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EL 7/73 SHEFFIELD AREA,

NORTHERN TASMANIA

REPORT ON EXPLORATION FOR 12 MONTHS

TO 15 FEBRUARY 1985

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*Assay data from DDHS  
84BB4 & BB5 were  
not included in this report.  
Gil Oakes has copies - will  
be put out as separate  
reports shortly & copy given 24/7/85*

REPORT NO: 13108

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1. SUMMARY

This report covers work on the NE extensions of the Mt Read Volcanic belt in the Sheffield EL 7/73 for the year ending 15 February 1985.

Previous stream sediment and some geophysical data were compiled at a regional scale and easier assessment of the data, including its shortcomings, was possible.

All current projects arose from the initial stream sediment work on the EL by Asarco and no other regional geochemical appraisal has taken place.

Four drill holes in the Beulah Barite Prospect have given much greater understanding of the geology, identified the barite as stratabound and identified a probable weak base metal hanging wall halo. Holes drilled were targeted on combined geophysical/geochemical targets.

Gridding on the reported location of a barite prospect was unsuccessful in finding either barite or major base metal soil anomalies. The geological environment appears attractive for massive sulphide deposits and further work is required adjacent to the grid area to follow coincident base metal anomalies in a favourable geological position.

Drilling of a combined UTEM and magnetic target at West Mount Roland was unsuccessful in finding base metals. The target anomalies appear to have been intersected.

Drilling of a UTEM target at Gowrie Park was unsuccessful in finding base metals. No explanation for the conductor is readily apparent.

Downhole EM surveys on all open holes on the Sheffield EL were carried out. Conductors were only located at Lake Barrington.

Follow-up of stream sediment anomalies at Ling 2 was undertaken. The anomalies could not be repeated.

Follow-up of stream sediment anomalies in the catchment adjacent to the Lake Barrington Prospect is in progress.

Reassaying of core from holes drilled on the Gowrie Park prospect returned maximum values of 1.1 ppm Au. The prospect has little potential as a gold prospect but remains interesting for base metal massive sulphide deposits.

Limited sampling of altered Ordovician clastic rocks adjacent to the volcanics for gold was unsuccessful in detecting gold.

A comprehensive future programme involving drilling of a favourable geological/geophysical target at Gowrie Park, drilling of a favourable geochemical/geological target at Gog Range, UTEM and IP surveys in the Beulah, Barrington, Gog Range and Stonebridge prospect areas, gridding at Barrington, Beulah and Stonebridge, and regional gold sampling to both generate new target areas and discriminate between base metal values likely to be related to typical Au rich massive sulphides and base metal values arising from other sources is proposed.

## 2. INTRODUCTION

This report describes work carried out on EL 7/73 for the year ending 15 February 1985.

EL 7/73 Sheffield was held in Joint Venture with Asarco until 1983 when CRAE assumed sole title for the EL.

This report supplements previous reports on the EL, particularly Clementson and Flis (1983) and Weber (1983).

Reduction in area of the EL is to come into effect on renewal. Details of work carried out on the area to be relinquished are described in CRAE Report No. 13060 (Temby, 1985).

### 3. CONCLUSIONS

No significant base metal intersections were made during assessment of a number of prospects during the year.

Geological information gained at the Beulah Barite Prospect and the Stonebridge Barite Prospect has allowed better definition of target horizons which may host massive sulphide bodies.

Presently known untested geological/geochemical and geophysical targets exist on the EL and drilling of two of these targets is warranted on present knowledge. Additional geophysical and geochemical data, currently being acquired, is very likely to lead to further drill targets.

Large areas of the EL are relatively untested, a situation which will be remedied by the proposed and current programme.

4. RECOMMENDATIONS

1. Drill existing targets at Gowrie Park and Gog Range.
2. Continue the programme of UTEM (currently in progress) to search for conductors at Beulah and Lake Barrington.
3. Carry out IP surveys at Gog Range, Stonebridge Barite and possibly at Beulah to search for sulphidic zones to target drill holes in.
4. Carry out a regional gold and barium sampling programme to discriminate between the numerous low order base metal anomalies already known and to generate new target areas.
5. Reassess the Promised Land prospect area in view of its proximity along strike to the Lake Barrington prospect and the presence of barite.

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 Plans TASH 1711 and 1712 which are adapted from the Sheffield and Middlesex 1 mile sheets and the Explanatory Reports for those sheets by Jennings (1979) and Jennings (1963) respectively.

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

## 6. LICENCE DATA COMPILATION

To allow better assessment of the EL data, compilation of geochemical and some geophysical data was carried out at 1:25 000 scale.

The Dighem II survey terrain clearances were compiled and found to leave a number of areas poorly tested by this method. Plans TASH 1708 and 1709 show terrain clearance. Excessive clearance was generally due to rugged terrain and to the presence of power lines.

Compilation of Asarco and BHP stream sediment data (Plans TASH 2524, 2525, 2526, 2527, 2528 and 2529) has allowed easier identification of data subsets due to changed geology and easier evaluation of the data.

Numerous elevated base metal values exist on the EL, the most prominent of which have been followed up in the past to give rise to the majority of prospects now under evaluation. Many others have not been followed up.

### 6.1 Recommendations

The EL should be stream sediment sampled for gold using CN leach samples and barium to allow discrimination of base metal values more likely to be related to significant volcanogenic style mineralisation from anomalous values due to cultural effects, high background lithologies, and changes in concentration in dispersion trains and absorption characteristics of the sediment sampled.

## 7. BEULAH BARITE PROSPECT

### 7.1 Surface Geophysics

Re-evaluation of the UTEM survey carried out in 1983 on the Beulah Barite Grid (Appendix 1) by M F Flis resulted in two drill targets being interpreted. One of these targets was found to occur within a gravity anomaly zone. Details of the survey are included in Appendix 1.

### 7.2 Drilling

Two percussion holes DD84 BB2 and 3 were drilled to test the geophysical targets above and two diamond drill holes DD84 BB4 and 5 were drilled to test additional combined UTEM, geochemical and gravity targets. Plan TASH 2160 shows the target anomalies and drill sections for the percussion holes and Plans TASH 2521 and 2522 show the diamond drill holes and target anomalies.

Analyses of samples from the percussion holes are shown on Plans TASH 2161 and 2162.

Sample results are given in Appendix 2. Percussion and diamond drill hole logs are given in Appendix 3. No assay results have been received for holes DD84 BB4 and 5.

### 7.3 Downhole Geophysics

Downhole EM37 was conducted on holes PD84 BB2 and 3. No conductors were identified although the data is noisy. Profiles are included in Appendix 4.

#### 7.4 Discussion

No significant base metals were found in holes PD84 BB2 and 3. Barium values found near the bottom of PD84 BB2 indicate that the barite veins found at surface occur in a broadly stratiform distribution (Plan TASH 2521). These continue into DD84 BB4.

Further examination of adits and new road cuts in the Beulah Barite grid area and LA core angles show that the sequence dips steeply south. Hole PD84 BB2 may have missed its target if the interpreted conductor was conformable and DD84 BB4 may not have adequately tested down dip extensions of the conductor.

The sequence intersected in DD84 BB4 and 5 consists of a south dipping and facing fining upwards sequence, consisting of coarse waterlain breccias at the base, interbedded sandy tuffs, vitric tuffs, and minor shales grading up to a dominantly sandstone and siltstone-shale sequence with a variable degree of sorting. A volcanic source for the majority of the sediments is evident. Fuchsite grains, thought to be clasts occur in most of the sandy lithologies and fuchsite also occurs in grains within clasts in the breccias.

Carbonate-pyrite ± galena veins are common over about 30 metres in DD84 BB5. Since the mineralisation appears to be sweated out of this horizon rather than being introduced (carbonate pyrite veins in other intervals carry no visible base metals) and occurs stratigraphically above the principal barite horizon known on the prospect the sequence intersected in holes DD84 BB4 and 5 may be stratigraphically above the potentially mineralised horizon and the weak base metals observed may represent a halo effect.

The presence of fuchsite may indicate either erosion of an alteration zone stratigraphically below the section in DD84 BB4 and 5, or may be due to replacement of Cr bearing clasts within the sandstones and breccias.

#### 7.5 Recommendations

The favourable setting identified by the work carried out on the Beulah Barite Grid indicates that the following work should be carried out:-

1. Cut grids to the East and West of the Beulah Barite Grid to test along strike potential of the zone of interest already identified.
2. Carry out soil sampling, mapping and UTEM surveys on the additional grids to test for conductive mineralisation in favourable geological positions. The above work is in progress. Grids are shown on Plan TASH 2507.
3. Carry out IP surveys to delineate sulphide rich zones in an otherwise relatively sulphide poor area.

#### 8. STONEBRIDGE BARITE PROSPECT

Initial work was carried out on the prospect by Clementson (CRAE Report 11883) who sampled three reconnaissance soil lines to the south of the grid. Department of Mines unpublished Report 1928(1) clearly identified the position of two barite occurrences over which a grid was placed to test for possible base metal deposits.

No barite occurrences were located on the grid and no old workings were identified. Location of the reported barite occurrence is shown on Plan TASH 2466.

### 8.1 Soil Sampling

Soil samples (C horizon) were collected over the grid. Soil values are given in Appendix 5 and contained Cu, Pb, Zn and Ba values as shown on Plans TASH 2468, 2469, 2470 and 2471.

Coincident low order soil base metal and Ba anomalies are present in the southern part of the grid. These coincident anomalies occur over feldspathic tuffs which appear to occur as discontinuous lenses principally in the southern portion of the grid. Copper anomalies are coincident with the lead and zinc anomalies but expand southwards in size and magnitude. The use of copper bearing fertilizer (see analyses in Appendix 5) was thought to be responsible for the elevated copper values on parts of the reconnaissance soil lines, however, the continuity of the soil values into heavily forested areas and the coincident nature of the base metal and barium anomalies suggests that the anomalies in the reconnaissance lines are likely to be due to natural causes. The fertilizer was found to be lacking in Pb and Zn.

### 8.2 Geology

Mapping of the grid (TASH 2466) has resulted in identification of a rapidly varying suite of volcanic derived sandstones, siltstones and shales with a variable component derived from granites and Precambrian quartz rich lithologies. Tuffs, both quartz bearing and quartz free occur as lenticular bodies, often lithic rich and probably ignimbritic.

Andesitic lavas, usually with prominent pyroxene phenocrysts become important in the south east of the grid. Carbonate alteration is a feature of the central parts of these lavas.

Regional chlorite alteration is present in the majority of tuffs and sandy sediments however no discrete alteration zones or styles indicative of a restricted hydrothermal system were identified.

Very fine grained pyrite clasts to two cm diameter are present in quartz bearing tuffaceous sandstones at 7700E 4435N and 7800E 4360N. These clasts were interpreted as probably exhalative on the basis of their texture and dissimilar nature to the regionally developed pyrite present. No base metal values were associated with the horizon carrying the pyrite clasts.

Distinctive mica bearing sandstones were used as marker horizons to determine strike on the grid. Strikes in the order of 320°-330° magnetic were inferred on the basis of float distribution of the mica sandstones, pyrite clast bearing sandstones and measured outcrop for the central and northern parts of the grid. In the south west of the grid the strike appears to be about 300° magnetic.

### 8.3 Geophysics

Ground magnetics and Genie EM were carried out over the grid. Interpretation of the surveys is given in Appendix 1 by T von Strokirch.

No significant anomalies were located.

#### 8.4 Recommendations

Further soil lines between reconnaissance lines 1 and 2 and to the south of line 1 are required to determine the extent of base metal anomalies present.

Follow-up of the anomalous tuff horizon should be undertaken to assess whether it could contain base metal deposits along strike to the south and south east.

The deeper EM survey, such as UTEM recommended by T von Strokirch should be postponed until further soil lines are tested as indicated above.

Collection of soil samples on the lines discussed above is in progress.

IP surveys south of the grid area should be considered to search for sulphidic horizons.

### 9. WEST MOUNT ROLAND PROSPECT

#### 9.1 Surface Geophysics

Interpretation of the 1984 UTEM survey by M F Flis (Appendix 1) resulted in a number of drill targets being generated. One target was generated on the West Mount Roland Grid, and percussion drilling was carried out to test a conductor adjacent to a magnetic unit (Plan TASH 2158).

#### 9.2 Drilling

RD84 MR2 intersected a sequence of intermediate volcani-clastics from the base of the Roland Conglomerate scree down to 43m, then an andesitic volcanic, possibly a

lava, to the end of the hole at 100m (Plan TASH 2158).

Magnetic susceptibility readings (Plan TASH 2519) indicate that the magnetic unit interpreted adjacent to the conductor was intersected.

The drill hole log is included in Appendix 3.

### 9.3 Downhole Geophysics

An EM37 downhole survey was carried out to test for any conductive zones. No conductors were detected. Profiles are included in Appendix 4.

### 9.4 Discussion and Recommendations

Plan TASH 2519 shows Cu, Pb and Zn values as downhole profiles. Only background values are present.

No further work is recommended on this prospect.

## 10. GOWRIE PARK PROSPECT

### 10.1 Surface Geophysics

Interpretation of the 1984 UTEM survey (Appendix 1) resulted in two drill targets being generated on the Gowrie Park Grid.

### 10.2 Drilling

Only one target was drilled, by hole RD84 GP4. Plan TASH 2156 shows the hole location and Plan TASH 2157 shows the drill hole section.

The hole proceeded to 77m by tricone, then 74.5 to 84.0m by BQ diamond. Drill logs are given in Appendix 3.

10.3 Downhole Geophysics

An EM37 survey was carried out, however no conductors were detected. Profiles are given in Appendix 4.

10.4 Geochemistry

Analyses of cuttings and core are shown on Plan TASH 2157 and given in Appendix 2. Examination of the plans show very minor Cu (max 130 ppm) and Pb (max 370 ppm) over 2m intervals within the target zone. A high zinc zone, at the base of weathering, is not considered to represent mineralisation in view of the lack of associated Pb and Cu values.

10.5 Discussion and Recommendations

The geochemical values in the target zone are not significant, although representing several times background for the hole. The lack of conductors suggests that no mineralisation of any significance exists near the hole.

The second target interpreted from the 1984 UTEM survey could not be drilled due to access difficulties. The target remains attractive on the basis of geology, the UTEM results and previous drilling at the extremities of the UTEM conductor at DD77 GPC2 and DD78 GPC3 where mineralisation was intersected (Purvis 1978).

Drilling of this target is planned for the near future.

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11. LAKE BARRINGTON PROSPECT

11.1 Downhole Geophysics

EM37 profiles down DD80 LB1, the only hole still open on this prospect, produced an off hole conductor worthy of further investigation. EM profile of the hole is included in Appendix 4.

11.2 Discussion and Recommendations

The re-evaluation of geochemical data (see section 6 ) drew attention to anomalous stream sediment values to the north of the previously worked area in the adjacent catchment. Grids have been extended in this area (Plan TASH 1719) to cover that catchment, and mapping, soil sampling and ground geophysics are recommended.

A UTEM survey is planned to commence in the near future.

The favourable geological location of the Lake Barrington prospect, with barite known along strike at Promised Land (Plan TASH 1719), gold bearing copper intersections in DD80 LB1, DD82 LB3, DD83 LB4 and an off hole EM conductor near hole DD80 LB1, is strongly recommended for further work.

Further drilling should not be undertaken until the soil surveys and mapping, as well as the UTEM survey are completed.

12. LING 2 ANOMALY12.1 Stream Sediment Geochemistry

BHP located a sample with anomalous Pb (180 ppm), As (50 ppm) and Ag (1.2 ppm) during stream sediment sampling on EL 15/65, part of which was included in EL 7/73, Sheffield.

Four follow-up samples were taken in and adjacent to the creek containing the original values. Plan TASH 2463 shows the sample sites. Geochemical results are given in Appendix 3.

The results are not anomalous and no further work was undertaken. The gold value was not considered significant in view of the close proximity of outcropping deep lead gravels to the sample site.

12.2 Geology

The original sample site was in a creek on the boundary between Cambrian volcanoclastics and Tertiary basalt. Outcrop was non-existent in the creek but good exposure of the Cambrian rocks occurs at the mouth of the creek in the Wilmot River. The Cambrian rocks in the creek consisted of vertically to steep south dipping coarse lithic sandstone with conglomerate interbeds with striking 110° magnetic. The area to the south of the anomalous creek is covered by a stacked series of basalt flows with interflow sediments consisting of quartz rich gravels and sand.

13. CORE REASSAYING

Reassaying of core from holes drilled on the Gowrie Park Grids for gold was carried out as these holes had not previously been assayed for gold.

All intervals with Pb and Zn in excess of 1500 ppm, Ag >5 ppm or pyrite >5% were assayed. Preroasting of graphitic samples was carried out.

The majority of Au bearing samples also had elevated Ag, and high base metal values were either present in the sample or in adjacent samples.

Maximum values from the 64 samples submitted were 1.1 ppm Au, however only 17 samples returned gold above detection limit and only 4 samples had greater than 0.1 ppm Au.

The gold bearing nature of the mineralisation has been confirmed and it would appear that potential for typical Au rich massive sulphides, similar to Rosebery, Que River and Hellyer remains in the prospect area.

Appendix 6 includes results for all samples and a summary of the logs for the samples returning gold values.

14. GOLD SAMPLING IN ROLAND CONGLOMERATE  
AND MOINA SANDSTONE

A programme of rock chip sampling of silicified, quartz veined and hematized Ordovician clastics was undertaken to see whether these might host disseminated gold deposits. Most of the work was done on Cethana EL 10/76 (CRAE Report No 13109) and only limited sampling was carried out on Gog Range. No gold was recorded. Analyses are included in Appendix 7.

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15. FUTURE PROGRAMME

15.1 Drilling

Drilling is to be carried out at Gowrie Park on a combined geological and UTEM conductor target as soon as possible.

Drilling of stratabound coincident Cu, Pb and Zn anomalies in a favourable geological setting is recommended at Gog Range. An IP survey will be needed to assist in drill hole targeting within Anomaly 3 (Plan TASH 1228).

15.2 Surface Geophysics

UTEM surveys are currently planned or in progress at the Beulah Barite Prospect and adjacent areas and are planned for the Lake Barrington Prospect on the grid extensions.

IP surveys at Gog Range are planned and are recommended for the Stonebridge Barite prospect to the south of the grid in the area of the initial reconnaissance lines.

15.3 Downhole Geophysics

Downhole EM surveys of DD84 BB4 and 5 are planned and will also be carried out on the hole to be drilled at Gowrie Park.

15.4 Soil Sampling and Mapping

Mapping and soil sampling are to be carried out on the Garden of Eden, Beulah Extended and Simmonds Grids in the Beulah Barite Prospect area, in the Stonebridge Barite Prospect area (in progress) and on the Lake Barrington Grid northern extensions.

15.5 Stream Sediment Sampling

Full coverage of the EL is planned with CN leach samples for gold to allow discrimination of base metal anomalies and to search for disseminated gold deposits.

15.6 Discussion

Additional drilling targets are expected to be generated from the UTEM surveys and soil geochem surveys.

New areas for detailed grid work are expected to result from the regional stream sediment survey.

16. REFERENCES

- |                |      |  |
|----------------|------|--|
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Temby P A	1985	EL 10/76 Cethana Area, Northern Tasmania. Report on Exploration for 12 months to 29 February 1985. CRAE Report No. 13109
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Weber G B	1984	Exploration Results Beulah, Staverton, Gog Range and Ireland Prospects - Sheffield EL 7/73, Tasmania. Report for the 12 months ending 15 February 1984. CRAE Report No. 12497

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17. LOCATION

Burnie 1:250 000 Sheet SK 5503

18. KEYWORDS

Copper, Gold, Lead, Silver, Zinc, Acid volcanics, Andesite, Volcanogenic, Barite, Paleozoic, Activities summary, Assays geochem, Assays Drill, Drill Diamond, Drill Percussion, Geophys EM, Geophys Magnetics, Ore Potential

19. LIST OF PLANS

<u>Plan No</u>	<u>Title</u>	<u>Scale</u>
1711	Sheffield EL 7/73 West Sheet. Regional Geology	1:25 000
1712	Cethana EL 10/76 and Sheffield EL 7/73 East Sheet. Regional Geology	1:25 000
1708	Sheffield EL 7/73 West Sheet Dighem 'Bird' Height West Sheet	1:25 000
1709	Cethana EL 10/76 and Sheffield EL 7/73 Dighem 'Bird' Height East Sheet	1:25 000
1719	Sheffield EL 7/73 and Cethana EL 10/76 Prospect Location Plan West Sheet	1:25 000
1720	Sheffield EL 7/73 Prospect Location Plan East Sheet	1:25 000

<u>Plan No</u>	<u>Title</u>	<u>Scale</u>
2524	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Copper	1:25 000
2525	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Lead	1:25 000
2526	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Zinc	1:25 000
2527	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Arsenic	1:25 000
2528	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Molybdenum	1:25 000
2529	Sheffield EL 7/73 and Cethana EL 10/76 -80 mesh Stream Sediment Geochemistry Silver	1:25 000
2160	Sheffield EL 7/73 Beulah Baryte Grid Line 800mE (2W) RD84 BB2 & 3 Sections	1:1 000
2521	Sheffield EL 7/73 Beulah Barite Grid Line 2W DD84 BB4 Section	1:1 000
2522	Sheffield EL 7/73 Beulah Barite Grid Line 2E DD84 BB5 Section	1:1 000
2161	Sheffield EL 7/73 Beulah Baryte Prospect RD84 BB2 Section, Geochemistry and Magnetic Susceptability Histogram	1:500
2162	Sheffield EL 7/73 Beulah Baryte Prospect RD84 BB3 Section Geochemistry and Magnetic Susceptability Histograms	1:500

<u>Plan No</u>	<u>Title</u>	<u>Scale</u>
2507	Sheffield EL 7/73 Plan of the Simonds Beulah and Garden of Eden Grids	1:5 000
2466	Sheffield EL 7/73 Stonebridge Barite Grid Geology Plan	1:5 000
2467	Sheffield EL 7/73 Stonebridge Barite Grid Sample Locations	1:5 000
2468	Sheffield EL 7/73 Stonebridge Barite Grid Cu Soil Geochemistry	1:5 000
2469	Sheffield EL 7/73 Stonebridge Barite Grid Pb Soil Geochemistry	1:5 000
2470	Sheffield EL 7/73 Stonebridge Barite Grid Zn Soil Geochemistry	1:5 000
2471	Sheffield EL 7/73 Stonebridge Barite Grid Ba Soil Geochemistry	1:5 000
2158	Sheffield EL 7/73 Mt Roland West Prospect RD84 MR2 Section	1:1 000
2159	Sheffield EL 7/73 Mt Roland West Prospect RD84 MR2 Section Geochem and Mag. Suscept. Histograms	1:500
2156	Sheffield EL 7/73 Gowrie Park Prospect RD84 GP4 Section	1:1 000
2157	Sheffield EL 7/73 Gowrie Park Prospect RD84 GP4 Section, Geochem and Mag. Susceptability Histograms	1:500

<u>Plan No</u>	<u>Title</u>	<u>Scale</u>
2463	Sheffield EL 7/73 Ling 2 Anomaly Sample Sites	1:15 000
2462	Sheffield EL 7/73 Ling 2 Anomaly Geology	1:15 000
1228	Sheffield EL 7/73 Gog Range Prospect Copper Soil Sample Results	1:5 000

20. LIST OF APPENDICES

- Appendix 1      Ground Geophysics Interpretations  
                  Sheffield EL Prospects
- Appendix 2      Percussion Drill Hole Assay Results
- Appendix 3      Drill Logs Sheffield EL 1984
- Appendix 4      Downhole EM 37 Profiles
- Appendix 5      Soil Sample Results - Stonebridge Barite  
                  Prospect
- Appendix 6      Core Reassay for Gold - Results and Summary  
                  Log
- Appendix 7      Gold Analyses of Ordovician Clastic Rocks

APPENDIX 1GROUND GEOPHYSICS INTERPRETATIONSSHEFFIELD EL PROSPECTS

1. Drill Targets from 1984 UTEM Surveys  
Cethana EL 10/76 and Sheffield EL 7/73
2. Gravity Survey at the Beulah Baryte Prospect  
Sheffield EL 7/73
3. UTEM Anomaly B, Beulah Baryte Grid  
Sheffield EL 7/73
4. UTEM Target at Beulah Baryte Grid  
Sheffield EL 7/73
5. Geophysics on the Stonebridge Prospect  
EL 7/73

APPENDIX 1

DRILL TARGETS FROM 1984 UTEM SURVEYS  
CETHANA EL 10/76 AND SHEFFIELD EL 7/73

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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.

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 consistent 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. 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°

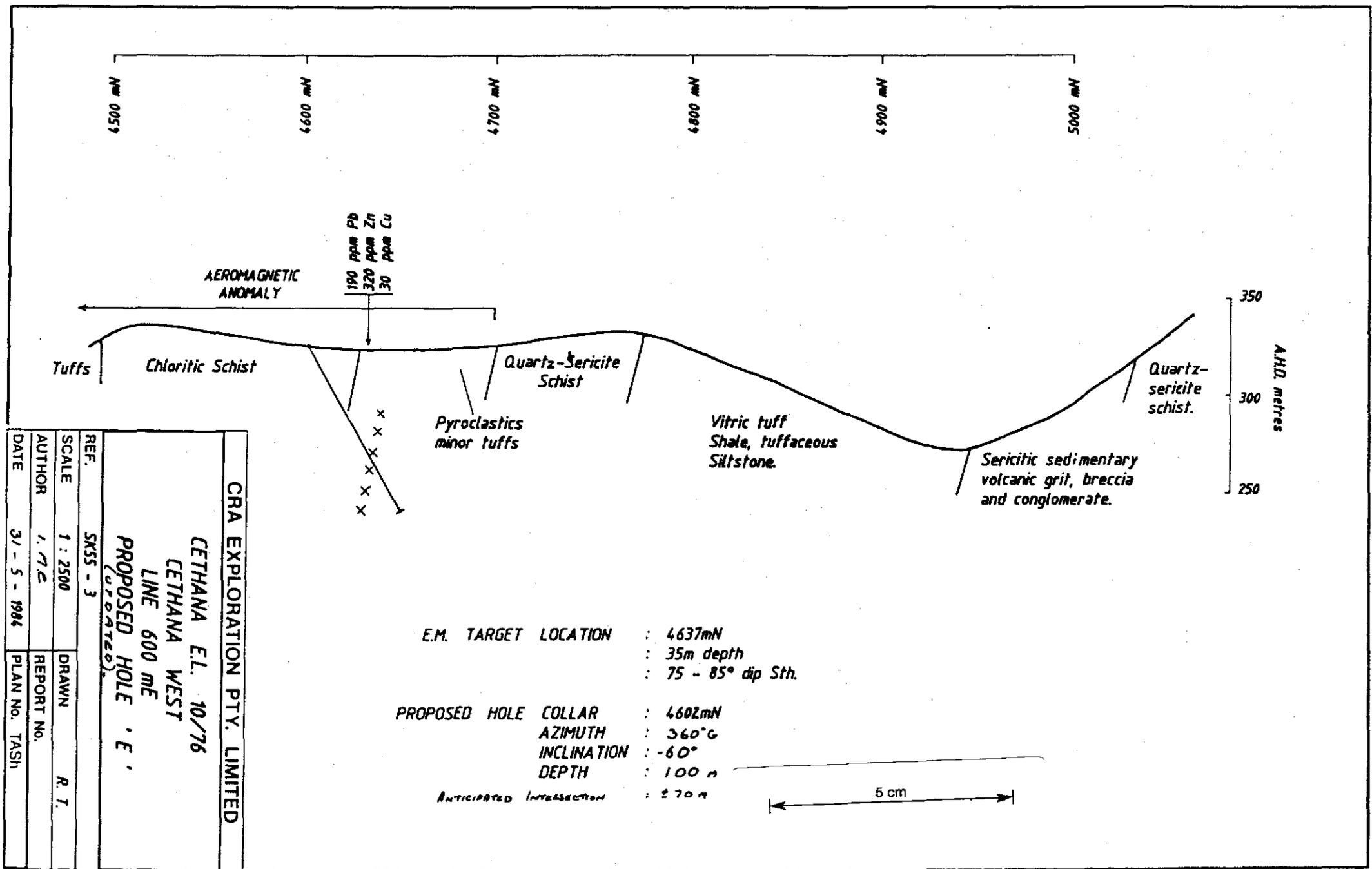
- 4. The Cethana West Grid anomaly to be tested by downhole E.M. methods using DD77CC1. If the hole is blocked the response to be tested by percussion drilling. The target is:-

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

- 5. The East Gowrie Park Grid to be further evaluated by ground magnetometry 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

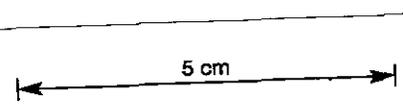


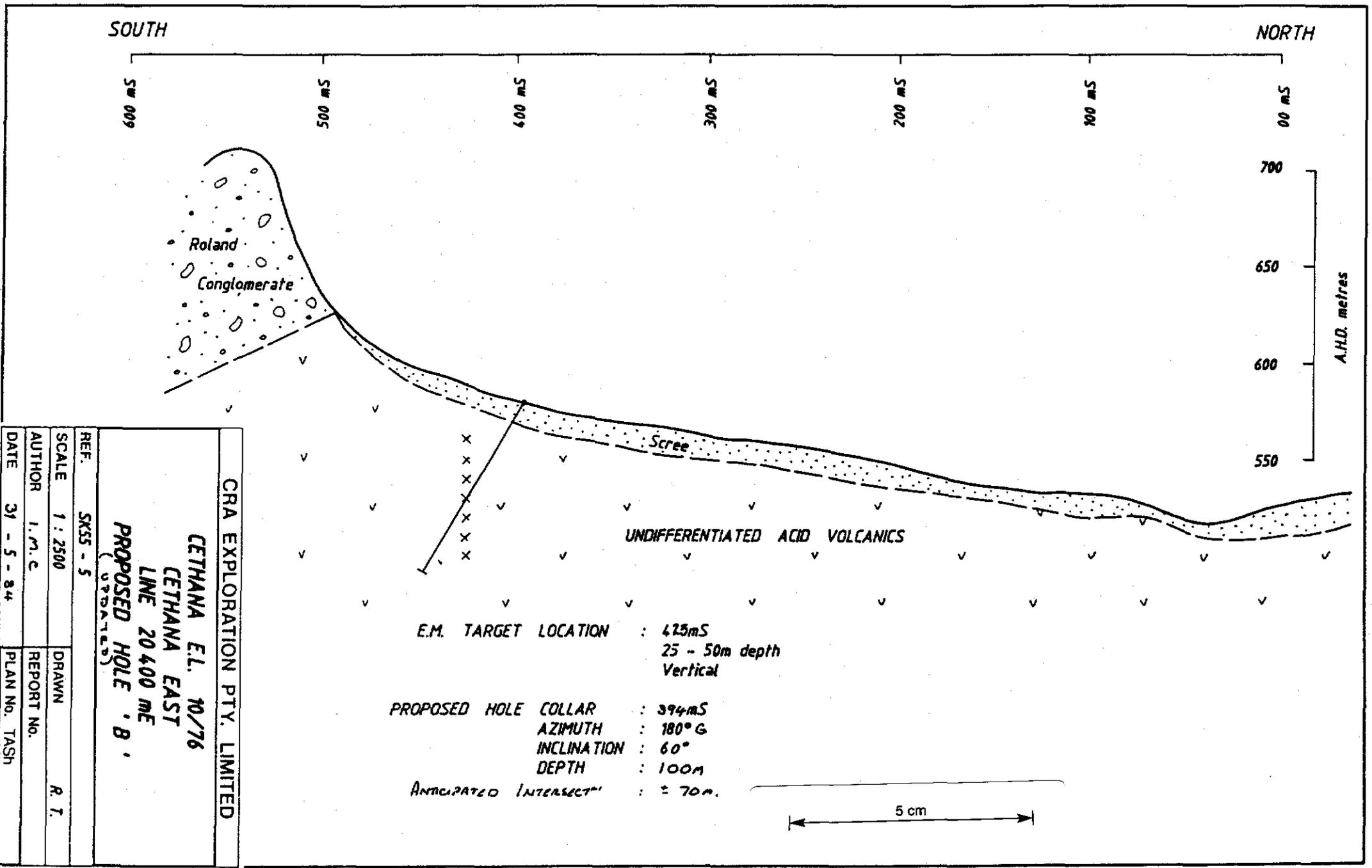
<b>CRA EXPLORATION PTY. LIMITED</b>	
CETHANA E.L. 10/76	
CETHANA WEST	
LINE 600 ME	
PROPOSED HOLE 'E'	
(CORRECTED)	
REF.	SK55 - 3
SCALE	1 : 2500
AUTHOR	I. T. G.
DATE	31 - 5 - 1984
DRAWN	R. T.
REPORT NO.	
PLAN NO.	TASH

