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CRA EXPLORATION PTY LIMITED

EL 10/76 CETHANA AREA, NORTHERN TASMANIA

REPORT ON EXPLORATION FOR 12 MONTHS TO 28 FEBRUARY 1985

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Date: 25 February 1985

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REPORT NO: 13109

232002

CONTENTS

1. SUMMARY

This report covers work on the NE extension of the Mt Read Volcanic Belt in the Cethana EL 10/76 for the year ending 28 February 1985.

Previous regional stream sediment and geophysical data were compiled as well as grid data for the Cethana EL.

The current prospects were generated from the initial Asarco stream sediment programme and no prospects have been generated by other means. No other regional geochemical appraisal has been undertaken.

Two percussion drill holes on the Cethana and Cethana West Grids were drilled. Base metal poor massive sulphides were intersected over about 24 metres in PD84 CC9.

Downhole EM surveys were carried out on the two holes, PD84 CC9 and 10, however no conductors were identified.

Reassaying of core from holes previously drilled in the Cethana area was carried out to test gold potential. No significant gold values were found.

Sampling of the Roland Conglomerate where significant hematization and silicification had taken place failed to yield any precious metal values.

The future programme proposed centres on delineation of the massive sulphides intersected in PD84 CC9 and relogging of the holes with a downhole UTEM system.

2. INTRODUCTION

This report describes work carried out on EL 10/76 for the year ending 28 February 1985.

EL 10/76 was pegged in 1976 to cover a reserve relinquished by the Mines Department that fell within EL 7/73.

This report supplements previous reports on the EL, particularly Purvis (1979), Purvis (1977) and Flis (1983).

3. CONCLUSIONS

No significant base metal intersections were made during the year's activities.

A massive or semi-massive sulphide body, poor in base metals, was intersected. This may represent the barren margin to a base metal rich massive sulphide deposit.

Further delineation of the massive sulphide horizon is required before assessment of whether further drill targets exist can be determined.

Problems may be present with interpretation of EM 37 down-hole data or with the EM 37 system used to log PD84 CC9 and 10. No conductors were interpreted despite a massive sulphide intersection.

The massive sulphides (barren and base metal bearing) in holes CC1-10 are highly deficient in precious metals which may indicate a lack of potential in the Cethana area for economic volcanogenic massive sulphides.

Potential for gold associated with hematized, silicified fault zones in the Roland Conglomerate has been severely downgraded in the Claude Mountain Lookout area. No further work is warranted.

4. RECOMMENDATIONS

1. Carry out a mise-a-la-masse survey at PD84 CC9 to delineate the extent of massive sulphides.

2. Relog PD84 CC9 and 10 with a downhole UTEM system to resolve possible interpretation or sensitivity problems with the UTEM ground system on the EM 37 downhole system.

3. Re-evaluate the geology in drill holes in Eastern Cethana if significant values are intersected in the Gowrie Park Grid drill hole.

4. Carry out the CN leach Au and Ba in the stream sediments survey recommended for the Sheffield EL 7/73 and Cethana EL 10/76 in CRAE Report Number 13108.

5. GEOLOGY

The EL covers a portion of the north eastern extensions of the Mt Read Volcanic Belt. Details of the geology are shown on Plan TASh 1711 which is adapted from the Sheffield 1 mile sheet and the Explanatory Report for that sheet by Jennings (1979).

Exploration potential for volcanogenic base metal deposits is considered to be good.

6. LICENCE DATA COMPILATION

To allow better assessment of data acquired on EL 7/73 and EL 10/76 compilation of geochemical and some geophysical data was carried out at 1:25 000 scale.

The Dighem II survey terrain clearances were compiled (Plan TASh 1708) and were found to leave a number of areas untested, particularly in areas of rugged terrain or near power lines.

Current prospects on the EL had been generated from this initial Asarco sampling. No new prospects had been generated by other means.

Compilation of Grid data on the Cethana EL 10/76 was carried out and is presented in Plans TASh 1667-1680, 1689 and 1690.

As part of the survey recommended to evaluate base metal anomalies and generate new targets on EL 7/73, CN leach gold stream sediment samples should be taken to cover EL 10/76 (see Report No 13108).

7. CETHANA PROSPECT

7.1 Surface Geophysics

Anomalous UTEM responses were interpreted in the Cethana area over a Cambrian sequence of mixed volcanics and derived epiclastics. Details of the anomalies interpreted are discussed in Appendix 1.

Difficulties in the UTEM surveying due to power lines on the Cethana West Grid prevented full delineation of one anomaly which was strengthening towards the power lines.

7.2 Drilling

PD84 CC9 was sited to test the combined UTEM anomaly/ Resistivity low, geochemical anomaly as shown on Plan TASh 2163. The drill hole section is shown on Plan TASh 2164.

PD84 CC10 was sited to test coincident UTEM, resistivity low and chargeability high in an area of Roland Conglomerate scree (Plan TASh 2165). Hole section is shown on Plan TASh 2166.

Drill logs are included in Appendix 2.

7.3 Downhole Geophysics

EM37 downhole surveys of the two holes were conducted to test for offhole conductors. A broad zone of conductive rocks was initially interpreted in PD84 CC9, however, on further processing the anomaly is not apparent. No conductors were interpreted in the vicinity of PD84 CC10.

Profiles of the two holes are given in Appendix 3.

7.4 Geochemistry

PD84 CC9 has slightly elevated Pb and Zn in the bottom 20 metres of the hole with highest values of 350 ppm Pb, 800 ppm Zn.

PD84 CC10 had low copper values (< 50 ppm Cu) with peak values of 1800 ppm Pb and 760 ppm Zn over 3 metres.

No precious metals were present in either hole. Assays are included in Appendix 4.

7.5 Discussion

In PD84 CC9 the highly pyritic zone (72-96 metres) contains a probable massive sulphide horizon at 80-85m as small pebbles of 25% pyrite were recovered. In the interval 80-86 metres elevated Pb and Zn values (maximum 320 ppm Pb, 820 ppm Zn) were present. High values down to 22 metres are thought to be a feature of the weathering profile rather than represent pristine bedrock responses.

The values in this core may represent the near barren margins of a base metal rich VMS and as such warrants further investigation.

A mise-a-la-masse survey will be undertaken to define better the extent of the sulphide body.

The lack of Au and Ag is disappointing and tends to downgrade the potential of the massive sulphide body.

PD84 CC10 passed through the volcanic sequence into Roland Conglomerate at 83 metres. Plan TASh 2165 shows the interpreted section indicating either a very irregular unconformity surface, overturning of the volcanic sequence or faulting of the contact with overthrusting of the volcanics.

Chloritic fine grained tuffs coincide with the interpreted target zone. Elevated base metal values also coincide with this interval (70-76m) with maximum values of

940 ppm Pb and 410 ppm Zn. Elevated Pb and Zn at 6-9m probably represents an enrichment in the weathering profile. The failure to detect conductors downhole in PD84 CC9 where massive sulphides were intersected suggests that problems either may have existed with the EM 37 machine, or that the EM 37 system is not as capable as the UTEM system in detecting subtle anomalies.

Both these holes should be resurveyed with downhole UTEM to determine whether downhole conductors are present.

8. CORE REASSAYING

One hundred and seventy eight samples from the eight diamond drill holes in the Cethana Prospect were reassayed for gold, which had not previously been determined.

All samples with Pb plus Zn in excess of 1500 ppm, Ag greater than 5 ppm or pyrite greater than 5% were analysed. Roasting of samples was carried out if graphite had been noted in the drill log.

Only six samples had Au greater than 0.01 ppm, with maximum value of 80 ppb over 2.5m in DD77 CC6.

These values are very disappointing and suggest that the adjacent Gowrie Park Prospect in EL 7/73, which is probably continuous with the Cethana Prospect, has greater potential for an economic massive sulphide deposit as gold values are higher and more abundant (CRAE Report No. 13108).

A summary log of gold bearing samples and assay results are included in Appendix 5.

9. GOLD SAMPLING IN THE ROLAND CONGLOMERATE AND MOINA SANDSTONE

Chip sampling of the hematized, silicified and alunite (?) bearing Roland Conglomerate in the vicinity of the Claude Mountain Lookout was undertaken to test gold potential.

The Roland Conglomerate in this area consists of a stacked sequence of fault repetitions of the Roland Conglomerate and a portion of the Moina Sandstone (?). Recognisable variations up sequence in the conglomerates from volcanic/clast bearing, feldspathic matrix conglomerates to jasper bearing matrix conglomerates to quartz sand matrix conglomerates are repeated in each fault repetition. Adjacent to the faults are hematized, silicified and quartz veining zones as well as a massive hematite-alunite (?) zone in the quarry at the lookout.

Systematic chip sampling of the road cuts was undertaken. No gold was found in any of the samples submitted and base metal values were negligible. Results are given in Appendix 6.

In view of the highly permeable nature of the Roland Conglomerate it is highly unlikely that any significant gold mineralisation is associated with the Roland Conglomerate or the faults sampled in the Claude Mountain area.

10. FUTURE PROGRAMME

The future programme will consist principally of defining the extent of the suspected massive sulphides in PD84 CC9 with a mise-a-la-masse survey.

It is also proposed that UTEM downhole surveys be conducted at PD84 CC9 and 10 to evaluate the lack of interpretable conductors in the downhole EM 37 data.

Further evaluation of drilling in holes CC5, 6, 7 and 8 is proposed if significant values are intersected in the proposed drill hole on the adjacent Gowrie Park Prospect (CRAE Report No 13108).

11. REFERENCES

Flis M F 1983 Exploration of Cethana EL 10/76, North Tasmania 1971-82, CRAE Report No 11923

Jennings I B 1979 Geological Atlas, 1 Mile Series, Sheet 37, Sheffield Explanatory Report. Department of Mines, Tasmania

Purvis J G 1977 EL's 7/73 and 10/76, Northern Tasmania. Exploration at Western Cethana, August 1976-1977, CRAE Report No 9041

Purvis J G 1977 EL 10/76, Northern Tasmania. Exploration at Eastern Cethana, September 1976 - September 1977. CRAE Report No 9044

Purvis J G 1979 Exploration at East Cethana EL 10/76 Northern Tasmania, September 1977 - September 1979. CRAE Report No 9717

Temby P A 1985 EL 7/73 Sheffield Area, Northern Tasmania. Report on Exploration for 12 Months to 15 February 1985. CRAE Report No 13108

12. LOCATION

Burnie 1:250 000 Sheet SK5503

13. KEYWORDS

Copper, Gold, Lead, Silver, Zinc, Acid Volcanics, Volcanogenic, Activities Summary, Assays Geochem, Assays Drill, Drill Percuss, Geophys EM, Ore Potential

14. LIST OF PLANS

Plan TASh No		Scale
1711	Cethana EL 10/76 and Sheffield EL 7/73 West Sheet Regional Geology	1:25 000
1708	Cethana EL 10/76 and Sheffield EL 7/73 Dighem 'Bird' Height West Sheet	1:25 000
1667	Cethana EL 10/76 and Part of Sheffield EL 7/73 Topo & Grid Base Plan East Sheet	1:5 000
1668	Cethana EL 10/76 and Part of Sheffield EL 7/73 Topo & Grid Base Plan West Sheet	1:5 000
1699	Cethana EL 10/76 and Part of Sheffield EL 7/73 Overlay of Aeromag Contour East Sheet	1:5 000
1670	Cethana EL 10/76 and Part of Sheffield EL 7/73 Overlay of Aeromag Contour East Sheet	1:5 000

Plan TASh No		Scale
1671	Cethana EL 10/76 and Part of Sheffield EL 7/73 Zinc Geochem East Sheet	1:5 000
1672	Cethana EL 10/76 and Part of Sheffield EL 7/73 Zinc Geochem West Sheet	1:5 000
1673	Cethana EL 10/76 and Part of Sheffield EL 7/73 Copper Geochem East Sheet	1:5 000
1674	Cethana EL 10/76 and Part of Sheffield EL 7/73 Copper Geochem West Sheet	1:5 000
1675	Cethana EL 10/76 and Part of Sheffield EL 7/73 Lead Geochem East Sheet	1:5 000
1676	Cethana EL 10/76 and Part of Sheffield EL 7/73 Lead Geochem West Sheet	1:5 000
1677	Cethana EL 10/76 and Part of Sheffield EL 7/73 Manganese Geochem East Sheet	1:5 000
1678	Cethana EL 10/76 and Part of Sheffield EL 7/73 Manganese Geochem West Sheet	1:5 000
1679	Cethana EL 10/76 and Part of Sheffield EL 7/73 Topo Contour Overlay East Sheet	1:5 000
1680	Cethana EL 10/76 and Part of Sheffield EL 7/73 Topo Contour Overlay West Sheet	1:5 000
1689	Cethana EL 10/76 and Part of Sheffield EL 7/73 Composite Geophysics East Sheet	1:5 000
1690	Cethana EL 10/76 and Part of Sheffield EL 7/73 Composite Geophysics West Sheet	1:5 000

Plan TASh No		Scale
2163	Cethana EL 10/76 RD84 CC9 Section	1:1 000
2164	Cethana EL 10/76 RD84 CC9 Section Geochem and Magnetic Susceptability Histograms	1:500
2165	Cethana EL 10/76 RD84 CC10 Section	1:1 000
2166	Cethana EL 10/76 RD84 CC10 Section Geochem and Magnetic Susceptability Histograms	1:500

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Appendix 2 Drill Logs PD84 CC9 and PD84 CC10

Appendix 3 Downhole EM 37 Profiles PD84 CC9 and PD84 CC10

Appendix 4 Percussion Drill hole Assay Results

Appendix 5 Core Reassay for Au - Results and Summary Log

Appendix 6 Gold Analyses - Roland Conglomerate and Moina Sandstone

APPENDIX 1

GROUND GEOPHYSICS INTERPRETATIONS

CETHANA EL 10/76 AREAS

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IN REPLY PLEASE QUOTE

1st May, 1984.

Memorandum To: T.W.DICKSON
P.TEMBY

From: M.FLIS

Subject: DRILL TARGETS FROM 1984 U.T.E.M. SURVEYS
CETHANA E.L.10/76/SHEFFIELD E.L. 7/73

Inspection of U.T.E.M. survey results from the "Cethana Belt" has delineated five targets worthy of further follow-up by drilling. Each is discussed in turn.

CETHANA WEST GRID

An anomalous response exists on lines 600mE and 700mE of this grid. The response is strengthening to the east (towards hole DD77 CC1 on 800mE) but, due to power-line noise surveying to the east could not be completed. The anomaly is coincident with a resistivity low delineated from previous gradient array I.P. surveys; and resides on the northern flank of a small (30nT) aeromagnetic anomaly. It lies on the contact between chloritic schists (altered acid volcanics) and possible ignimbrites (massive, welded acid volcanics). Tertiary basalts occur to the north-east - there is a very slight chance these may be the cause, however this seems unlikely at this stage.

The anomaly has a depth of 25m to 50m and a probable steep (75°) southerly dip.

CETHANA GRID

A moderately strong response is centred on line 20200mE, extending for a further 100m to the west and 200m to the east. It is coincident with a gradient array I.P. resistivity low and chargeability high, a V.L.F.-E.M. anomaly and a magnetic high at it's western end. A depth of 30m and a steep southerly dip are interpreted.

...2/.

This response may be caused by a shale unit within acid volcanics; scree covers the anomalous area.

GOWRIE PARK GRID

A group of responses occur between holes DD77GPC2 and GPC3. They all occur on the northern and eastern flanks of a 50nT aeromagnetic anomaly and predominantly within tuffs and sedimentary sequences. The anomalies have a cumulative length of 1000m. The strongest response occurs on line 1100mE at 4632mN where a depth of 30m and a vertical dip is indicated.

