	3100	-10	1.15
1080039	SHD17	610.1	610.3	379973.18	5359908.7	91.31	NODULAR CARBONATE IN CHL-SER VOLCANIC	22400	37700	7200	2800	-10	1.3
1080040	SHD17	651.0	651.2	379937.14	5359912.47	72.35	CARBONATE VEINS IN CHL VOLCANIC	3500	91800	11200	6600	-10	1.47
1080041	SHD1	367.8	368.0	380883.74	5358898.92	138.44	CARBONATE VEINS (WEAKLY ALTERED)	37700	20600	5400	3800	108	1.12
1080042	SHD1	435.2	435.4	380848.88	5358888.33	81.66	CARB SPOTS AFTER FELDSPAR AND SERICITE	15300	31100	3310	6400	34	0.71
1080043	SHD1	542.75	543.0	380784.03	5358869.16	-1.9	CARB SPOTS AFTER FELDSPAR	9300	38900	4630	5900	-10	1.02
1080044	SHD1	612.8	613.0	380736.34	5358855.93	-51.43	PERVASIVE CARBONATE, SERICITE	18600	26200	4320	3000	49	1
1080045	SHD1	637.0	637.2	380719.47	5358851.09	-68.09	PERVASIVE CARBONATE, SERICITE	16600	-500	2880	3600	20	0.97
1080047	SHD2	303.1	303.2	380226.11	5358836.37	214.43	PERVASIVE CARBONATE, SERICITE	36300	39500	4050	8600	68	1.79
1080049	SHD2	332.4	332.6	380213.89	5358829.9	188.55	PERVASIVE CARBONATE, SERICITE	33500	35700	6550	8400	29	1.76
1080050	SHD2	356.3	356.7	380203.35	5358824.42	167.69	PERVASIVE CARBONATE, SERICITE	36400	43100	10800	5700	27	1.81
1080051	SHD2	384.6	384.8	380190.81	5358817.97	143.27	PERVASIVE CARBONATE, SERICITE	10400	105000	43100	4700	18	2.66
1080052	SHD2	517.9	518.1	380128.01	5358787.96	29.62	CARBONATE SPOTS IN SERICITIC PUMICE BX	19100	18300	7360	6500	11	0.97
1080053	SHD2	546.1	546.3	380113.3	5358780.94	6.62	CARBONATE SPOTS IN SERICITIC PUMICE BX	83000	39700	18300	24500	192	4.35
1080054	SHD13	727.3	727.5	380927.82	5358880.59	-105.33	CARBONATE VEINS, WEAK SERICITE ALTERATION	87900	37500	6160	7900	104	2.58
1080055	SHD13	970.0	970.3	380759.1	5358890.13	-278.92	CARBONATE VEINS, WEAK SERICITE ALTERATION	43400	40300	2480	11500	67	1.34
1080056	SHD13	1016.2	1016.4	380724.21	5358894.72	-308.77	CARBONATE VEINS + SPOTS IN DACITIC MASSFLOW	36000	30000	2560	14200	82	1.81
1080057	SHD13	1041.5	1041.7	380705.08	5358897.24	-325.14	CARBONATE VEINS + SPOTS IN DACITIC MASSFLOW	22600	18100	4380	6300	51	1.21
1080058	YNC4	154.4	154.7	379867.35	5359901.95	408.18	PERVASIVE CARBONATE + VEINS, CHL-SER-BAR-FE3O4 ALTERATION	3100	176000	26900	11900	21	1.42
1080059	YNC4	183.4	183.7	379848.6	5359890.79	389.07	PERVASIVE CARBONATE + VEINS, SER ALTERATION	8000	31700	3600	2800	-10	0.63
1080060	YNC6	216.2	216.4	379688.64	5360373.09	328.35	SPOTS-VEINS, WK SER-CHL, FELDS STILL PRESENT	16600	37600	1300	4600	41	1.11
1080061	YNC6	239.5	239.7	379675.45	5360370.2	309.36	SPOTS, WK SER-CHL, FELDS STILL PRESENT	27200	47100	1540	9600	68	0.79
1080062	YNC7	96.7	96.9	379890.77	5359833.25	450.88	PERVASIVE CARBONATE + VEINS, SER ALTERATION	88000	39000	20500	21700	103	4.54
1080063	YNC7	138.7	139.0	379863.14	5359620.23	421.98	PERVASIVE CARBONATE + VEINS, SER ALTERATION	83200	47700	6480	9200	146	2.67
1080064	YNC10	276.6	276.8	379803.76	5360054.59	287.54	PERVASIVE CARBONATE, WEAK SERICITE	122000	29900	7720	4300	198	4.12
1080065	YNC10	333.0	333.2	379769.84	5360039.58	245.05	PERVASIVE CARBONATE, MOSTLY AFTER FELDSPAR	37000	40000	3410	3700	89	1.9
1080066	YNC10	418.4	418.6	379715.75	5360016.23	183.24	PERVASIVE CARBONATE	21200	27300	3980	1200	72	1.06
1080076	YNC5	161.3	161.5	379813.23	5360135.52	409.56	PERVASIVE CARBONATE	19100	120000	140385	8900	39	5.36
1080077	YNC5	181.4	181.7	379798.86	5360128.04	397.57	CARBONATE VEINS	61000	17500	3938	3800	104	1.48
1080079	HA008	112.95	113.2	380549.82	5358633.56	418.43	PERVASIVE CARBONATE, SERICITE	9200	2000	5604	300	28	0.39
1080080	HA008	153	153.3	380522.31	5358639.13	389.82	PERVASIVE CARBONATE, (SERICITE)	10400	3500	5553	500	20	0.38

Analabs	Analabs	Analabs	Analabs	Analabs	Analabs
I510	I510	I510	I510	I510	I510
ppm	ppm	ppm	ppm	ppm	%
200	500	10	200	10	0.005

534108

Table 3. Flourine content in Sericite.

SAMPLE	HOLE	FROM	TO	EAST	NORTH	RL	K	Na	Al	Ba	F	F/K	K/Al	ALTERATION STYLE
1021172	SHD16	558.2	559.2	380390.1	5359085	82.23	3.95	1200	75800	78	1050	265.8	0.52	Ser-Pyr
1021199	SHD16	583.2	585	380375.5	5359070	68.14	3.77	1200	78800	1060	1150	305.0	0.48	Ser-Pyr
1020828	SHD16	613	614	380358.2	5359052	52.37	4.14	1100	81700	641	800	193.2	0.51	Ser-Pyr-Carb
1020909	SHD16	691	692	380310.8	5359003	14.12	4.17	1350	74000	70	1250	299.8	0.56	Ser-Pyr
1020934	SHD16	715.5	716.5	380295.3	5358988	3	3.45	850	62100	247	1250	362.3	0.56	Ser-Pyr
1020609	SHD18	165	166	380109.8	5359156	315.93	3.74	1150	75300	1170	800	213.9	0.50	Ser-Pyr-Carb
1020659	SHD18	213	214	380087.7	5359173	277.03	3.39	14400	76300	2140	325	95.9	0.44	Ser-Pyr-Carb
1020684	SHD18	236	237	380076.8	5359182	258.76	4.01	750	74300	1100	650	162.1	0.54	Ser-Pyr-Carb
							Method	1104	1104	1104	1104	C801		
							Laboratory	Analabs	Analabs	Analabs	Analabs	Analabs		
							Units	%	ppm	ppm	ppm	ppm		
							Detection	0.05	50	100	5	50		

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