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





CRA EXPLORATION PTY. LIMITED

CETHANA E.L. 10/76

CETHANA EAST

LINE 20 400 ME

PROPOSED HOLE 'B'

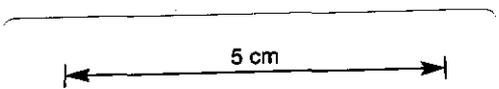
(UPDATED)

REF.	SKSS - 5	DRAWN	R. T.
SCALE	1 : 2500	REPORT NO.	
AUTHOR	I. M. C.	PLAN No.	TASH
DATE	31 - 5 - 84		

E.M. TARGET LOCATION : 425mS  
 25 - 50m depth  
 Vertical

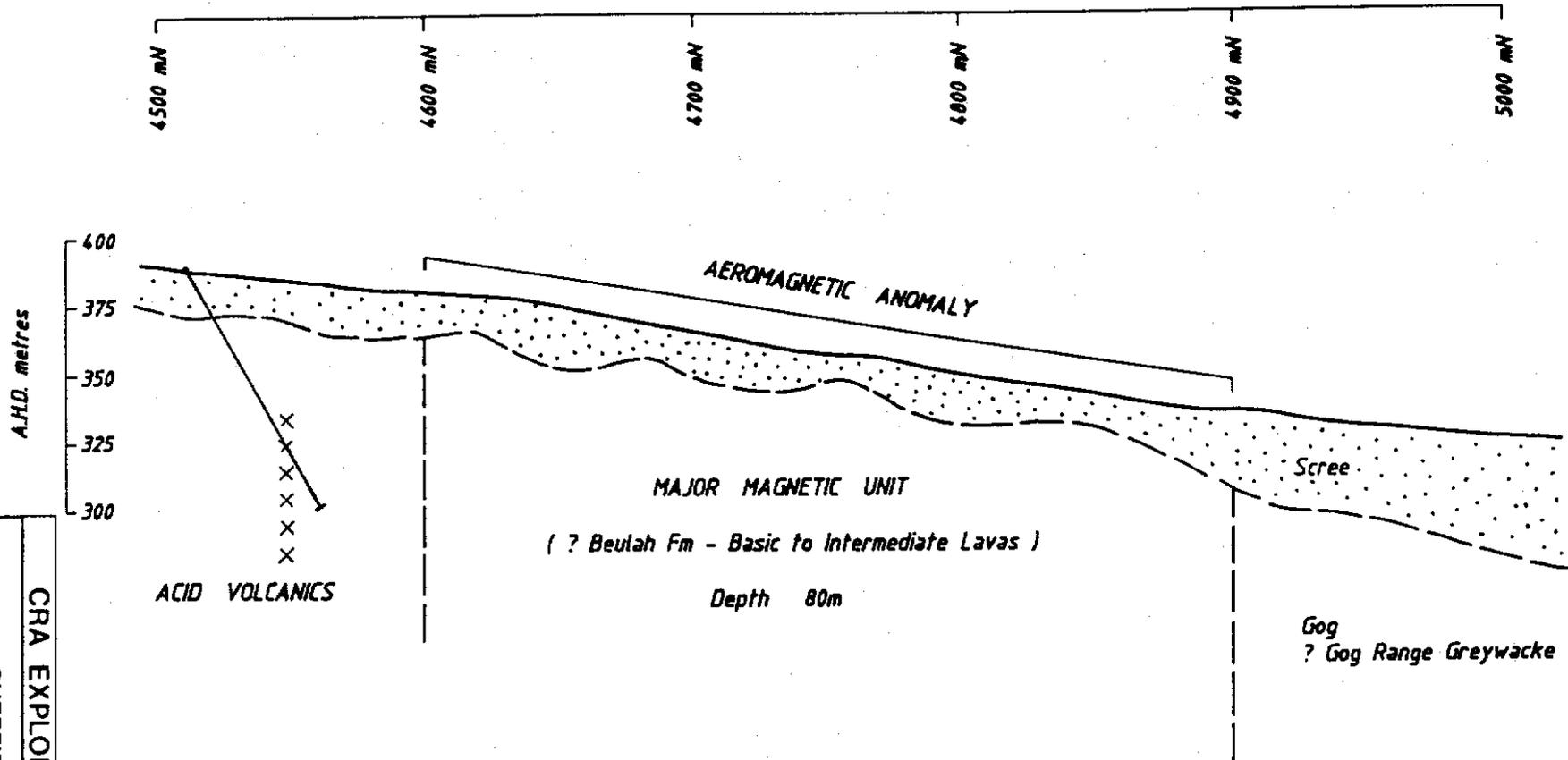
PROPOSED HOLE COLLAR : 394mS  
 AZIMUTH : 180° G  
 INCLINATION : 60°  
 DEPTH : 100m

ANTICIPATED INTERSECT : ± 70m.



SOUTH

NORTH

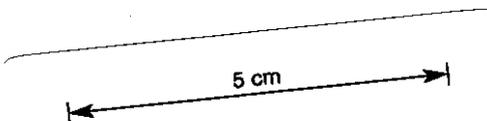


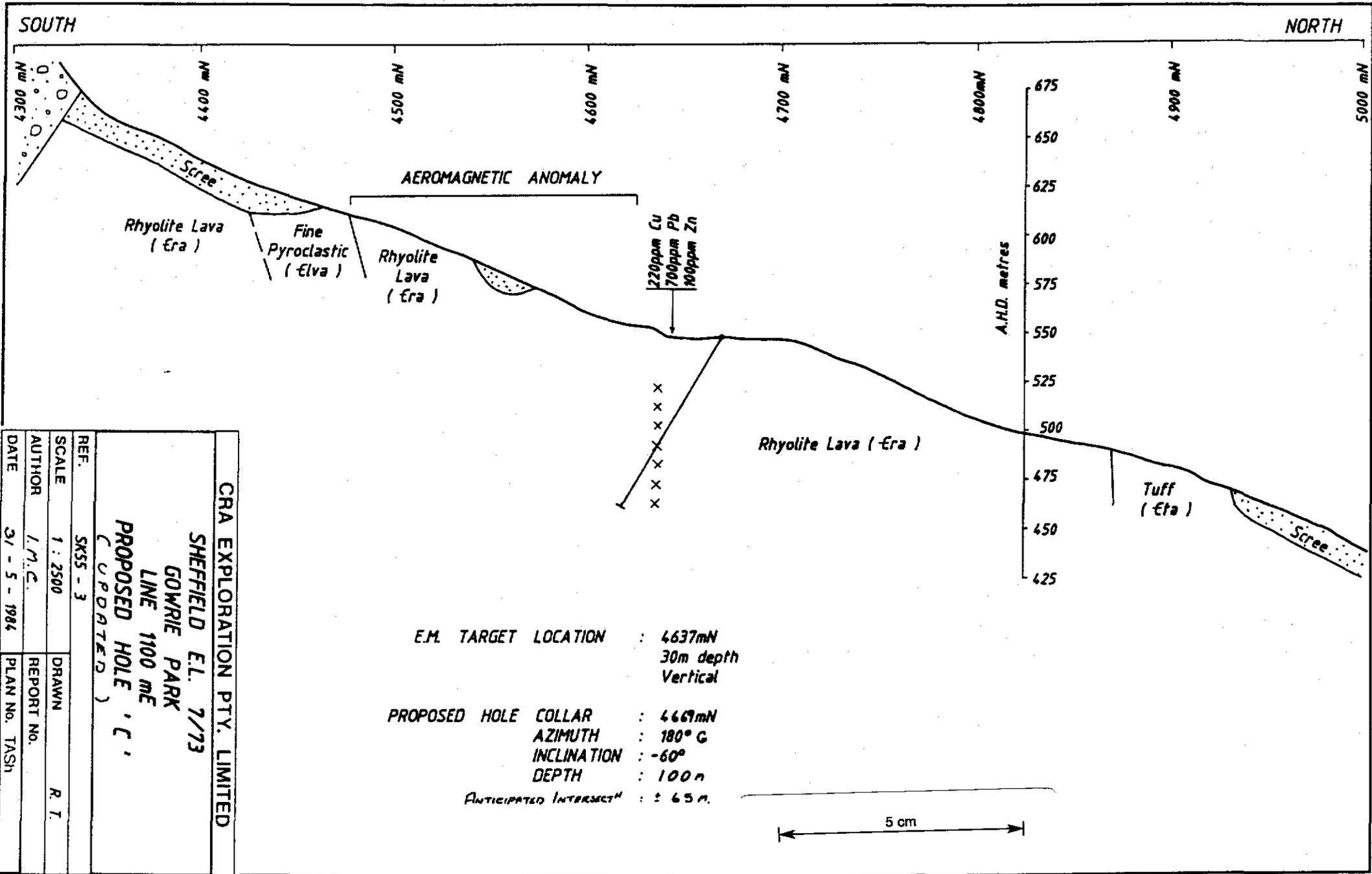
CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
EAST GOWRIE PARK	
LINE 4825 ME	
PROPOSED HOLE 'D'	
REF.	SK55 - 3
SCALE	1 : 2500
AUTHOR	J. T. G.
DATE	3 / - 5 - 1986
DRAWN	R. T.
REPORT NO.	
PLAN NO.	TASH

E.M. TARGET LOCATION : 4550mN  
 50m depth  
 Vertical

PROPOSED HOLE COLLAR : 4560mN  
 AZIMUTH : 360° G  
 INCLINATION : -60°  
 DEPTH : 100m

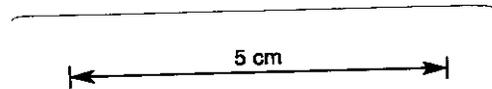
ANTICIPATED INTERSECTION : 170m





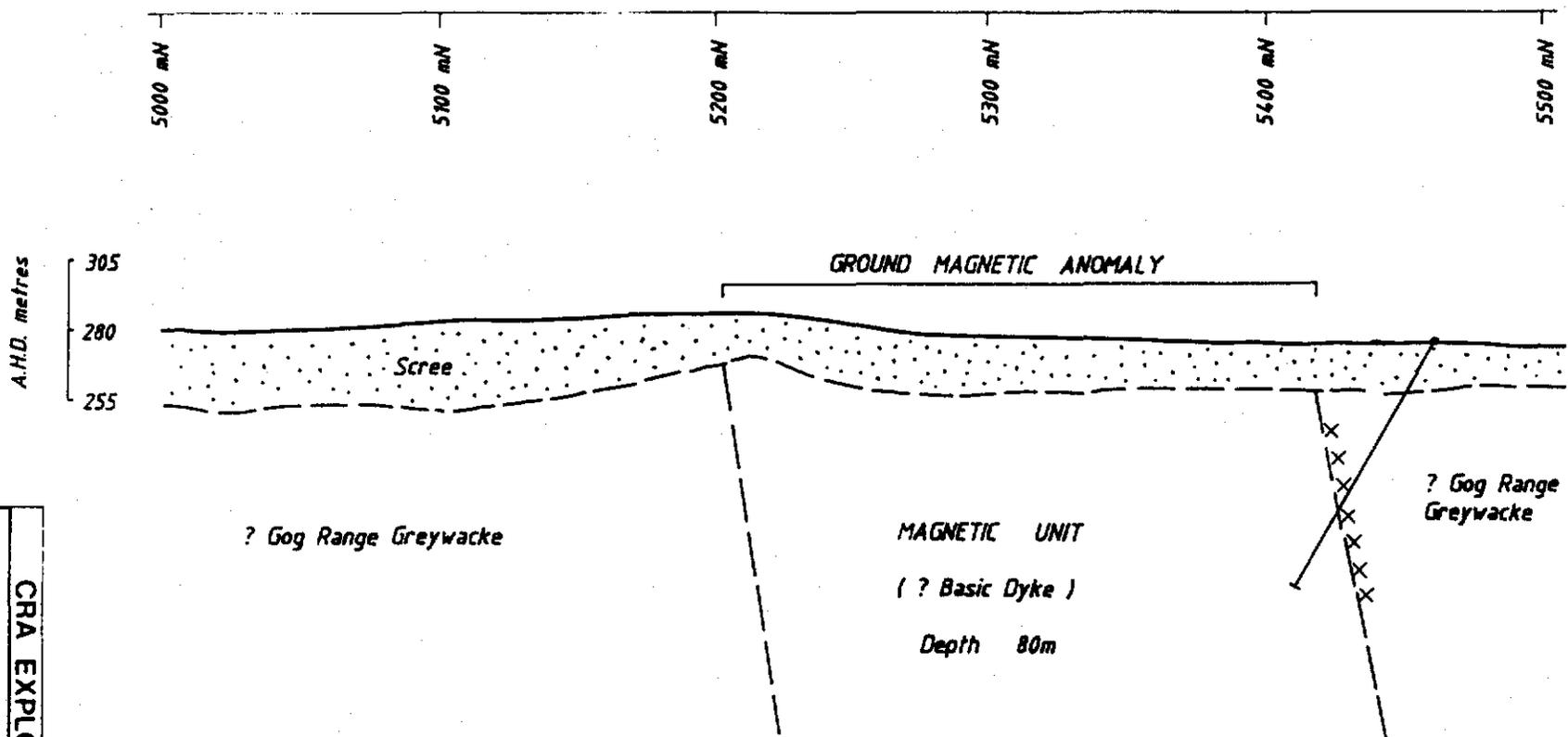
CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
GOWRIE PARK	
LINE 1100 ME	
PROPOSED HOLE 'C'	
(UPDATED)	
REF.	SK55 - 3
SCALE	1 : 2500
AUTHOR	J.N.C.
DATE	31 - 5 - 1984
DRAWN	R.T.
REPORT NO.	
PLAN NO.	TASH

E.M. TARGET LOCATION : 4637mN  
 30m depth  
 Vertical  
  
 PROPOSED HOLE COLLAR : 4669mN  
 AZIMUTH : 180° G  
 INCLINATION : -60°  
 DEPTH : 100m  
 ANTICIPATED INTERSECT : 65m.



SOUTH

NORTH



E.M. TARGET LOCATION : 5425mN  
 25 - 50m depth  
 80° dip Nth.

PROPOSED HOLE COLLAR : 5462mN  
 AZIMUTH : 180° C  
 INCLINATION : -60°  
 DEPTH : 100m

5 cm

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
 WEST MT. ROLAND  
 LINE 4700 MF  
 PROPOSED HOLE 'A'

REF. SK55 - 3

SCALE 1 : 2500

DRAWN R.T.

AUTHOR

REPORT No

037

235038

APPENDIX 1

GRAVITY SURVEY AT THE BEULAH BARYTE PROSPECT

SHEFFIELD EL 7/73

038

235039



CRA EXPLORATION PTY. LIMITED  
(INC. IN N.S.W.)

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TELEX: AAS7144  
TELEPHONE: 44 3533  
AREA CODE: (002)

IN REPLY PLEASE QUOTE

16th July, 1984.

Memorandum To: T.W.DICKSON  
P.TEMBY  
I.CLEMENTSON

From: M.FLIS

Subject: GRAVITY SURVEY AT THE BEULAH BARYTE  
PROSPECT, SHEFFIELD E.L. 7/73.

INTRODUCTION

A gravity survey was planned for lines 800 and 900mE (old lines 2W and 1W respectively) of the Beulah Baryte grid. The purpose of the survey was to obtain more information about the two E.M. conductors ("B" and "D" - see report 12279) which have been proposed for drilling.

The survey was carried out on the 6th of July, using the L & R #G-649 meter. Due to intensive logging operations and rain, however, only line 800mE was completed. A total of 58 stations were occupied at 12.5 metre intervals. The stations were levelled to better than 1mm accuracy and tied to the A.H.D. by contour maps. The data was not tied to the National Gravity Network. Major local topographic features were deemed to have only a monotonic effect on observed gravity - obviating the need for terrain corrections in this case. The R.M.S. error in the survey is  $\pm 0.013$  mgals.

Data was reduced using the programme GRAVPACK. A Bouguer density of 2.67 gm/cc was used although it didn't seem to make much difference whether anything between about 2.5 and 2.8 gm/cc was used.

Figure I shows the Bouguer Anomaly, topographic, ground magnetic and U.T.E.M. profiles for this line. Known geology is indicated. A table of Principle Facts is attached as Appendix I.

This memo supersedes my other two memos of the 4/7/84 and 19/6/84 regarding drilling targets at the Beulah Baryte Prospect.

### DISCUSSION

#### Regional Gradient.

An earlier regional gravity survey (Sheehan, G.M. 1969 "The Gravity Field in the Sheffield Area" Uni. of Tas.) delineates a six milligal gravity high three kilometres to the north of the grid. This high is located on an outcropping magnetic Cambrian granite and is interpreted as being due to late stage basic volcanism atop a volcanic centre. Little information can be gleaned from this gradient as it is significantly effected by the lack of terrain corrections and it is not mapped extensively enough.

#### Features of the Gravity Profile.

Major features of the gravity profile pertinent to proposed drilling are:-

1. A large 0.6 milligal anomaly dominates the profile. The anomaly is most probably caused by the baryte which occurs here. The effects of host lithology is not known. Earlier gravity work by the Department of Mines approximately 100m to the east delineated only the small positive anomaly at 2150mN due to insufficient line length. They assumed this was due to the baryte and computed a possible baryte reserve of 37,000 tonnes on this basis. Assuming the entire anomaly from 2037 to 2412mN to be due to an equidimensional body, a minimum mass of 1.2 million tonnes is computed. In reality, the baryte appears stratabound with a strike length many times greater than it's width. A rough depth estimate puts the body at around 25m depth.
2. On the crest of this anomaly reside four small (<0.1 milligals) anomalies. Whilst they appear to be noise spikes it should be noted that they are a magnitude greater than the error in the survey and, more importantly, all, bar one, are defined by four points. U.T.E.M. anomaly B (marked on the profile) is coincident with one of these gravity highs. The gravity anomaly, like the U.T.E.M. anomaly, suggests a shallow source.
3. A negative anomaly of -0.15 milligals lies immediately to the north of the major gravity high at 2437mN. U.T.E.M. anomaly D is coincident with this gravity low. The zone is also defined by a high frequency, high amplitude ground magnetic anomaly. The gravity has confirmed the re-interpretation of anomaly D as being a relatively confined narrow body.

4. A small gravity high immediately to the north of the negative anomaly is followed by another negative at 2537mN. This negative is also defined by an U.T.E.M. anomaly (D'). The ground magnetic coverage does not extend this far north.

#### GENERAL

Whilst U.T.E.M. anomaly B is a short time constant event, it's coincidence with the baryte deposit, and the fact that a secondary gravity anomaly suggests a massive source, makes it an attractive drilling target.

The longer time constant anomaly D, on the other hand, is related to a prominent gravity low and a high frequency, high amplitude magnetic anomaly - features congruous to a fault or shear zone containing weathered material and groundwaters. Anomaly D' appears to be due to the same type of source with the intervening, non-sheared ground giving rise to the positive gravity anomaly at 2500mN.

To add further information to the vexatious question of local dip, the gravity data would suggest a southerly one. This is indicated by the lower gradients on the southern side of the anomalies compared with those on the northern side. A northerly dip is interpreted from U.T.E.M. anomaly D.

#### CONCLUSIONS AND RECOMMENDATIONS

U.T.E.M. anomaly B is a confined, near surface conductor which appears to have some mass to it. It is impossible to ascertain if this mass is due to baryte or massive sulphides (N.B. I would expect baryte to be resistive). U.T.E.M. anomalies D and D' are also confined, near surface conductors but being associated with gravity lows the probability of them being due to shear or fault zones is high.

I recommend that Anomaly B be drilled as planned. The gravity survey has downgraded Anomaly D as a drillable target. As both anomalies are near surface I suggest a close examination of the rocks be made at the drill pad sites which, I understand, have already been dozed.

MARCUS FLIS

Listings of File : GBB800ME

Title : REULAH BARYTE LINE 800mE (OLD 2W) GRAVITY PROFILE

L&R #G-649 GRAVITY METER READ BY M.FLIS  
SURVEY NOT TIED TO NATIONAL GRAVITY NETWORK  
LEVELLED BY L.MACKENZIE TO ARBITRARY DATUM (200m ON LINE  
800mE AT 2700mN - OLD LINE 2W AT 700mN).  
FINE WEATHER , 4 DEG. C, NO WIND.

The IGSN 71 gravity formula has been used to compute the latitude correction.  
Bouguer density used = 2670.00 kg/cubic metre.  
Meter constant used 1.01580 mGal/div.  
Free air correction computed from  $2.s(\text{PHI}).h/R(\text{PHI})$   
where  $s(\text{PHI})$  is the IGSN 71 value for latitude PHI  
 $R(\text{PHI})$  is the earth radius at latitude PHI  
 $h$  is the station elevation above the reference datum.  
Gravitational constant 6.672 E-11 S.I. units.

Station Number	Co-ordinates Eastings Northings	Elevation	Time	Date	Meter Readings	Bouguer Anomaly
8401.1975	450570.0 5408375.0	204.00	10:36	06.07.84	24.9100	29.2840
8401.1988	450572.5 5408387.3	203.54	10:39	06.07.84	25.0850	29.3723
8401.2000	450575.0 5408399.5	202.56	10:42	06.07.84	25.3030	29.4021
8401.2013	450577.5 5408411.8	202.57	10:45	06.07.84	25.3330	29.4356
8401.2025	450580.0 5408424.0	204.68	10:49	06.07.84	24.9210	29.4347
8401.2038	450582.5 5408436.3	205.62	10:52	06.07.84	24.7690	29.4664
8401.2050	450585.0 5408448.6	205.51	10:55	06.07.84	24.8530	29.5313
8401.2063	450587.5 5408460.8	205.99	10:58	06.07.84	24.7840	29.5567
8401.2075	450590.0 5408473.1	205.36	11:04	06.07.84	24.9390	29.5950
8401.2088	450592.5 5408485.3	204.35	11:08	06.07.84	25.2080	29.6718
8401.2100	450595.0 5408497.6	203.45	11:11	06.07.84	25.4450	29.7366
8401.2113	450597.5 5408509.9	201.88	11:16	06.07.84	25.8300	29.8223
8401.2125	450600.0 5408522.1	199.93	11:19	06.07.84	26.2830	29.8998
8401.2138	450602.5 5408534.4	197.28	11:26	06.07.84	26.8710	29.9816
8401.2150	450605.0 5408546.6	194.68	11:30	06.07.84	27.5090	30.1204
8401.2163	450607.5 5408558.9	194.62	11:37	06.07.84	27.5600	30.1664
8401.2175	450610.0 5408571.2	194.98	11:44	06.07.84	27.4710	30.1529
8401.2188	450612.5 5408583.4	200.47	11:51	06.07.84	26.4580	30.2102
8401.2200	450615.0 5408595.7	204.65	11:56	06.07.84	25.6760	30.2421
8401.2213	450617.5 5408607.9	208.34	12:03	06.07.84	24.9780	30.2652
8401.2225	450620.0 5408620.2	211.57	12:09	06.07.84	24.3730	30.2911
8401.2238	450622.5 5408632.5	214.82	12:14	06.07.84	23.8430	30.3958
8401.2250	450625.0 5408644.7	218.22	12:18	06.07.84	23.1410	30.3542
8401.2263	450627.5 5408657.0	221.72	12:21	06.07.84	22.4210	30.3127
8401.2275	450630.0 5408669.2	225.35	12:26	06.07.84	21.7480	30.3471
8401.2288	450632.5 5408681.5	228.51	12:30	06.07.84	21.1700	30.3841
8401.2300	450635.0 5408693.8	231.45	12:34	06.07.84	20.5420	30.3271
8401.2313	450637.5 5408706.0	232.35	12:38	06.07.84	20.3510	30.3126
8401.2325	450640.0 5408718.3	233.36	12:40	06.07.84	20.1320	30.2887
8401.2338	450642.5 5408730.5	234.72	12:46	06.07.84	19.8380	30.2626
8401.2350	450645.0 5408742.8	235.86	12:49	06.07.84	19.6010	30.2472
8401.2363	450647.5 5408755.1	236.06	12:52	06.07.84	19.5790	30.2654
8401.2375	450650.0 5408767.3	236.02	12:55	06.07.84	19.5280	30.2068
8401.2388	450652.5 5408779.6	234.71	12:59	06.07.84	19.7040	30.1302
8401.2400	450655.0 5408791.8	232.21	13:03	06.07.84	20.1200	30.0631
8401.2413	450657.5 5408804.1	229.33	13:07	06.07.84	20.5480	29.9335
8401.2425	450660.0 5408816.4	226.80	13:11	06.07.84	20.9750	29.8716
8401.2438	450662.5 5408828.6	224.58	13:14	06.07.84	21.4130	29.8808
8401.2450	450665.0 5408840.9	221.85	13:20	06.07.84	21.9350	29.8786
8401.2463	450667.5 5408853.3	218.79	13:24	06.07.84	22.5930	29.9471
8401.2475	450670.0 5408865.7	216.13	13:28	06.07.84	23.1700	30.0121
8401.2488	450672.5 5408878.0	213.13	13:31	06.07.84	23.8630	30.1268
8401.2500	450675.0 5408890.3	211.82	13:35	06.07.84	24.2310	30.2451

042

235042

043

8401.2513	450677.5	5408902.5	211.19	13:39	06.07.84	24.3460	30.2403
8401.2525	450680.0	5408914.8	209.56	13:42	06.07.84	24.5660	30.1441
8401.2538	450682.5	5408927.0	207.61	13:44	06.07.84	24.9610	30.1616
8401.2550	450685.0	5408939.3	206.53	13:47	06.07.84	25.1610	30.1533
8401.2563	450687.5	5408951.6	205.42	13:51	06.07.84	25.4310	30.2115
8401.2575	450690.0	5408963.8	204.95	13:55	06.07.84	25.5540	30.2462
8401.2588	450692.5	5408976.1	204.27	13:59	06.07.84	25.7810	30.3454
8401.2600	450695.0	5408988.3	204.11	14:03	06.07.84	25.8360	30.3721
8401.2613	450697.5	5409000.6	204.26	14:07	06.07.84	25.8300	30.3979
8401.2625	450700.0	5409012.9	204.03	14:09	06.07.84	25.8710	30.3941
8401.2638	450702.5	5409025.1	203.40	14:12	06.07.84	26.0040	30.4064
8401.2650	450705.0	5409037.4	203.15	14:14	06.07.84	26.1030	30.4576
8401.2663	450707.5	5409049.6	202.69	14:17	06.07.84	26.2110	30.4780
8401.2675	450710.0	5409061.9	201.83	14:21	06.07.84	26.3400	30.4421
8401.2688	450712.5	5409074.2	200.90	14:24	06.07.84	26.4720	30.3943
8401.2700	450715.0	5409086.0	200.00	14:26	06.07.84	26.6990	30.4478

Base Stations

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Conversion Parameters

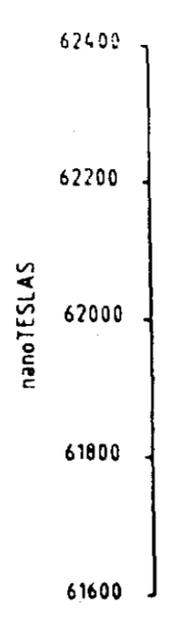
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Easting/Longitude	450570.00000	Northings/Latitude	5408375.00000	AMG Zone	55.00000
Free Air Constant	0.30872				
Bouguer Density	2670.00000				

235043

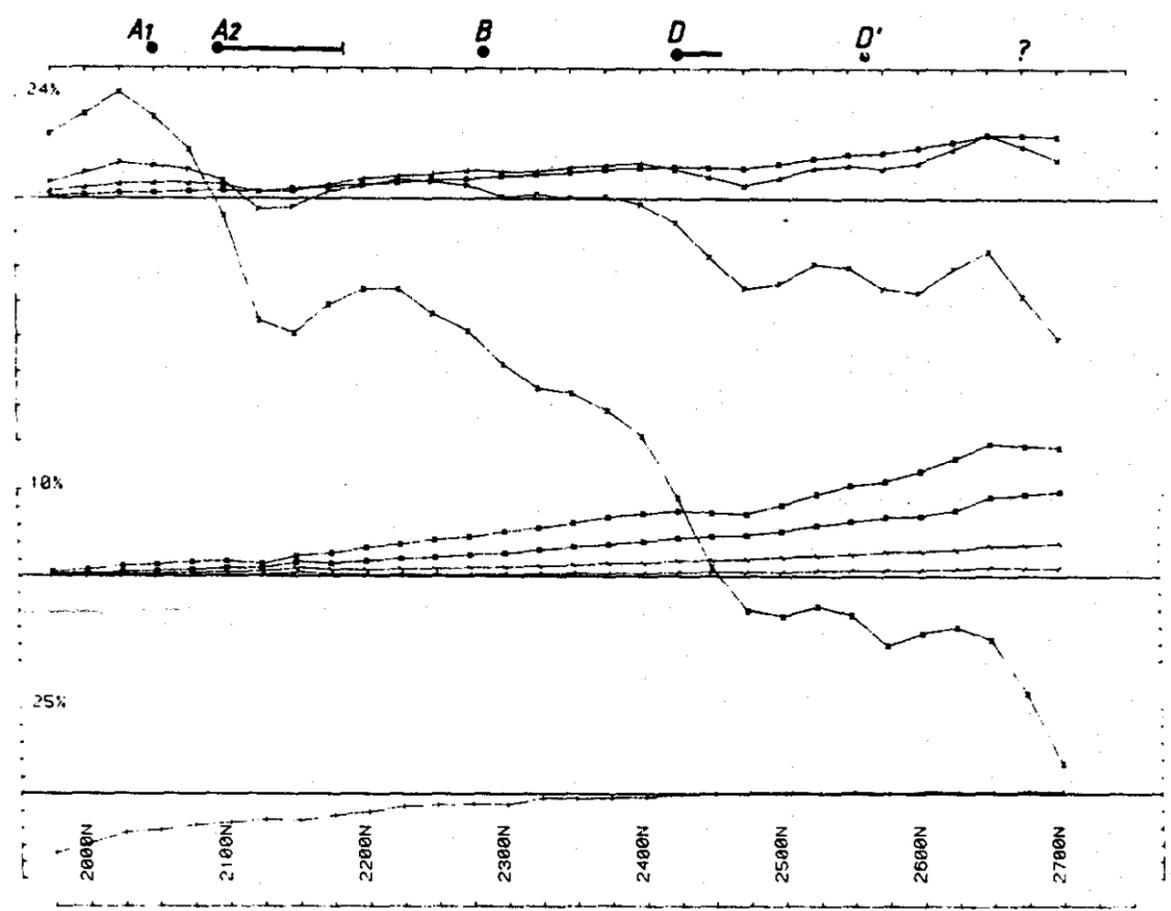
041

# BEULAH BARYTE PROSPECT LINE 800mE

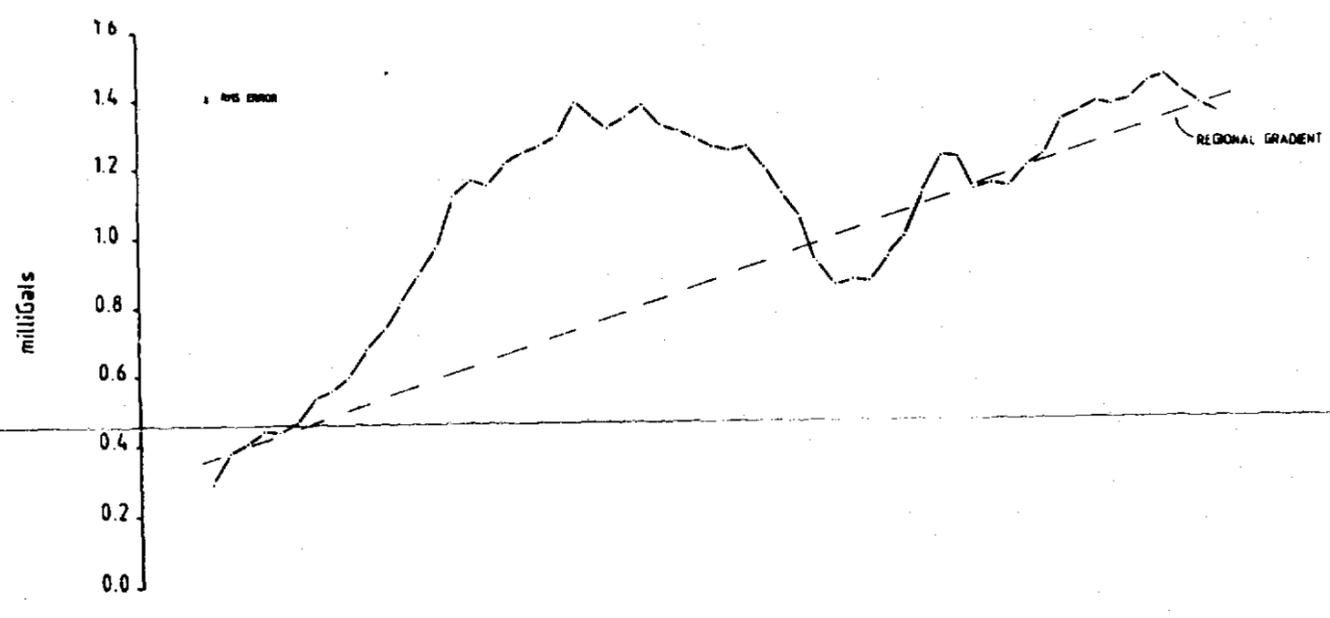
GROUND  
MAGNETICS



U.T.E.M.