EAST GOWRIE PARK GRID

A line of moderately strong responses occurs at the ends of lines 4630mE to 4900mE. Line 5000mE completely covers the anomaly and indicates that it may be a block conductor i.e. moderately wide (75m). The conductor is directly associated with a strong magnetic gradient. A depth of 65m is postulated. The possibility that this response is lithology caused (e.g. magnetic dyke) is high.

WEST MT.ROLAND GRID

The U.T.E.M. response on this grid indicates the presence of a block conductor on all four lines. This is consistant with the ground magnetics. The western most line (4700mE), however, also shows a strong, long lived, thin dyke response associated, but transgressive to an intense magnetic high. A depth of 65m and a dip of 80°N are interpreted.

RECOMMENDATIONS

1. The West Mt.Roland anomaly to be percussion drilled immediately. The target is:

   location : 4700mE, 5435mN
   depth : 65m
   dip : 80°N

2. The Cethana grid anomaly to be percussion drilled. The target is:

   location : 20200mE, 350mS
   depth : 25m
   dip : 75°S

...3/.

3. The Gowrie Park grid anomaly to be tested by downhole E.M. methods using the two adjacent holes. If these holes are blocked a percussion hole to be put down to test the response. The target is:-

location : 1100mE, 4637mN
depth : 30m
dip : 90°

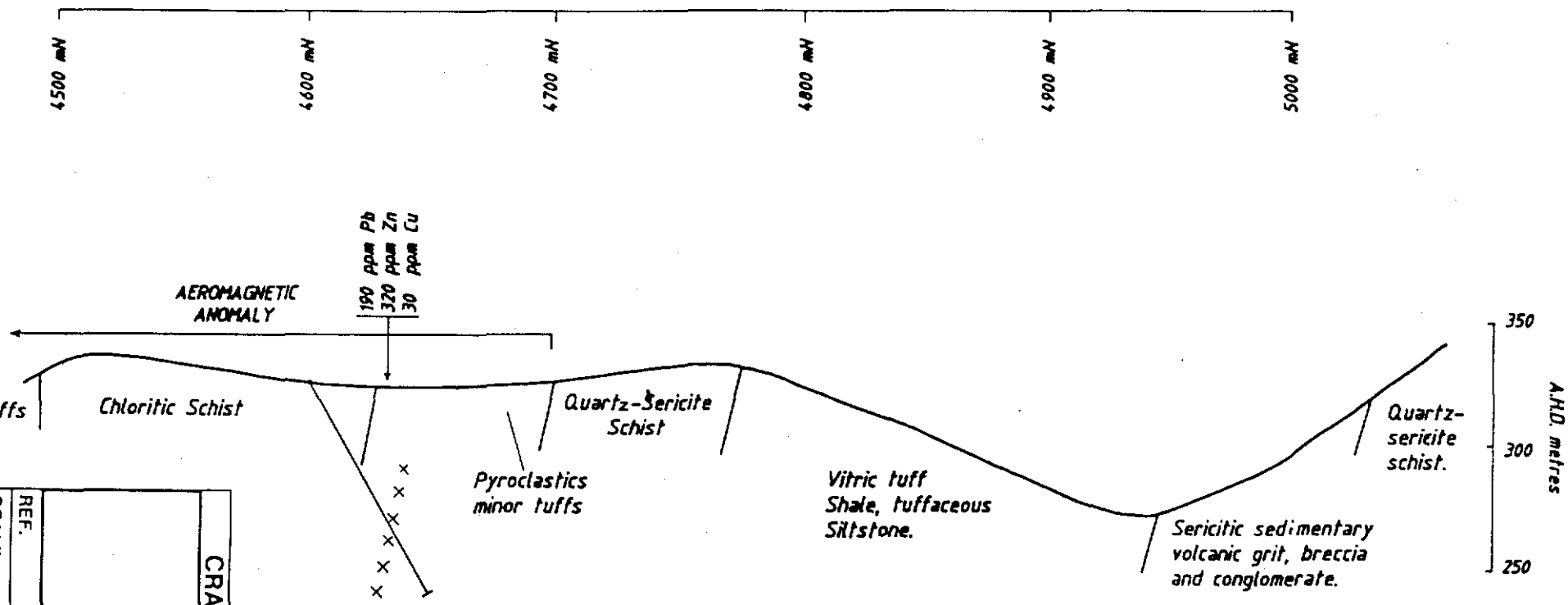
4. The Cethana West Grid anomaly to be tested by downhole E.M. methods using DD77CC1. If the hole is blocked the response to be tested by percussion drilling. The target is:-

location : 700mE, 4637mN
depth : 35m
dip : 75°S

5. The East Gowrie Park Grid to be further evaluated by ground mgnetometry and E.M. modelling prior to any drilling. Should these prove favourable the likely target is:-

location : 5000E, 4487N
depth : 65m
dip : 90° (?)

MARCUS FLIS



E.M. TARGET LOCATION : 4637mN
: 35m depth
: 75 - 85° dip Sth.

PROPOSED HOLE COLLAR : 4602mN
AZIMUTH : 360°G
INCLINATION : -60°
DEPTH : 100 m

ANTICIPATED INTERSECTION : 270 m

5 cm

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CETHANA E.L. 10/76
CETHANA WEST
LINE 600 mE
PROPOSED HOLE 'E'
(UPDATED)

REF.	SKSS - 3
SCALE	1 : 2500
AUTHOR	I. MC
DATE	31 - 5 - 1984
DRAWN	R. T.
REPORT No.	
PLAN No.	TASh

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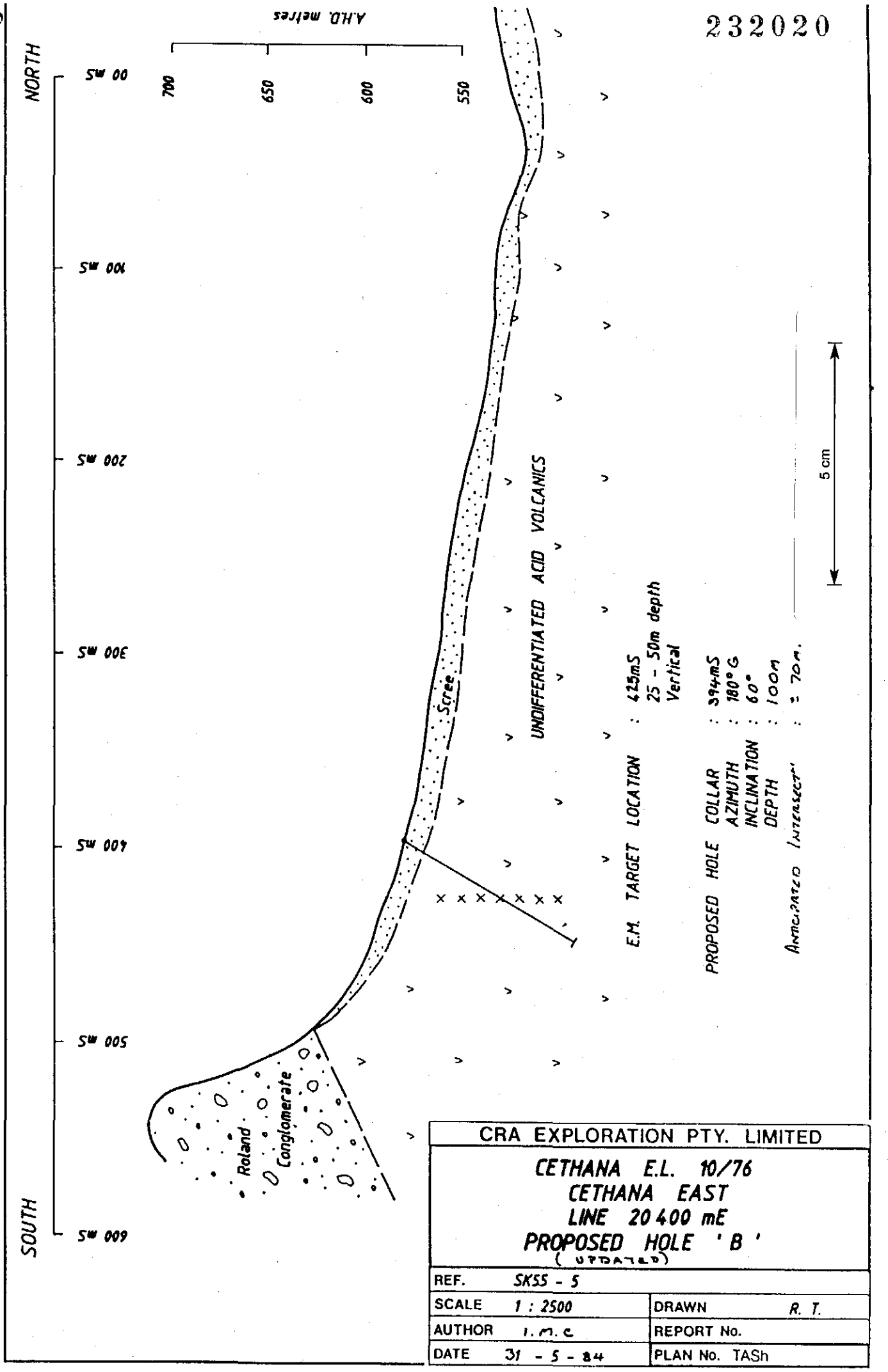

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CETHANA E.L. 10/76
CETHANA EAST
LINE 20 400 mE
PROPOSED HOLE 'B'
(UPDATED)

REF.	SK55 - 5		
SCALE	1 : 2500	DRAWN	R. T.
AUTHOR	I. M. E.	REPORT No.	
DATE	31 - 5 - 84	PLAN No.	TASh

APPENDIX 2

DRILL LOGS - PD84 CC9 AND PD84 CC10

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Drill Hole	:	PD84 CC9
Licence	:	Cethana EL 10/76
Locality	:	Cethana West Grid
Collar Location	:	600mE 4602mN (approx. 428515E 5408470N AMG)
Inclination	:	-60°
Azimuth	:	360° (Grid North)
Drillers	:	Overland Drilling
Date	:	June 1984
Total Depth	:	102m
Logged	:	I.M.Clementson

From (m)	To (m)			
0	10	Soil/Clay	:	Red and ochre clays, some probably derived from nearby Tertiary basalts (note high mag susceptibility of uppermost clays).
10	21	Weathered Acid Volcanics	:	Intensely weathered acid volcanics; probably tuffaceous including recogniseable laminated tuff. Abundant quartz and fragments of quartz rich fragmental tuff or arkosic arenite
21	55	Quartz-Sericite Chlorite (epidote) Tuffs (?)	:	Light to mid greenish grey quartz-sericite-chlorite (and/or epidote) foliated (schistose) acid volcanic or volcaniclastic. Quartz "eyes" visible : possibly phenocrysts, indicating that the rock is a porphyry, more probably qz clasts in a coarse volcaniclastic. Chlorite abundant both as an "alteration" product of discrete grains (?clasts of mafic minerals or mafic rich fragments) and dispersed within the dominantly quartz-sericite matrix. Epidote as a selective and occassionally pervasive alteration takes over from chlorite (occassionally supplements it) in a number of zones, principally 40-48m.

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				White, soft, massive zeolite (?) coating joint faces and in thin veinlets. Disseminated pyrite is ubiquitous throughout, amount varies but never exceeds 5%. Grain size is also variable, most is very fine (0.2 - 0.5mm) [where visible] but in the more pyritic zones coarser (1-1½mm) euhedral crystals occur. Hematite occurs frequently as both "earthy" disseminations and joint coatings and as disseminated and clots of specular hematite (within the core of which pyrite is occassionally visible).
55	72	Quartz-Sericite-Epidote Foliated Tuff	:	Light greenish grey, quartz-sericite schistose tuff(?) with pale green-yellowish green epidote pervasive throughout the matrix and selectively replacing ? feldspars. Minor chlorite in parts. Generally very fine grained (or finely crystalline) except 62-63m where a coarser grain/crystal fraction probably reflects an increase in grain size in the parent tuff. Disseminated pyrite throughout, Maximum 5% Average 2-3%
72	96	Phyllite	:	Dark grey-green (almost black) chloritic phyllite. Well foliated, sericitic. Occassional quartz grains visible in the phyllites. Strongly, but variably pyritic. 72 - 80m up to ± 7% pyrite 80 - 85m up to ± 15% " 85 - 96m up to ± 7% " with fragments (particularly between 80-85m) of semi-massive pyrite to 25%. Originally fine tuffaceous sediment. Much of the pyrite is coarse grained and euhedral ? diagenic.

96	102m	Phyllite/Quartz Sericite Schist	:	Alternating phyllite (as above) and quartz-sericite schist, slightly chloritic and epidote rich.

Drill Hole	:	PD84 CC10
Licence	:	Cethana EL 10/76
Locality	:	Cethana East Grid
Collar Location	:	20400mE, 394mS (approx. 429645E 5407460N AMG)
Inclination	:	-60°
Azimuth	:	180° (Grid South)
Drillers	:	Overland Drilling
Date	:	June 1984
Total Depth	:	96m
Logged	:	I.M.Clementson/P A Temby

From (m)	To (m)			
0	4	Talus	:	Roland Conglomerate scree
4	20	Weathered Tuffs	:	Fine sand and silt recovered with occassional fragments of recognisable fine tuffaceous sediment. Light brown, so sulphides observed. Fragments of vein quartz with no visible mineralisation from 1-5% of recovered material.
20	24	Mafic Tuff	:	Dark green massive chlorite with quartz fragments (or phenocrysts) which occur in clusters and disseminated throughout. Size range ½ - 1mm. Probably represents a pervasively altered mafic rich matrix tuff, the quartz fragments being detrital but of volcanic origin.
24	83m	Interbedded Choritic Tuffs (Fine and Coarse), Quartzose Tuffs and Rare Shales	:	Succession dominated by chloritic tuffs varying in grain size and sorting between fine, silt grade, well sorted tuffs (presumable resorted and reworked aqueous deposits) and coarser, poorly sorted facies with quartz and occassional feldspar crystal clasts which show little evidence of reworking. Overall colour is pale chloritic green with minor darker chlorite rich fragments representing either more thoroughly altered tuffs or originally more mafic rich tuff interbeds. Some light yellowish (to pinkish) hue in some of the fine facies is probably a "weathering"

effect (? proximity to joints or possibly permeability along bedding and laminae)- or it may represent selective "argillic" alteration. In coarser facies a pinkish hue seems to be due to both a lesser thorough chloritisation and in some instances a larger than average proportion of feldspar fragments. Crystal fragments within the coarser facies reach 1½-2mm and are quartz or feldspar. Little abrasion is evident and none whatsoever where quartz is accompanied by feldspar crystal fragments.

Alteration is generally totally pervasive throughout the matrix of all grain size facies, only occassionally does some unaltered(?) felsic rich matrix in coarser facies look unaltered. Pyrite is ubiquitous, always present in trace to 1% amounts, rarely to 3%. It is disseminated throughout the matrix and occurs as thin hair like veinlets in some zones. Pyrite is generally very fine grained but some euhedral crystals to 1mm are occassionally observed in coarser facies. The fine, silt-grade tuffs appear to have a lower pyrite content but this may be a reflection of grain size.

The quartzose tuffs are greatly inferior in frequency to the chloritic tuffs. They are of silt to fine-medium sand grade, very well sorted and are grey to brown in colour. They might almost be called quartzites. Pyrite is present but only in trace amounts. Some fracture surfaces have a sericitic sheen.