GRAVITY



GEOLOGY

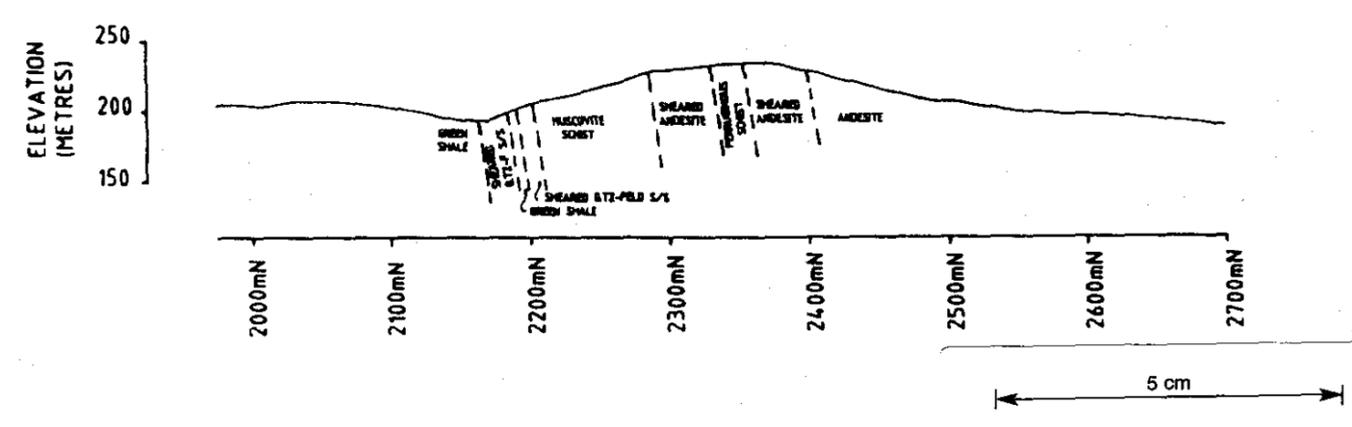
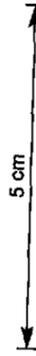


fig. 1  
1:5000

235044

235045



CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7173

BEULAH BARYTE

RESIDUAL GRAVITY

REF. SK 55-3

SCALE 1:2 500

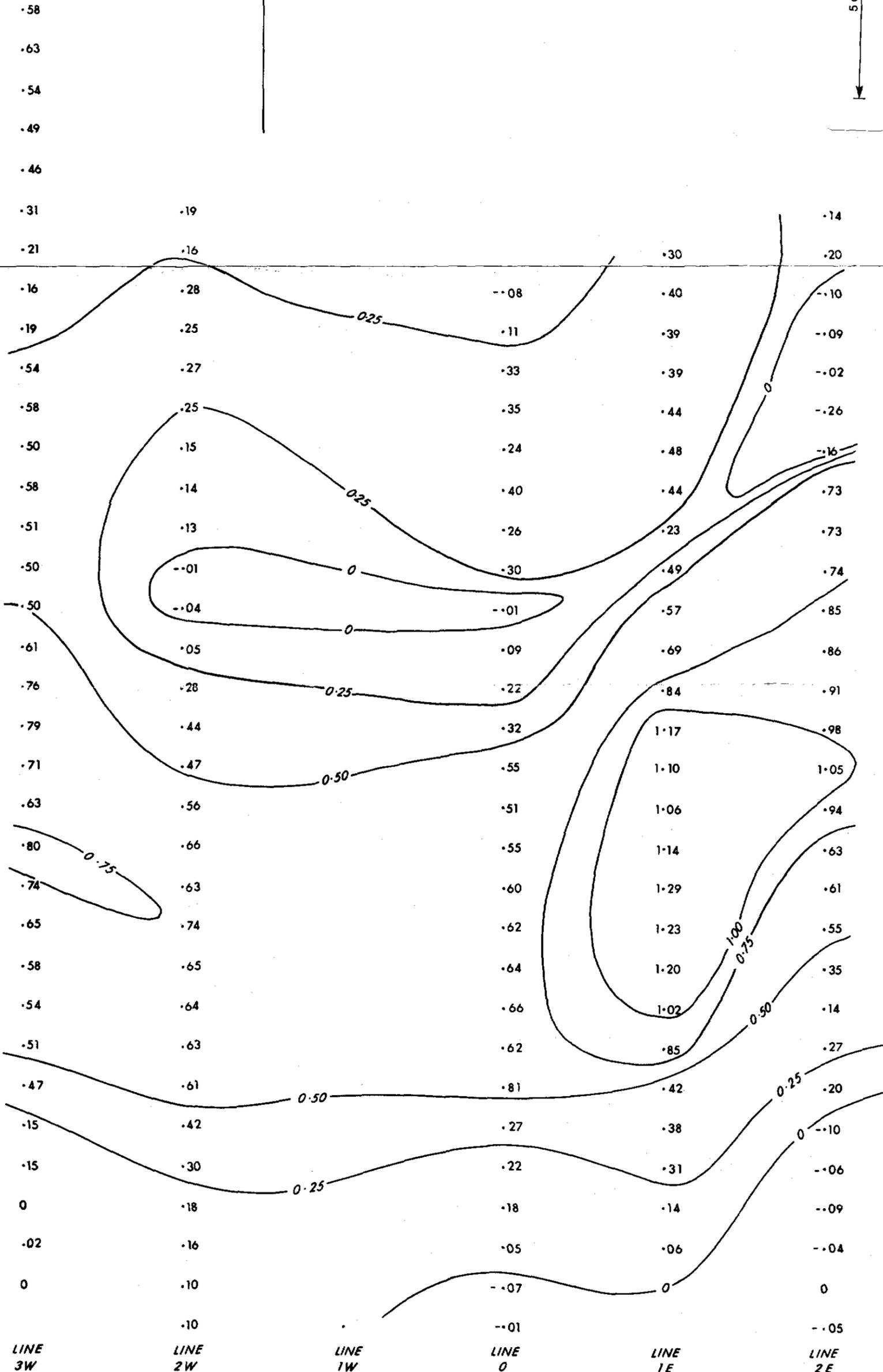
AUTHOR T. V. S.

DATE 20-11-84

DRAWN D.L.

REPORT NO.

PLAN No. TASH 2266



CONTOUR INTERVAL = 0.25 milligals

044

045

235046

APPENDIX 1

UTEM ANOMALY B, BEULAH BARYTE GRID

SHEFFIELD EL 7/73



CRA EXPLORATION PTY. LIMITED  
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AREA CODE: (002)

IN REPLY PLEASE QUOTE

4th July, 1984.

Memorandum To: T.DICKSON  
I.CLEMENTSON  
P.TEMBY

From: M.FLIS

Subject: U.T.E.M. ANOMALY B, BEULAH BARYTE GRID  
SHEFFIELD E.L. 7/73

Anomaly B, defined by the 1983 U.T.E.M. survey (CRAE Report 12279) lies approximately over the baryte deposit at Beulah. The anomaly occurs on lines 700mE to 900mE (old lines 3W to 1W) being closed off to the east (on line 900mE) but not to the west.

The profiles indicate, however, that it is dying off to the west.

In general, anomaly B is short lived - indicating a low quality conductor. Originally a resistivity of 110 ohm metres was interpreted. This may simply reflect a shear zone within the andesites (the anomaly resides in an anomalous corridor defined by VLF-EM). No anomalous magnetics are associated with this zone.

U.T.E.M. anomaly B is best developed on line 800mE (old 2W) at 2287mN (old 287mN). Assuming a thin plate conductor a depth of 50 metres is computed. No definitive dip information can be derived from the E.M. profiles.

MARCUS FLIS

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APPENDIX 1

UTEM TARGET AT BEULAH BARYTE

SHEFFIELD EL 7/73

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CRA EXPLORATION PTY. LIMITED  
(INC. IN N.S.W.)

LEVEL 4, BELLERIVE QUAY,  
CAMBRIDGE ROAD, BELLERIVE, 7018, TASMANIA, AUSTRALIA

19th June, 1984.

P.O. BOX 138  
BELLERIVE 7018  
TELEGRAMS: CRAEX  
TELEX: AA57144  
TELEPHONE: 44 3533  
AREA CODE: (002)

IN REPLY PLEASE QUOTE

Memorandum To: I.CLEMENTSON  
P.TEMBY

Copy: T.W.DICKSON

From: M.FLIS

Subject: U.T.E.M. TARGET AT BEULAH BARYTE,  
SHEFFIELD E.L. 7/73

The Beulah Baryte U.T.E.M. survey has been re-assessed in light of the Hellyer experience. Much more emphasis is now placed on the occurrence of baryte in andesites - a situation common to both Beulah and Hellyer. Another parallel is obvious in hindsight: the original (first) drill hole put down to test the strongest response found supposedly highly conductive black shales - shales which would be analogous to the conductive shales surrounding the andesites in which Hellyer occurs.

The response of the Hellyer body to U.T.E.M. is extremely subdued, to say the least. With this in mind all the responses at Beulah become of interest. Unfortunately, we are not able to drill everything all the time!

Anomaly D (see plan TASH 1384) is now recognised to be due to a separate, finite conductor rather than just reflecting a conductivity change between lithologies (CRAE Report No. 12279 by Flis, 1983).

This anomaly reaches it's strongest response on line 800mE (old line 2W), degrading markedly on lines 700mE and 1000mE. A depth of 22 to 33 metres fits in well with depths already interpreted on other lines. The dip of the body, although subjective (dependent on what type of body the response is attributed to) is interpreted to be 75° to the north. Note that to the east, along Saltwater Ck. dips of 60° to 70° South have been mapped whilst to the south a 60° dip to the north is mapped.

...2/.

Conductance is in the order of 5 to 10 Siemens which is the right order of magnitude for Que River/Hellyer type orebodies. A strike length of at least 300 metres is evident - although it is not closed off to the west.

RECOMMENDATION

Anomaly D to be drilled. The target is:

Line: 800mE (old 2W)  
Location: 2437mN (old 437mN)  
Depth: 22 to 33m, say 50m  
Dip: 75° North

M.F.FLIS

APPENDIX 1

GEOPHYSICS OVER THE STONEBRIDGE PROSPECT

EL 7/73

051

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CRA EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

2ND FLOOR, BELLERIVE QUAY,  
31 CAMBRIDGE ROAD, BELLERIVE, 7018, TASMANIA, AUSTRALIA

P.O. BOX 138  
ROSNY PARK 7018  
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TELEX: AA57144  
TELEPHONE: 44 3533  
AREA CODE: (002)

IN REPLY PLEASE QUOTE

4/Dec/84

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

MEMO FROM : T. VON STROKIRCH

SUBJECT: GEOPHYSICS OVER THE STONEBRIDGE BARITE PROSPECT EL  
7/73

INTRODUCTION

Ground EM and magnetics were performed over the eight one kilometre lines of the Stonebridge Barite prospect. Magnetic readings were taken every 12.5 metres and EM readings using the Scintrex GENIE system were taken every 25 metres with a transmitter/receiver separation of 100 metres. Two frequencies pairs (337Hz/112Hz and 3037Hz/112Hz) were monitored at all stations. Some problems were encountered with electric fences but these were alleviated when the local property owners kindly agreed to turn them off.

INTERPRETATION

No major conductors were located on this grid. The area tends to have generally noisy EM and magnetic responses which is due to highly changeable geology rather than to cultural effects. This tends perhaps to obscure minor anomalies. The dominant response on the eastern lines was the basalt which has a high frequency conductive response associated with it. Some minor conductors were detected which may need following up when geological and geochemical evidence is considered. A line by line interpretation follows.

Line 7300E

There is a conductivity contrast between the northern and

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southern ends of the line with the contact appearing to be at 4200N. Possible conductors occur at 4150N and 4350N. The former is the deeper of the two but little more can be said as they are both very small and the response is close to the noise level.

Line 7400E

Contacts between rock types are indicated from magnetics at 4290N, 4560N and 4710N. A magnetic unit lies between 4290N and 4560N. There is a possible conductor at 4050N but the line does not extend far enough to be sure. It appears from the available information that the conductor would in any case be shallow and thus geochemistry should confirm whether or not it is of interest.

Line 7500E

Station 4700N on this line is the approximate position of a DIGHEM conductor located on this grid. On the ground this is visible as a conductive feature of about 35 metres width dipping to the south at 70deg. at a depth of 30-50 metres. It is most probably due to a slightly more conductive rock type as the conductivity appears to be quite of quite a low order. There is a magnetic peak in the centre of the conductor which is due to a source at a depth of 30 metres. An apparent conductor occurs at 4250N. It dips at a shallow angle to the south and is again interpreted as being due to a more conductive rock type. In this case there is some question in my mind as to whether the response on the lower frequency is in fact due to the same feature or whether there is a deeper source as well. Another deeper penetration EM system might be needed to solve this problem. If there is a deeper source then I feel that it might be from 40-60 metres down but this is just an intuitive guess. A magnetic low is centred on the same point as the centre of the deeper response. A magnetic contact occurs at 4450N.

Line 7600N

The 800nT drop in the magnetic response at the northern end of the line indicates the edge of the basalts that lie across the northern edge of the grid. A magnetic unit lies between 4075N and 4300N to the south of which the magnetic response is lower possibly indicating sediments. The low frequency response at the southern end of the line is very noisy, indicating considerable conductivity variation in the

rocks at some depth. At the surface the higher frequency indicates that the rocks are generally more conductive than elsewhere. If there is any sort of geochemical response this area should be considered interesting even though there is no well defined conductor. At 4625N there is a small deepish (50-60 metres) conductor with a 150nT magnetic peak on its southern edge. Again the conductor is poorly defined and no quantitative estimates of dip and conductivity are possible, though it appears to dip steeply to the south.

#### Line 7700N

The shallow conductive response of the basalt is becoming visible on this line. The edge of the basalt as interpreted from the magnetics (4875N) and the EM (4650N) is quite different. I assume that there is a fairly broad area of weathered basaltic material off the edge of the fresh basalt, and that this produces the conductive response when the magnetics show no sign of shallow fresh basalt. At the end of the line at 4925N there is a plunge in the values of both the high and the low frequencies as well as the magnetics. This is interesting though I can't explain what it is caused by. Most likely it has something to do with the basalt but it may be a conductor under thin basaltic material. If no geochemical sampling has been done here it might be worth while. There is a slight increase in surface conductivity and a decrease in the deeper conductivity south of 4250N. Between 4325N and 4425N there is a unit with a low magnetic signature. At 4650N there is a magnetic contact. The background EM response for the whole line is unusually low which indicates generally high conductivity. Perhaps this is indicative of a lot of alteration or fracturing.

#### Line 7800E

The edge of the basaltic material appears to be at 4650N from the EM and at 4900N from the magnetic information. There are magnetic contacts visible at 4325N, 4690N and 4825N where the fresh basalt appears to commence. Possible conductors are present at 4100N, 4225N and 4400N. None of the responses are very strong and all must be at greater than 30 metres depth. The dips appear to be generally to the north. I feel that further EM with a more discriminating system would be necessary to determine whether these conductors are real. I don't feel nearly as pleased with the

conductors on this line as I indicated after the first pass. As is often the case, 'they looked better the first time'.

#### Line 7900N

The EM and the magnetics agree quite well on the position of the edge of the basalt on this line, both putting it at 4700N. At the northern end of this line a DIGHEM conductor was found. This is clearly on the basalt and is probably due to it. The low frequency response is somewhat depressed underneath the basalt which may indicate a rock type change as you go under the basalt. Other magnetic contacts are present at 4260N and 4400N. A small conductor lies at 4300N.

The source is at a depth of 50 metres dipping at 60deg. to the north. There is a magnetic low at 4600N which may correlate with the similar feature on line 7800N.

#### Line 8000N

Again there is a curious disparity between the position of the basalt as determined by the two techniques, but this time it is in the opposite direction. The EM response is dominated by a broad shallow conductor at the edge of the basalt which dips at a shallow angle to the north. This is probably related to the base of the basalt. There is a magnetic contact at 4200N. The end of the line is once again characterised by a somewhat more anomalous response on the EM, this time solely on the low frequency. I would have liked to see the line extend a little further to the south to completely cover the anomaly in this case, as it appears to be caused by a non-surface source (greater than 40 metres depth) which might not produce a strong geochemical response if it were a small ore body which might be related to a larger one at depth.

#### CONCLUSIONS

Reading back through this memorandum, I find that I have spent a large portion of it discussing the position of the basalt rather than any interesting responses from the rocks which might be expected to be the hosts for any ore. This reflects the general value of the results. The GENIE system is basically a cheap, rapid reconnaissance EM tool which finds large anomalies. Unfortunately there do not appear to be many 'elephants' lurking on the Stonebridge grid that are

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PAGE 5

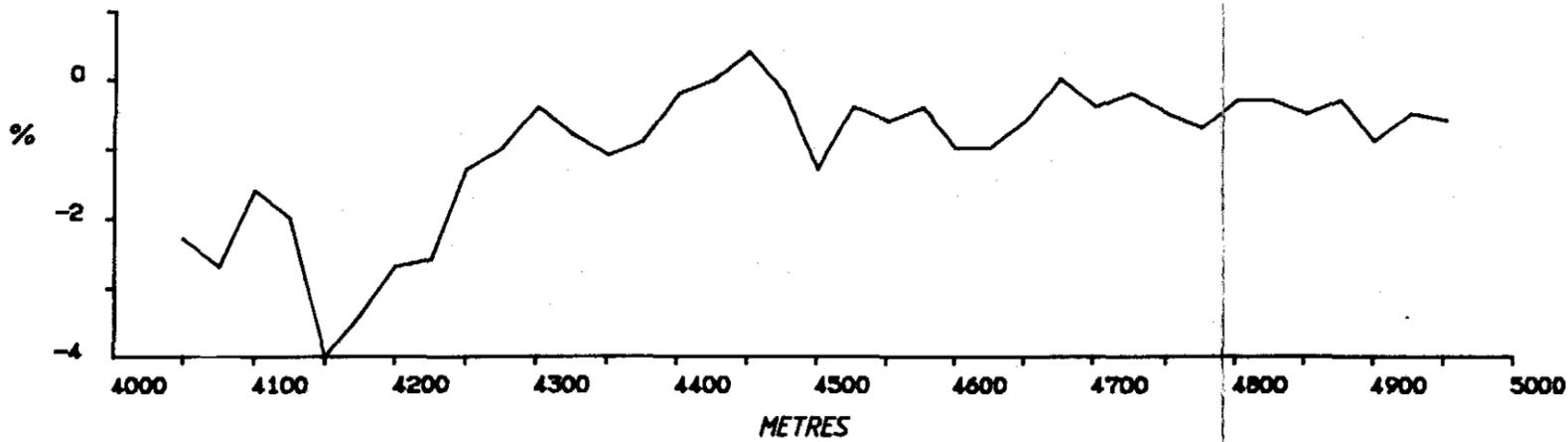
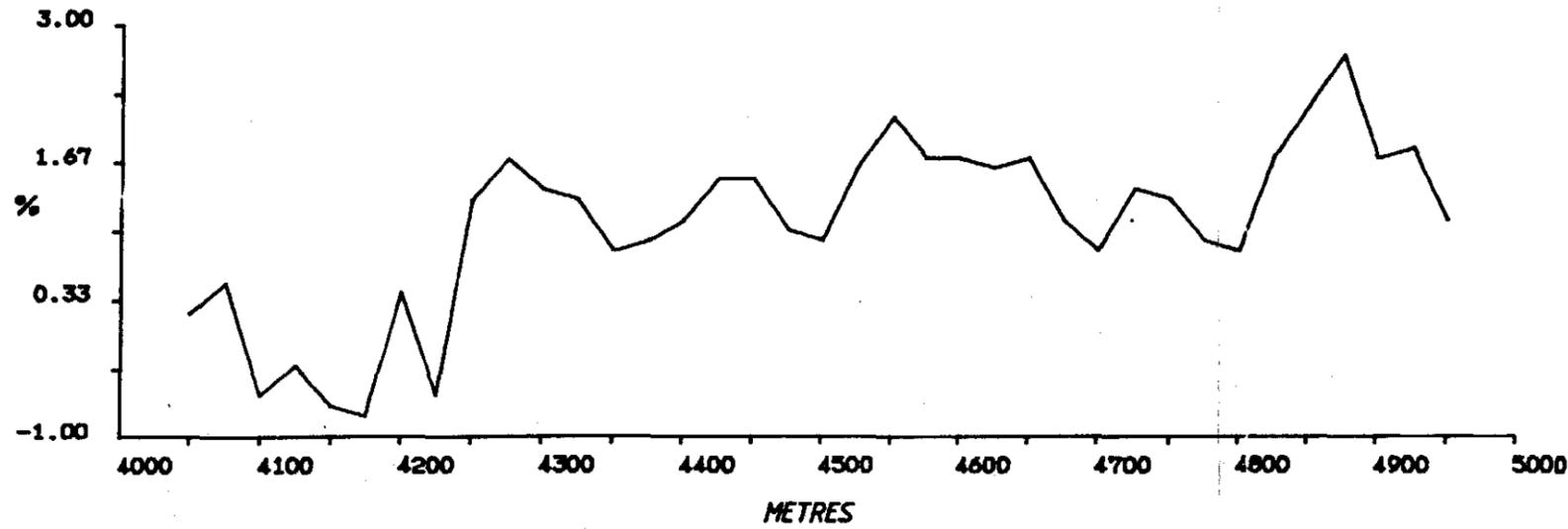
in reach of the GENIE. Most of the responses that we have received have been somewhat ambivalent but may be significantly upgraded by even minor geochemical anomalies. If any follow up work is to be done I recommend using a more discriminating, deeper penetrating, large loop system such as UTEM. Problems will arise with current channeling due to the large variations in rock conductivities - a la Beulah - and careful interpretation will be necessary to sort out these spurious anomalies.

T. von Strokirch

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### STONEBRIDGE LINE 7300E EM



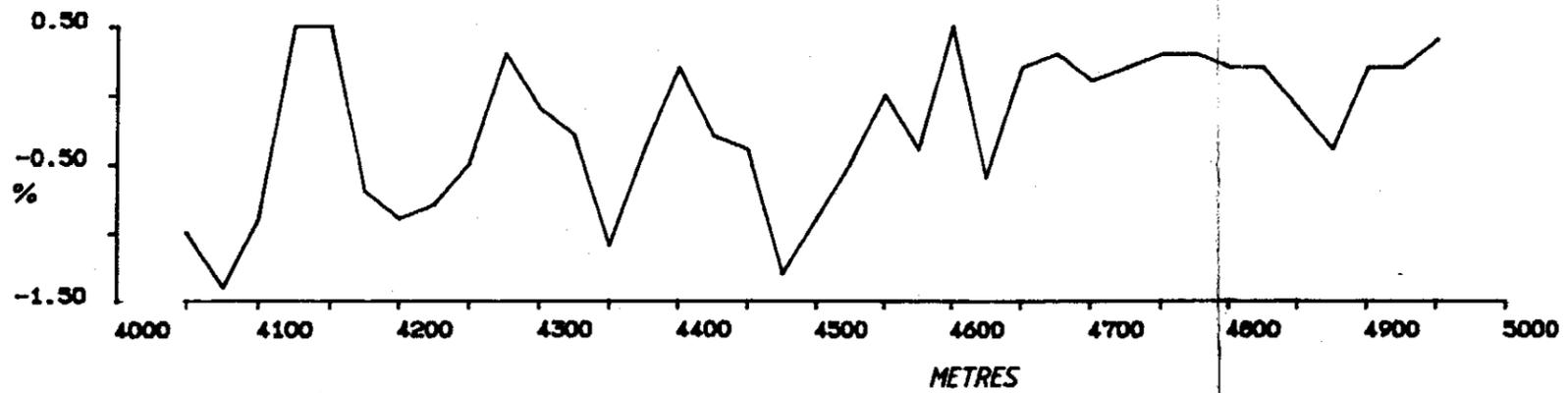
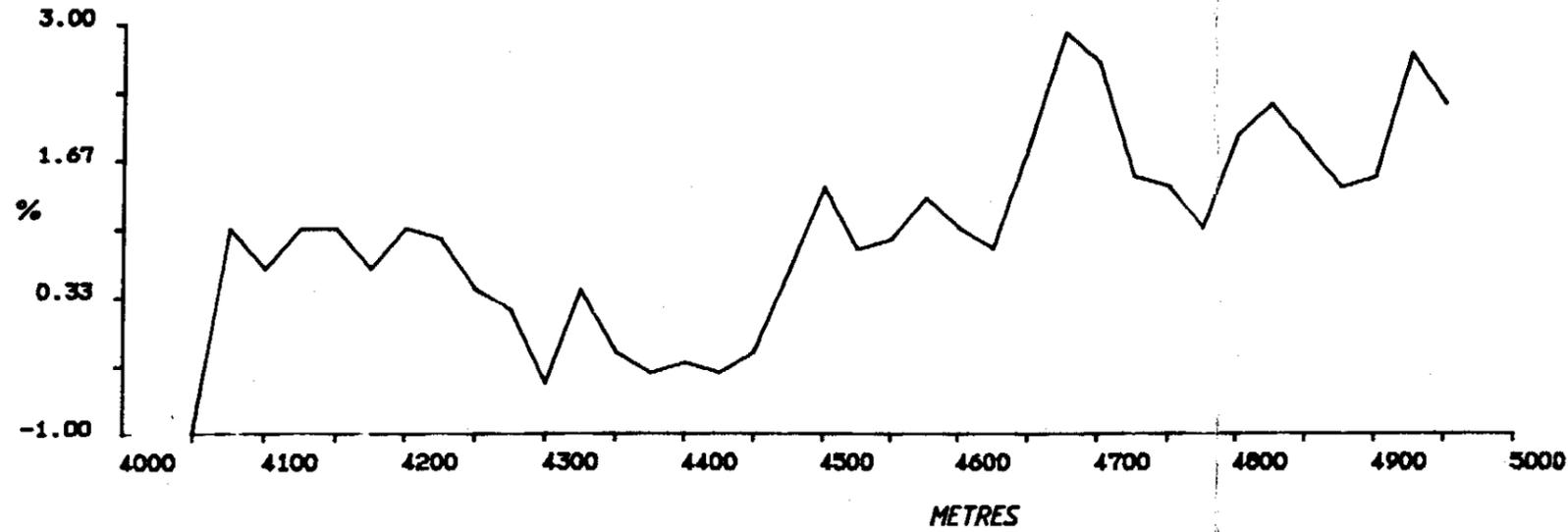
5 cm

CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73			
STONEBRIDGE BARITE PROSPECT			
LINE 7300 mE			
GENIE PROFILES			
REF.	SK55 - 3		
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.v.S.	REPORT No.	
DATE	23 - 11 - 1984	PLAN No.	TASH 2274

057

235058

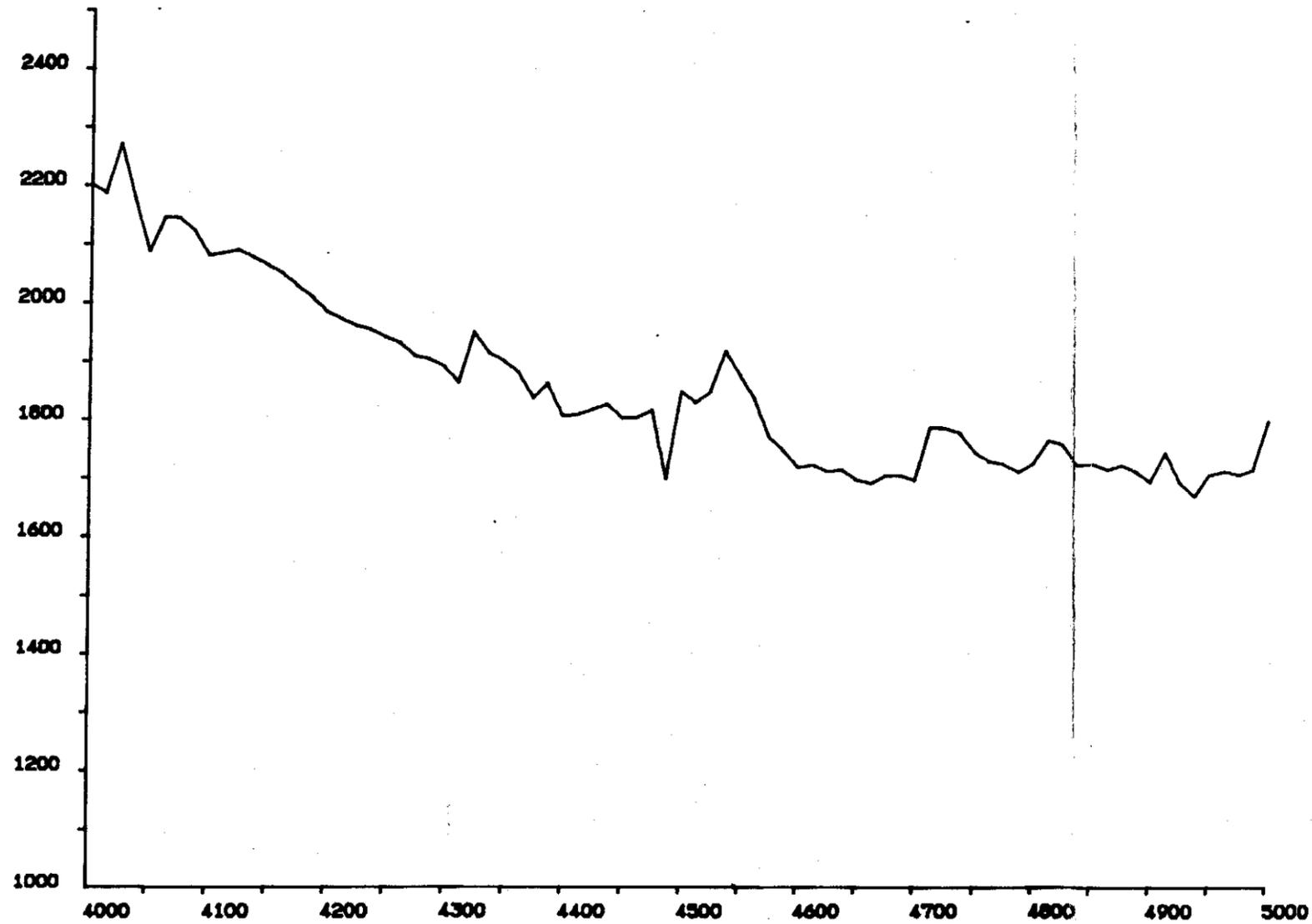
### STONEBRIDGE LINE 7400E EM



5 cm

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
STONEBRIDGE BARITE PROSPECT	
LINE 7400 mE	
GENIE PROFILES	
REF.	SK55 - 3
SCALE	1 : 5000
AUTHOR	T.v.S.
DATE	23 - 11 - 1984
DRAWN	T.v.S.
REPORT No.	
PLAN No.	TASh 2275