Mid to dark grey shale fragments occassionally seen in the drill cuttings represent either sporadic contamination from a small number of interbeds high in the hole, or more frequent but very thin shales scattered throughout the intersection.

		Vein quartz occurs at a number of intervals throughout the succession; it is milky and only rarely has traces of pyrite, otherwise, it hosts no metallic minerals. Between 30-65m a number of 10-40cm long cavities (or extremely soft ground) were encountered.
24	45m	Coarse chloritic tuff dominant. Angular to (rare) slightly subrounded quartz fragments in a chloritic matrix. Minor fine grained, fairly well sorted chloritic tuff also present. Some dark green chlorite rich fragments also occur. Vein quartz praticularly noted between 37-43m, especially abundant between 40-41m; no mineralisation observed. Pyrite is present in all facies of tuffs, does not exceed 1%. Between 37-39m some fragments of light grey, very soft shale occur.
45	51m	Fine, silt or fine sand grade tuff. Chloritic but often slightly yellowish in colour (? alteration, or leaching/weathering). Finely pyritic 1-3%. Quartz veining (to 10%) between 48-49m-51m. Some coarser less well sorted chloritic tuff also present-thin interbeds?
51	55m	Coarser chloritic tuff facies dominant plus significant vein quartz (to 20% between 51-52m). Overall pyrite content Tr-1% except 54-55m = 5%. Some evidence (rounding of quartz) of reworking in some of the tuff fragments - also some whilst still quite coarse are better sorted.

55	58m	Fine, silt grade facies of the chloritic tuffs. Finely pyritic, Tr-1%. Minor vein quartz.
58	64m	Coarser chloritic tuff dominates. Feldspar fragments/clasts visible in some of the least well sorted facies. Pyrite to 1% sometimes concentrated upon thin joint facies and in hairline veins.
64	68m	Very fine, well sorted silt grade, pale green chloritic tuff facies. Looks almost like a chloritic shale but it is definately silt grade and has a low clay content. Pyrite is very fine grained and overall is at trace levels only except 67-68m where a few pyrite faced cracks occur. Vein quartz is significant (10%) between 67-68m.
68	71m	Fine facies chloritic tuff as above plus at least 50% interbeds(?) of light-mid greenish grey fine grained quartzite or quartzose tuff:- well sorted, silt to fine sand grade contain only trace pyrite.
71	76m	As 64-68 ie finest facies chloritic tuff. Minor vein quartz. Pyrite trace to 1%.
76	79m	As above plus a brown, fine grained, well sorted quartzite containing only trace pyrite.
79	81m	Brown quartzite; fine grained well sorted, trace pyrite.
81	83m	As above plus 50% coarse tuff facies. Trace pyrite. Also traces of a very soft grey (mid grey) shale.

83	96m	Roland Conglomerate	:	Jasper bearing Roland Conglomerate. Traces of pyrite. Some chloritic fragments (? contamination or an inherent part of the Roland?).

APPENDIX 3

DOWNHOLE EM 37 PROFILES - PD84 CC9

AND PD84 CC10

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IN REPLY PLEASE QUOTE

Feb/1985

MEMO TO: P. A. TEMBY
COPY TO: T. W. DICKSON

MEMO FROM: T VON STROKIRCH

SUBJECT: DOWNHOLE EM37 TESTS ON THE CETHANA PROSPECT, EL 10/76

INTRODUCTION

During September 1984 two drill holes in the Cethana prospect were surveyed with down hole EM using the EM37 system supplied by Geoterrex. Holes PD84 CC9 and PD84 CC10 were tested at 2 and 5 metre intervals using four one hundred metre loops per hole.

INTERPRETATION

PD84 CC9 was drilled on a subtle UTEM anomaly. It was expected to give a strong response as up to 15% volume pyrite had been located in the hole between 72 and 96 metres depth. Unfortunately down hole probing indicated that the hole had caved at 89 metres depth but it was still expected that some response should be evident and that we might be able to determine the direction of any increase in sulphides. All four loops had no anomalous response towards the base of the hole so it appears doubtful that the pyritic zone is in fact the source of the UTEM anomaly. Early time negatives at the top of the hole are present on all loops with the strongest responses being on the northern and western loops. The western loop also experiences a sharp negative above thirty metres depth on all channels. These effects are both presumed due to surface conductive

and topographical variations. A resistvity log of this hole would be interesting to determine the actual conductivity of the pyritic zone in order to decide whether it might be possible to follow it with an Applied Potential array instead.

PD84 CC10 was also drilled on a UTEM anomaly. The hole did not encounter any obvious source for the anomaly. Down hole EM was performed with four loops spaced around the hole. No anomalies were recorded down hole. There is some increase of response on some of the loops but this is interpreted as being due to preferential coupling with the rocks across strike rather than to a conductive source per se. Surface responses are again visible near the top of the hole so it would appear in retrospect that the UTEM anomaly probably has a surficial source which has been enhanced by curent channelling along the edge of a resistive unit to the south which can be seen on the IP/resistivity survey which was performed earlier.

CONCLUSION

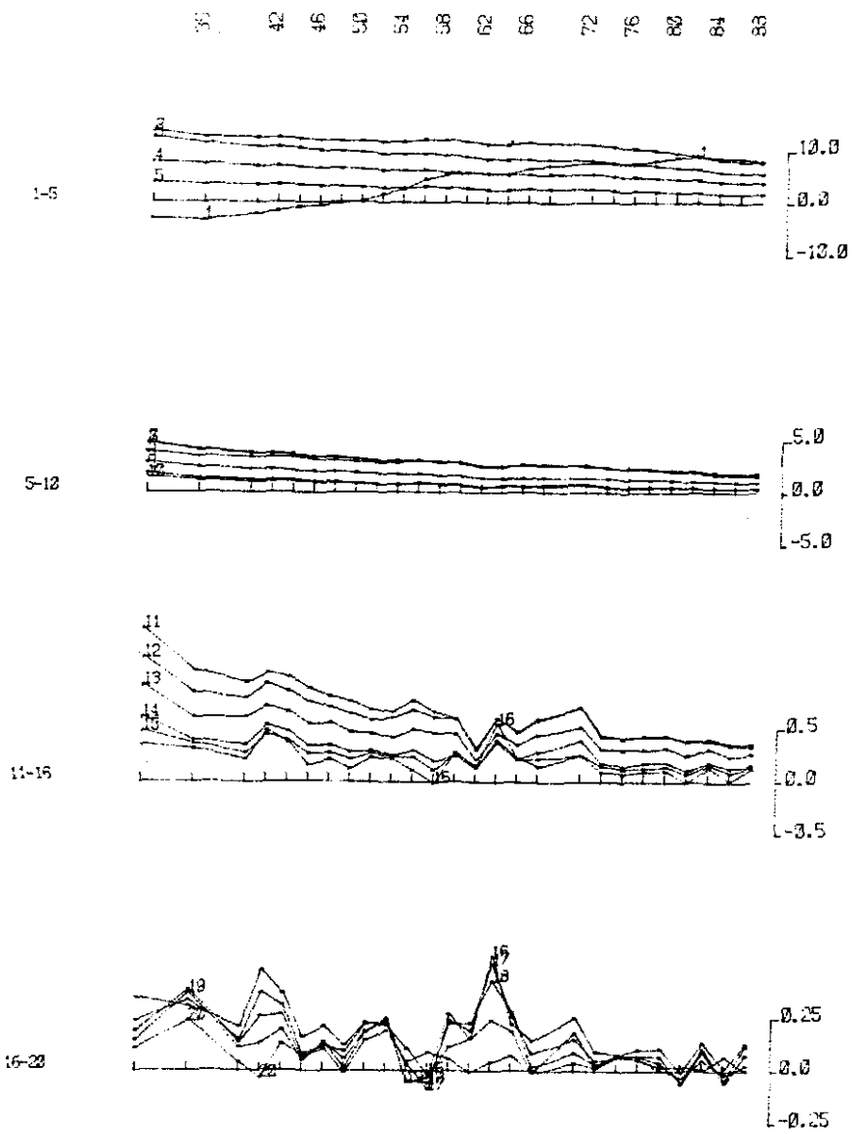
Thus the downhole EM was not able to locate any conductive bodies that might have just been missed during the drillins of the Cethana holes and it appears that in both cases the anomalies might actually have been due to shallow responses which were complicated by current channelling and intermittent layers of conductive material on the surface.

T. von Strokirch

031

5 cm

AXIAL COMPONENT B (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

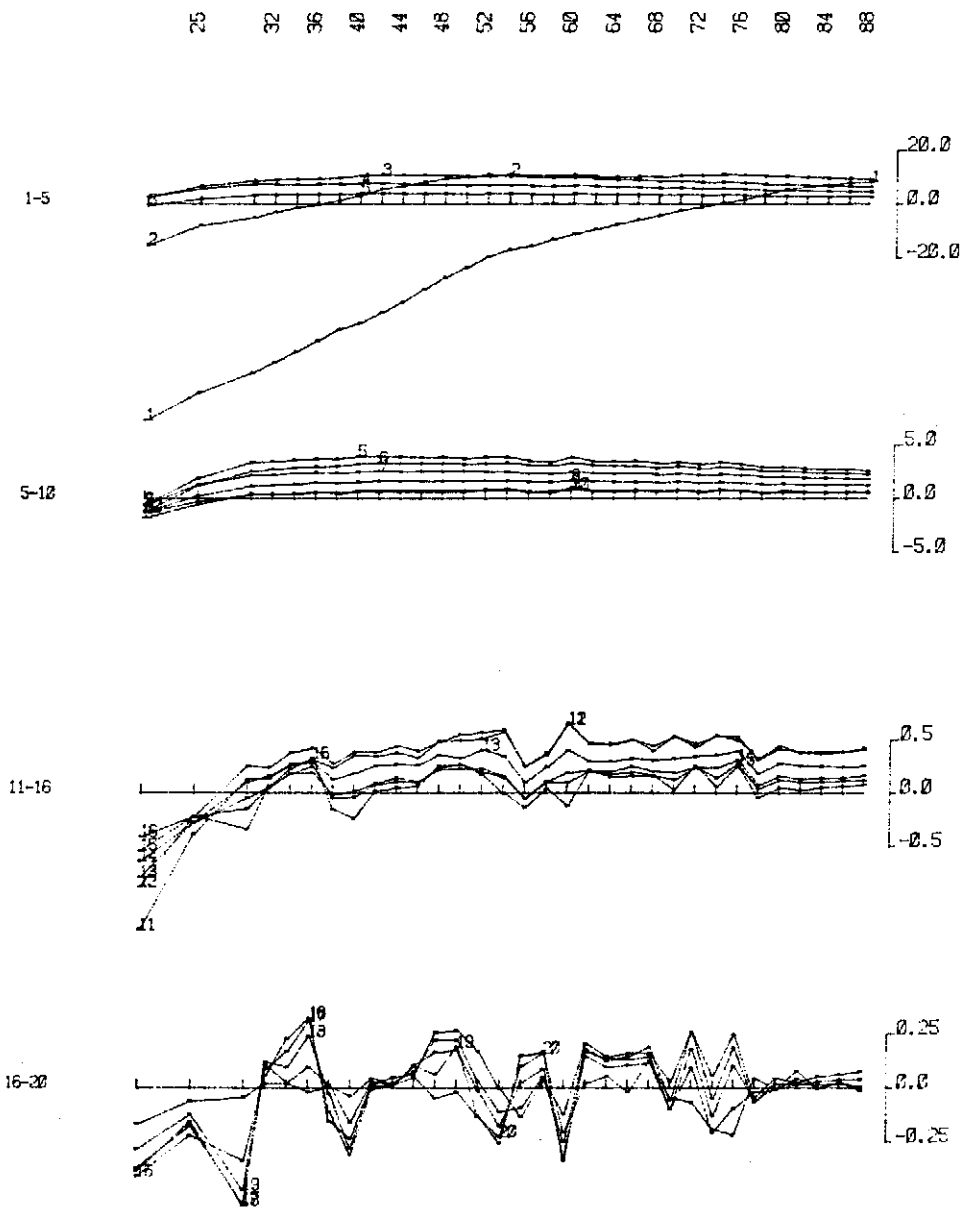
TX LOOP SIDES	: 50S	0E
	: 50N	120E
TX LOOP SIZE	: 120m X 100m	
TX TURN OFF TIME	: 120 microsecs	
CURRENT	: 25.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 4096 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 27-SEP.1984	

SURVEYED AND COMPILED BY GEOTEREX PTY. LTD.	PROJECT NO. 85-1842

CLIENT : CRA Exploration
PROJECT : Gethsemane Prospect
AREA : Sheffield Tas.
BOREHOLE : CC9 A
TX LOOP : 21

2320033

AXIAL COMPONENT B (A)



nanovolts per amp-metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES	:	50S 100W
	:	50N 0E
TX LOOP SIZE	:	100m X 100m
TX TURN OFF TIME	:	120 microsecs
CURRENT	:	36.0 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	4096 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1: 500
SURVEYED BY	:	PE
DATE	:	27-SEP,1984

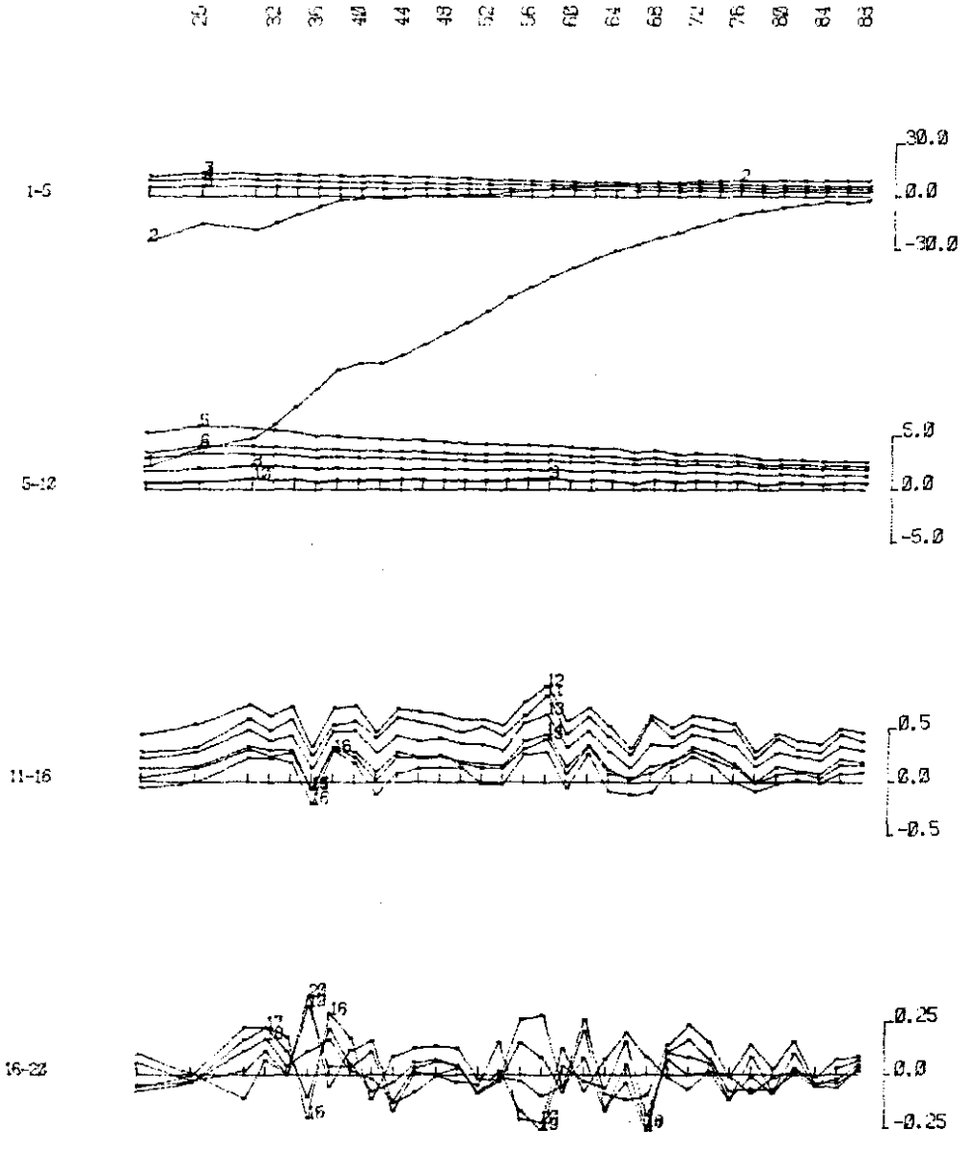
SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 84-1842