### STONEBRIDGE BARYTES LINE 7400E

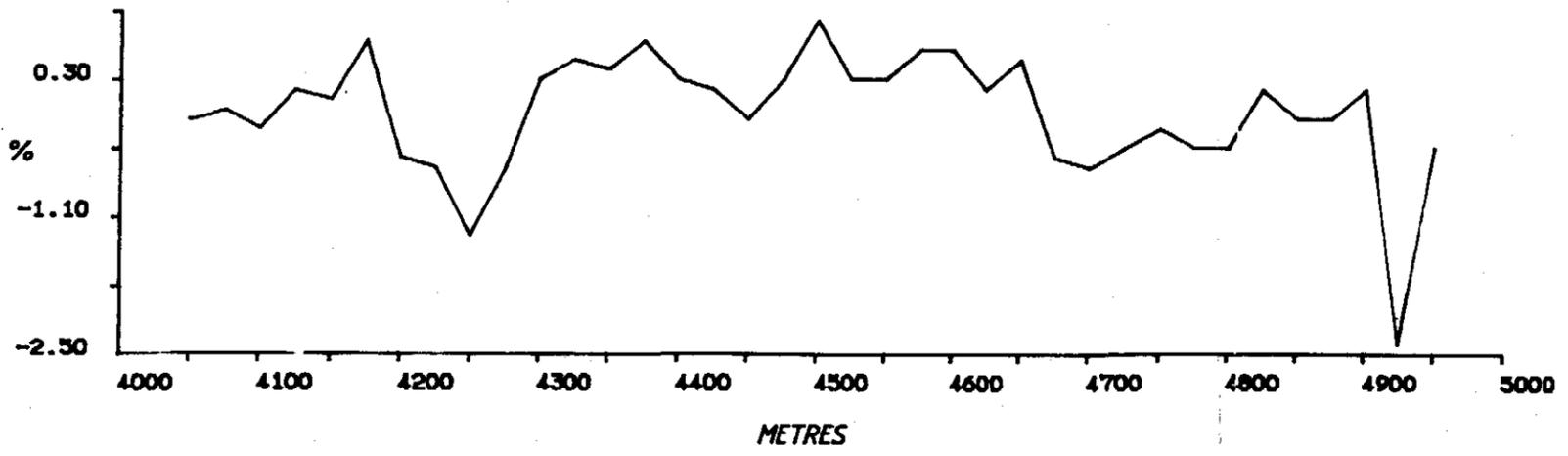
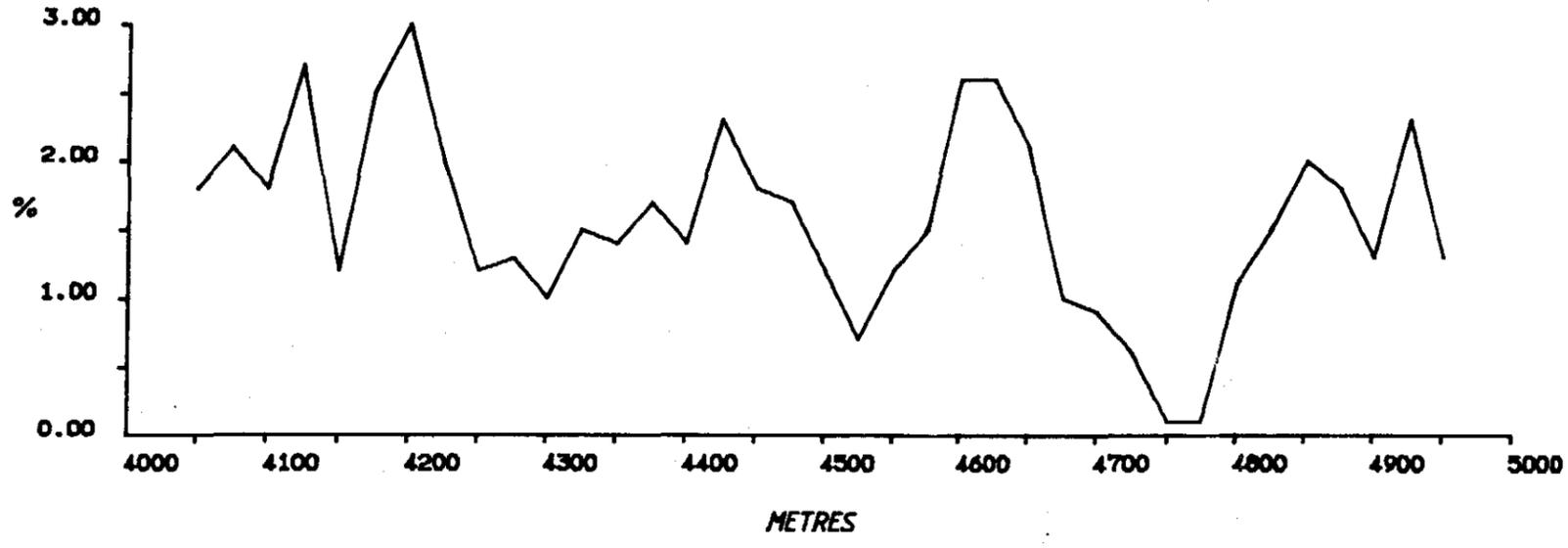


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AUTHOR	REPORT NO.
DATE	PLAN NO. TASH

059

235060

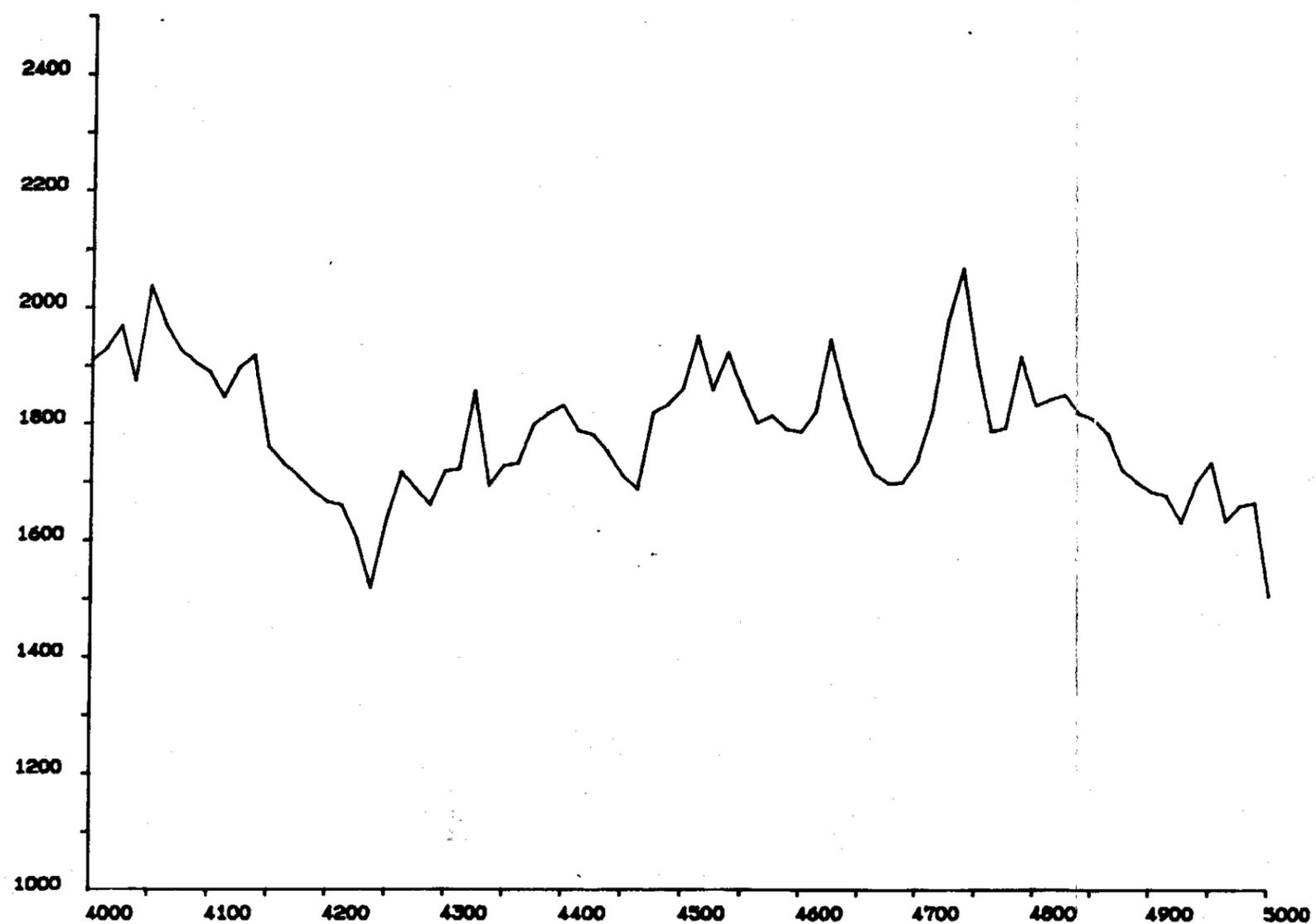
### STONEBRIDGE LINE 7500E EM



5 cm

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
STONEBRIDGE BARITE PROSPECT	
LINE 7500 mE	
GENIE PROFILES	
REF.	SKSS - 3
SCALE	1 : 5000
AUTHOR	T.v.S.
DATE	23 - 11 - 1984
DRAWN	T.v.S.
REPORT No.	
PLAN No.	TASH 2276

STONEBRIDGE BARYTES LINE 7500E

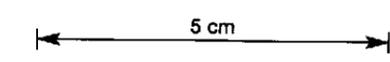
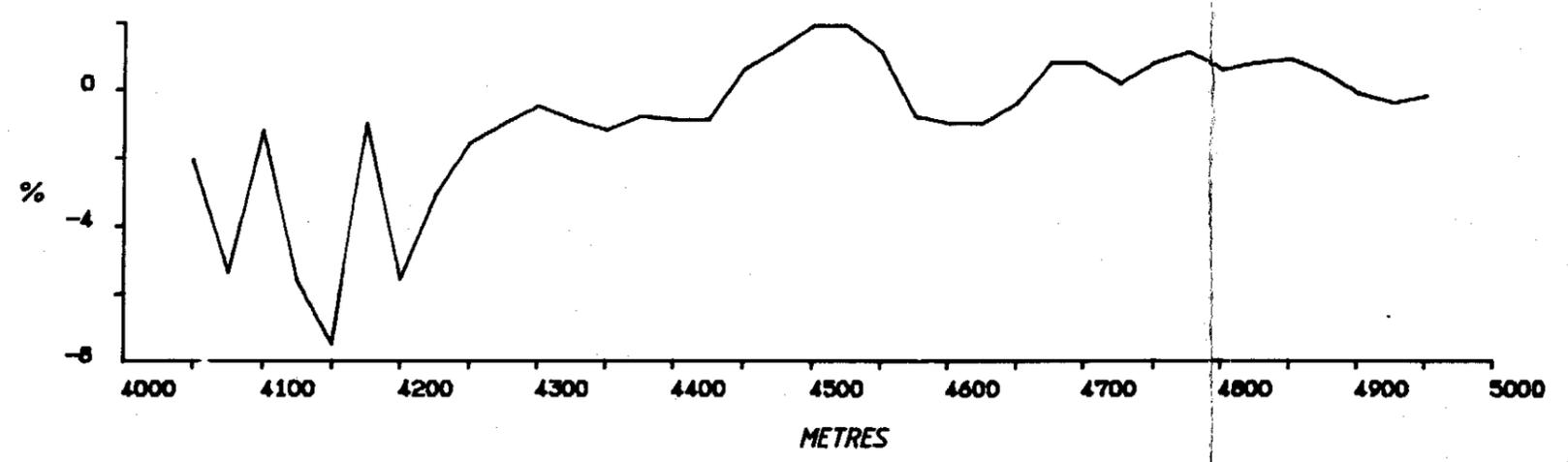
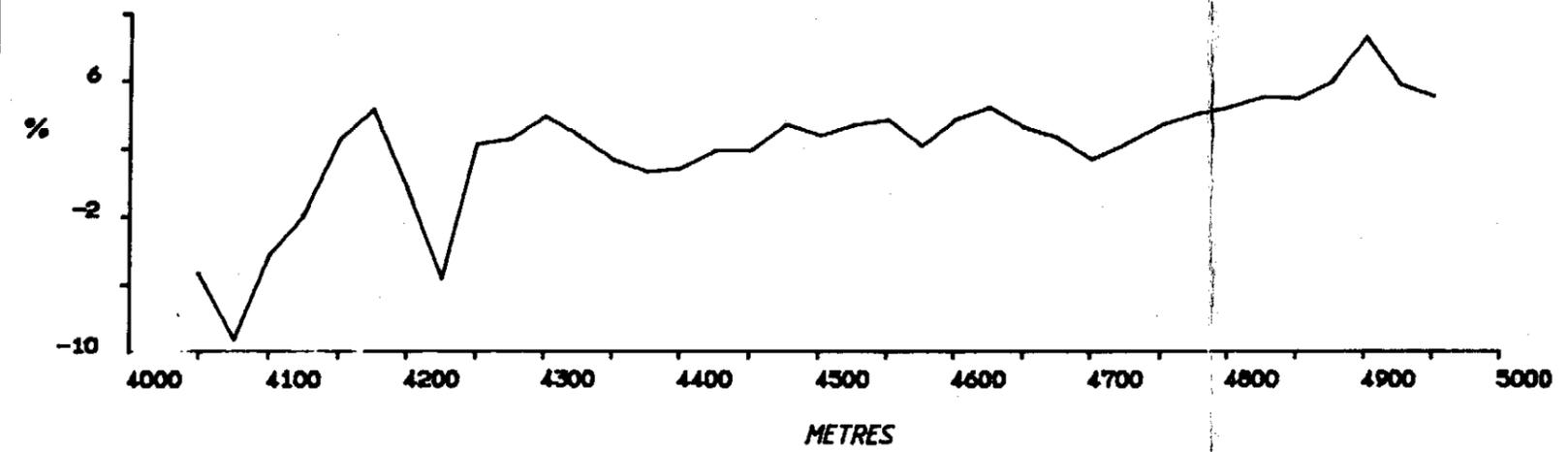


CRA EXPLORATION PTY. LIMITED	
REF.	
SCALE	DRAWN
AUTHOR	REPORT NO.
DATE	PLAN NO. TRSH

061

235062

### STONEBRIDGE LINE 7600E EM

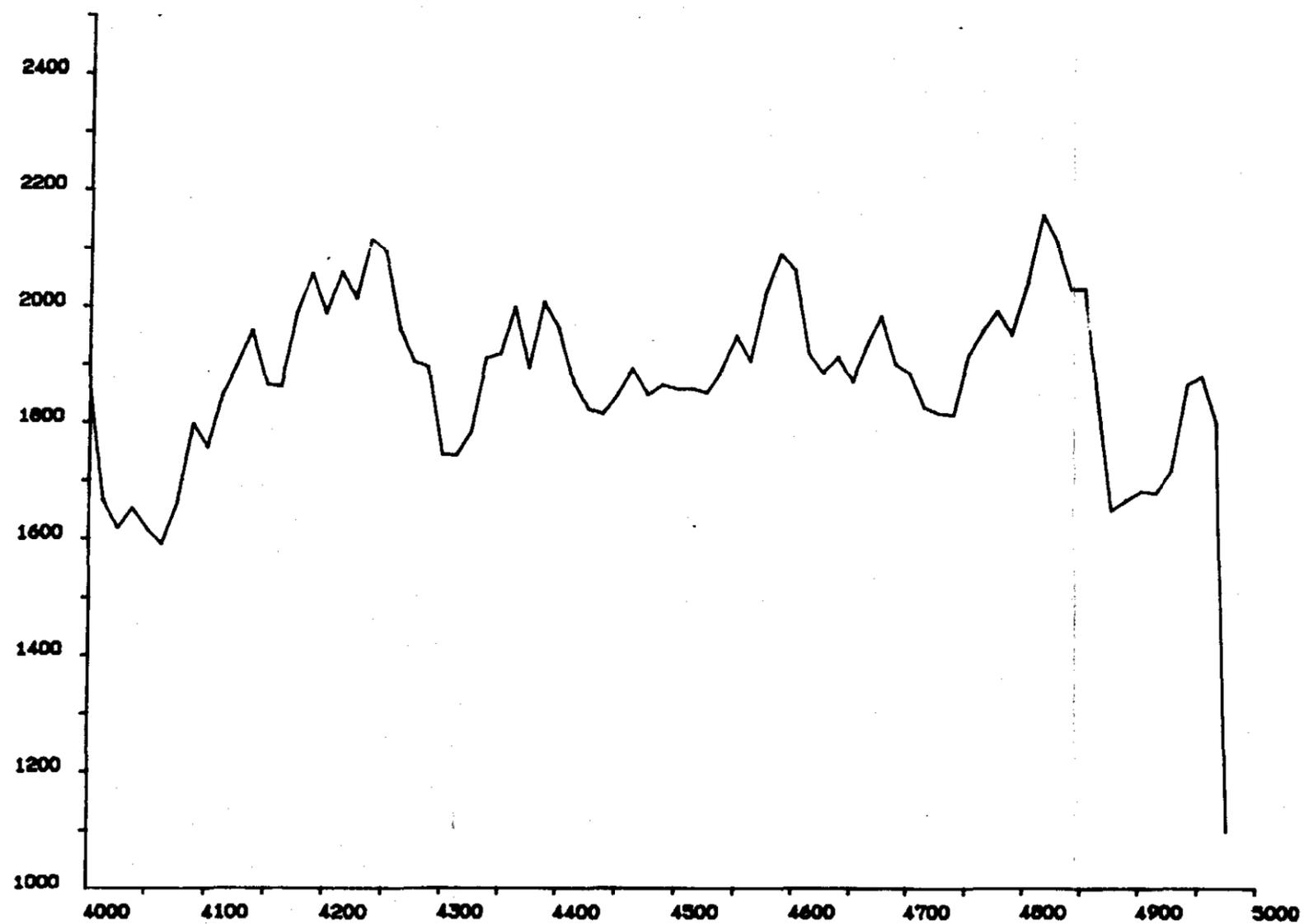


CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
STONEBRIDGE BARITE PROSPECT	
LINE 7600 mE	
GENIE PROFILES	
REF.	SK35 - 3
SCALE	1 : 5000
AUTHOR	T.v.S.
DATE	23 - 11 - 1984
DRAWN	T.v.S.
REPORT No.	
PLAN No.	TASh 2277

062

235063

### STONEBRIDGE BARYTES LINE 7600E

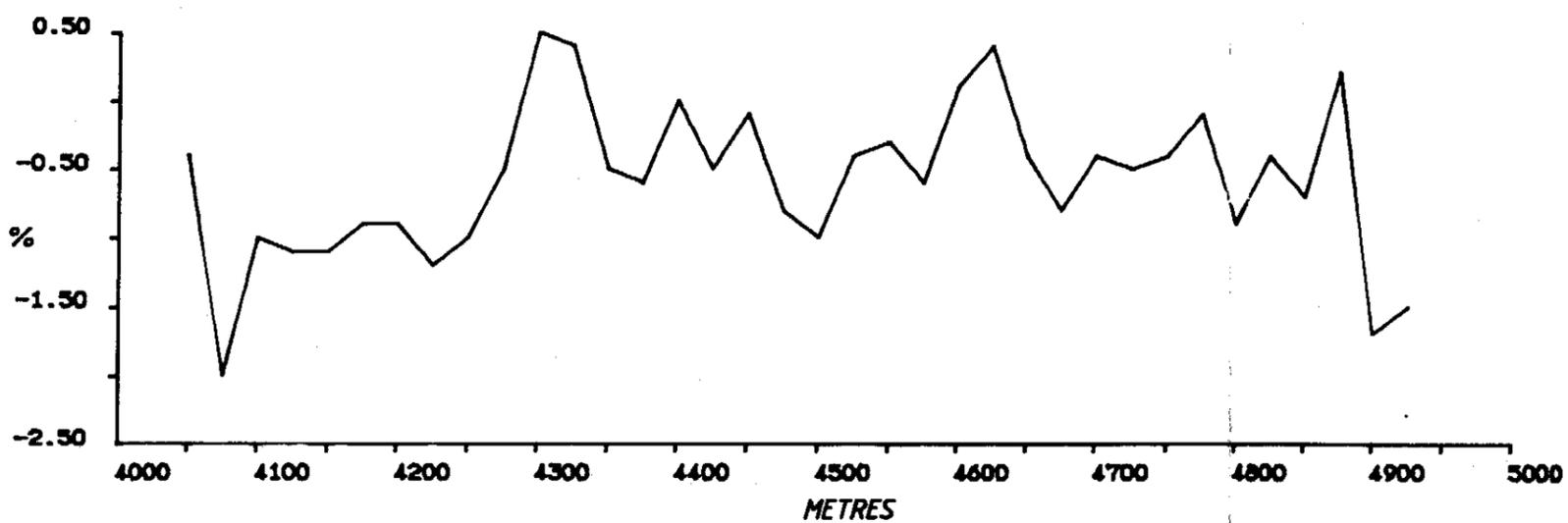
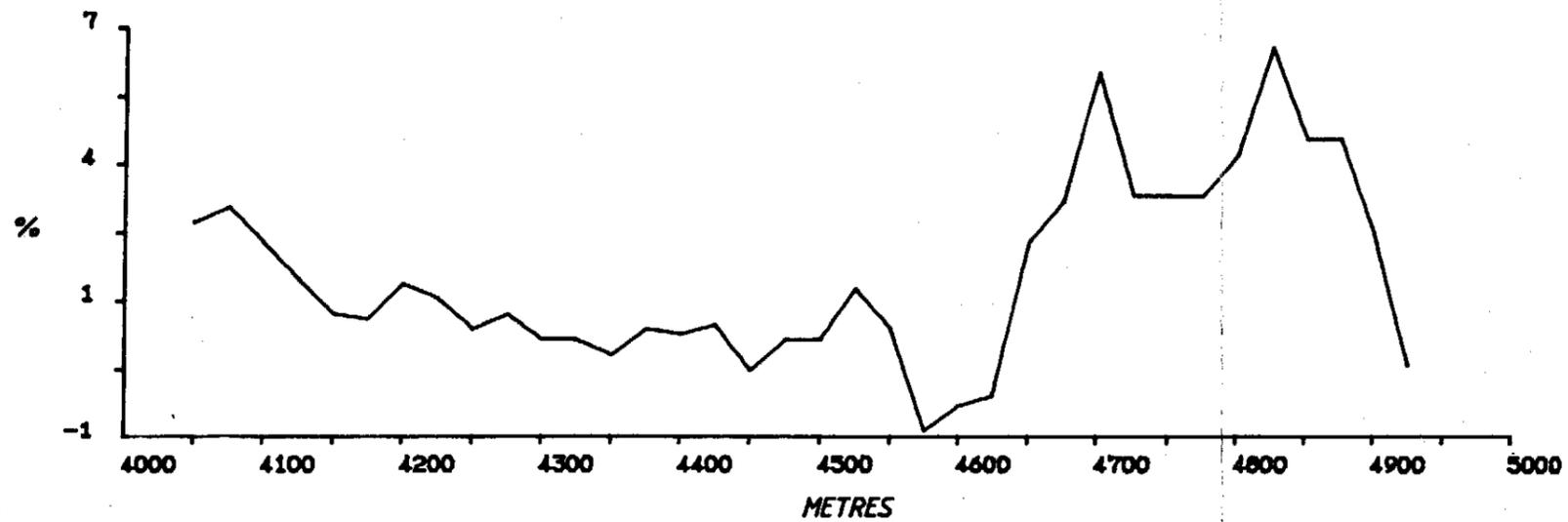


<b>CRA EXPLORATION PTY. LIMITED</b>	
REF.	
SCALE	DRAWN
AUTHOR	REPORT NO.
DATE	PLAN NO. TASH

063

235064

### STONEBRIDGE LINE 7700E EM



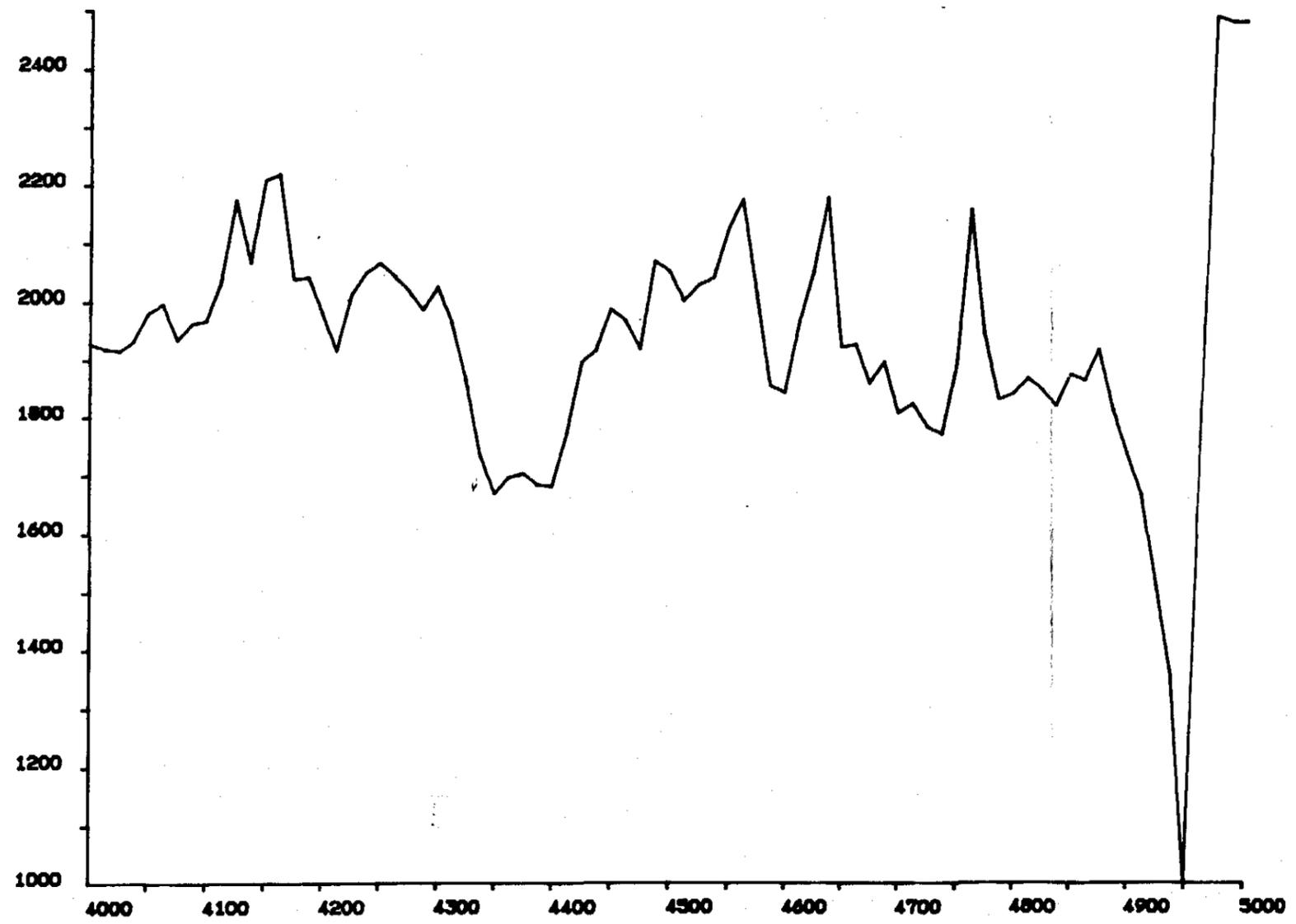
5 cm

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
 STONEBRIDGE BARITE PROSPECT  
 LINE 7700 mE  
 GENIE PROFILES

REF.	SKSS - 3		
SCALE	1 : 5000	DRAWN	T.v.S.
AUTHOR	T.v.S.	REPORT No.	
DATE	23 - 11 - 1984	PLAN No.	TASH 2278

STONEBRIDGE BARYTES MAGNETICS LINE 7700E

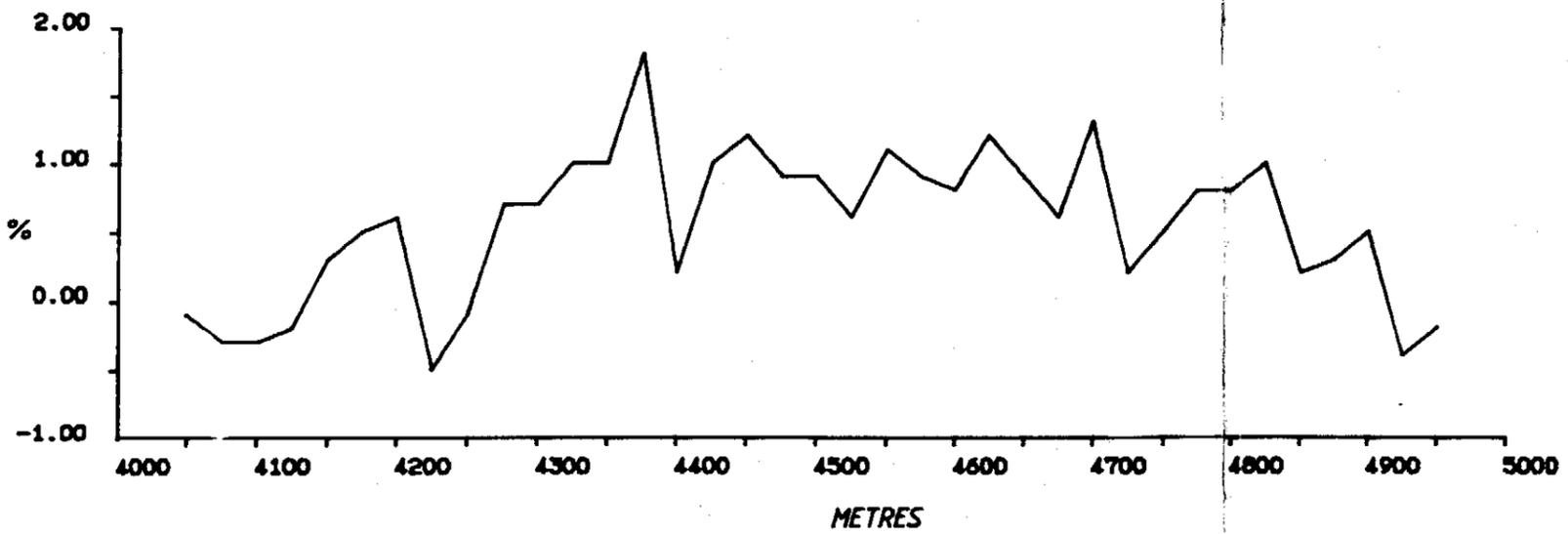
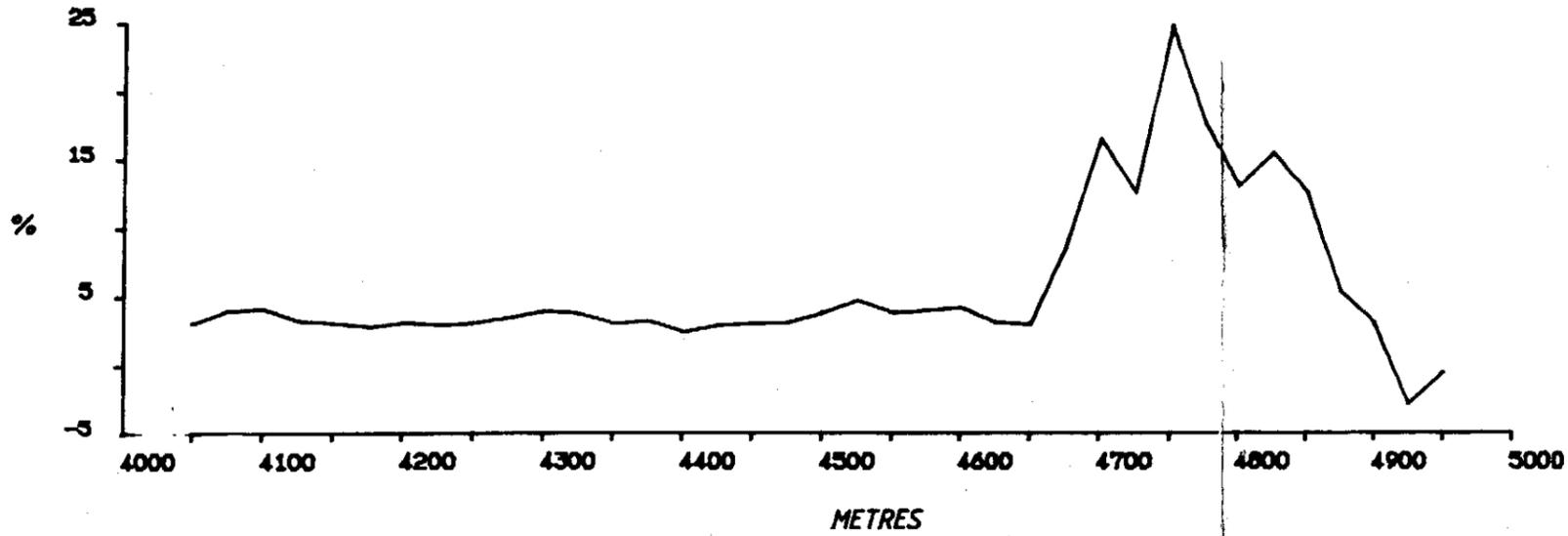