CLIENT	: CRA Exploration	
PROJECT	: Gethera Prospect	
AREA	: Sheffield Tas.	
BOREHOLE	: CC9	A
TX LOOP	: 22	

5 cm

5 cm

AXIAL COMPONENT B (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

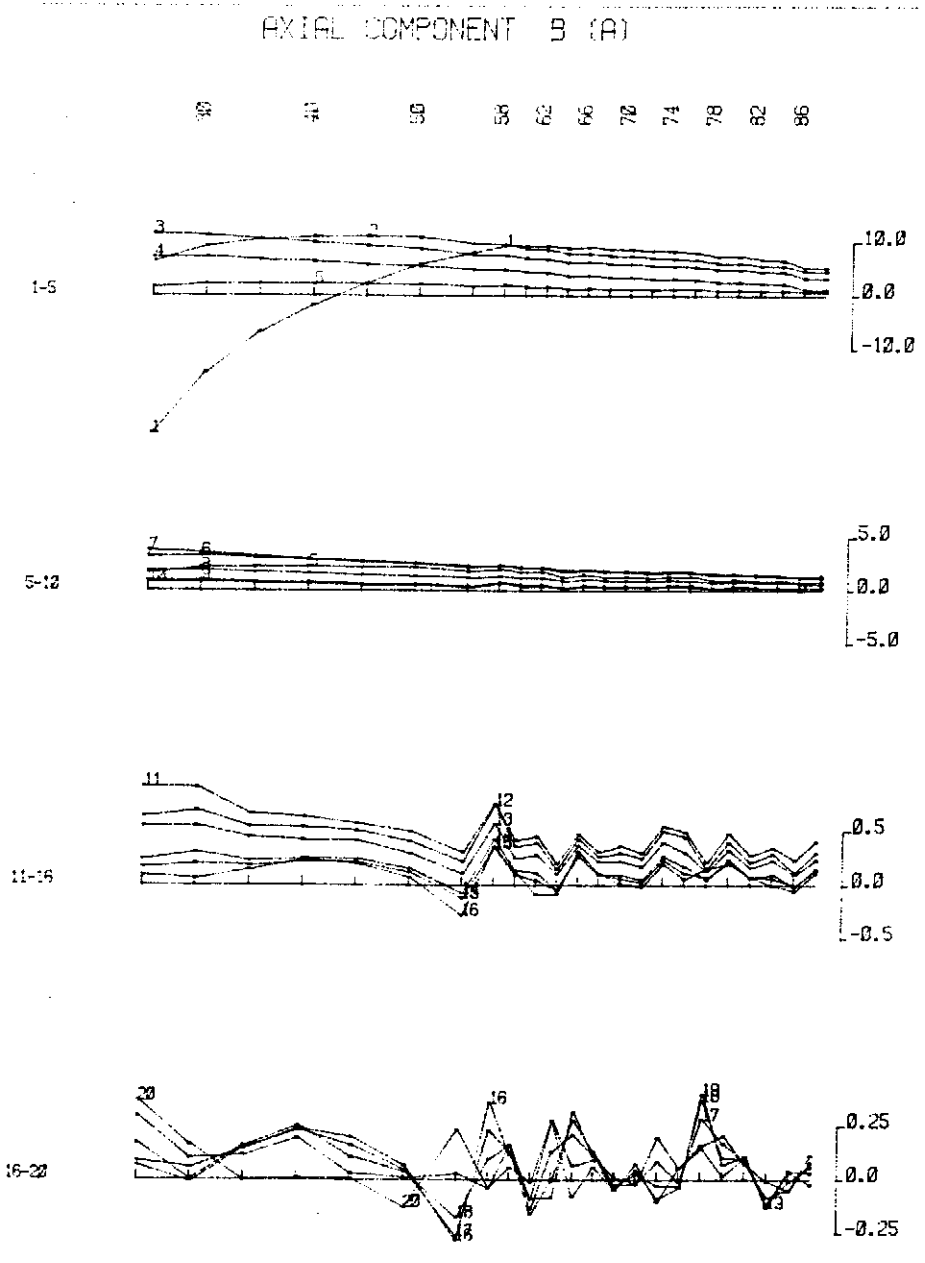
TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES	: 0N	50W
	: 100N	50E
TX LOOP SIZE	: 100m X 100m	
TX TURN OFF TIME	: 120 microsecs	
CURRENT	: 26.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 4096 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 28-SEP-1984	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 85-1842

CLIENT : CRA Exploration
PROJECT : Cethana Prospect
AREA : Sheffield Tas.
BOREHOLE : CC9 A
TX LOOP : 18

5 cm



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

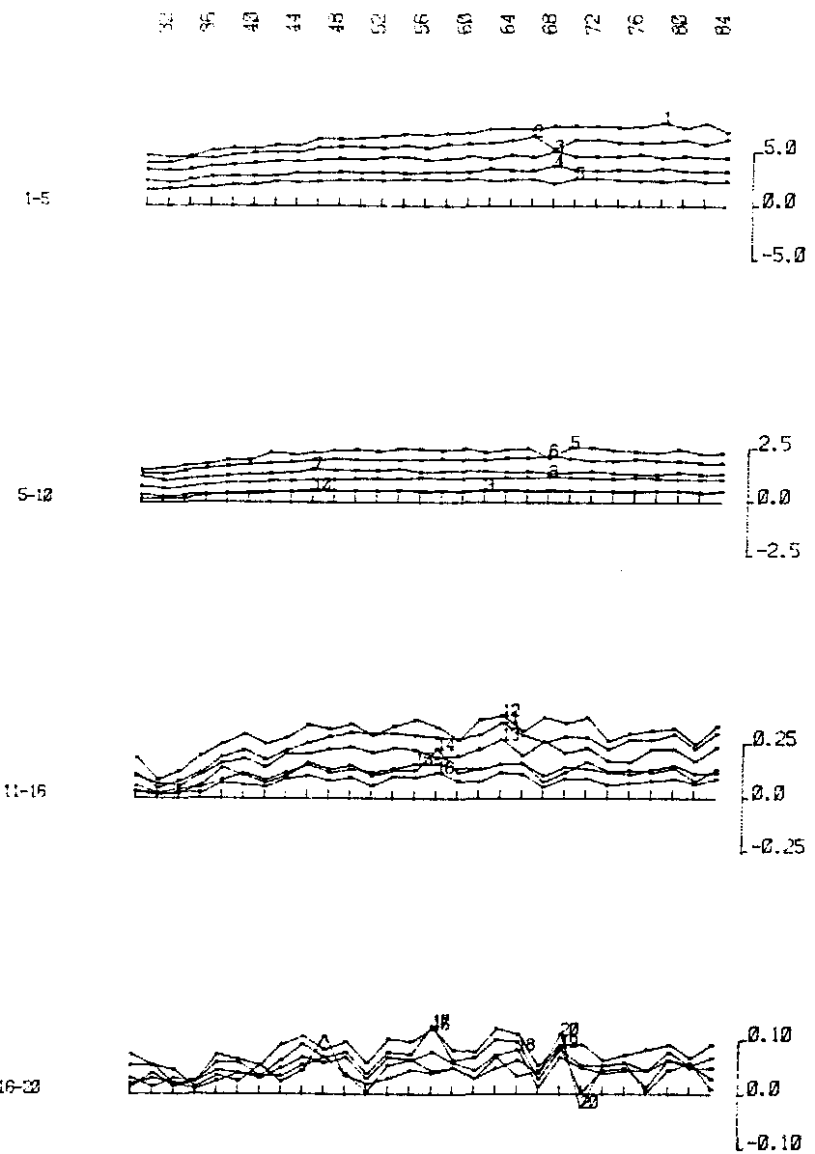
TX LOOP SIDES	:	120S	50W
	:	0N	50E
TX LOOP SIZE	:	120m X 120m	
TX TURN OFF TIME	:	122 microsecs	
CURRENT	:	26.0 amps	
FREQUENCY	:	25 Hz	
INTEGRATION TIME	:	4096 cycles	
SYNC MODE	:	CRYSTAL	
HORIZONTAL SCALE	:	1: 500	
SURVEYED BY	:	PE	
DATE	:	26-SEP-1984	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 85-1942

CLIENT	: CRA Exploration	
PROJECT	: Gathara Prospect	
AREA	: Sheffield Tas.	
BOREHOLE	: CC9	A
TX LOOP	: 19	

5 cm

AXIAL COMPONENT B (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES	:	50S 0E
	:	50N 120E
TX LOOP SIZE	:	120m X 120m
TX TURN OFF TIME	:	122 microsecs
CURRENT	:	26.0 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1: 500
SURVEYED BY	:	PE
DATE	:	22-SEP-1984

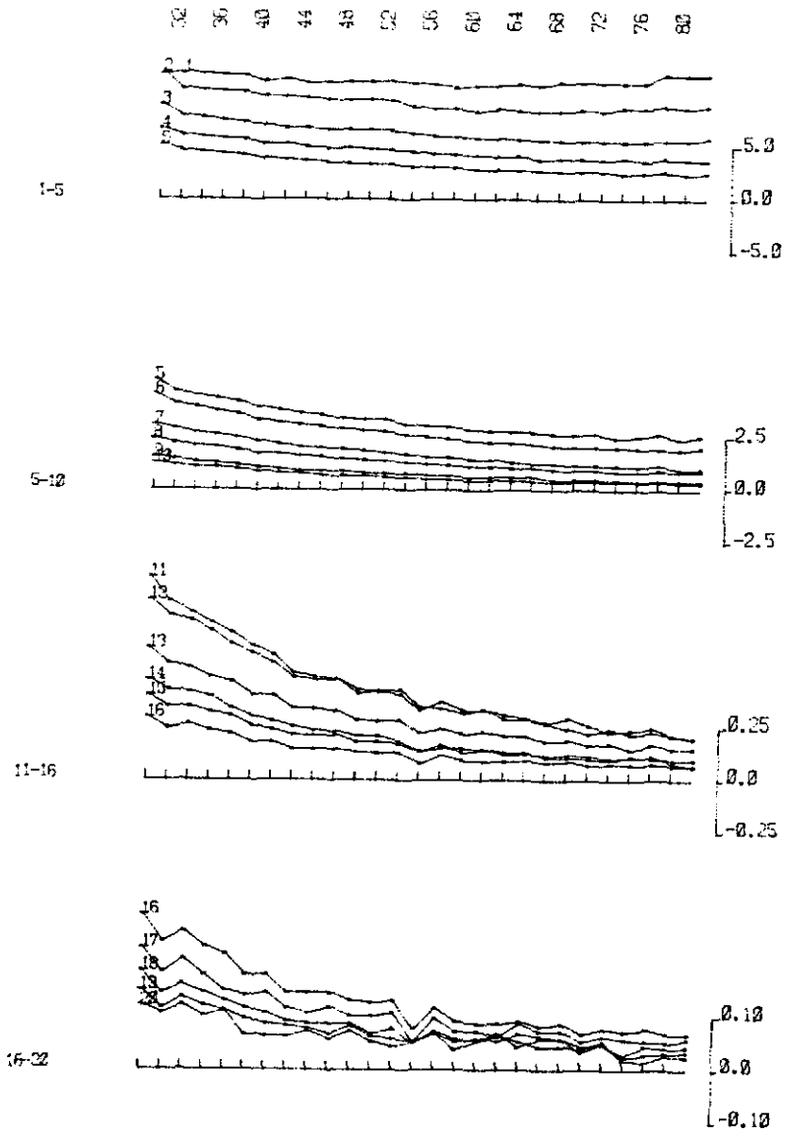
SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1842

CLIENT : CRA Exploration
PROJECT : Gethsemane Prospect
AREA : Sheffield Tas.
BOREHOLE : CC10 A
TX LOOP : 12

5 cm

AXIAL COMPONENT B (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

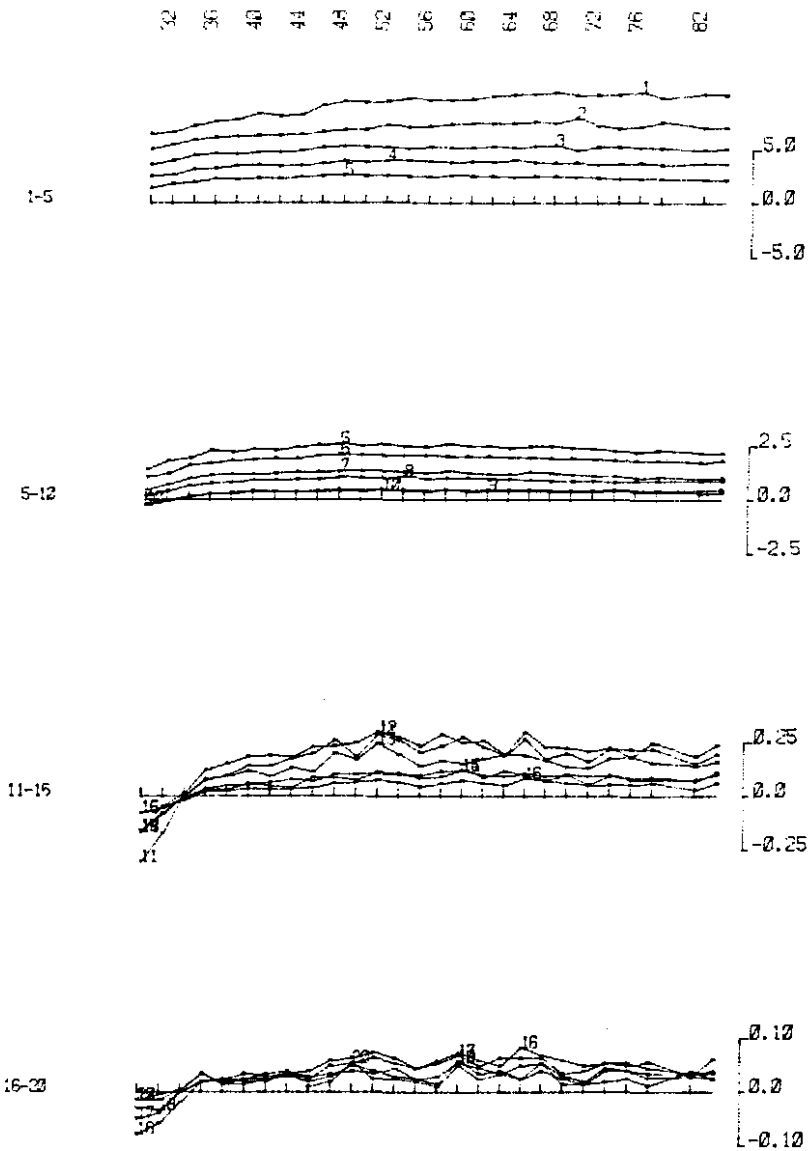
TX LOOP SIDES	: 50S	120W
	: 50N	0E
TX LOOP SIZE	: 120m X 120m	
TX TURN OFF TIME	: 122 microsecs	
CURRENT	: 26.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 1224 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 22-SEP-1984	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 85-1842

CLIENT : CSR Exploration
PROJECT : Cethana Prospect
AREA : Sheffield Tas.
BOREHOLE : CC10 A
TX LOOP : 11

5 cm

AXIAL COMPONENT B' (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES	: 120S	50W
	: 0N	50E
TX LOOP SIZE	: 120m X 120m	
TX TURN OFF TIME	: 120 microsecs	
CURRENT	: 26.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 02-SEP-1984	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

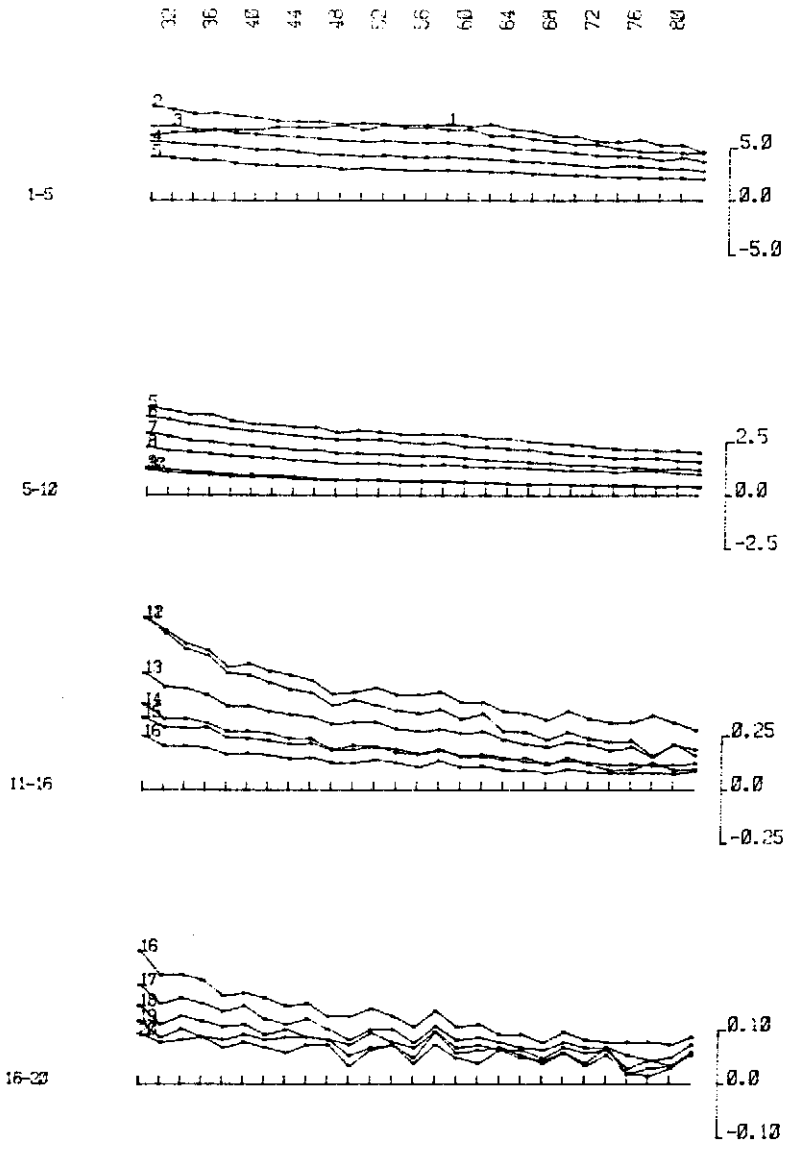
PROJECT NO. 85-1842

CLIENT : CRA Exploration
PROJECT : Cathera Prospect
AREA : Sheffield Tas
BOREHOLE : CC10 A
TX LOOP : 10

038

5 cm

AXIAL COMPONENT B (A)



nanovolts per amp.metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES	: 0N	SOW
	: 120N	SOE
TX LOOP SIZE	: 120m X 120m	
TX TURN OFF TIME	: 120 microsecs	
CURRENT	: 25.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 22-SEP.-1984	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 85-1842

CLIENT	: CRA Exploration
PROJECT	: Cethana Prospect
AREA	: Sheffield Tas.
BOREHOLE	: CC10 A
TX LOOP	: 9

232040

APPENDIX 4

PERCUSSION DRILL HOLE ASSAY RESULTS

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232042

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 2

TENEMENT NAME EL 7/73 Sheffield No.

PLAN – MAP REFERENCE Cethana West Grid.

CO-ORDINATES 428515 E 5468470 N DRILLERS Overland COMMENCED June 1984 DEPTH 102 m HOLE No PD84CC9

Azimuth 360° mag. INCLINATION -60 DRILL TYPE Percussion COMPLETED CASING LEFT 102 m DPO No(s) 31912

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ALS) Cu	Pb	Zn	Ag	Au
					weathered zone	990056	12.0	15.0		135	310	620	2	<3
						57	21.0	22.0		110	220	540	2	<3
						60	26.0	27.0		50	180	380	1	<3
						63	29.0	30.0		60	200	410	1	<3
						66	32.0	33.0		20	230	340	1	<3
						69	35.0	36.0		20	125	370	1	<3
						71	37.0	38.0		10	230	320	1	<3
						73	39.0	40.0		20	155	350	1	<3
						77	43.0	44.0		30	195	660	1	<3
						80	46.0	47.0		40	185	460	1	15
						83	49.0	50.0		10	180	400	1	<3
						85	51.0	52.0		10	160	300	1	<3
						87	53.0	54.0		30	145	320	1	<3
						89	55.0	56.0		40	115	300	1	<3
						92	58.0	59.0		15	135	290	1	<3
						95	61.0	62.0		25	160	460	1	<3
						98	64.0	65.0		20	120	340	1	<3
					target zone	101	67.0	68.0		65	140	350	1	<3
						104	70.0	71.0		105	95	290	1	<3
						107	73.0	74.0		250	175	640	2	3
						112	78.0	79.0		35	110	460	2	<3
						113	79.0	80.0		30	180	500	2	<3
						114	80.0	81.0		40	290	780	3	3
						115	81.0	82.0		40	320	820	3	5
					15% pyrite	117	83.0	84.0		30	250	720	3	5
						119	85.0	86.0		25	230	660	3	<3
						121	87.0	88.0		20	280	600	3	5
						123	89.0	90.0		50	195	640	3	3
						125	91.0	92.0		15	260	480	2	3
						127	93.0	94.0		15	200	460	2	<3

041
21

232043

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 2 OF 2

TENEMENT NAME EL 7/73 Sheffield No. .....

PLAN – MAP REFERENCE Cethana West Grid

CO-ORDINATES 428515 E 5408470 N DRILLERS Overland COMMENCED June 1984 DEPTH 102 m HOLE No. PD 84CC9

Azimuth 360° mag. INCLINATION −60 DRILL TYPE ..... COMPLETED ..... CASING LEFT 102 m DPO No(s) 31912

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ALS) Cu	Pb	Zn	Ag	Au
						990130	96·0	97·0		15	195	420	1	<3
						33	99·0	100·0		15	165	500	1	<3
						35	101·0	102·0		30	260	640	2	<3
						110	76·0	77·0		70	105	480	1	<3

232044

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME EL 7/73 Sheffield No. .....

PLAN – MAP REFERENCE Cethana East Grid

CO-ORDINATES 429645 E 5407460 N DRILLERS Overland COMMENCED June 1984 DEPTH 96 m HOLE No. PD84CC10

Azimuth 180° mag. INCLINATION −60 DRILL TYPE Permanian COMPLETED ..... CASING LEFT 96 m DPO No(s) 31912

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by ALS) Cu	Pb	Zn	Ag	Au
					weathered zone.	990138	6.0	9.0		10	380	920	<1	<3
						41	15.0	18.0		2	50	380	<1	<3
						43	21.0	26.0		15	85	680	1	<3
						44	24.0	27.0		45	1800	760	2	<3
						47	33.0	36.0		15	75	310	<1	<3
						50	38.0	39.0		10	140	290	<1	<3
						53	41.0	42.0		30	50	85	<1	<3
						56	44.0	45.0		10	60	105	<1	<3
						58	46.0	47.0		15	35	55	<1	<3
						59	47.0	48.0		15	50	75	<1	<3
						62	50.0	51.0		10	90	85	<1	<3
						65	53.0	54.0		15	65	85	<1	<3
						66	54.0	55.0		10	45	80	<1	<3
						67	55.0	56.0		15	45	65	<1	<3
						70	58.0	59.0		15	35	45	<1	<3
						73	61.0	62.0		20	40	50	<1	<3
						76	64.0	65.0		10	35	75	<1	<3
					target zone	82	70.0	71.0		20	940	440	1	<3
						84	72.0	73.0		40	240	220	1	<3
						87	75.0	76.0		25	140	250	1	<3
						90	78.0	79.0		10	80	155	<1	<3
						93	81.0	82.0		15	160	290	<1	<3
						96	84.0	85.0		5	50	95	<1	<3
						99	87.0	88.0		5	40	55	<1	<3
						202	90.0	91.0		5	40	45	<1	<3
						205	93.0	94.0		5	30	30	<1	<3
						157	45.0	46.0		10	45	75	<1	<3
						179	67.0	68.0		15	50	135	<1	<3

APPENDIX 5

CORE REASSAY FOR AU

RESULTS AND SUMMARY LOG

041

232046

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME EL 10/76 Cethana No.

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES E DRILLERS Longyear COMMENCED 28/1/77 DEPTH 106.4 m HOLE No. DD77SC1

Azimuth 45° INCLINATION −55° DRILL TYPE Diamond (Mark 12) COMPLETED 2/2/77 CASING LEFT 4 m DPO No(s) 31906

DEPTH From M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						601679	20.6	22.6		–	
						601676	23.3	24.3		–	
						82	29.4	30.5		–	
						83	30.5	31.6		–	
						95	76.0	78.6		–	
						96	78.6	79.0		–	
						97	79.0	89.4		–	
						99	88.6	89.8		–	
						601701	92.0	94.1		–	
						02	94.1	95.8		–	
						03	95.8	98.0		–	
						04	98.0	100.0		–	
						05	100.0	100.6		–	

045

232047

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME EL 10/76 Cethana No. .....

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES ..... E ..... DRILLERS Longyear ..... COMMENCED 4/2/77 ..... DEPTH 164.1 m ..... HOLE No. DD77CC2

Azimuth 210° ..... INCLINATION −61° ..... DRILL TYPE Diamond (Mark 12) ..... COMPLETED 9/2/77 ..... CASING LEFT 4 m ..... DPO No(s). 31906

DEPTH From (M)	DEPTH To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						601707	12.5	13.5		–	
						08	14.0	16.0		–	
						11	19.3	21.3		–	
						12	21.3	23.0		–	
						52	38.0	39.0		–	
						20	39.0	40.0		–	
						22	45.0	46.0		–	
						54	46.0	47.0		–	

046

232048

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME EL 10/76 Cethana No.

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES E DRILLERS Longyear COMMENCED DEPTH 190.0 m HOLE No RD77CC3

Azimuth 208° INCLINATION −60° DRILL TYPE Diamond (Mark 12) COMPLETED CASING LEFT 4 m. DPO No(s) 31906

DEPTH From M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au ppb
						601779	12.0	14.0		—
						80	14.0	17.0		—
						91	36.4	38.4		—
						99	79.7	80.5		—
						800	81.7	83.6		—
						901	83.6	85.4		—
						02	85.4	87.4		—
						05	107.5	109.4		—
						07	122.8	124.2		—
						09	140.1	140.9		—
						10	144.9	145.7		—
						11	145.7	146.8		—
						12	147.8	145.2		—
						13	156.5	158.5		—

047

232049

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME EL 10/76 Cethana

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 2175 E 1395 DRILLERS Longyear COMMENCED 6:4:77 DEPTH 149.7 m HOLE No DD77CC4

Azimuth 180° INCLINATION DRILL TYPE Diamond (Longyear 38) COMPLETED 12:4:77 CASING LEFT 2 m DPO No(s) 31906

DEPTH From M	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						603483	6.0	10.0		–	
						84	10.0	12.5		–	
						85	12.5	13.5		–	
						86	13.5	14.0		–	
						87	17.0	17.4		–	
						618112	20.0	25.0		–	
						603493	73.5	75.0		–	
						94	75.0	77.5		–	
						603429	120.5	122.0		–	
						30	122.0	124.0		–	
						37	135.0	136.0		–	
						38	136.0	138.0		–	

232050

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 078

TENEMENT NAME EL 10/76 Cethana No.

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21750 E 8 S DRILLERS Longyear COMMENCED 13·4·77 DEPTH 164·2m HOLE No PD77CC5

Azimuth 180° INCLINATION −50° DRILL TYPE ~~Diamond (Longyear 38)~~ COMPLETED 17·4·77 CASING LEFT 2·0 DPO No(s) 31906

DEPTH From M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis Au	Au ppb
						603478	15·6	19·7		–	
						79	19·7	25·2		–	
						618005	25·2	28·2		–	
						06	28·2	30·0		–	
						07	30·0	32·0		–	
						11	36·9	37·8		50	
						12	37·8	38·8		–	
						13	38·8	41·0		–	
						14	41·0	43·0		–	
						15	43·0	45·0		–	
						16	45·0	46·5		–	
						17	46·5	47·5		–	
						603480	47·5	49·0		–	
						618 018	50·9	51·8		–	
						14	51·8	53·0		–	
						22	57·0	59·3		–	
						23	63·0	64·5		–	
						24	64·5	66·0		–	
						25	72·6	75·0		–	
						26	75·0	77·0		–	
						29	80·0	82·5		–	
						30	82·5	83·2		–	
						31	83·2	85·0		–	
						32	85·0	87·0		–	
						41	103·0	105·0		–	
						49	123·0	126·0		–	
						50	126·0	128·0		–	
						67	154·8	156·0		–	
						68	156·0	157·6		–	

232051

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 1

TENEMENT NAME E4 10/76 Cethana No.