CRA EXPLORATION PTY. LIMITED	
REF.	
SCALE	DRAWN
AUTHOR	REPORT No.
DATE	PLAN No. TAB

065

235066

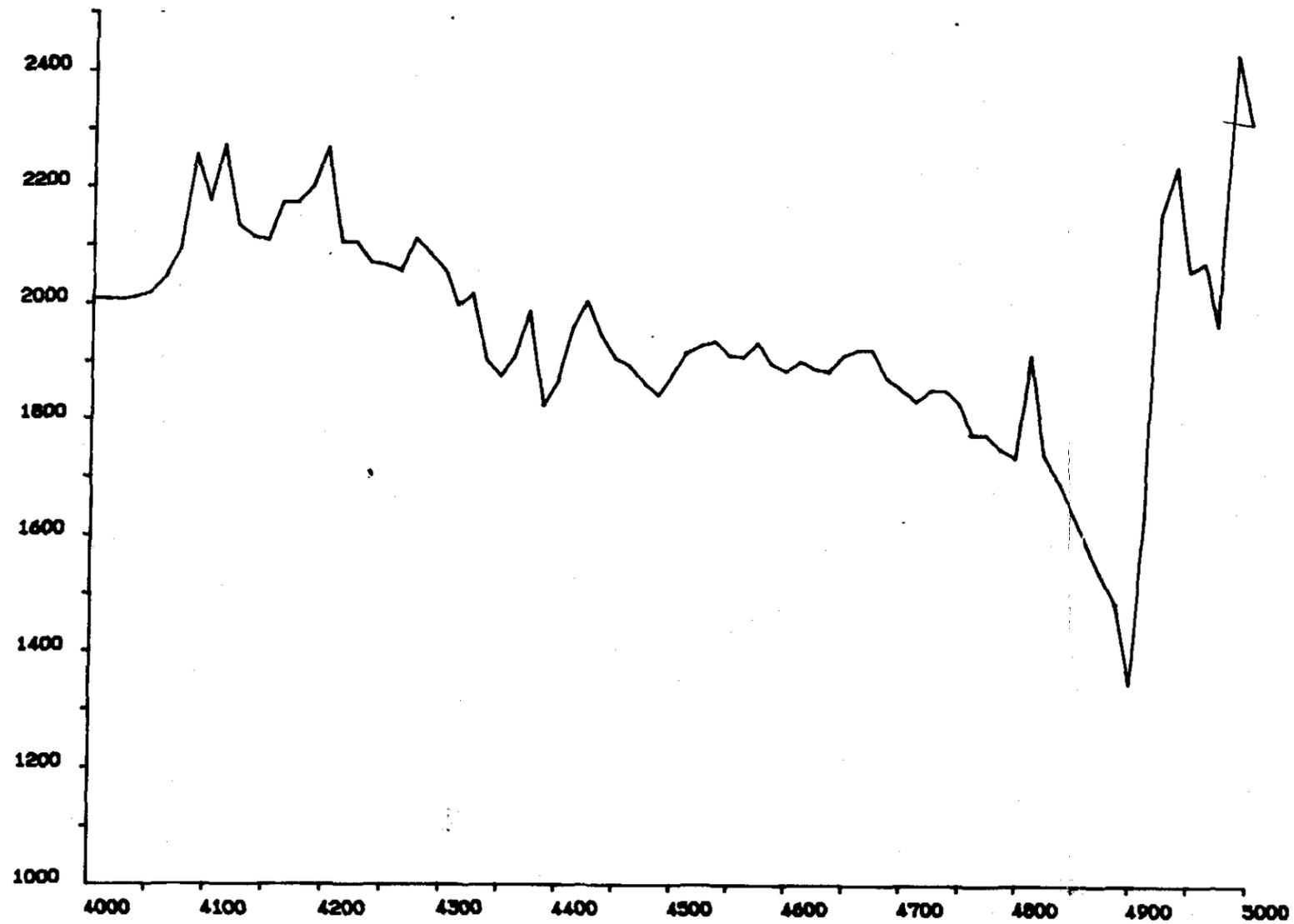
### STONEBRIDGE LINE 7800E EM



5 cm

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
STONEBRIDGE BARITE PROSPECT	
LINE 7800 mE	
GENIE PROFILES	
REF.	SK35 - 3
SCALE	1 : 5000
AUTHOR	T.v.S.
DATE	23 - 11 - 1984
DRAWN	T.v.S.
REPORT No.	
PLAN No.	TASh 2279

STONEBRIDGE BARYTES MAGNETICS LINE 7800E

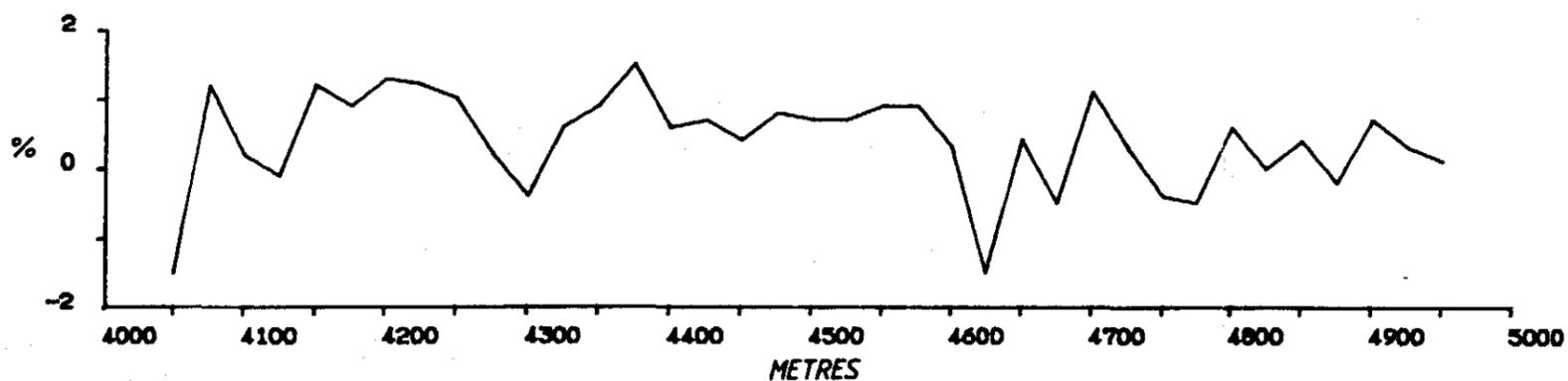
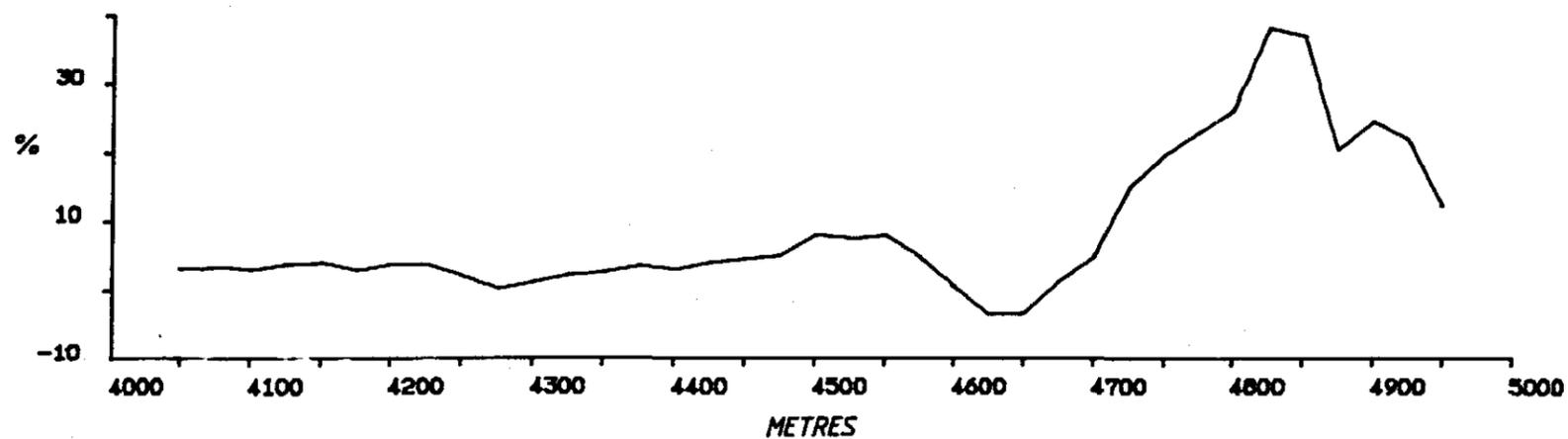


CRA EXPLORATION PTY. LIMITED	
REF.	
SCALE	DRAWN:
AUTHOR	REPORT NO.
DATE	PLAN NO. TASH.

067

235068

### STONEBRIDGE LINE 7900E EM



5 cm

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
 STONEBRIDGE BARITE PROSPECT  
 LINE 7900 mE  
 GENIE PROFILES

REF.	SKSS - 3		
SCALE	1 : 5000	DRAWN	T.v.S.
AUTHOR	T.v.S.	REPORT No.	
DATE	23 - 11 - 1984	PLAN No.	TASh 2200

STONEBRIDGE BARYTES MAGNETICS LINE 7900E

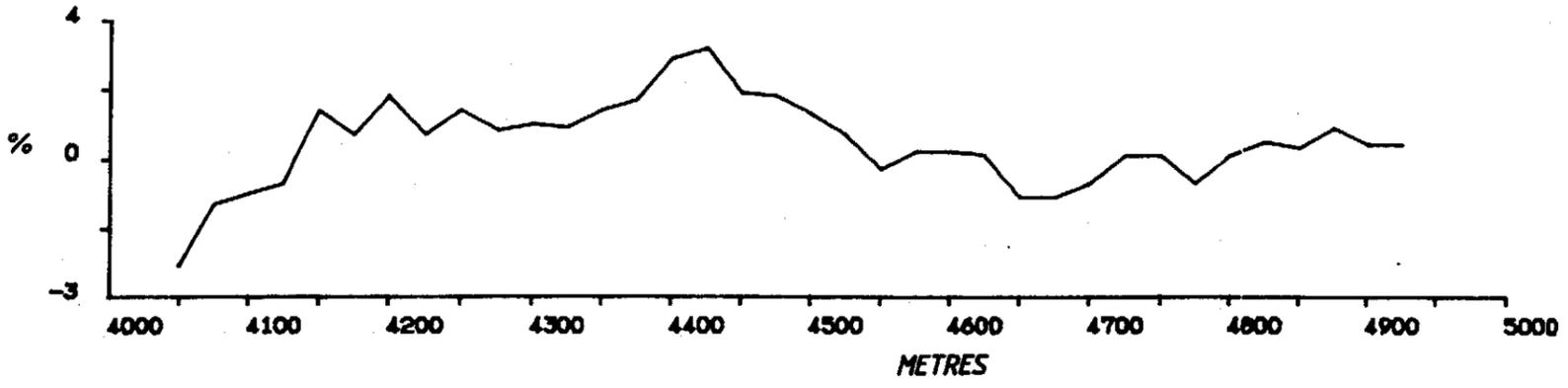
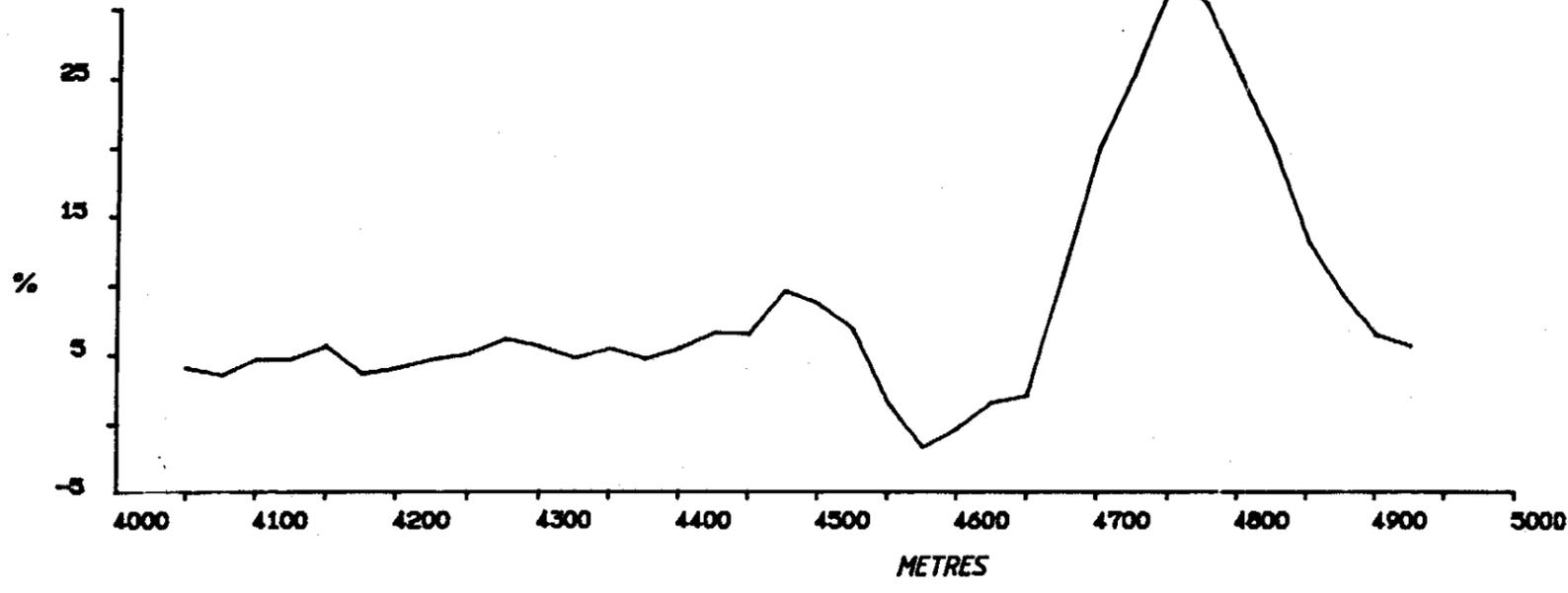


<b>CRA EXPLORATION PTY. LIMITED</b>	
<b>REF.</b>	
<b>SCALE</b>	<b>DRAWN</b>
<b>AUTHOR</b>	<b>REPORT No.</b>
<b>DATE</b>	<b>PLANN No. TASH</b>

069

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### STONEBRIDGE LINE 8000E EM



5 cm

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
STONEBRIDGE BARITE PROSPECT	
LINE 8000 mE	
GENIE PROFILES	
REF.	SX55 - 3
SCALE	1 : 5000
DRAWN	T.V.S.
AUTHOR	T.V.S.
REPORT No.	
DATE	23 - 11 - 1984
PLAN No.	TASH 2207

070

235071

STONEBRIDGE BARYTES MAGNETICS LINE 8000E



CRA EXPLORATION PTY. LIMITED	
REF.	
SCALE	DRAWN
AUTHOR	REPORT No.
DATE	PLAN No. TASH

APPENDIX 2

PERCUSSION DRILL HOLE ASSAY RESULTS

1. PD84 BB2
2. PD84 BB3
3. PD84 MR2
4. PD84 GP4

235073

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

SHEET 1 OF 2

TENEMENT NAME E.L. 7/23. Sheffield No. ....

PLAN - MAP REFERENCE Penah Ba Grid

CO-ORDINATES 450660 m E 548705 m N DRILLERS Overland COMMENCED June 1984

DEPTH 99 m HOLE No. PDB4882

Azimuth 180 mag. INCLINATION -60 DRILL TYPE Peruccion COMPLETED .....

CASING LEFT 99 m DPO No(s) 31916

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ALS</u> )						
From (M)	To (M)									Cu	Pb	Zn	Ag	Ba	Au	ppb
						990258	0	3		10	105	80	1	510	10	
						60	6	9		65	50	80	1	760	3	
						66	16	17		40	45	200	1	980	<3	
						67	17	18		50	30	180	1	1550	3	
						68	18	19		15	20	105	1	790	<3	
						70	20	21		10	15	110	<1	890	<3	
						73	23	24		15	20	340	1	2050	<3	
						76	26	27		5	20	410	1	2000	<3	
						79	29	30		15	30	360	1	1600	<3	
						82	32	33		20	55	405	1	1850	<3	
						83	33	36		10	45	370	1	1900	<3	
						86	36	37		20	60	270	1	1200	<3	
						89	39	40		15	40	280	1	830	<3	
						90	40	41		10	35	275	1	790	<3	
						91	41	42		5	35	270	1	800	<3	
						94	44	45		2	20	170	1	1050	<3	
						97	47	48		10	20	130	1	2100	<3	
						300	50	51		50	20	180	1	1700	<3	
						01	51	52		25	20	175	1	1300	<3	
						05	55	56		5	20	110	1	1450	<3	
						06	56	57		2	25	120	1	1350	<3	
						09	59	60		2	30	100	1	1150	<3	
						12	62	63		10	25	125	1	1250	<3	
						15	65	66		5	20	130	1	1350	<3	
						18	68	69		2	20	180	1	1100	<3	
						21	71	72		5	15	110	1	6700	<3	
						24	74	75		35	15	80	1	8450	<3	
						27	77	78		10	20	100	1	6400	<3	
						30	80	81		5	20	90	1	3350	<3	
						33	83	84		2	25	80	1	2550	<3	



074

235075

C.R.A. EXPLORATION PTY. LIMITED  
DRILL CORE LOGSHEET 1 OF 2  
TENEMENT NAME EL 7/73 Sheffield No. .....  
PLAN - MAP REFERENCE Beulah Ba Grid  
DEPTH 76 m HOLE No. PDR4883  
Azimuth 180 mag INCLINATION -60 DRILL TYPE Percussion COMPLETED ..... CASING LEFT 76 m DPO No(s) 31914CO-ORDINATES 450650 m E 540840 m N DRILLERS Overland COMMENCED June 1984

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ALS</u> )						
From (M)	To (M)									Cu	Pb	Zn	Ag	Ba	A <sub>ppb</sub>	As
						990349	0	4		55	50	85	1	440	<3	—
						52	10	12		30	45	70	1	450	<3	—
						55	14	15		75	45	60	1	1050	<3	—
						58	17	18		60	50	50	1	850	<3	—
						61	20	21		60	45	35	1	800	<3	—
						64	23	24		85	60	50	1	400	<3	—
						67	26	27		40	30	75	1	1500	<3	—
						71	30	31		40	40	65	1	790	<3	5
						72	31	32		30	45	95	1	1000	<3	4
						74	33	34		20	25	75	1	850	<3	6
						75	34	35		45	20	70	2	790	<3	8
						76	35	36		70	20	170	1	1000	<3	9
						77	36	37		75	25	265	2	920	<3	8
						78	37	38		70	20	200	1	1000	<3	12
						79	38	39		90	35	140	1	810	<3	12
						80	39	40		60	25	160	1	1050	<3	22
						81	40	41		30	20	240	2	2250	<3	10
						82	41	42		25	20	95	1	1600	<3	9
						83	42	43		20	20	70	1	900	<3	7
						86	45	46		80	30	140	1	590	<3	—
						87	46	47		50	30	115	1	600	<3	—
						88	47	48		70	40	125	2	590	<3	—
						89	48	49		25	30	135	1	550	<3	—
						92	52	53		30	40	95	2	590	<3	—
						94	53	54		30	35	120	2	460	—	—
						95	54	55		20	105	110	2	410	—	—
						96	55	56		40	85	135	2	500	—	—
						99	58	59		20	30	110	2	480	—	—
						400	59	60		25	30	100	2	460	—	—
						03	62	63		20	40	100	2	450	—	—







APPENDIX 3DRILL LOGS SHEFFIELD EL 1984

1. Log PD84 BB2
2. Log PD84 BB3
3. Log DD84 BB4
4. Log DD84 BB5
5. Log PD84 MR2
6. Log PD84 GP4

Drill Hole : PD84 BB2  
 Licence : Sheffield EL 7/73  
 Locality : Beulah Baryte Prospect  
 Collar Location : Line 2W 334mN (approx. 450640mE 548705mN AMG)  
 Inclination : -60°  
 Azimuth : 180° (grid south)  
 Driller : Overland Drilling  
 Date : July 1984  
 Total Depth : 99m  
 Logged : I.M.Clementson

From (m)	To (m)		
0	3	Soil	: Red clay rich B-C horizon soils. Weathered andesitic fragments.
3	17	Weathered Foliated Tuffs (Ferruginous)	: Red to red brown highly weathered, fine grained tuffs.
17	26	Andesite/Andesitic Tuff:	Fine grained massive equigranular rock, either a uniform well sorted, very tight tuff of intermediate composition (no quartz visible or evident from texture or hardness) or an andesitic, fine grained aphanitic lava. Colour varies between very dark reddish grey to a dark greenish grey (possibly representing oxidation or not of chlorite and/or other mafic components). Below 23m the dark green facies is dominant. Traces vein quartz. Abundant manganiferous and occassionally chloritic joint/fracture facings. No observed evidence of sulphides. Association with tuffs above and below suggests that the unit is also probably a well sorted tuffaceous sediment.

- 26            34m            Interbedded Andesitic  
and Sandy, Quartzose  
Tuffs and Shales            :
- Dark grey/red-grey massive, finely sorted tuffs (much as that above) with (presumably) interbeds of a strongly foliated, pink-ochre tuff. Sandy in texture not well sorted with noticeable quartz component and limonite clots (ex pyrite?)  
b. dark grey to mid grey silty mudstone or tuffaceous shale with no visible mineralisation, poorly foliated.
- Proportions, overall 40% andesitic tuff 40% sandy tuff, 10% shale, 10% vein quartz.
- 34            41m            Quartzose Tuffs            :
- Mid grey, slightly greenish, sandy tuffs. Poorly sorted, medium sand grade. Matrix distinctly chloritic, numerous small cavities ex feldspar clasts (to  $\frac{1}{2}$ mm). Quartz content not great, (10% but noticeable). Below 36m degree of sorting and uniformity becomes much greater, fresher specimens display a uniformity of texture and grain size plus a "tightness" reminiscent of a ? dacitic lava. Joint/fracture faces often seen covered with soft white secondary - probably zeolites. These become prominent between 38-41m (10%) plus some hematite accompanies the 'zeolite' in this interval.  
No evidence of sulphides observed.
- 41            45m            Andesite/Andesitic Tuff            :
- Dark purple grey fine grained (aphanitic) andesite lava or very well sorted tuff. [Low mag. susceptibility possibly supports the latter possibility]. Massive. Slightly chloritic. Occassional zeolite coated joints and veinlets, also chlorite common on joints, especially between 44-45m. No evidence of sulphides observed.

- 45            55m            Chloritic Schistose Tuffs    :    Pale greenish grey strongly foliated fine grained tuffs or shales. Chloritic, sericitic and quartzose. Very well sorted, uniform except for thin (0.2mm) wisps and laminae of dark grey argillic/mafic/chloritic material. Some more silicic, whiter and harder horizons must exist interbedded within this suite but are minor and thin. Between 51-53m an interbed(s) of a pinkish red quartz sericite schist occurs forming 30% of returned sample plus 30% being a slightly darker grey chloritic schist. Vein quartz 10% throughout. Traces of finely disseminated pyrite visible in all these schistose tuffs.
- 55            61.5            Andesite/Andesitic Tuff    :    Dark purple-grey fine grained, much as previously intersected but with slightly less developed sorting. Occasional clasts (phenocrysts) of chlorite to 2mm ? replacing a mafic component. Also joints coated with chlorite and probably some pervasive alteration to chlorite of matrix. No observed sulphides.
- 61.5           76            Quartzose Tuff            :    Pale grey green quartz-sericite-chlorite tuff. Not well foliated. Some shaley wisps to 1mm. Chlorite is pervasive throughout and also occurs in fine (1mm) veinlets. Minor vein quartz (5%). Traces of disseminated pyrite in the tuff/shales.
- 76            80.5            Hematitic Schistose Tuffs Interbedded with Quartzose Tuffs    :    As above 50% of a dark reddish green grey sericitic, coarser, less well sorted schistose tuff. Lithic fragments (dark grey shale?) to 3mm and quartz fragments (angular) to ½mm in a chloritic and hematitic matrix. Specks of ?specular hematite disseminated in matrix.

235083

- 80.5            82m            Mudstone            :

Purplish grey, slightly silicified poorly foliated mudstone. Slightly chloritic. No sulphides.
  
- 82                88m            Quartz Sericite Schistose Tuffs            :

Dark grey, slightly red, foliated quartz-sericite schist. Generally well sorted and fine grained but with occasional small (0.5mm) quartz clasts. A darker grey, less reddish facies is very similar, comprises 30% of unit but is slightly coarser grained but just as well foliated. The coarser, darker tuffs have chlorite replacing recognisable small mafic clasts (0.5mm). Small veinlets of chlorite occur between 87-88m and are up to 3mm in width. No evidence of any sulphides.
  
- 88                99m            Interbedded Qz-Sericite Tuffs, Sandy Tuffs and Minor Shales            :

Intersection is dominated by pale cream-green coloured quartz-sericite schistose tuffs. These are well foliated and uniformly fine grained. They contain very finely disseminated pyrite up to a total of approx. 2%, often associated with chlorite veinlets. Throughout the intersection, small proportions of interbedded facies appear:

  - 90-92m 5% of sample is a quartz crystal tuff-cream coloured, fine grained matrix hosting 20% quartz clasts (?phenocrysts)
  - 93-94m 15% of sample is a dark grey foliated shale plus traces of vein baryte and traces disseminated pyrite.
  - 94-95m 10% of sample is a coarser quartzose tuff, pinkish cream in colour, well sorted
  - 96-97m 10% coarser quartzose tuff as above plus 10% coarser quartzose tuff as above
  - 10% foliated dark grey, chloritic shales plus
  - 10% mid grey foliated poorly sorted tuff with lithic clasts to 3mm.

235084

083

Drill Hole : PD84 BB3  
 Licence : Sheffield EL 7/73  
 Locality : Beulah Baryte Prospect  
 Collar Location : Line 2W, 470mN (approx. 450650mE 5408840mN AMG)  
 Inclination : -60°  
 Azimuth : 180° (Grid South)  
 Driller : Overland Drilling  
 Date : July 1984  
 Total Depth : 76m  
 Logged : I.M.Clementson

<u>From (m)</u>	<u>To (m)</u>		
0	2	Soils	: Ochre-red clays
2	17	Weathered Intermediate Volcanic	: Probably an andesitic lava or well sorted tuff. Very weathered, purplish red in colour, soft. Zeolite coating joint faces common. No evidence of sulphides.
17	31	Shaley Tuff	: Purple grey silty to shaley tuff. Soft slightly foliated. Matrix is virtually a shale hosting clasts to $\frac{1}{2}$ mm of ? feldspar now altered (weathered?) to clays. Abundant joint coatings of chlorite and manganiferous minerals. No evidence of sulphides, traces vein quartz. Paler greenish facies at 28 and 30m.
31	40	Clay Rich Fault Zone	: Very soft zone, sample return consists of shales/shaley tuff as above plus upto 70% of a white clay, often forming large, coherent fragments. Vuggy vein quartz forms up to 10%. Some pieces of the clay have patches of a bright apple green soft (ad mixed with clay) mineral (.Ba muscovite [oellacherite]; hydrous muscovite [damourite] or ? Cr muscovite [fuchsite] ?) (? talc or pyrophyllite?).

























Drill Hole : PD84 MR2  
 Licence : Sheffield EL 7/73  
 Locality : West Mount Roland Grid  
 Collar Location : 4700mE 5460mN (approx. 435725E 5410420N AMG)  
 Inclination : -60°  
 Azimuth : 180° (Grid South)  
 Drillers : Overland Drilling  
 Date : June 1984  
 Total Depth : 100m  
 Logged : I.M.Clementson

<u>From (m)</u>	<u>To (m)</u>		
0	3	<u>Surficial scree</u>	: Roland Conglomerate debris. Clayish. Ochre-grey
3	9	<u>Clay</u>	: Ochre (becoming grey with depth) clays. Stiff, fairly competent and dry. Presumably weathered fine grained sediment or volcanic
9	13	<u>Weathered (intermediate?) Volcanic</u>	: Grey to reddish grey and green-grey clay with relic texture of parent lithology. Intense replacement of mafic fragments or minerals by chlorite, also veinlets of chlorite. Felsic crystals or fragments identifiable but totally weathered to clay. Matrix very fine grained. Either fine volcanic or volcanoclastic. No quartz observed - ? intermediate.
13	43	<u>Weathered (intermediate) Volcanic</u>	: Virtually no sample return. Foaming agents reduced sample to fine clay. Only very occasional fragments of chlorite rich volcanic or volcanoclastic observed. No evidence of any quartz.
43	64	<u>Andesite</u>	: Mid greenish grey, feldspar rich fragmental or more probably volcanic lava or dyke. All of the feldspar has been argillised, rock matrix is fine grained, grey with greenish cast of chlorite.

235098

097

- Also joint coatings and discrete replacement (of mafics) by chlorite. [two varieties one being slightly darker]. No evidence of flow textures or of any sedimentary banding unless a very vague lineation of feldspars in bedding. No evidence of any sulphides observed. Probably an intermediate (andesitic) lava of Beulah Formation.
- 64            66m    Andesite            :
- Dark purplish red volcanic, probably lava (andesite) with fine dark red matrix with clots (to 2mm) of dark green chlorite. [No observed clastic textures but not convincingly volcanic igneous in appearance]. Tr disseminated py.
- Quartz vein (1) encountered 64 - ± 66m to 5% total recovered volume. Tr py, tr cpy observed in this qz. Vuggy qz + ? carbonate seen in small (1mm - 2mm) cavities in some fragments.
- 66            85m    Andesite            :
- Dark reddish green volcanic abundant mafic content - chlorite and amphibole in fine red aphanitic matrix. Vuggy quartz with traces disseminated pyrite. Intensely mafic (and chlorite alteration of mafics) may represent fragments of thin alteration zones or veins. Patches of white mineral, tabular habit/cleavage. - ? calcite (possibly some dolomite). Traces of pink orthoclase alteration in fine veinlets. Carbonate veining most intense 77m, 79m. Traces of azurite in carbonate vein at 77m. Visible cpy (tr only) at 75m. Slightly increased py (with qz/carb vein material) at 73m (trace).
- 85            87m    Andesite            :
- More mafic and chlorite andesite otherwise much as above. Darker and distinctly greenish in colour, also coarser grained, equigranular. Tr disseminated pyrite. Qz and carbonate vein material to 5% (carb qz). Visible cpy in qz at 85m.