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21600 E 3505 S DRILLERS Ace Diamond Drillers COMMENCED 6:12:77 DEPTH 200·5 HOLE No DD77CC6

Azimuth 180° INCLINATION −55° DRILL TYPE Diamond (F-30) COMPLETED 16:12:77 CASING LEFT Nil DPO No(s) 31906

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au ppb
						297306	10·0	13·0		–
						10	22·9	25·0		–
						1				–
						618301	31·0	33·0		–
						02	33·0	35·0		–
						03	35·0	36·5		–
						04	36·5	38·0		–
						05	38·0	39·5		–
						06	39·5	41·0		–
						07	41·0	45·0		–
						297313	43·0	45·0		–
						618308	46·8	48·5		–
						09	48·5	50·2		–
						10	50·2	52·2		–
						11	52·2	54·2		–
						12	54·2	56·2		–
						13	56·2	57·2		–
						297315	57·2	60·0		–
						618314	60·0	62·4		80
						15	79·0	80·0		–
						297322	80·0	83·0		–
						51	167·0	170·0		–
						52	170·0	173·0		–
						57	185·0	187·2		–
						618320	189·0	191·0		–
						21	141·0	193·0		–
						22	193·0	195·0		40
						23	195·0	197·0		–
						297440	197·0	200·5		–

050

232052

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 2

TENEMENT NAME EL 10/76 Cethana No

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21600 E 3718.55 DRILLERS Ass. Diamond Drillers COMMENCED 19/12/77 DEPTH 137.4 m HOLE No DD77CC7

Azimuth 180° INCLINATION −50° DRILL TYPE Diamond (F-30) COMPLETED 11/1/78 CASING LEFT 6m HQ DPO No(s) 31906

DEPTH From M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						618838	6.0	7.5		20	
						41	10.5	12.0		–	
						51	14.5	18.0		–	
						59	37.5	40.0		–	
						844	45.5	46.5		–	
						45	46.5	48.0		–	
						46	48.0	49.0		–	
						47	49.0	50.0		–	
						49	51.0	52.0		–	
						50	53.0	54.0		–	
						65	56.5	58.0		–	
						66	58.0	59.0		–	
						70	60.5	62.2		–	
						67	62.2	62.5		–	
						69	68.5	70.5		–	
						79	73.0	75.5		–	
						80	75.5	78.0		–	
						83	78.0	80.5		–	
						84	80.5	83.0		–	
						85	83.0	86.0		–	
						88	92.0	95.0		–	
						92	104.0	107.0		–	
						74	109.3	110.5		30	
						75	110.5	111.5		–	
						76	111.5	112.5		–	
						94	—	—			
						95	115.5	118.5		–	
						96	115.5	120.5		–	
						97	121.5	124.5		–	

232053

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME E4/0/76 Cethana No. .....

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21600 E 3718·5 S DRILLERS ..... COMMENCED 19/12/77 DEPTH 137·4m HOLE No. PD77C7

Azimuth 180° INCLINATION −50° DRILL TYPE ..... COMPLETED 11/1/78 CASING LEFT 6m HQ DPO No(s) 31906

DEPTH From M	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						618900	130·5	133·5		–	
						01	133·5	136·0		–	
						02	136·0	137·4		–	

232054

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

SHEET 1 OF 252

TENEMENT NAME EL 10/76 Cethana No.

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21750 E 42·5 N DRILLERS Ass Diamond Drillers COMMENCED 15·1·78 DEPTH 157·6 m HOLE No. DD77CC8

Azimuth 180° INCLINATION −55° DRILL TYPE Diamec (F-30) COMPLETED 29·1·78 CASING LEFT 3m HQ DPO No(s) 31905

DEPTH From (M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au ppb
						618996	4.0	6.0		—
						7	6.0	8.0		—
						8	8.0	10.0		—
						9	10.0	12.0		—
						619000	12.0	14.0		—
						297268	16.0	18.0		50
						91	22.0	24.0		—
						93	26.0	28.0		—
						95	30.0	32.0		—
						96	32.0	32.7		—
						97	32.0	33.5		—
						395	54.0	57.0		—
						400	69.0	72.0		—
						403	78.0	81.0		—
						4	81.0	84.0		—
						5	84.0	87.0		—
						6	87.0	90.0		—
						7	90.0	92.5		—
						61	95.0	97.0		
						410	97.0	99.0		—
						11	99.0	101.0		—
						12	101.0	103.0		—
						13	103.0	105.0		—
						14	105.0	107.0		—
						15	107.0	109.0		—
						16	109.0	111.0		—
						17	111.0	113.0		—
						18	113.0	115.0		SNR
						19	115.0	117.0		—
						20	117.0	119.0		—

053

232055

C.R.A. EXPLORATION PTY. LIMITED
DRILL CORE LOG

TENEMENT NAME EL10/76 Cethana No. .....

PLAN – MAP REFERENCE Cethana 1:25000

CO-ORDINATES 21750 E 42·5 N DRILLERS Ass. Diamond Drillers COMMENCED 15·1·78 DEPTH 157·6 m HOLE No. DD77CC8

Azimuth 180° INCLINATION – 55° DRILL TYPE Diamond (F-30) COMPLETED 29·1·78 CASING LEFT 3 m HQ DPO No(s) 31905

DEPTH From M)	DEPTH To(M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis) Au	ppb
						297421	119.00	121.0		–	
						2	121·0	123·0		–	
						5	127.0	129.0		–	
						34	145·0	147·0		–	
						36	149.0	151·0		–	
						39	155.0	157·6		–	

APPENDIX 6

GOLD ANALYSES - ROLAND CONGLOMERATE

AND MOINA SANDSTONE

Hole	Sample No	From - To	Au (ppm)	Pb	Zn	Cu	Ag	Core Description
77CC1			Nil					
77CC2			Nil					
77CC3			Nil					
77CC4			Nil					
77CC5	618012	37.8 - 38.8	0.6	.8%	3.88%	1.18%	185	Chloritic, graphitic tuff shale 25% sulphides. Repeat on Au of 0.7 ppm
77CC6	618814	60.0 - 62.4	0.08	.98%	.65%	310	5	Sericite - chlorite - carbonate altered fine grained graphitic tuff, 3% py
	618822	193.0 - 195.0	0.04	.12%	.33%	105	3	Sericite - chlorite - carbonate altered fine graphitic tuff, 3% py
77CC7	618838	6.0 - 7.5	0.02	90	860	10	2	Chloritic gritty tuff, quartz veining, 3-5% py, minor hematite
	618874	109.3 - 110.5	0.03	.21%	.15%	48	3	Fine grained bedded (?) tuff with sericite, some carbonate and chlorite 5% py
77CC8	297288	16.0 - 18.0	0.05	230	.22%	120	<1	Cherty sericitic fine grained tuff, bands of xtal tuff

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name: Cethana EL 10/76 No. ..... Sample numbers: 1197501-4, 8-12 Collected by: Peter Temby Sheet no. 1 of 2

Area / Prospect: Mt Claude Date: June 1984

Map / Photo reference: Cethana 1:25000 5 cm Analysed by: Genalysis DPO no. 31906

A 02143

055

Sample No.	Type ss * oc f s	ss channel ** fl	wi	al	co	ca	pH	o/c sample type ***	s sample type ****	Carbon	Metal content ppm or % Cu	Pb	Zn	Ag	As	Sb	Au ppm	Grid ref	Geological Observations
1197501	oc	4m x 20cm rock chip.									8	18	14	<.1	10	6	<.01	430500E 5406720N	Completely hematized Roland Conglomerate some ghost pebbles visible, minor alluvia (?)
2	oc	10m x 20cm rock chip									10	6	4	<.1	15	<1	<.01	430500E 5406690N	Minor hematization of qtz sand matrix type Roland Conglom.
3	oc	10m x 20cm rock chip									7	5	3	<.1	10	<1	<.01	430500E 5406680N	Minor qtz veining in qtz sand matrix Roland Conglom.
4	oc	10m x 20cm rock chip									5	4	3	<.1	15	<1	<.01	430500E 5406670N	Strongly silicified and qtz veined qtz matrix type Roland Conglom.
8	oc	10m x 20cm rock chip									5	4	3	<.1	10	<1	<.01	430560E 5406615ON	Silicified conglom with sandy layers, pinkish hematitic matrix, qtz veining esp. in sandy layers.
9	oc	10m x 20cm rock chip									5	3	2	<.1	10	<1	<.01	430550E 5406620N	Silicified conglom with pinkish matrix, minor qtz veining. Fe stain associated with joints.
10	oc	10m x 20cm rock chip									7	3	2	<.1	15	<1	<.01	430550E 5406610N	Reddish conglom with some greenish clayey matrix, qtz veining. on joint plane.
11	oc	7m x 20cm rock chip									7	3	3	<.1	10	<1	<.01	430550E 5406600N	Conglom with gradational contact with sst. red matrix, abundant qtz veining
12	oc	8m x 20cm rock chip									8	4	3	<.1	5	<1	<.01	430550E 5406590N	Red sst with abundant qtz veins at 90° to dip.
		Detection Limits									1	1	1	0.1	5	1	0.01		

* Sample type ss = stream sediment oc = outcrop f = float s = soil

** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

*** Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)

**** Soil sample type auger hole or pit depth m A, B or C horizon

2320158

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name: Cethana EL 10/76 No. Sample numbers: 1197513–20 Collected by: Peter Temby Sheet no: 2 of 2
Area / Prospect: Mt Claude Date: June 1984
Map / Photo reference: Cethana 1:25000 Analysed by: Genalyses DPO no: 31904
A 02143

5 cm

Sample No.	Type ss * oc f s	ss channel ** fl	wi	al	co	ca	pH	o/c sample type ***	s sample type ****	Carbon	Cu	Pb	Zn	Ag	As	Sb	Au	Grid ref	Geological Observations
1197513	oc	10m x 20cm rock chip.									7	3	2	<.1	10	<1	<.01	430550E 5406580N	Red sst with qtz veins normal to dip.
14	oc	10m x 20cm rock chip									5	12	3	0.8	10	<1	<.01	430530E 5406560N	Conglom with abundant r-10 mm black and red jasper fragments, feldspathic matrix, some porphyry pebbles to 5cm.
15	oc	10m x 20cm rock chip									5	18	4	0.3	15	<1	<.01	430535E 5406560N	as above.
16	oc	10m x 20cm rock chip									7	8	2	<.1	15	<1	<.01	430550E 5406580N	Feldspathic jasper bearing conglom. sandy inter beds. Moderate silicification some qtz veining.
17	oc	10m x 20cm rock chip									6	5	3	<.1	10	<1	<.01	430560E 5406590N	Sheared, qtz veined feldspar-jasper bearing conglomerate
18	oc	10m x 20cm rock chip									5	8	3	<.1	15	<1	<.01	430860E 5406210N	Red shale with cherty bands (secondary) within sequence of sandy feldspathic jasper bearing conglomerate.
19	oc	9m x 20cm rock chip									5	3	2	<.1	15	<1	<.01	430860E 5406200N	Pink-white qtzite, heavily silicified with quartz veining.
20	oc	3 vertical channel samples over 10m in hematite lens									6	34	8	<.1	15	8	<.01	430600E 5406620N	Massively hematized s/st on basal plane of fault. Conglom overthrust, also hematized. Adit in hematite. fault ≈ 60° dip.
		Detection Limits									1	1	1	0.1	5	1	0.01		

* Sample type ss = stream sediment oc = outcrop f = float s = soil
** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2
*** Outcrop sample type gs = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)
**** Soil sample type auger hole or pit depth m A, B or C horizon

057

2320569

LEGEND

QUATERNARY

- Qra — RECENT ALLUVIUM.
- Qt — SCREE, ALLUVIUM, AND LANDSLIDE DEBRIS COMPOSED OF TERTIARY BASALT DETRITUS.
- Qd — SCREE, ALLUVIUM, AND LANDSLIDE DEBRIS COMPOSED OF JURASSIC DOLERITE DETRITUS.
- Qrc — SCREE, ALLUVIUM, AND LANDSLIDE DEBRIS COMPOSED OF CONGLOMERATE DETRITUS.
- Qg — MARSH DEPOSITS AND RESIDUAL GRAVELS.

TERTIARY

- Tb — BASALT - ALKALINE OLIVINE, VALLEY FILL.
- Ts — SANDS, CLAYS, AND CONGLOMERATES.

JURASSIC

- Jdl — DOLERITE - SMALL DYKES AND PLUGS, THOLEIITIC.

PERMIAN

- Pkb — KANSAS CK. BEDS - BASAL CONGLOMERATES, PEBBLY SILTSTONE, AND FOSSILIFEROUS LIMESTONE, SILTSTONE AND SANDSTONE WITH ERRATICS.
- Pbb — BASAL BEDS (KANSAS CK. BED EQUIVALENTS) - CONGLOMERATE (TILLITES), MUDSTONE, TASMANITE "OIL SHALE".

SILURIAN

- Se — ELDON GROUP (?) - MASSIVE CLEAN QUARTZ SANDSTONE AND QUARTZITE.

ORDOVICIAN

- Ogs — SKARN - METASOMATISED AND CONTACT METAMORPHOSED GORDON LIMESTONE. PREDOMINANTLY GARNET AND PYROXENE.
- Og — GORDON LIMESTONE - MASSIVE BEDS OF BLUE GREY FINE GRAINED LIMESTONE.
- Om — MOINA SANDSTONE - QUARTZ SANDSTONE AND SHALES WITH MINOR GRIT AND CONGLOMERATE BEDS.
- Orc — ROLAND CONGLOMERATE - COARSE POORLY SORTED, COMPOSED OF PRECAMBRIAN QUARTZITE COBBLES, OCCASIONAL QUARTZITE BEDS.

DEVONIAN

- Dgr — BEULAH MICROGRANITE - FINE GRAINED GRANITE AND MICROGRANODIORITE.
- Ddlgr — DOLCOATH GRANITE - MEDIUM TO COARSE GRAINED, BIOTITE WITH APLITE VEINS AND DYKES.

CAMBRIAN

- Ebp — BULL CK. FORMATION - QUARTZ FELDSPAR PORPHYRY AND SEDIMENTS HYDROTHERMALLY ALTERED.
- Elg — LORINNA GREYWACKE - ASSEMBLAGE OF GREYWACKE, CHERT AND PORPHYRY.
- Emk — MINNOW KERATOPHYRE - SODA-RHYOLITE, KERATOPHYRES, TUFFS AND SUBORDINATE GREYWACKES HYDROTHERMALLY ALTERED.
- Egg — GOG RANGE GREYWACKE - A SEQUENCE OF TURBIDITE SEDIMENTS CONSISTING OF ARGILLACEOUS CHERT, SILTSTONE AND GREYWACKES WITH VOLCANIC INTERBEDS TOWARDS THE TOP.
- Esf — SPRENT FORMATION - CHERT BRECCIA AND MINOR SHALE INTERCALATIONS.
- Ebf — BEULAH FORMATION - BASIC TO INTERMEDIATE LAVAS WITH PYROCLASTICS AND BRECCIA.
- Edl — QUARTZ DOLERITE.
- E — UNDIFFERENTIATED ACID VOLCANICS.

- ESTABLISHED BOUNDARY - POSITION APPROXIMATE.
- INFERRED PROBABLE OR INDEFINITE BOUNDARY.
- UNCONFORMITY.
- THRUST FAULT (TEETH ON UPPER PLATE).
- WRENCH FAULT.
- FAULT WITH DIRECTION OF MOVEMENT.
- ANTICLINAL AXIS SHOWING DIRECTION OF PLUNGE.
- SYNCLINAL AXIS SHOWING DIRECTION OF PLUNGE.
- STRIKE AND PLUNGE OF MINOR FOLDS.
- STRIKE AND DIP OF STRATA.
- STRIKE OF VERTICAL STRATA.
- STRIKE AND DIP OF JOINTING.
- STRIKE AND DIP OF CLEAVAGE.
- STRIKE OF BEDS INTERPRETED FROM AIR PHOTOS AND/OR TRAVERSE INFORMATION.
- MINE OR PROSPECT.

FROM: SHEFFIELD 1:63 360 GEOLOGY MAP, I.B. JENNINGS ET. AL., DEPT. OF MINES TAS. 1959.

5 420 000 mN
5 415 000 mN
5 410 000 mN
5 405 000 mN
425 000 mE
430 000 mE
435 000 mE

Wilmot Ag, Pb
Bell Mount Au,
Shepherd & Murphy Bi, Wo, Mo, Sn,
Squib W, Bi, Mo, Sn, Au.
Sayers W, Bi, Sn, Mo,
Dolcoath W, Bi.
Hidden Treasure W
All Nations W, Bi, Mo.
Premier W, Mo, Bi, Fe.
Tin Spur
Round Hill Ag, Pb.
Devonian Ag, Pb, Au.
Campbells Reward Ag, Au
Ag, Pb,

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73 EAST SHEET

REGIONAL GEOLOGY 001

85-2333

232060

5 cm

Ref:	SK55 - 3		
Scale:	1 : 25.000	Drawn:	R.T. G. W.
Author:	M.F.F.	Report No.	13109
Date:	24 - 3 - 1984	Plan No.	TASh 1711

5 420 000 mN

5 415 000 mN

5 410 000 mN

5 405 000 mN

425 000 mE

430 000 mE

435 000 mE

** NOTE **

BIRD HEIGHT LESS THAN 55 METRES ..... DARK GREY
55 TO 75 METRES ..... LIGHT GREY
GREATER THAN 75 METRES ..... WHITE
MISSING DATA ..... BLACK
NOMINAL SURVEY HEIGHT WAS 55 METRES

5 cm

232061

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73
& Part of CETHANA E.L. 10/76
DIGHEM " BIRD " HEIGHT
WEST SHEET 002

85-2633

Ref:	SK55 - 3		
Scale:	1 : 25.000	Drawn:	R.T. G. W.
Author:	M.F.F.	Report No.	13109
Date:	24 - 3 - 1984	Plan No.	TASh 1708

003

STAVERTON ROAD

Transmission Line

Transmission Line

CLAUDE ROAD

Dasher River

GOWRIE PARK

O'Neills Creek

OLIVERS ROAD

Power Line

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE

E.L. 10/76

E.L. 7/73

232062

5 cm

CRA EXPLORATION PTY. LIMITED	
CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET	
003	
85-3333	
REF: SK55 - 3	
SCALE: 1 : 5000	DRAWN: R. T.
AUTHOR: M. F. F.	REPORT No. 13109
DATE: APRIL 1984	PLAN No. TASh. 1667

004

Cupron Creek

Lake Barrington

STAVERTON ROAD

CETHANA ROAD

CETHANA

Transmission Line

Dasher River

CLAUDE ROAD

Power Line

Cethana Dam

LAKE CETHANA

LORINNA ROAD

COCKATOO ROAD

Machinery Creek

OLIVERS ROAD

E.L. 10/76

E.L. 7/73

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

420 000 mE

430 000 mE

431 000 mE

232063

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

004

85-2333

REF:	SK55-3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	APRIL 1984	PLAN No.	TASh 1668

CRA EXPLORATION PTY. LIMITED

23064

CETTAANA EL. 10/76 & part of 7/73 EAST SHEET
SHEFFIELD EL. 7/73 EAST SHEET
AEROMAGNETIC CONTOURS

005

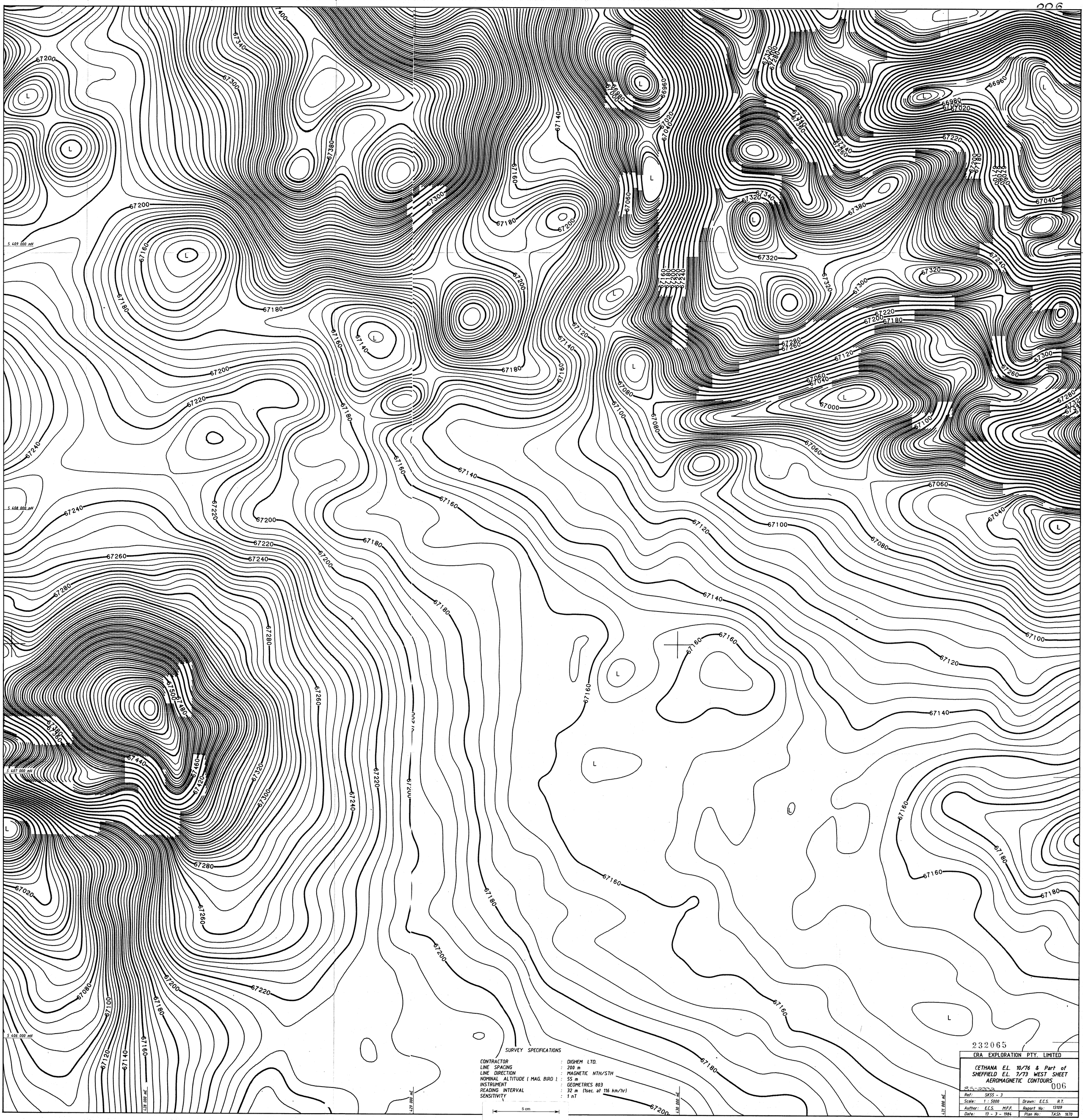
Ref: SX55 - 3			
Scale: 1 : 5000	Drawn: E.C.S.	R.T.	
Author: E.C.S. M.F.F.	Report No: 1370		
Date: 14 - 3 - 1984	Plan No. TASK 1499		

SURVEY SPECIFICATIONS

CONTRACTOR : DIGHEM LTD.
LINE SPACING : 200 m
LINE DIRECTION : MAGNETIC NTH/STH
INSTRUMENT : GEOMETRICS 803
NOMINAL ALLTITUDE (MAG. BIRD) : 55 m
READING INTERVAL : 32 m (1sec. at 116 km/hr)
SENSITIVITY : 1 nT

5 cm

E 435 000 mE
E 434 000 mE
E 433 000 mE
E 432 000 mE
N 5 408 000 mN
N 5 407 000 mN
N 5 406 000 mN
N 5 405 000 mN



SURVEY SPECIFICATIONS

CONTRACTOR	:	DIGHEM LTD.
LINE SPACING	:	200 m
LINE DIRECTION	:	MAGNETIC NTH/STH
NOMINAL ALTITUDE (MAG. BIRD)	:	55 m
INSTRUMENT	:	GEOMETRICS 803
READING INTERVAL	:	32 m (1sec. at 116 km/hr)
SENSITIVITY	:	1 nT

232065

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET AEROMAGNETIC CONTOURS

85-2333

Ref: SK55 - 3	
Scale: 1 : 5000	Drawn: E.C.S. R.T.
Author: E.C.S. M.F.F.	Report No: 13109
Date: 13 - 3 - 1984	Plan No: TASh 1670

007

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

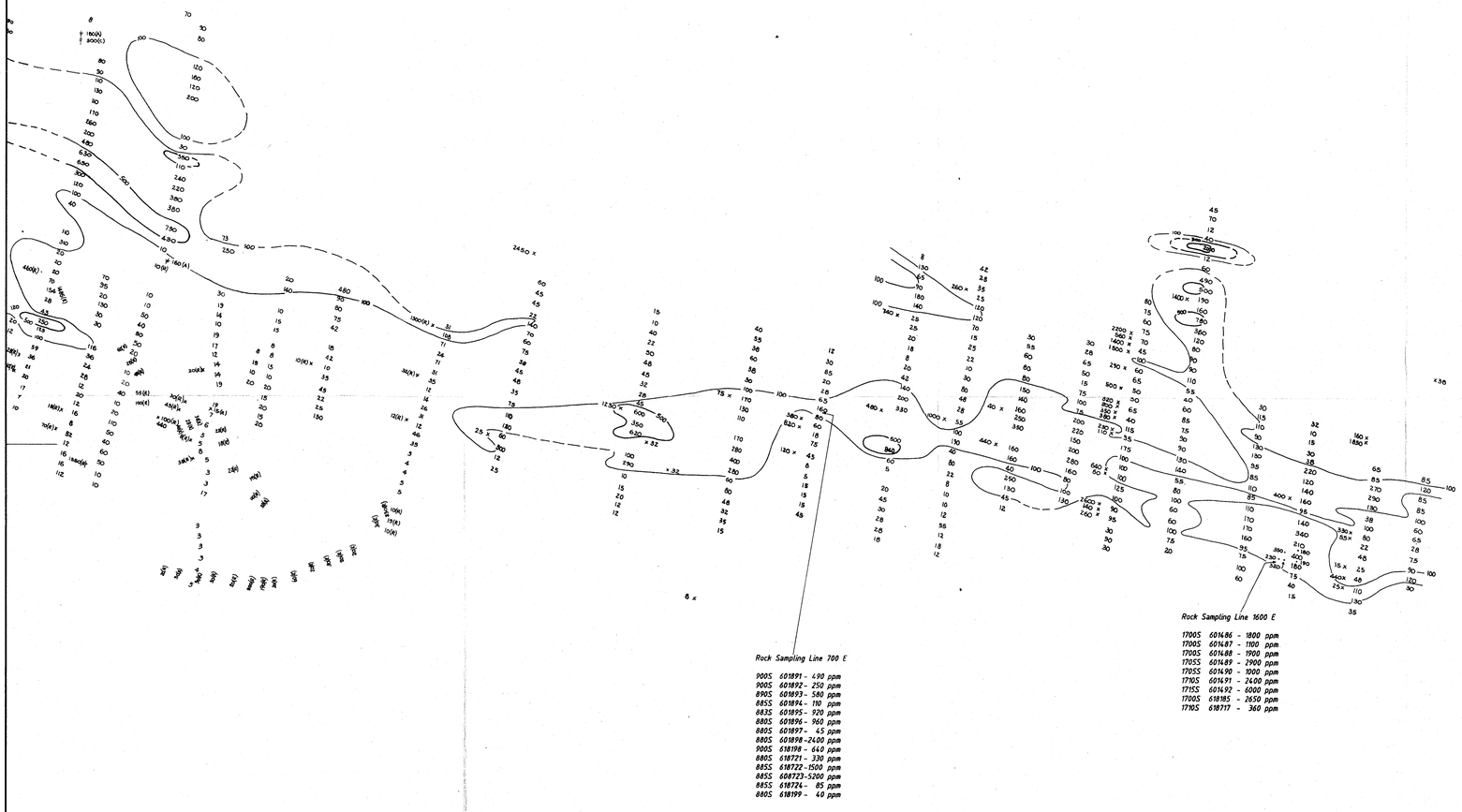
431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE



Rock Sampling Line 700 E

900S 601891 - 490 ppm
900S 601892 - 250 ppm
890S 601893 - 580 ppm
885S 601894 - 110 ppm
883S 601895 - 920 ppm
880S 601896 - 960 ppm
880S 601897 - 45 ppm
880S 601898 - 2400 ppm
900S 618198 - 640 ppm
880S 618721 - 330 ppm
885S 618722 - 1500 ppm
885S 618723 - 5200 ppm
885S 618724 - 85 ppm
880S 618199 - 40 ppm

Rock Sampling Line 1600 E

1700S 601486 - 1800 ppm
1700S 601487 - 1100 ppm
1700S 601488 - 1900 ppm
1705S 601489 - 2900 ppm
1705S 601490 - 1000 ppm
1710S 601491 - 2400 ppm
1715S 601492 - 6000 ppm
1700S 618185 - 2650 ppm
1710S 618717 - 360 ppm

LEGEND

270 Soil Sample

S 50(R) Rock Sample

(38)(R) Rock Outcrop Chip Sample Over Interval Shown.

232066

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET

ZINC GEOCHEMISTRY

85-2333 007

REF:	SK55 - 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1986	PLAN No.	TASh 1671

008

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

628 000 mE

629 000 mE

630 000 mE

631 000 mE

LEGEND

270 Soil Sample

× 50(R) Rock Sample

38(R) Rock Outcrop Chip Sample Over Interval Shown.

232067

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

ZINC GEOCHEMISTRY

008

85-2333.

REF:	SK55-3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1984	PLAN No.	TASh 1672

009

5 609 000 mN

5 608 000 mN

5 607 000 mN

5 606 000 mN

431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE

ROCK SAMPLING LINE 700 E

900S	601891	- 85
900S	601892	- 85
890S	601893	- 215
885S	601894	- 60
883S	601895	- 320
880S	601896	- 85
880S	601897	- 35
880S	601898	- 900
900S	618198	- 180
880S	618721	- 18
885S	618722	- 40
885S	618723	- 135
885S	618724	- 860
880S	618199	- 40

ROCK SAMPLING LINE 1600 E

1700S	610486	- 165
1700S	601487	- 410
1700S	601488	- 250
1705S	601489	- 220
1705S	601490	- 390
1710S	601491	- 340
1715S	601492	- 130
1700S	618185	- 1100
1710S	618717	- 60

LEGEND

270	Soil Sample
× 501(R)	Rock Sample
381(R)	Rock Outcrop Chip Sample Over Interval Shown.

232068

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET

COPPER GEOCHEMISTRY 009

85-2330

REF:	SK55 - 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1984	PLAN No.	TASh 1673

010

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

439 000 mE

439 000 mE

439 000 mE

439 000 mE

LEGEND

270 Soil Sample

× 501(R) Rock Sample

381(R) Rock Outcrop Chip Sample Over Interval Shown

232069

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

COPPER GEOCHEMISTRY

010

85-3333

REF:	SK55- 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1986	PLAN No.	TASn 1674

011

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE

Rock Sampling Line 700 E

900S	601891	- 250
900S	601892	- 130
895S	601893	- 200
885S	601894	- 300
883S	601895	- 4800
880S	601896	- 1400
880S	601897	- 130
880S	601898	- 2.15%
900S	618198	- 380
880S	618721	- 380
885S	618722	- 1.00%
885S	618723	- 1.46%
885S	618724	- 210
880S	618199	- 160

Rock Sampling Line 1600 E

1700S	601486	- 2400
1700S	601487	- 2.05%
1700S	601488	- 8600
1705S	601489	- 9600
1705S	601490	- 1.05%
1710S	601491	- 3.55%
1715S	601492	- 1.10%
1700S	618185	- 3.20%
1710S	618717	- 1450

LEGEND

270	Soil Sample
× 40(R)	Rock Sample
20(R)	Rock Outcrop Chip Sample Over Interval Shown

232070

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET

LEAD GEOCHEMISTRY 011

REF:	SK55 - 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	15 - 3 - 1984	PLAN No.	TASh 1675

012

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

428 000 mE

429 000 mE

430 000 mE

431 000 mE

LEGEND

280 Soil Sample

× 40(R) Rock Sample

20(R) Rock Outcrop Chip Sample Over Interval Shown.