235099

098

87

100m

Andesite

: Red, fresh andesite as above. Chlorite in part  
(mafics and as veins/shears[slickensides visible])  
Traces disseminated py throughout. Strongly  
magnetic towards end of hole : only magnetic  
material observed is magnetite

235100

Drill Hole : PD84 GP4  
 Licence : Sheffield EL 7/73  
 Locality : East Gowrie Park Grid  
 Collar Location : 4825mE 4510mN (approx. 433855mE, 5407715mN AMG)  
 Inclination : -60°  
 Azimuth : 360° (Grid North)  
 Driller : Overland Drilling  
 Date : July 1984  
 Total Depth :  
 Logged : I.M.Clementson/P.A. Temby

<u>From (m)</u>	<u>To (m)</u>		
0	26	Talus	: Roland Conglomerate scree, clasts of Roland Conglomerate from 1cm - 1500cm. Matrix quartz sand -grid

(Note: Between 26-32m and 35-74.5m hole drilled using Tricone roller; this result in total comminution of sample cuttings to fine sand. Logging of this material was severely restricted to colour of sample, colour of return drilling mud and gross mineralogical composition of sample. No textural features or lithological characteristics recognisable; classification of intersected horizons therefore highly subjective).

26	45	Chloritic Andesites	: [based on core obtained between 32-35m] dark green highly chloritic matrix hosting abundant euhedral feldspar phenocrysts (1-3mm) now intensely altered to a carbonate-clay material. Extremely soft, weathered to some degree but alteration appears to be a principal cause. No visible sulphides but occasional limonitic patches which may be after pyrite. Thin (1-2mm) carbonate veinlets plus carbonate coatings on slickensided joint faces. Traces of hematite associated with the chlorite in the matrix.  Cuttings from open-hole drilling of the remainder of this intersection comply with the above description and have been included as part of a similar lithology.
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63	67.5	Silicified Chloritic	:	Grey, very finely comminuted sample. Dominated by fine quartz plus lesser chlorite. Sparse hematite, magnetite quite abundant plus trace visible pyrite. Based on core from 77.7m this sample equates to a silicified chloritic tuffaceous lithology.
67.5	69	Hematitic Volcanic	:	Hematitic chlorite bearing intermediate as in previous intersection (53-61.5).
69	69.5	Cavity	:	
69.5	71.5	Silicified Chloritic Tuff?	:	Dark grey sample. Similar to sample equated to the silicified chloritic tuff at 77.7m.
71.5	77m			Distinct change in ground conditions but not in sample. Ground is much harder and produced very irregular "ragged" rotation of drill string - ? possibly caused by quartz veins breaking up under the bit?. Sample dominated by chloritic mafic material (70%) with quartz (vein and "volcanic") and felsic (carbonate altered) to 25%, magnetite and hematite to (max.) 5% hematite rich sections (5% in sample) occur between 75.5 - 76.5.

Tricone drilling abandoned at 77m due to 'rough' nature of the drilling. Diamond drilling commenced but drill string must have caught in a small cavity as drilling recommenced at 74.5m with good core recovery.



APPENDIX 4

DOWNHOLE EM 37 PROFILES

104



CRA EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

2ND FLOOR, BELLERIVE QUAY,  
31 CAMBRIDGE ROAD, BELLERIVE, 7018, TASMANIA, AUSTRALIA

235105

P.O. BOX 138  
ROSNY PARK 7018  
TELEGRAMS: CRAEX  
TELEX: AA57144  
TELEPHONE: 44 3533  
AREA CODE: (002)

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 IN THE SHEFFIELD AREA EL 7/73

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INTRODUCTION

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During September 1984 six drill holes in the Sheffield area were tested with down hole EM using the EM37 system supplied by Geoterrax in order to locate possible off hole conductors in holes that for the most part had found no clear source of the EM anomalies that they had been drilled on. Considerable equipment problems delayed the logging of the holes but in the final product the quality of the data is adequate. Coordinates for the sides of the transmitter loops are specified in relation to the drill hole collars (0,0).

INTERPRETATION

---

PD83 BB1

The hole was logged to a depth of 100 metres using four transmitter loops. Surface effects were detected to a depth of 45 metres but no deeper anomalous responses were recorded on any of the loops.

PD84 BB2

The hole was logged to a depth of 90 metres the last 9 metres having caved. Four loops were used around the hole to give an understanding of conductor orientation. Two narrow conductors were located, both less than 2 metres in width.

One at 53 metres depth is evident on all loops with some indication of a polarity switch after early times. This indicates that the source is likely to be a near vertical body dipping steeply in a northerly direction with one edge being close to the hole while the others extend some distance from it. The source appears to be of limited strike extent perhaps indicating a lense shape. The conductivity of the source, while contrasting strongly with the host rock, is not high as the host is extremely resistive. The other anomaly is at 73 metres which is where the UTEM conductor was expected to be. The source for this is oriented at a completely different angle from the shallower anomaly. Coupling is poor from the northern and southern loops but much stronger from the other two. The indication is that the source is a narrow weakly conductive body which dips steeply in an easterly direction. It is associated with a quartzose tuff with some vein quartz. Probably it is due to a fault.

PD84 BB3

This hole was logged to a depth of 76 metres. Only one loop was laid over it as it was felt at the time that the UTEM conductor was likely to be explained by a fault zone that was encountered in the hole. The down hole EM does not show any discrete conductors so the fault zone interpretation appears incorrect. Towards the bottom of the hole there is a rise in response which is most likely due to a increase in host conductivity rather than to a conductor though it is also possible to interpret the response as being due to a conductive body at least 20 metres off the hole some where below the bottom. This body is not likely to be massive sulphides as its conductivity does not appear to be high.

PD84 MR2

This hole was surveyed to a depth of 96 metres using four loops placed on four sides of the hole collar. The most prominent response on these loops is the surface effects on late times down to a depth of thirty five metres. A broad response from the top of the hole down to seventy metres looks like an off hole conductor at first glance but is in fact probably due to the normal drop off of the signal at depth which has been distorted by the anomalously high surface conductivity. The different polarisation directions at the surface by the different loops reflects some

variation in the extent of the conductive overburden from the hole. This surface conductivity variation is believed to be the source of the UTEM anomaly.

#### PDB4 GP4

The hole was logged with only one loop to a depth of 68 metres. The response is curious in that it is negative in all the early channels. I am at loss to explain this except to suspect that it may have been plotted incorrectly. In any case there do not appear to be any particularly conductive responses except for a slight increase in conductivity at the surface. The UTEM anomaly remains unexplained.

#### DD82 LB3

The hole was logged to a depth of 180 metres. Four 200 metre loops were used to gain as much directional information as possible. The extremely resistive host rocks give a good contrast for a conductive anomaly situated at 100 metres depth along the hole. The source of this anomaly is 15 to 20 metres off hole in a north north west direction. It strikes ENE and has a hundred metre strike extent at least. This is the most promising anomaly located on this program of down hole logging.

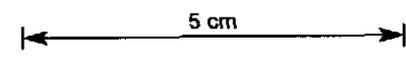
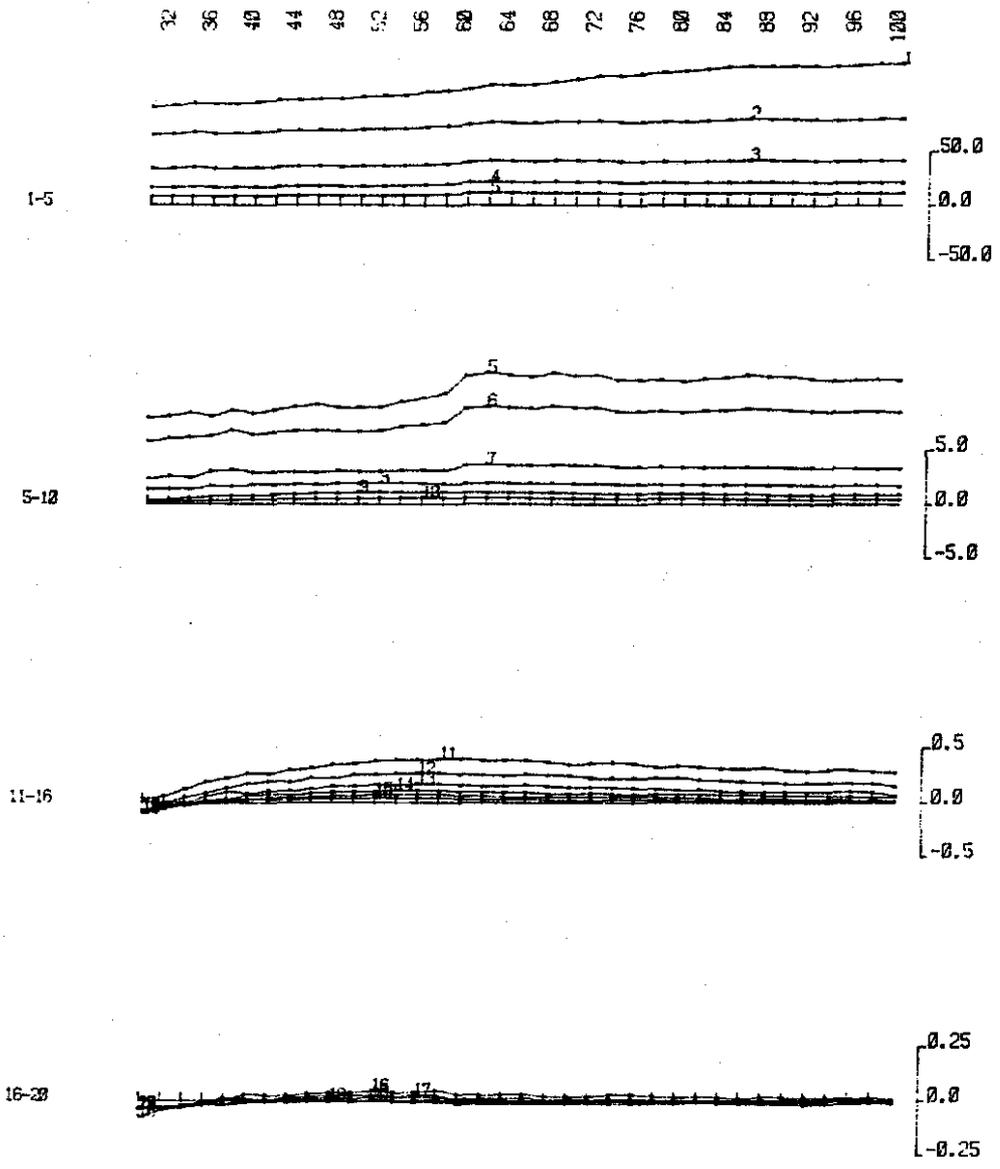
#### CONCLUSIONS AND RECOMMENDATIONS

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It would appear from the logging that current channeling and surface conductivity problems associated with the Roland conglomerate scree have complicated the UTEM interpretation and great care will have to be taken in future interpretation of UTEM data. The only hole that could warrant further follow up at this stage is DD82 LB3. A surface TEM survey might locate the conductor on the surface and give a better indication of its strike extent.

T. von Strakirch

AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp-metre squared

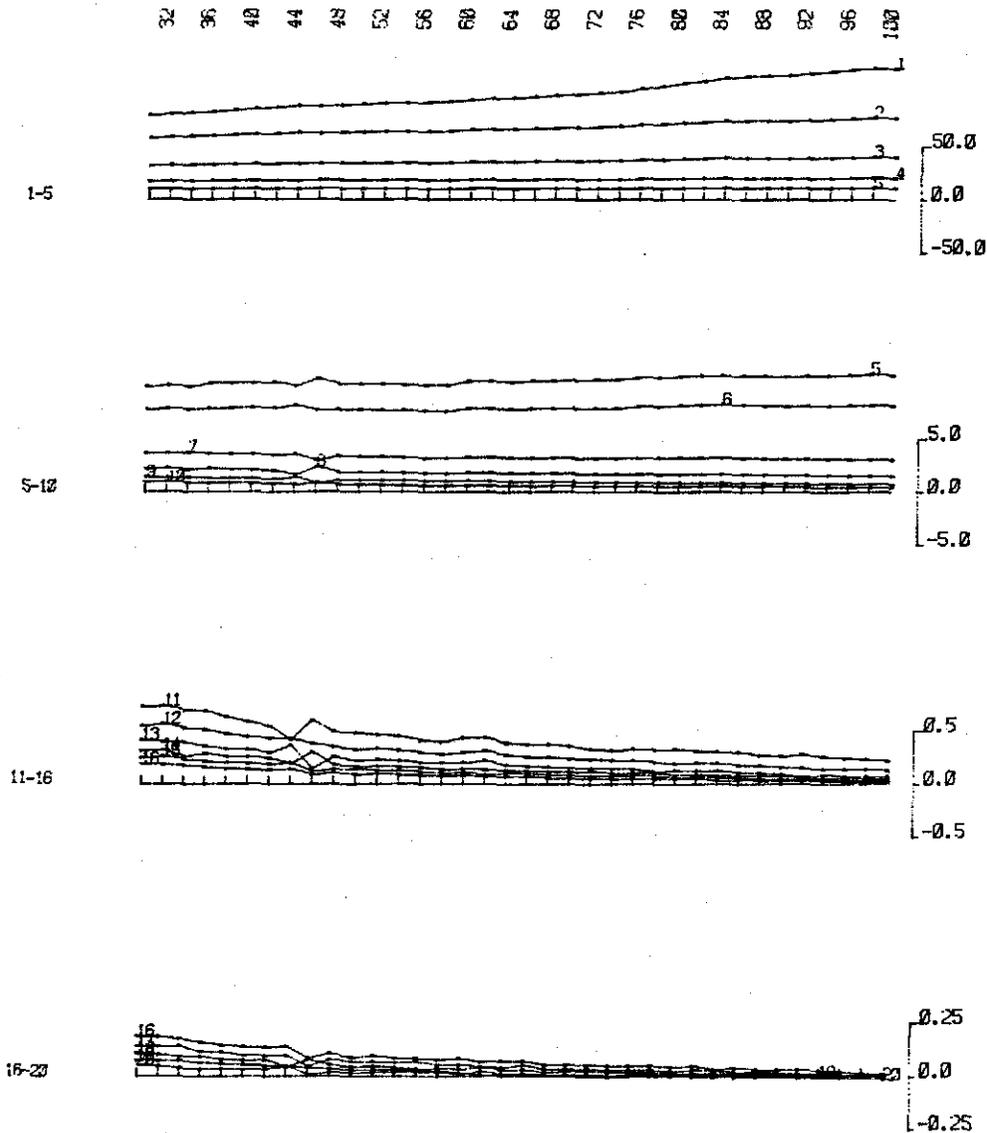
TX LOOP SIDES : SWS 0E  
                  : SWN 120E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 18-SEP-1984

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

CLIENT : CSR Exploration  
PROJECT : Beulah Borehole  
AREA : Sheffield Tas.  
BOREHOLE : BB1 A  
TX LOOP : 8

235108

AXIAL COMPONENT B (A)



5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp. metre squared

TX LOOP SIDES : 505 1204  
 : 50N BE  
 TX LOOP SIZE : 120m X 120m  
 TX TURN OFF TIME : 122 microseconds  
 CURRENT : 25.0 amps  
 FREQUENCY : 25 Hz  
 INTEGRATION TIME : 512 cycles  
 SYNC MODE : CRYSTAL  
 HORIZONTAL SCALE : 1: 500  
 SURVEYED BY : PE  
 DATE : 18-SEP.1984

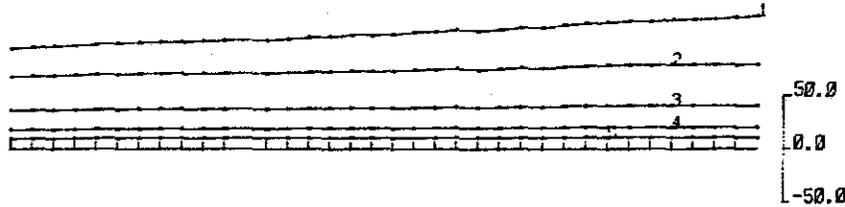
	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.		PROJECT NO. 85-1842
	CLIENT : CRA Exploration		
PROJECT : Bouish Borehole			
AREA : Sheffield Tas.			
BOREHOLE : 881		A	
TX LOOP : 7			

235109

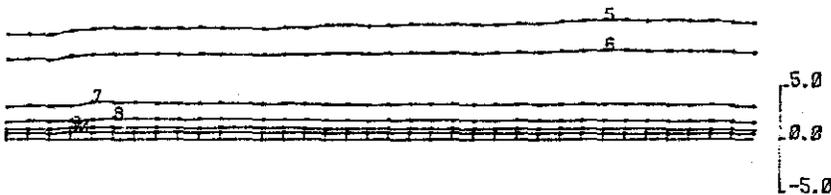
AXIAL COMPONENT B (A)

32 36 40 44 48 54 58 62 66 70 74 78 82 86 90 94 98

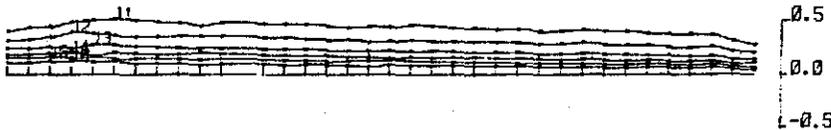
1-5



5-12



11-16



16-22



5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

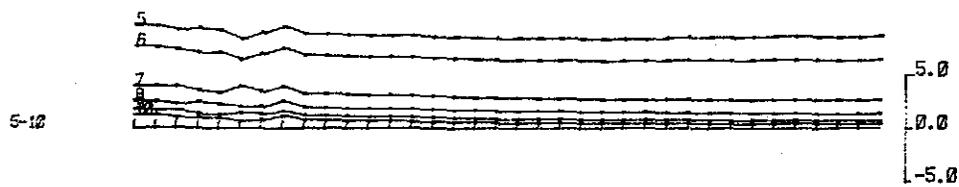
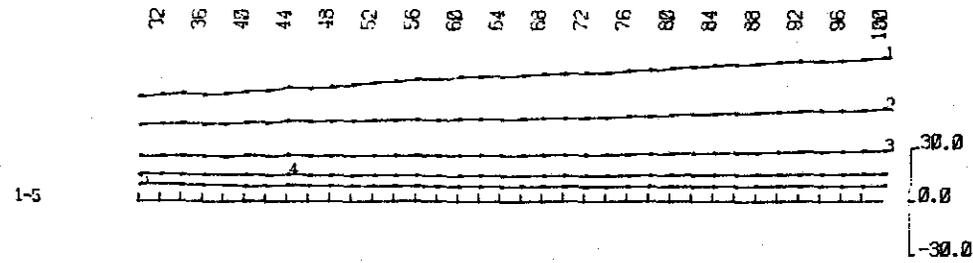
nanovolts per amp.metre squared

TX LOOP SIDES : 120S 50N  
                  :     DN 50E  
TX LOOP SIZE : 120 X 120  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 18-SEP, 1984

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	05-1842

CLIENT : ORA Exploration  
PROJECT : Beulah Baryte  
AREA : Sheffield Twp.  
BOREHOLE : BB1                    A  
TX LOOP : 6

AXIAL COMPONENT B (A)



5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

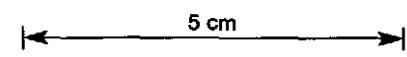
nanovolts per amp.metre squared

TX LOOP SIDES : 0N 50N  
                  : 120N 50E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 18-SEP, 1984

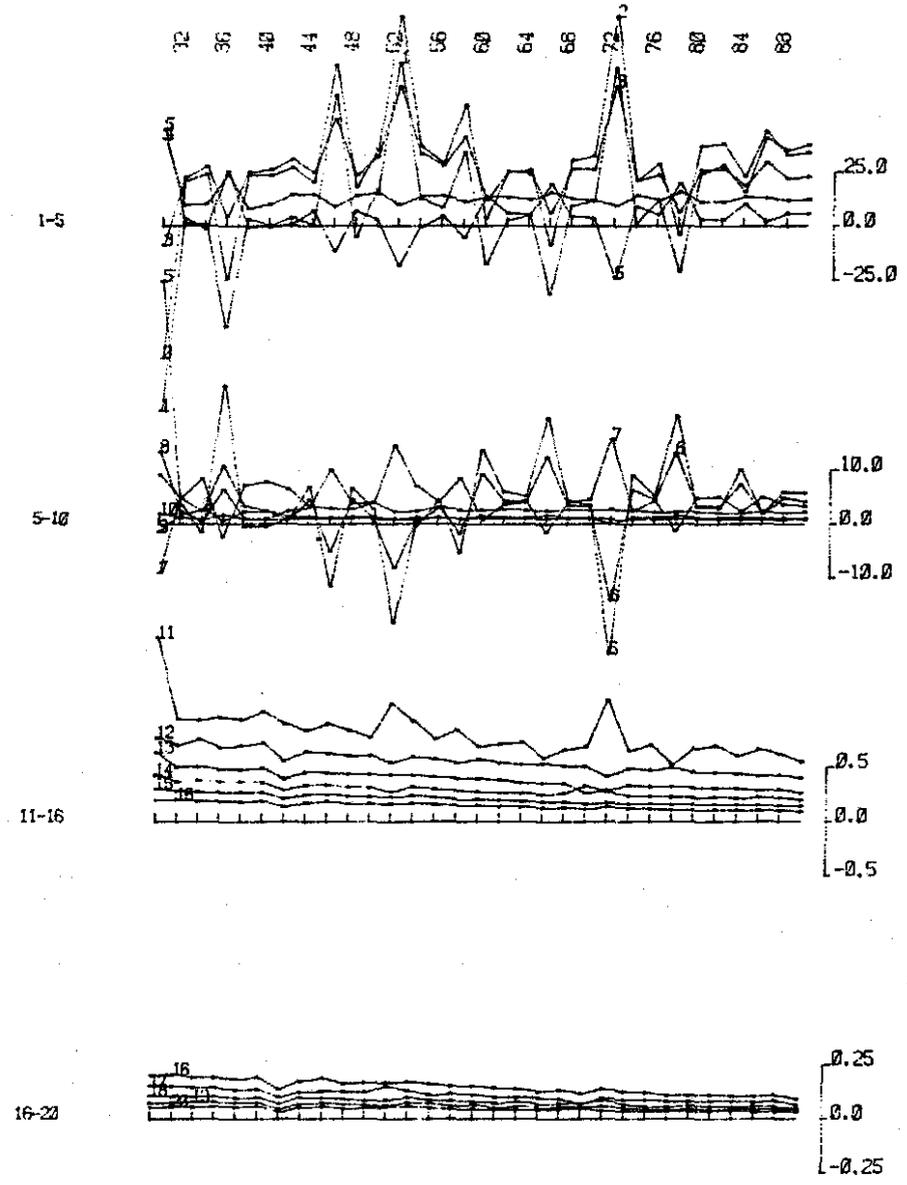
	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	85-1342

CLIENT : ORA Exploration  
PROJECT : Bouich Borehole  
AREA : Sheffield Twp.  
BOREHOLE : BB1 A  
TX LOOP : 5

235111



AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

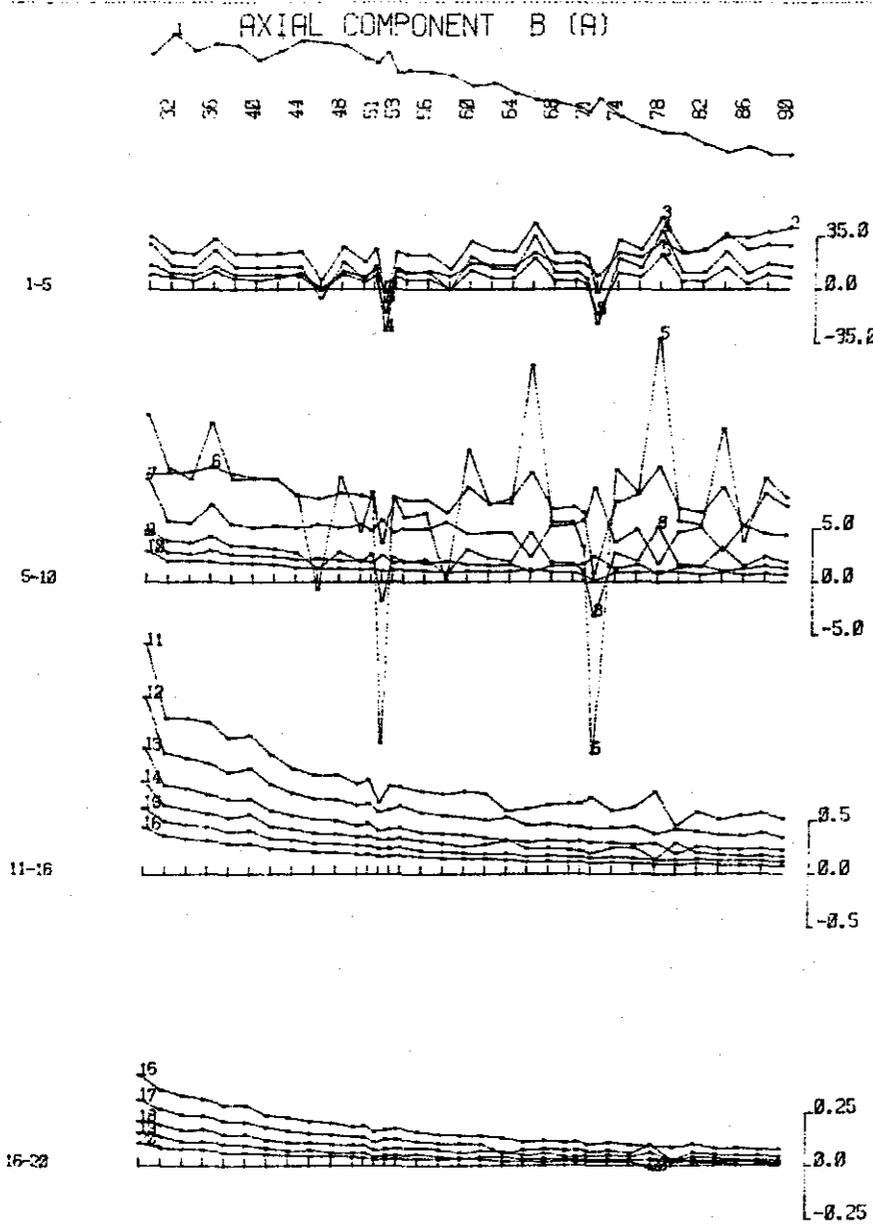
ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp. metre squared

TX LOOP SIDES : 96S DE  
                  : 50N 120E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 30.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 16-SEP, 1984

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTEK PTY. LTD.	25-1842

CLIENT : CRB Exploration  
PROJECT : Bouich Saryte  
AREA : Sheffield Twp.  
BOREHOLE : BB2 A  
TX LOOP : 4



5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (S)

nanovolts per amp.metre squared

TX LOOP SIDES : 50S 100W  
                  : 50N 0E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 32.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 16-SEP-1984

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

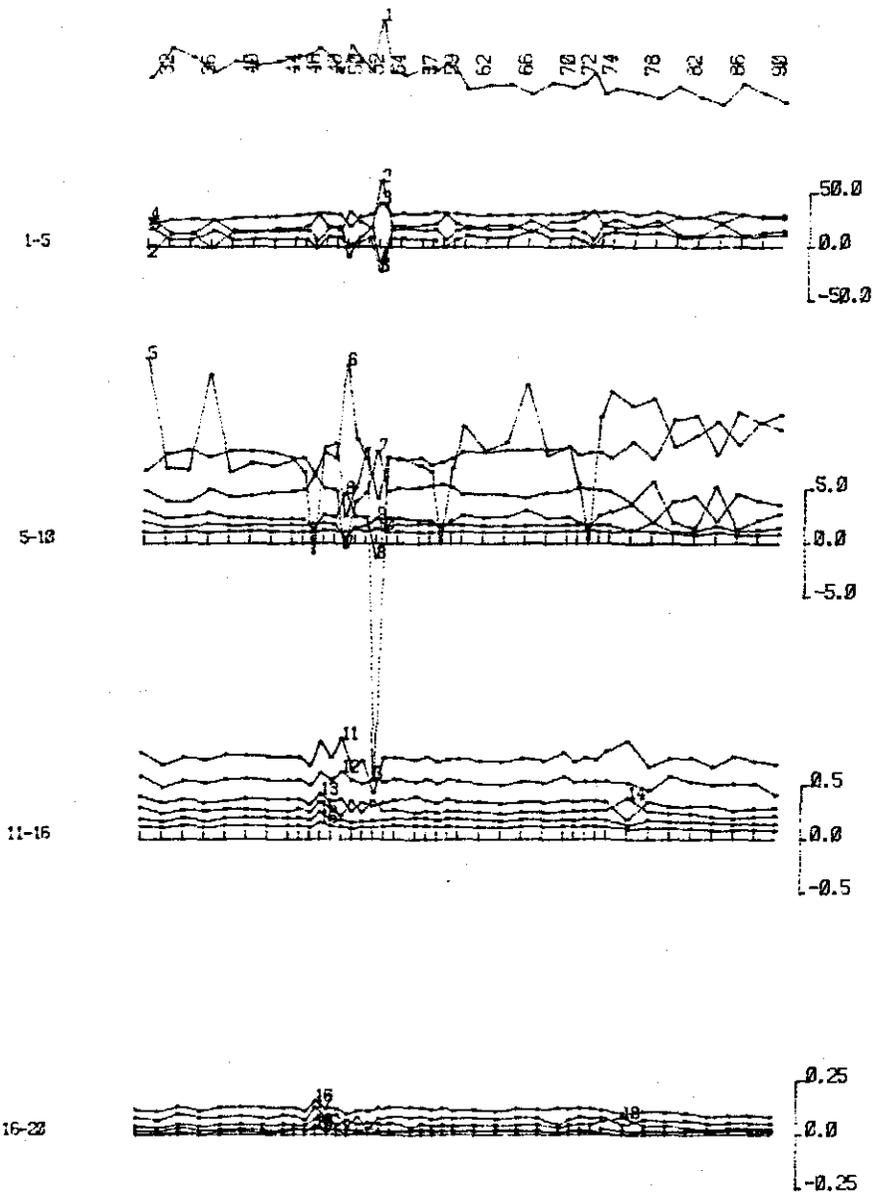
CLIENT : CSR Exploration  
PROJECT : Benich Baryte  
PREP : Sheffield Tce.  
BOREHOLE : BB2 A  
TX LOOP : 3

AXIAL COMPONENT B (A)

5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (S)