232071

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

LEAD GEOCHEMISTRY

BS-2333 012

REF:	SK55-3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	15-3-1984	PLAN No.	TASh 1676

013

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

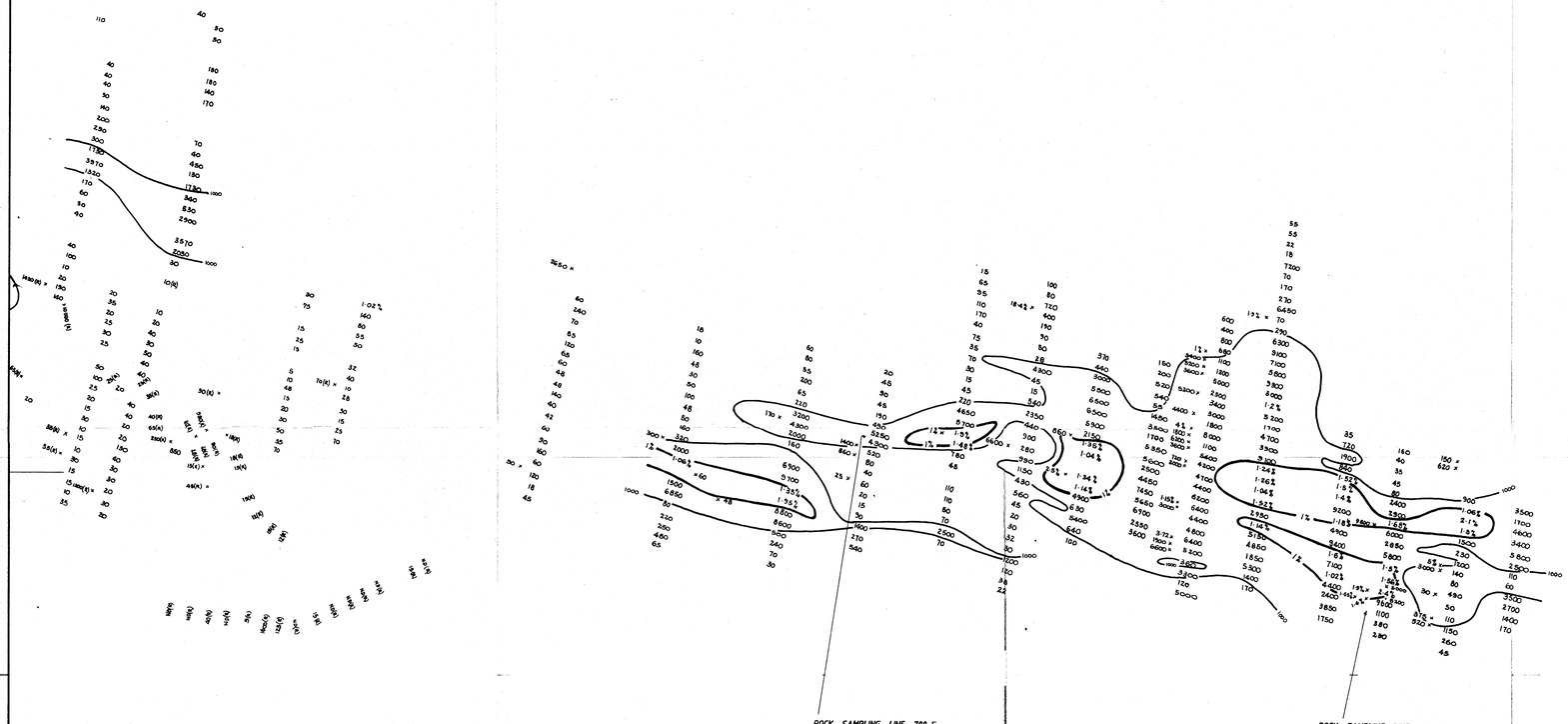
431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE



ROCK SAMPLING LINE 700 E

900S	601891	- 640
900S	601892	- 960
890S	601893	- 900
885S	601894	- 260
883S	601895	- 8400
880S	601896	- 330
880S	601897	- 25
880S	601898	- 6.2%
900S	618198	- 1150
880S	618721	- 75
885S	618722	- 2.5%
885S	618723	- 1.7%
885S	618724	- 140
880S	618199	- 620

ROCK SAMPLING LINE 1600 E

1700S	601486	- 4000
1700S	601487	- 5.55%
1700S	601488	- 3.75%
1705S	601489	- 3.80%
1705S	601490	- 3.35%
1710S	601491	- 4.15%
1715S	601492	- 1.05%
1700S	618185	- 32.00%
1710S	618717	- 1900

LEGEND

270 Soil Sample

×50(R) Rock Sample

38(R) Rock Outcrop Chip Sample Over Interval Shown

232072

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET

MANGANESE GEOCHEMISTRY 013

85-838D

REF:	SK55 - 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1986	PLAN No.	TASh 1677

014

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

429 000 mE

430 000 mE

431 000 mE

LEGEND

270 Soil Sample

× 50(R) Rock Sample

38(R) Rock Outcrop Chip Sample Over Interval Shown.

232073

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

MANGANESE GEOCHEMISTRY

85-2838

014

REF:	SKSS- 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	14 - 3 - 1984	PLAN No.	TASh 1678

015

300 400 500 550 600 700 800 900 1000

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & part of
SHEFFIELD E.L. 7/73 EAST SHEET
TOPOGRAPHIC CONTOURS

35-2333. 232074 015

Ref:	SK55 - 3		
Scale:	1 : 5000	Drawn:	LANDS DEPT. R. T.
Author:	M.F.F.	Report No.	13109
Date:	14 - 3 - 1984	Plan No.	TASh 1679

423 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE

016

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

429 000 mE

430 000 mE

431 000 mE

664

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & part of
SHEFFIELD E.L. 7/73 WEST SHEET
TOPOGRAPHIC CONTOURS

85-3330

016

Ref:	SK55 - 3		
Scale:	1 : 5000	Drawn:	LANDS DEPT. R.T.
Author:	M. F. F.	Report No.	13109
Date:	14 - 3 - 1984	Plan No.	TASh 1680

232075

017

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

431 000 mE

432 000 mE

433 000 mE

434 000 mE

435 000 mE

LEGEND

a,b — a,b — U.T.E.M. Anomaly showing depth to top (a), latest anomalous channel (b) and probable conductor trace.

Chargeability High. / Resistivity Low — Gradient array I.P. 10m reading dipole. IPR-8 receiver.

Magnetic Anomaly / Positive Magnetic Trend — Scintrex MP-2 Magnetometer

a b — DIGHEM Airborne E.M. Anomaly showing depth (a) and conductance (b) - an X signifies a possible anomaly.

Summarised by M. FLIS from plans Tc 115, Tc 116, Tc 117, TASh 447, and TASh 448.

232076

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 EAST SHEET

COMPOSITE GEOPHYSICS 017

35-3333

REF:	SK55 - 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	3 - 4 - 1984	PLAN No.	TASh 1689

018

5 409 000 mN

5 408 000 mN

5 407 000 mN

5 406 000 mN

428 000 mE

429 000 mE

430 000 mE

431 000 mE

LINES NOT SURVEYED BY U.T.E.M. DUE TO POWER LINE NOISE

LINES NOT SURVEYED BY U.T.E.M. DUE TO POWER LINE NOISE

LEGEND

- U.T.E.M. Anomaly showing depth to top (a), latest anomalous channel (b) and probable conductor trace.
- Chargeability High. / Resistivity Low — Gradient array I.P. 10m reading dipole. IPR-8 receiver.
- Magnetic Anomaly / Positive Magnetic Trend — Scintrex MP-2 Magnetometer
- DIGHEM Airborne E.M. Anomaly showing depth (a) and conductance (b) - an X signifies a possible anomaly.

Summarised by M. FLIS from plans Tc 115, Tc 116, Tc 117, TASh 447, and TASh 448.

232077

5 cm

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76 & Part of SHEFFIELD E.L. 7/73 WEST SHEET

COMPOSITE GEOPHYSICS 018

85-283

REF:	SK55- 3		
SCALE:	1 : 5000	DRAWN:	R. T.
AUTHOR:	M. F. F.	REPORT No.	13109
DATE:	3 - 4 - 1984	PLAN No.	TASh 1690

4500mN

4600mN

4700mN

4800mN

Aeromagnetic Anomaly

190ppm Pb, 320ppm Zn, 30ppm Cu

Tuffs

Chloritic Schists

Tuffs / Schists

Quartz - Sericite Schists

Vitric Tuff, Shale, Tuffaceous Siltstone

X

X

X

X

X

X

E.O.H. 102m

232078

5 cm

LEGEND

- Soils and Clay
- Weathered Intermediate / Acid Tuffs
- Quartz - Sericite - Chlorite Schists
- Quartz - Sericite - Epidote Schists
- Phyllite, Pyritic
- Interbedded Phyllite / Schists
- X X Interpreted Location of E.M. Anomaly

CRA EXPLORATION PTY LIMITED

CETHANA E.L. 10/76
RD 84 CC 9 SECTION 019

85-2333.

REF. SK 55-3	
SCALE 1:1000	DRAWN D.M.L.
AUTHOR I.M.C.	REPORT No. 13109
DATE 5-10-84	PLAN No. TASh 2163

Magnetic Susceptability 10^{-5} S.I.

600 500 400 300 200 100 0

p.p.m.

0 100 200 300 400 500 600 700 800 900

0m
25m
50m
75m
100m

054 057 060 063 066 069 071 073 077 080 083 085 087 089 092 095 098 101 104 107 112 113 114 115 116 117 119 121 123 125 127 130 133 135

232079

LEGEND

- Soils and Clays
- Weathered Intermediate / Acid Tuffs
- Quartz - Sericite - Chlorite Schists
- Quartz - Sericite - Epidote Schists
- Phyllite, Pyritic
- Interbedded Phyllite / Schists

5 cm

GEOCHEM LEGEND

- Copper
- Lead
- Zinc
- [Sample Interval, sample prefix 990

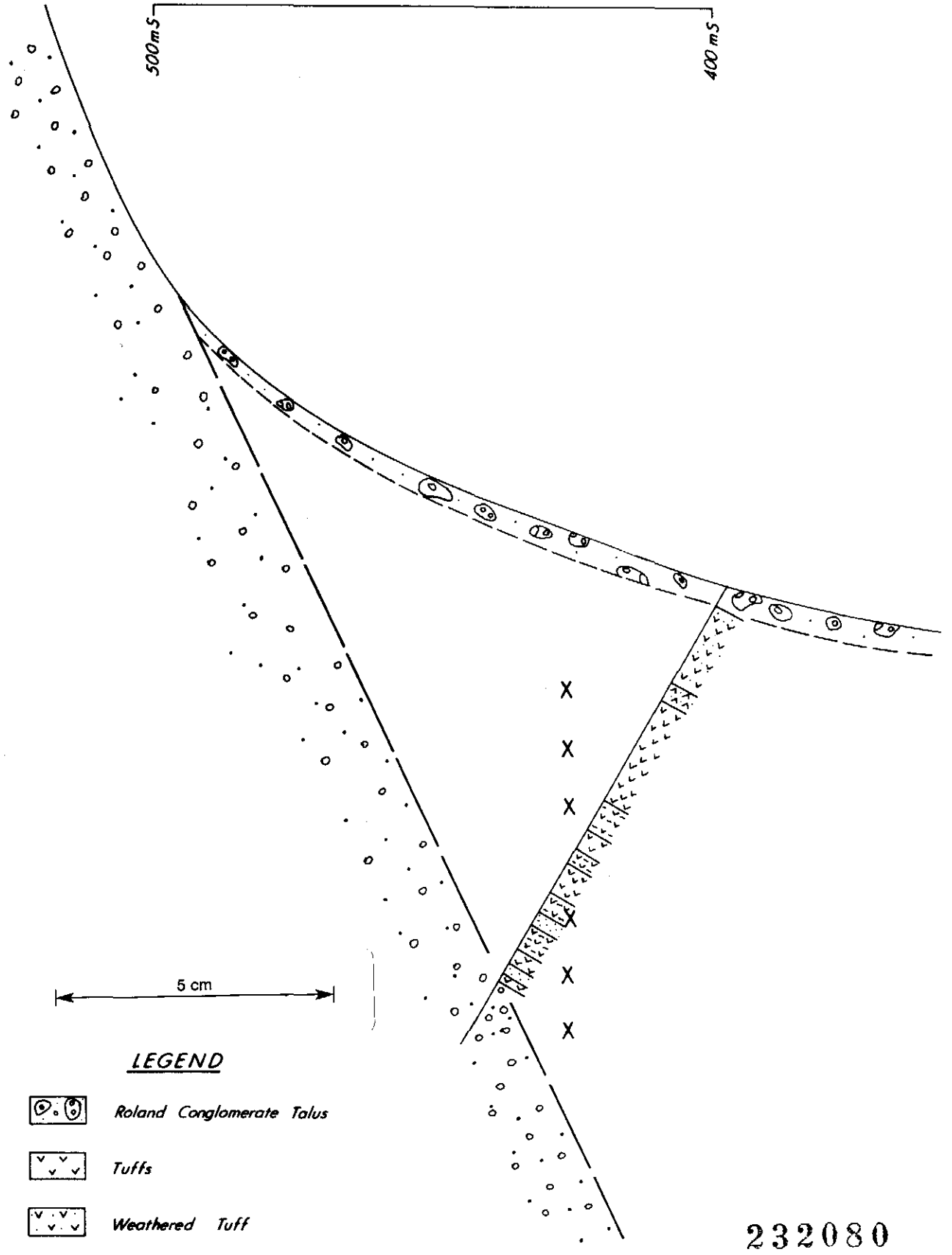
CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76
RD 84 CC 9 SECTION, GEOCHEM. & MAG. SUSCEPTABILITY HISTOGRAMS

020

85-2333

REF.	SK 55-3		
SCALE	1:500	DRAWN	R.T.
AUTHOR	I.M.C.	REPORT No.	13109
DATE	4 - 10 - 84	PLAN No. TASh	2164



LEGEND

- Roland Conglomerate Talus
- Tuffs
- Weathered Tuff
- Quartzite
- Silty Tuff
- Mafic Tuff
- Roland Conglomerate
- X X Interpreted Location of E.M. Anomaly

232080

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76
RD 84 CC 10 SECTION

021

85-2332

REF.	SK 55-3		
SCALE	1 : 1000	DRAWN	D.M.L.
AUTHOR	I.M.C.	REPORT No.	13109
DATE	4 - 10 - 84	PLAN No. TASh	2165

Magnetic Susceptability 10^{-5} S.I.

60 50 40 30 20 10 0

p.p.m.

0 100 200 300 400 500 600 700 800 900 1000

0m
25m
50m
75m
96m

138
141
143
144
147
150
153
156
158
159
162
165
166
167
170
173
176
182
184
187
190
193
196
199
205

232081

5 cm

LEGEND

- Roland conglomerate talus
- Tuffs
- Weathered tuff
- Quartzite
- Silty tuff
- Mafic tuff
- Roland Conglomerate

GEOCHEM LEGEND

- Copper
- Lead
- Zinc
- Sample interval , sample prefix 990

CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76
RD 84 CC 10 SECTION, GEOCHEM. & MAG. SUSCEPTABILITY HISTOGRAMS

85-232.

REF. SK 55-3	
SCALE 1:500	DRAWN R.T.
AUTHOR I.M.C.	REPORT No. 13109
DATE 4-10-84	PLAN No. TASh 2166