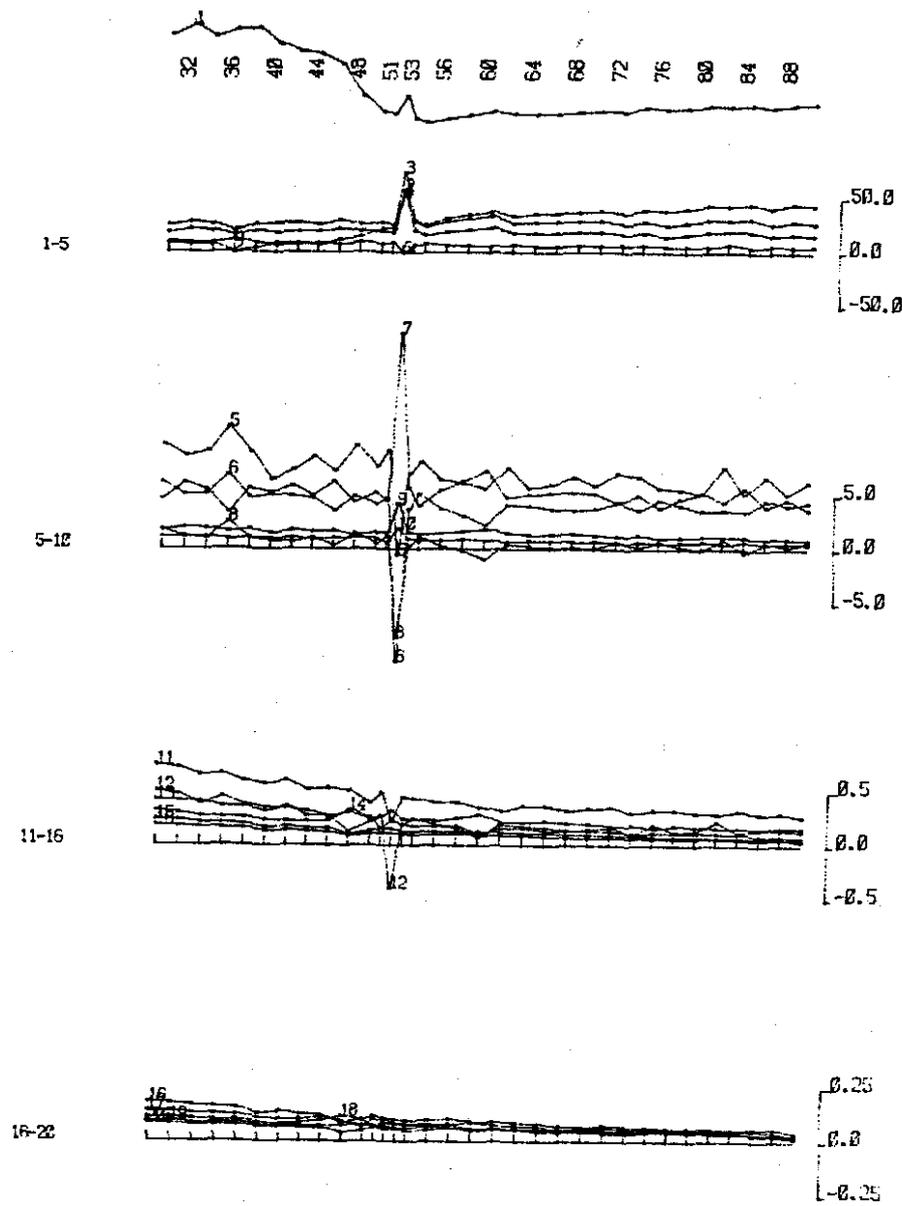
nanovolts per amp.metre squared

TX LOOP SIDES	: 120S	S04
	: 0N	S0E
TX LOOP SIZE	: 120m X 120m	
TX TURN OFF TIME	: 120	microseconds
CURRENT	: 30.0	amps
FREQUENCY	: 25	Hz
INTEGRATION TIME	: 512	cycles
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:	500
SURVEYED BY	: PE	
DATE	: 16-SEP-1984	

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

CLIENT	: ORA Exploration	
PROJECT	: Bouich Baryte	
AREA	: Sheffield Tas.	
BOREHOLE	: BB2	A
TX LOOP	: 2	

AXIAL COMPONENT B (A)



nanovolts per amp. metre squared

EM-37  
BOREHOLE  
SURVEY

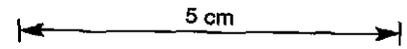
ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES : EN 50M  
                  : 120M 50E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 30.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 512 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 16-SEP, 1984

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

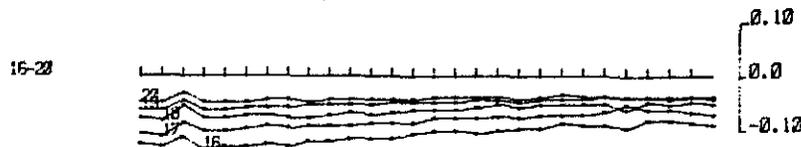
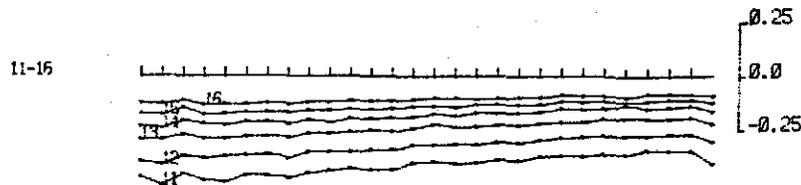
CLIENT : ORA Exploration  
PROJECT : Beulah Borehole  
AREA : Sheffield Tas.  
BOREHOLE : BB2 A  
TX LOOP : 1

235115



AXIAL COMPONENT B (A)

22 26 30 34 38 42 46 50 54 58 62 66 70 74



5 cm

EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt/cm per amp.metre squared

TX LOOP SIDES : 120S 50W  
                  : 0N 50E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 1224 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 22-SEP, 1984



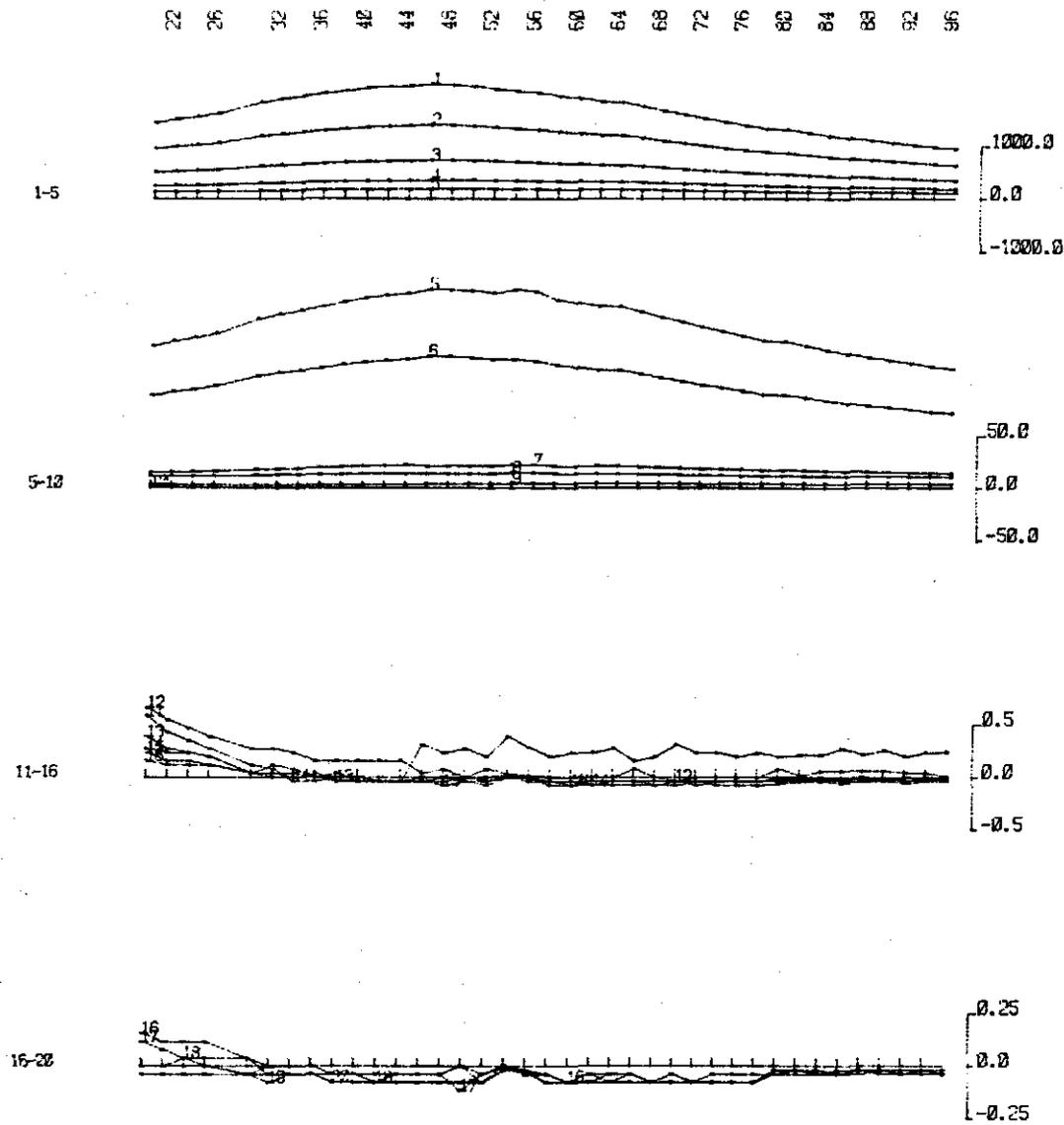
SURVEYED AND COMPILED BY  
GEOTREX PTY. LTD.

PROJECT NO.  
85-1842

CLIENT : ORR Exploration  
PROJECT : Beulah Baryte  
PRER : Sheffield Tas.  
BOREHOLE : BB3  
TX LOOP : 13

A

AXIAL COMPONENT B (A)



5 cm

EM-37  
BOREHOLE  
SURVEY

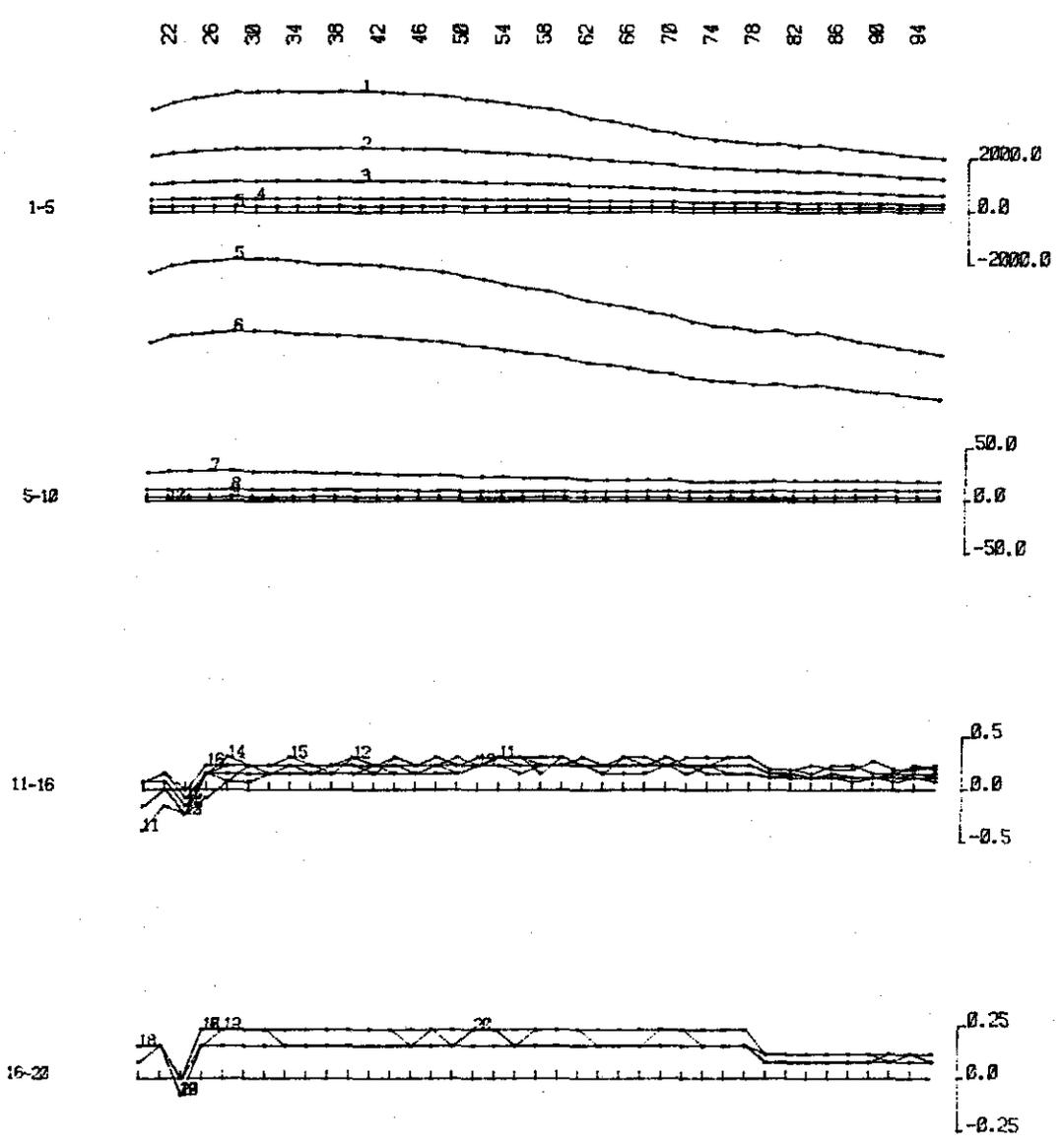
ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt per amp-metre squared

TX LOOP SIDES : ON 50N		
: 120N 50E		
TX LOOP SIZE : 120m X 120m		
TX TURN OFF TIME : 120 microseconds		
CURRENT : 25.0 amps		
FREQUENCY : 25 Hz		
INTEGRATION TIME : 256 cycles		
SYNC MODE : CRYSTAL		
HORIZONTAL SCALE : 1: 500		
SURVEYED BY : PE		
DATE : 24-SEP-1984		
	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	
	PROJECT NO. 85-1842	
CLIENT : CSR Exploration		
PROJECT : West Mount Roland		
AREA : Sheffield Tas.		
BOREHOLE : MR2		A
TX LOOP : 14		

235117

AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

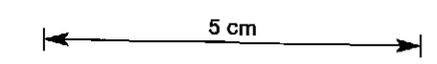
ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

microvolts per amp.metre squared

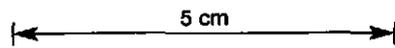
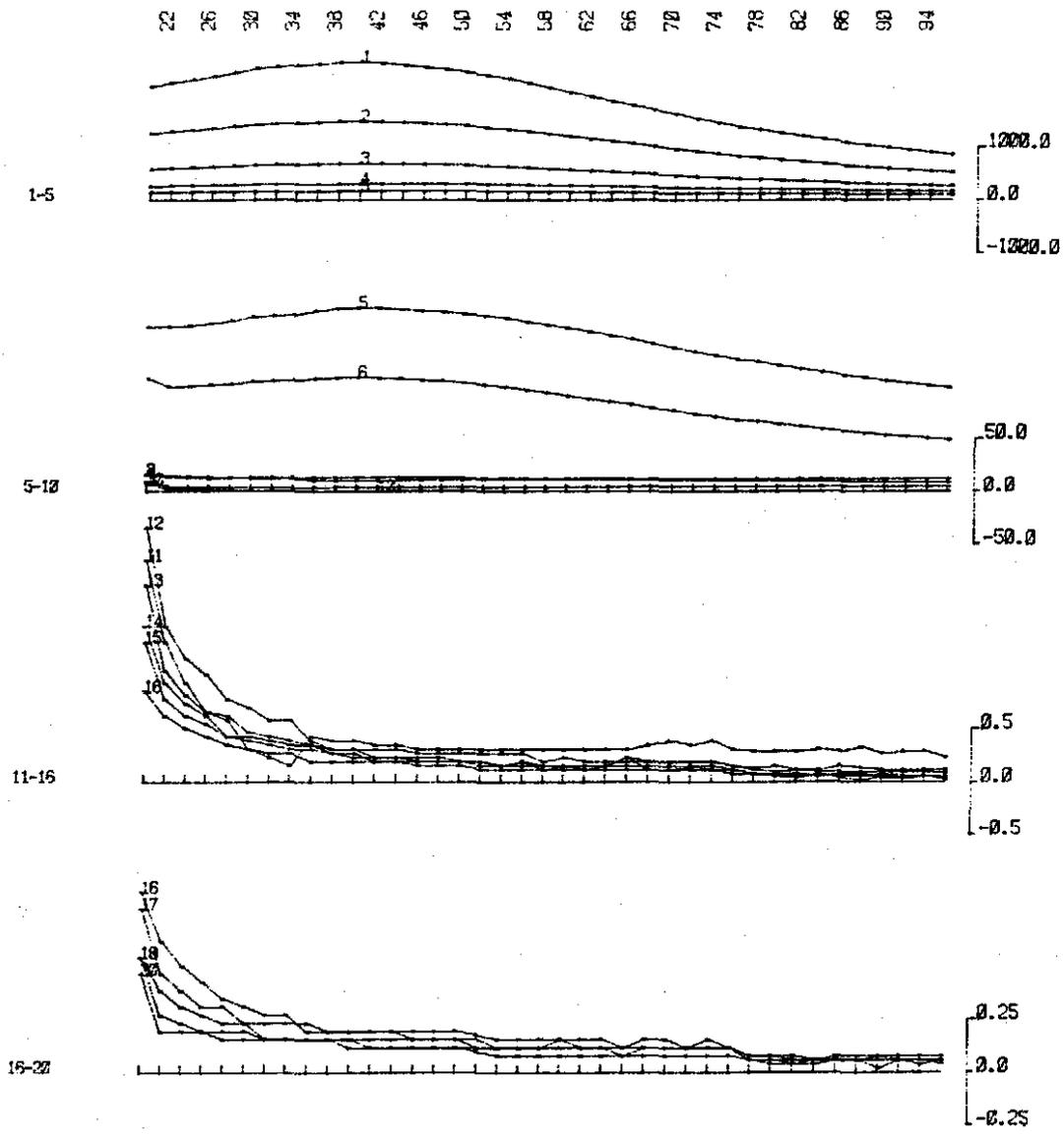
TX LOOP SIDES	: 1205	504
	: 0N	50E
TX LOOP SIZE	: 120m X 120m	
TX TURN OFF TIME	: 130	microseconds
CURRENT	: 25.0	amps
FREQUENCY	: 25	Hz
INTEGRATION TIME	: 056	cycles
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:	500
SURVEYED BY	: PE	
DATE	: 24-SEP, 1984	

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	85-1842
CLIENT	: CRA Exploration	
PROJECT	: West Mount Roland	
AREA	: Sheffield Tas.	
BOREHOLE	: MR2	A
TX LOOP	: 15	

235118



AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

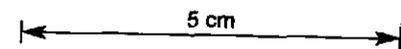
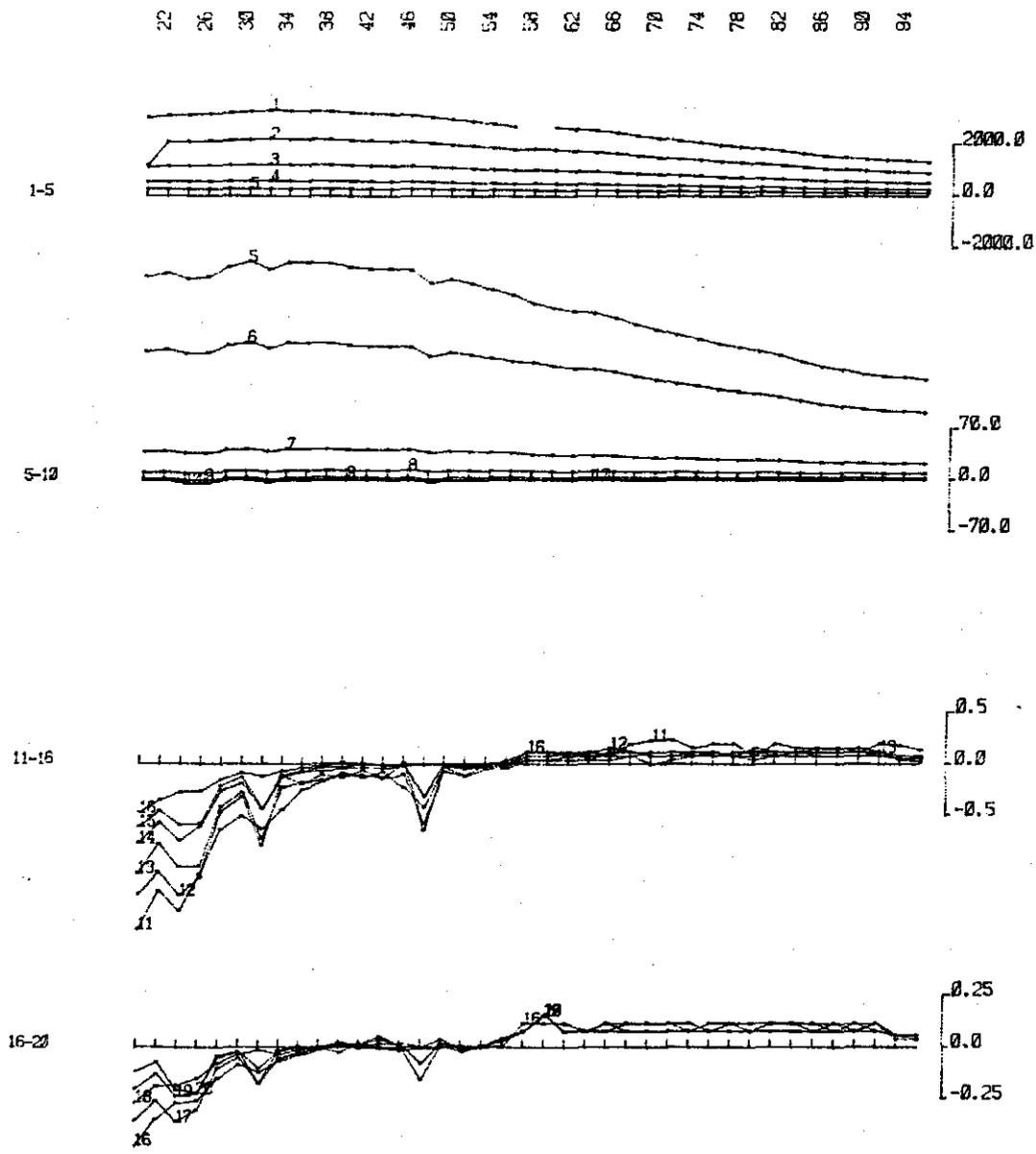
nanovolts per amp.metre squared

TX LOOP SIDES : 50S 120H  
: 50N 0E  
TX LOOP SIZE : 100m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 26.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 23-SEP-1984

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

CLIENT : CRA Exploration  
PROJECT : West Mount Roland  
AREA : Sheffield Twp.  
BOREHOLE : MR2 R  
TX LOOP : 16

AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (E)

nanovolts per amp.metre squared

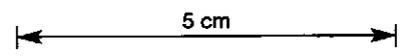
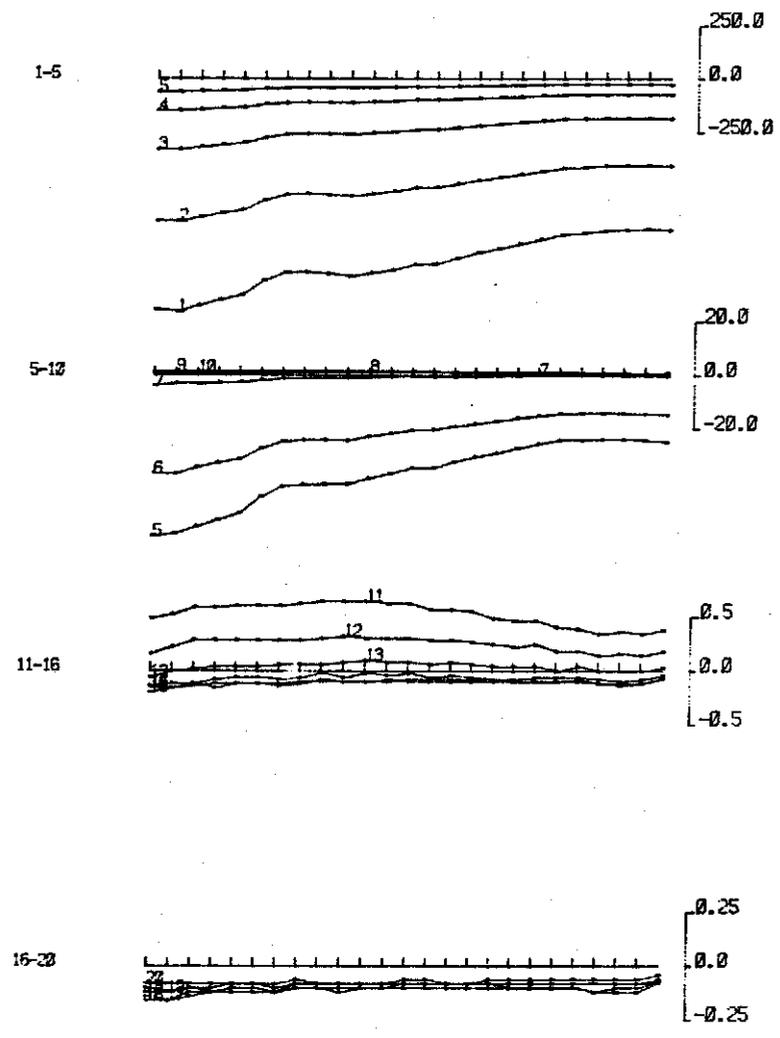
TX LOOP SIDES : 58S 0E  
                  : 58N 102E  
TX LOOP SIZE : 120m X 120m  
TX TURN OFF TIME : 120 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 24-SEP-1984

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1842
	CLIENT : CRA Exploration PROJECT : West Mount Roland AREA : Sheffield Twp. BOREHOLE : MR2 TX LOOP : 17	R

235120

AXIAL COMPONENT B (A)

22 26 30 34 38 42 46 50 54 58 62 66



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp-metre squared

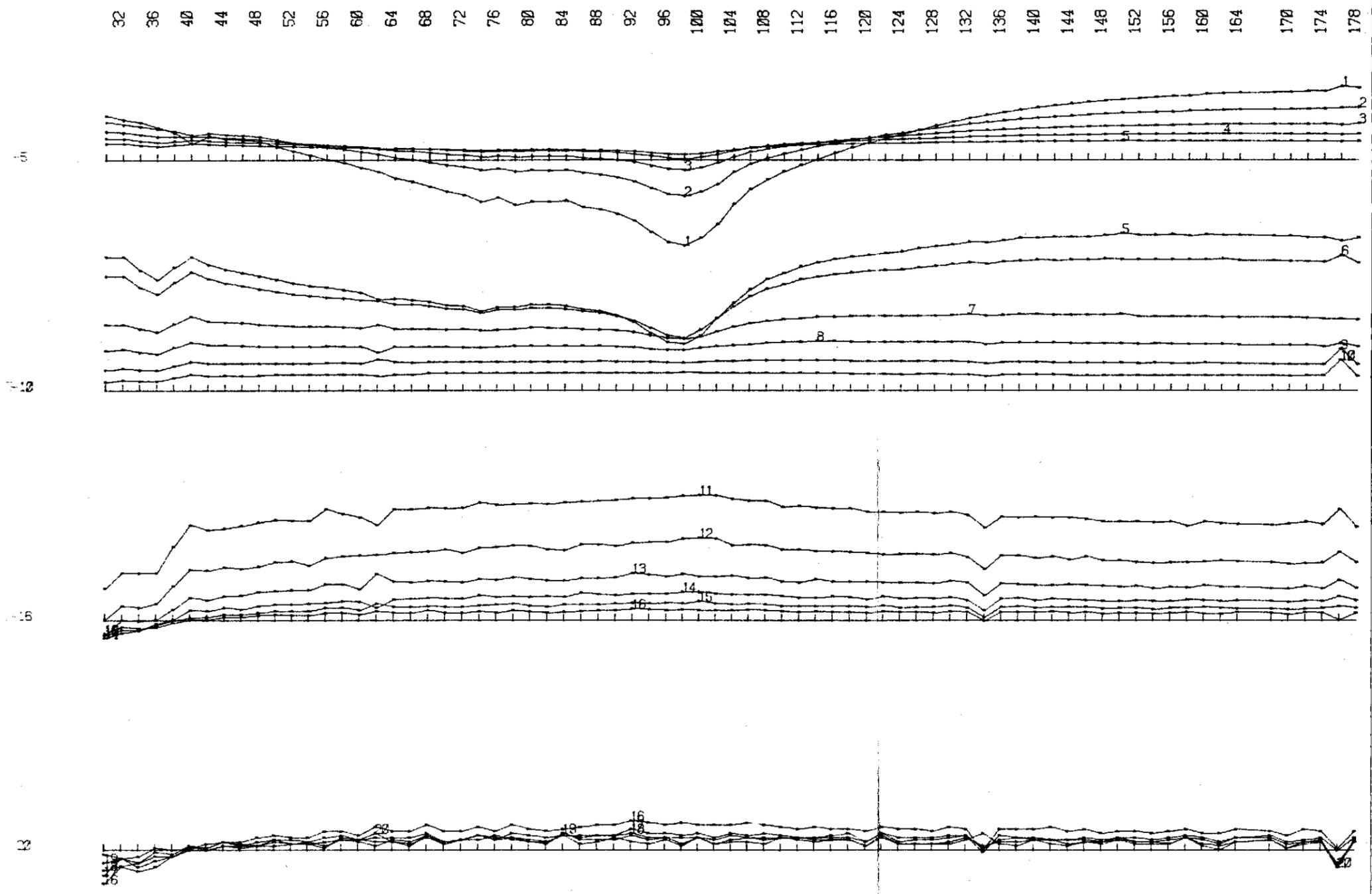
TX LOOP SIDES	: 120S	320N
	: 120N	120W
TX LOOP SIZE	: 220m X 220m	
TX TURN OFF TIME	: 240 microseconds	
CURRENT	: 25.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1: 500	
SURVEYED BY	: PE	
DATE	: 29-SEP-1984	

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

CLIENT	: CRA Exploration
PROJECT	: Gowrie Park
AREA	: Sheffield Twp.
BOREHOLE	: GP4 R
TX LOOP	: 22

235121

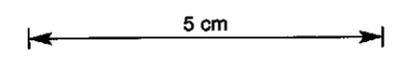
AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp. metre squared



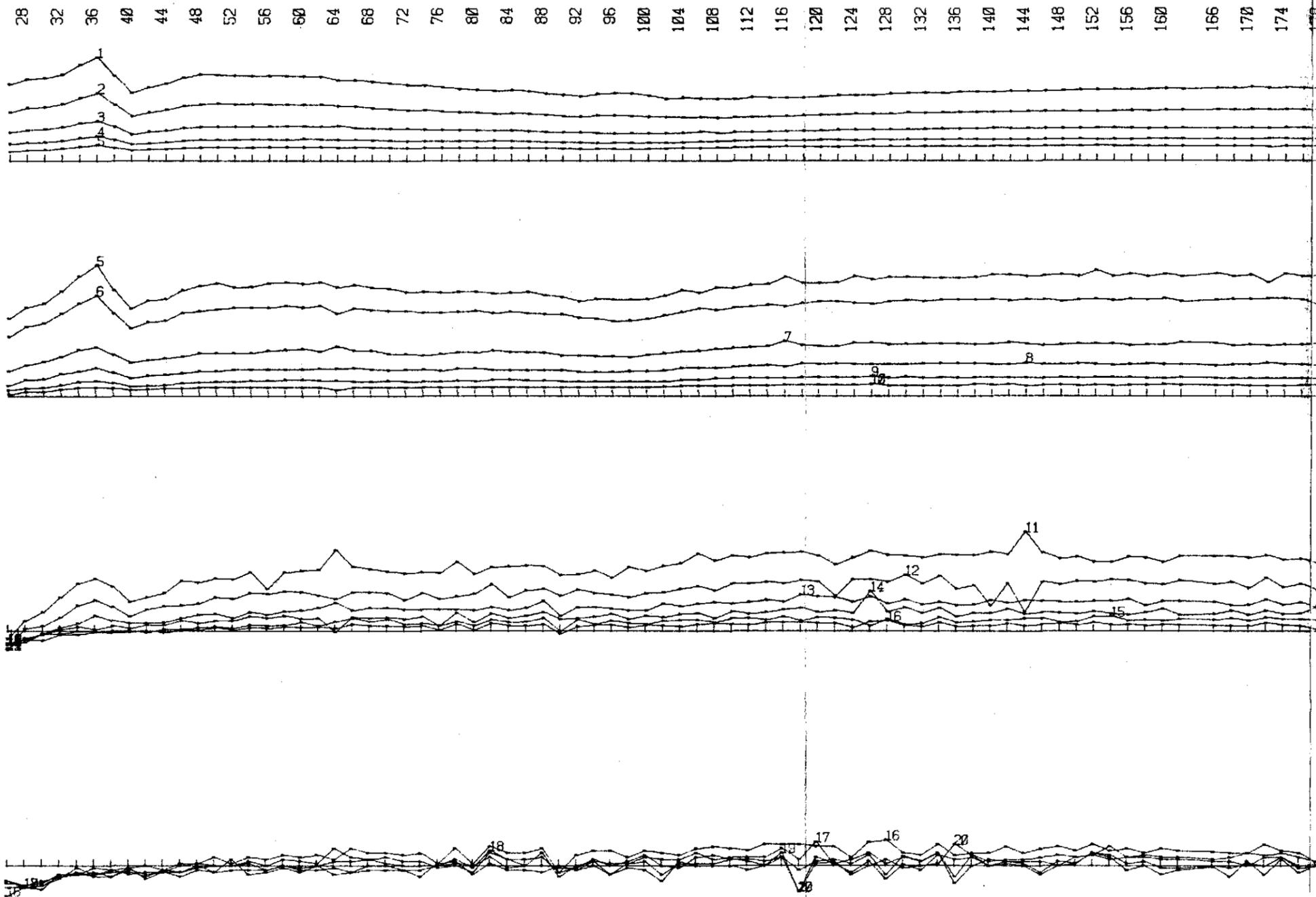
TX LOOP SIDES : ON 200N  
 : 200N OE  
 TX LOOP SIZE : 220m X 220m  
 TX TURN OFF TIME : 240 microseconds  
 CURRENT : 25.0 amps  
 FREQUENCY : 25 Hz  
 INTEGRATION TIME : 1024 cycles  
 SYNC MODE : CRYSTAL  
 HORIZONTAL SCALE : 1: 500  
 SURVEYED BY : PE  
 DATE : 01-OCT, 1984

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

CLIENT : CRA Exploration  
 PROJECT : Lake Barrington  
 AREA : Sheffield Tas.  
 BOREHOLE : LB3 A  
 TX LOOP : 29

235123

AXIAL COMPONENT B (A)



EM-37  
BOREHOLE  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

20.0  
0.0  
-20.0

2.5  
0.0  
-2.5

0.25  
0.0  
-0.25

0.10  
0.0  
-0.10

5 cm

nanovolts per amp-metre squared

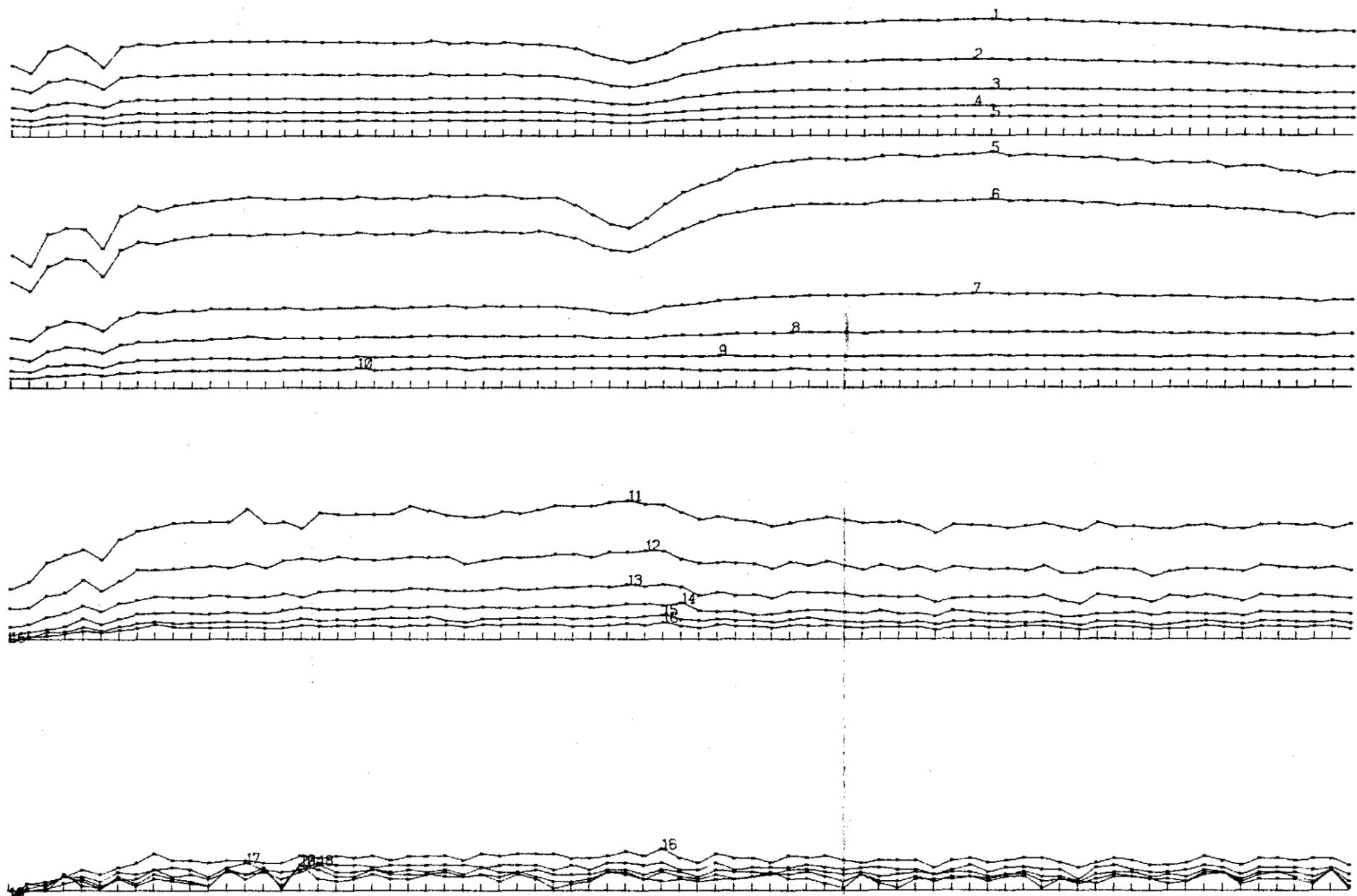
TX LOOP SIDES : 200S 0E  
 : 0N 200E  
 TX LOOP SIZE : 200m X 200m  
 TX TURN OFF TIME : 240 microseconds  
 CURRENT : 25.0 amps  
 FREQUENCY : 25 Hz  
 INTEGRATION TIME : 256 cycles  
 SYNC MODE : CRYSTAL  
 HORIZONTAL SCALE : 1: 500  
 SURVEYED BY : PE  
 DATE : 30-SEP, 1984

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1842
	CLIENT : CRA Exploration	PROJECT : Luke Barrington
AREA : Sheffield Tas.	BOREHOLE : LB3	A
TX LOOP : 24		

235124

AXIAL COMPONENT B (A)

32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100 104 108 112 116 120 124 128 132 136 140 144 148 152 156 160 164 168 172 176



30.0  
0.0  
-30.0  
2.5  
0.0  
-2.5  
0.25  
0.0  
-0.25  
0.10  
0.0  
-0.10

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolts per amp.metre squared

5 cm

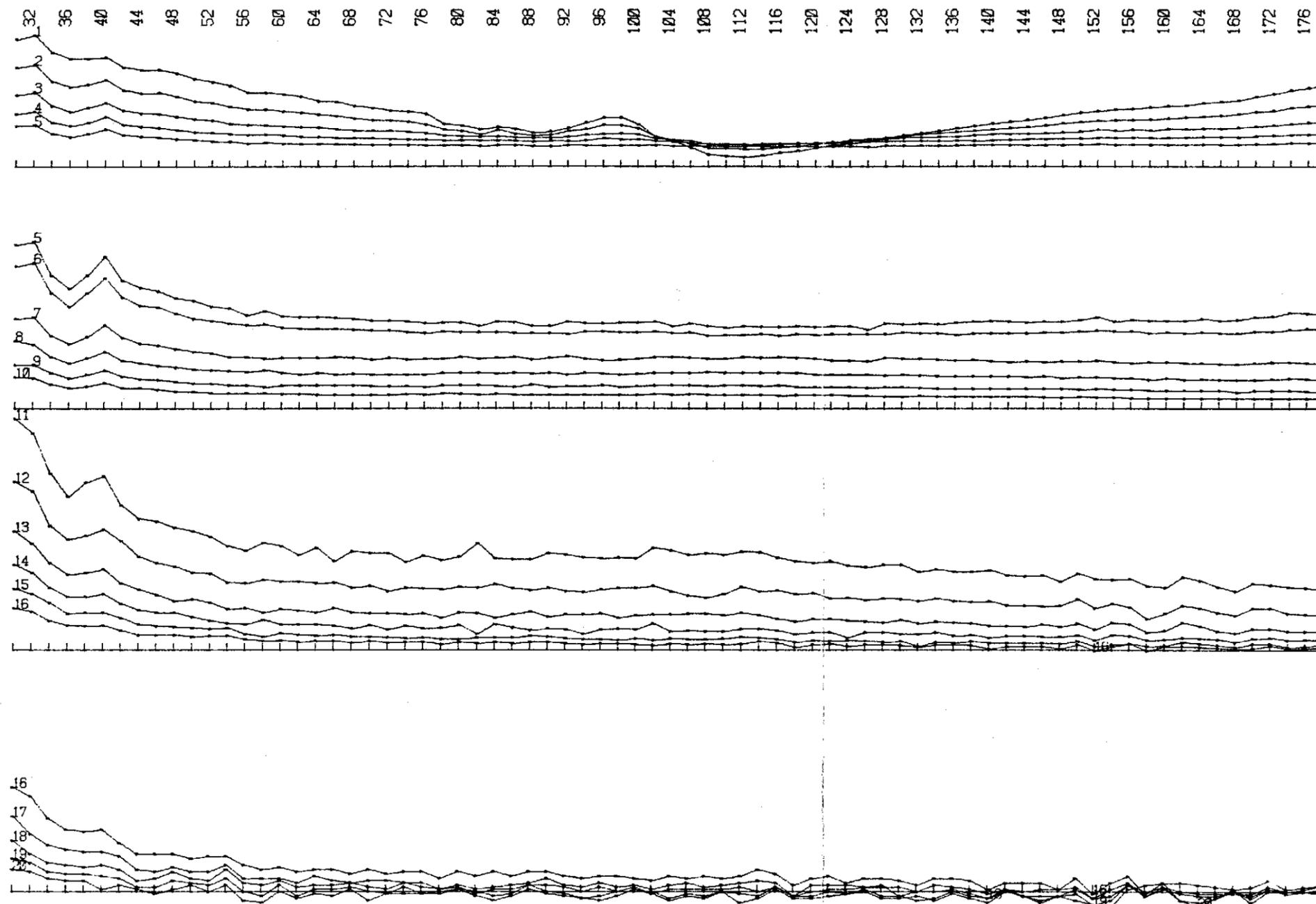
TX LOOP SIDES : 200S 200W  
: 0N 0E  
TX LOOP SIZE : 200m X 200m  
TX TURN OFF TIME : 240 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 1024 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 01-OCT-1984

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1842
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CLIENT : CRA Exploration  
PROJECT : Lake BARRINGTON  
AREA : Sheffield Tas.  
BOREHOLE : LB3 A  
TX LOOP : 25

235125

AXIAL COMPONENT B (A)



EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

10.0  
0.0  
-10.0

2.5  
0.0  
-2.5

0.25  
0.0  
-0.25

0.10  
0.0  
-0.10

nanovolts per amp. metre squared

5 cm

TX LOOP SIDES : 0N 0E  
: 200N 200E  
TX LOOP SIZE : 200m X 200m  
TX TURN OFF TIME : 240 microseconds  
CURRENT : 25.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 1024 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1: 500  
SURVEYED BY : PE  
DATE : 30-SEP, 1984

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

CLIENT : CRA Exploration  
PROJECT : Lake Barrington  
AREA : Sheffield Tas.  
BOREHOLE : LB3 A  
TX LOOP : 26

125

235110

APPENDIX 5

SOIL SAMPLE RESULTS STONEBRIDGE BARITE PROSPECT

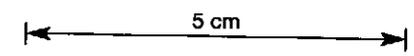
C.R.A. EXPLORATION GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141042-64 Sample numbers 1141042-64 Collected by PA Tenby Sheet no. 1 of 16  
 Area / Prospect Stonebridge Ba Grid Map / Photo reference Sheffield 1:25000 Soil Samples Line 8000 E Date 2/11/84  
 A 02143 Analysed by ALS DPO no. 31920

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref N	Geological Observations
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba		
		oc	o/c sample type ***																		
		f	s sample type ****						depth												
1141042	B								45	30	80	<1			5	6.17	3	200	4575		
43	B							45	45	90	1			<3	8.58	4	240	4525			
44	B							35	40	90	1			<3	7.45	3	310	4500			
45	C							25	45	95	<1			<3	5.60	5	710	4475			
46	C							160	65	110	<1			<3	4.94	6	980	4450			
47	B-C							45	55	115	<1			<3	4.95	6	690	4425			
48	B							45	90	135	1			<3	7.28	12	750	4400			
49	B-C							55	140	95	1			<3	6.97	14	560	4375			
50	C							30	80	130	1			<3	6.34	4	590	4350			
51	B-C							30	100	90	1			<3	5.96	8	810	4325			
52	C							25	105	95	1			<3	5.85	7	550	4300			
53	B-C							30	105	130	1			<3	5.83	6	570	4275			
54	B-C							25	45	70	<1			<3	5.82	3	480	4250			
55	B							20	55	50	<1			<3	5.00	5	300	4225			
56	C							30	105	105	1			<3	6.92	2	410	4200			
57	B-C							35	115	70	1			<3	8.35	2	370	4175			
58	C							45	220	105	2			<3	8.78	7	380	4150			
59	C							45	230	60	1			<3	8.62	2	290	4125			
60	C							100	460	190	2			5	9.96	9	430	4100			
61	B-C							20	70	30	1			<3	7.10	2	1000	4075			
62	C							25	80	20	<1			<3	3.11	2	1150	4050			
63	B-C							25	60	35	1			3	4.75	2	390	4025			
1141064	B							5	5	45	<1			5	0.17	<1	<10	4000			

235127

\* 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)





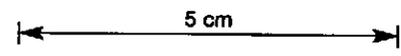
C.R.A. EXPLORATION , GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 114088-9 Sample numbers 114088-9 Collected by PA Temby Sheet no. 16  
 Area / Prospect Stonebridge Bar Grid Soil Samples Date 2/11/84  
 Map / Photo reference Sheffield 1:25000 Line 7900 E Analysed by A.L.S. DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref	Geological Observations					
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Fe	As	Ba								
		o/c sample type ***							ppb																	
		H s sample type ****																								
114088	C							50	60	130	2			3	9.01	3	170	4575								
89	C							55	45	110	1			3	8.25	<1	630	4600								

235129

\* 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)



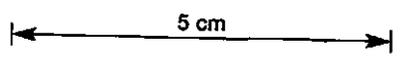
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141090-100, 198-200 Sample numbers Soil Samples 230-38 Collected by P.A. Temby Sheet no. 4 of 16  
 Area / Prospect Stonebridge Ba Grid Map / Photo reference Sheffield 1:25000 Line 7800 E Analysed by A.L.S. Date 2/11/84 DPO no. 31920  
 A 02143

Sample No.	Type ss* oc f s	ss channel **						Carbon	Metal content ppm or %											Grid ref N	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			
		o/c sample type ***							s sample type ****												
1141090	B-C								35	45	75	1			3	8.95	<1	130	5000		
91	B								60	35	100	<1			3	7.12	3	280	4975		
92	B-C								40	45	90	1			3	7.20	<1	390	4950		
93	B								40	45	100	1			<3	6.85	<1	310	4925		
94	B								50	50	110	2			3	8.44	1	570	4900		
95	C								10	35	40	1			<3	4.02	<1	410	4875		
96	C								10	30	25	<1			<3	2.57	1	230	4850		
97	C								30	65	75	2			<3	8.29	4	130	4825		
98	C								10	40	80	1			<3	5.67	3	600	4800		
99	B-C								40	40	95	1			<3	6.74	2	500	4775		
100	B								25	45	60	1			<3	6.48	3	390	4750		
198	C								35	50	75	1			<3	6.30	2	440	4725		
199	B								40	45	80	1			<3	6.50	2	270	4700		
200	C								40	40	70	<1			<3	5.74	2	540	4675		
230	C								35	55	90	1			<3	6.87	2	330	4650		
31	C								35	50	65	<1			<3	6.01	3	360	4625		
32	C								40	50	60	1			<3	7.40	2	300	4600		
33	C								15	40	35	<1			<3	6.80	2	230	4575		
34	C								55	75	120	1			<3	6.70	5	440	4550		
35	C								65	65	95	1			<3	6.83	1	340	4525		
36	B								15	45	90	<1			<3	5.96	2	410	4500		
37	B								10	45	65	<1			<3	5.36	<1	400	4475		
38	B-C								20	50	45	1			<3	9.25	12	350	4450		

285130

\* 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)



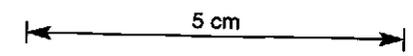
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name: EL 7/73 Sheffield No. 1141239-55 Sample numbers 1141239-55 Collected by PA Tamby Sheet no. 5 of 16  
 Area / Prospect: Stonebridge Co Grid Soil Samples Date: 2/11/84  
 Map / Photo reference: Sheffield 1:25000 Line 7800 E Analysed by A.L.S. DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref N	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			
		o/c sample type ***																			
		s sample type ****																			
1141239	B							15	55	65	1			<3	6.46	4	430	4425			
40	B-C							20	50	80	<1			<3	5.50	1	340	4400			
41	B							30	80	80	1			<3	5.95	5	310	4375			
42	B							20	65	55	1			<3	7.23	4	370	4325			
43	B							35	95	45	1			<3	6.33	6	400	4300			
44	C							25	65	45	<1			<3	8.37	6	390	4275			
45	C							20	35	30	<1			<3	3.16	1	340	4250			
46	C							65	125	120	1			<3	7.56	4	590	4225			
47	B-C							30	140	85	<1			<3	4.11	6	390	4200			
48	B-C							25	60	90	<1			<3	6.01	3	700	4175			
49	C							75	100	50	1			15	6.26	9	780	4150			
50	C							40	95	65	1			3	6.40	1	310	4125			
51	C							30	65	40	<1			3	5.97	4	290	4100			
52	C							60	65	55	1			<3	8.44	1	180	4075			
53	B							15	20	20	<1			3	1.76	<1	60	4050			
54	A-B							5	10	20	<1			3	0.33	<1	10	4025			
55	A							5	5	10	<1			3	0.49	<1	<10	4000			

235131

\* 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)



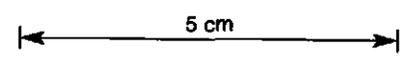
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 114/256-78 Sample numbers 114/256-78 Collected by PA Tenby Sheet no. 6 of 16  
 Area / Prospect Stonebridge Ba Grid Soil Samples Date 2/1/84  
 Map / Photo reference Sheffield N. 25000 Line 7700 E Analysed by ALS DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref N	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			
		o/c sample type ***																			
		s sample type ****																			
114/256								5	5	25	<1				3	0.12	<1	<10	4000		
57								10	15	30	<1				3	2.36	<1	<10	4025		
58								45	70	55	2				<3	8.76	4	50	4050		
59								40	55	65	1				<3	7.39	<1	120	4075		
60								35	50	65	1				<3	7.49	1	280	4100		
61								35	45	50	1				<3	7.09	<1	150	4125		
62								10	35	20	<1				<3	5.94	3	390	4150		
63								10	35	65	<1				<3	5.13	<1	290	4175		
64								15	45	40	<1				<3	4.79	3	250	4200		
65								10	50	95	1				<3	5.33	<1	690	4225		
66								15	55	65	<1				<3	6.08	3	380	4250		
67								10	75	75	1				<3	6.43	2	570	4275		
68								15	50	90	1				3	6.75	3	610	4300		
69								10	45	80	1				<3	5.84	2	520	4325		
70								30	65	80	1				<3	5.85	2	480	4350		
71								15	50	70	1				<3	6.13	5	300	4375		
72								15	55	60	1				<3	4.83	3	530	4400		
73								15	55	90	2				<3	6.81	6	580	4425		
74								10	55	90	1				<3	6.09	4	530	4450		
75								15	55	80	1				<3	6.55	3	520	4475		
76								25	50	70	1				<3	6.12	1	550	4500		
77								15	60	110	1				<3	7.14	4	390	4525		
78								15	55	55	1				<3	6.38	3	580	4550		

235152

\* 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)



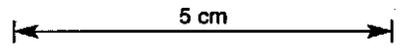
C.R.A. EXPLORATION GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141 279 - 96 Sample numbers Line 7700 E Collected by PA Temby Sheet no. 7 of 16  
 Area / Prospect Stonebridge Ba Grid Map / Photo reference Sheffield 1:25000 Analysed by ALS Date 2/11/84 DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba		
		o/c sample type ***																		
		s sample type ****																		
1141279								15	50	75	1				<3	6.39	2	360	4575	
80								10	35	30	<1				<3	3.45	2	360	4600	
81								10	40	60	<1				<3	5.51	2	310	4625	
82								10	40	60	<1				<3	4.82	2	490	4650	
83								5	45	110	<1				<3	4.95	3	310	4675	
84								5	40	55	<1				<3	4.68	<1	370	4700	
85								10	40	40	<1				<3	4.08	8	310	4725	
86								5	35	30	<1				<3	3.45	2	390	4750	
87								15	30	40	<1				<3	3.82	2	290	4775	
88								5	20	35	<1				<3	2.51	<1	370	4800	
89								10	35	45	<1				<3	3.08	2	610	4825	
90								5	30	30	<1				<3	3.40	2	430	4850	
91								25	45	85	<1				<3	5.93	18	280	4875	
92								15	35	45	<1				<3	3.57	2	350	4900	
93								15	40	55	<1				<3	4.06	2	720	4925	
94								25	45	75	1				<3	7.82	3	440	4950	
95								20	50	50	1				<3	5.97	4	440	4975	
96								70	50	150	<1				<3	9.80	1	140	5000	

235133

\* 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)



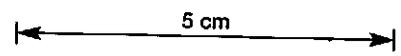
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141299, 300, 345-65 Sample numbers 1141299, 300, 345-65 Collected by PA Tenby Sheet no. 8 of 16  
 Area / Prospect Stonebridge & Grid Line 7600 E Date 2/11/84  
 Map / Photo reference Sheffield 1:25000 Soil Samples. Analysed by ALS DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref N	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			
		o/c sample type ***																			
		s sample type ****																			
1141299								25	35	50	1			<3	4.71	2	530	4975			
300								30	45	90	1			<3	8.86	2	410	4950			
345								15	40	90	1			<3	7.28	<1	450	4925			
46								10	35	50	1			<3	4.04	<1	550	4900			
47								15	35	55	1			<3	5.40	<1	590	4875			
48								5	35	45	1			<3	4.61	1	330	4850			
49								5	30	40	<1			<3	3.25	<1	310	4825			
50								5	30	35	1			<3	2.04	<1	340	4800			
51								15	40	65	1			<3	4.70	2	520	4775			
52								15	40	50	1			<3	4.97	2	310	4750			
53								35	35	35	<1			<3	5.58	1	320	4725			
54								15	30	45	1			<3	3.11	<1	410	4700			
55								20	45	70	1			<3	5.31	<1	330	4675			
56								15	45	60	1			<3	4.24	5	600	4650			
57								15	55	80	1			<3	5.23	2	390	4625			
58								15	55	80	2			<3	6.60	4	440	4600			
59								10	50	65	1			<3	5.25	3	350	4575			
60								10	55	65	1			<3	4.63	3	490	4550			
61								10	65	70	2			<3	4.69	2	500	4525			
62								5	45	50	1			<3	3.53	<1	490	4500			
63								10	60	65	2			<3	4.18	<1	500	4475			
64								10	40	105	1			<3	3.50	<1	610	4450			
65								10	90	115	1			<3	3.59	<1	720	4425			

235134

\* 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)



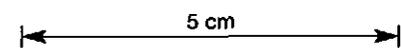
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141366 - 82 Sample numbers 1141366 - 82 Collected by PA Tamby Sheet no. 9 of 16  
 Area / Prospect Stonebridge Ba Cruid Line 7600 E Date 2/11/84  
 Map / Photo reference Sheffield 1:25000 Soil Samples Analysed by ALS DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Fe	As	Ba			
		o/c sample type ***																			
		s sample type ****													ppb	%					N
1141366								20	65	70	1			<3	4.54	2	280	4400			
67								15	95	125	2			15	5.77	2	440	4375			
68								10	75	95	2			<3	5.04	2	400	4350			
69								10	85	120	2			<3	4.46	<1	460	4325			
70								10	90	75	1			<3	4.29	1	650	4300			
71								40	1400	340	1			<3	5.65	5	470	4275			
72								15	210	75	2			<3	7.15	<1	250	4250			
73								10	170	190	1			<3	6.55	1	730	4225			
74								10	85	80	1			<3	5.73	<1	1250	4200			
75								5	50	70	1			<3	5.97	<1	510	4175			
76								10	45	145	1			<3	4.86	1	580	4150			
77								15	40	90	1			<3	5.66	1	660	4125			
78								15	55	65	1			<3	5.64	3	740	4100			
79								10	40	45	1			<3	4.80	1	300	4075			
80								10	60	80	1			<3	4.50	2	560	4050			
81								20	70	110	1			<3	6.83	3	660	4025			
82								80	75	80	<1			<3	3.12	7	520	4000			

235135

\* 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)



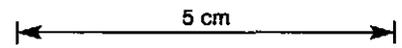
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name: EL 7/73 Sheffield No. 1141383-405 Sample numbers: 1141383-405 Collected by: P.A. Temby Sheet no. 10 of 16  
 Area / Prospect: Stonebridge Ba Grid Map / Photo reference: Sheffield 1:25000 Line 7500 E Soil Samples Date: 2/11/84  
 A 02143 Analysed by: ALS DPO no. 31920

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba		
		o/c sample type ***																		
		s sample type ****																		
1141383								10	25	30	<1			<3	4.33	<1	670	5000		
84								25	40	70	<1			<3	5.65	2	900	4975		
85								20	25	55	<1			<3	5.05	2	810	4950		
86								15	25	35	<1			<3	4.07	4	540	4925		
87								25	30	35	<1			<3	4.00	12	510	4900		
88								25	55	115	<1			<3	1.92	12	660	4875		
89								30	30	30	<1			<3	5.24	6	610	4850		
90								10	25	25	<1			<3	3.51	2	350	4825		
91								15	30	40	<1			<3	4.77	2	550	4800		
92								10	30	35	<1			<3	3.84	3	540	4775		
93								15	30	50	<1			<3	4.02	2	450	4750		
94								20	30	45	<1			<3	4.02	3	330	4725		
95								25	35	55	<1			<3	7.26	1	200	4700		
96								15	40	35	<1			<3	3.73	5	370	4675		
97								25	70	70	<1			<3	5.32	4	350	4650		
98								15	50	45	<1			<3	3.63	2	270	4625		
99								15	25	35	<1			<3	5.07	4	460	4600		
400								15	45	35	<1			<3	4.17	5	290	4575		
01								15	35	40	<1			<3	3.60	4	370	4550		
02								15	45	30	<1			<3	3.80	3	350	4525		
03								10	35	35	<1			<3	2.22	3	330	4500		
04								10	45	30	<1			<3	2.96	4	290	4475		
05								35	60	110	<1			<3	5.48	5	500	4450		

235136

\* 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)  
 \*\*\*\*



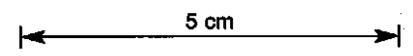
C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141406-23 Sample numbers 1141406-23 Collected by PA Temby Sheet no. 11 of 16  
 Area / Prospect Stonebridge Ba Grid Line 7500 E Date 2/11/84  
 Map / Photo reference Sheffield 1:25000 Soil Samples Analysed by ALS DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba		
		o/c sample type ***																		
		s sample type ****																		
1141406								20	55	70	<1			<3	3.54	4	420	4425		
07								20	50	85	<1			<3	3.77	3	450	4400		
08								20	55	100	<1			<3	4.01	4	420	4375		
09								15	50	110	<1			<3	4.70	3	560	4350		
10								15	230	210	<1			<3	4.83	3	480	4325		
11								10	150	175	<1			<3	3.89	6	610	4300		
12								10	165	80	<1			<3	4.39	16	360	4275		
13								15	105	120	1			<3	6.57	<1	380	4250		
14								35	45	50	<1			<3	3.86	6	480	4225		
15								25	45	60	<1			<3	4.26	5	440	4200		
16								40	55	50	<1			<3	4.02	3	340	4175		
17								35	115	105	<1			<3	6.37	10	400	4150		
18								30	50	160	1			<3	5.50	3	510	4125		
19								105	30	55	<1			<3	4.56	3	600	4100		
20								70	55	45	<1			<3	4.55	5	540	4075		
21								15	30	30	<1			<3	3.37	2	530	4050		
22								25	45	55	<1			<3	4.04	3	700	4025		
23								20	45	55	<1			<3	3.87	3	580	4000		

235137

\* 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)

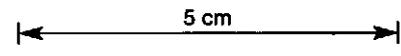


C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 114424-64 Sample numbers 114424-64 Collected by P.A. Temby Sheet no. 12 of 16  
 Area / Prospect Stonebridge Ba Grid Line 7400 E Date 2/1/84  
 Map / Photo reference Sheffield 1:25000 Soil Samples Analysed by ALS DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			N
		o/c sample type ***																			
		s sample type ****																			
114424								15	115	55	<1				<3	3.02	6	470	5000		
25								10	25	25	<1				<3	2.82	4	680	4975		
26								10	20	25	<1				<3	1.82	2	520	4950		
27								5	15	20	<1				<3	1.27	2	330	4925		
28								5	25	25	<1				<3	2.29	38	640	4900	23	
29								10	50	65	<1				<3	2.97	8	490	4875	35	
30								25	65	115	<1				<3	4.64	12	710	4850	138	
31								25	70	125	<1				<3	3.88	12	620	4825	38	
32								20	35	40	<1				<3	4.20	8	500	4800		
33								15	30	45	<1				<3	4.51	3	590	4775		
34								20	25	45	<1				<3	4.38	3	490	4750		
35								20	30	45	<1				<3	4.61	2	290	4725		
36								20	50	60	<1				<3	3.39	2	340	4700		
37								25	65	75	<1				<3	3.93	3	350	4675		
38								20	65	60	<1				<3	2.45	<1	350	4650		
39								25	50	50	<1				<3	1.65	1	360	4625		
40								35	85	65	<1				<3	4.47	5	390	4600		
41								25	60	65	<1				<3	5.28	2	200	4575		
42								20	45	40	<1				<3	5.40	<1	180	4550		
43								35	45	40	<1				<3	5.95	2	430	4525		
44								10	100	60	<1				<3	7.09	<1	60	4500		
45								10	60	95	<1				<3	4.88	4	440	4475		
46								15	50	65	<1				<3	4.07	1	400	4450		

\* 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)

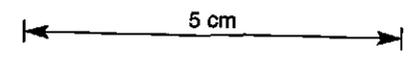


C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141447-64 Sample numbers 1141447-64 Collected by PA Tenby Sheet no. 13 of 16  
 Area / Prospect Stonebridge Ba Grid Line 7400 E Date 2/11/84  
 Map / Photo reference Sheffield 1:25,000 Soil Samples Analysed by A.L.S. DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba		
		o/c sample type ***							s sample type ****											
1141447								25	155	30	<1			<3	2.76	5	490	4425		
48								20	45	30	<1			<3	1.89	1	310	4400		
49								30	40	30	<1			<3	3.91	2	480	4375		
50								50	45	50	<1			<3	2.75	1	520	4350	235139	
51								30	35	75	<1			<3	5.67	2	370	4325		
52								15	30	55	<1			<3	2.26	<1	610	4300		
53								10	45	35	<1			<3	1.62	<1	340	4275		
54								5	35	5	<1			<3	1.30	2	70	4250		
55								5	30	5	<1			<3	1.03	<1	80	4225		
56								2	5	<2	<1			<3	0.14	<1	20	4200		
57								2	<5	<2	<1			<3	0.16	<1	<10	4175		
58								2	<5	<2	<1			<3	0.09	<1	10	4150		
59								30	145	20	<1			<3	1.15	<1	290	4125		
60								15	75	15	<1			<3	0.89	<1	310	4100		
61								30	65	70	<1			<3	3.02	2	750	4075		
62								65	55	175	<1			<3	5.56	10	810	4050		
63								50	60	210	<1			<3	6.44	5	1250	4025		
64								75	150	80	<1			<3	3.96	5	580	4000		

\* 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 ns = grab sample rc = rock chip (state interval & length) cs = channel sample (state length)



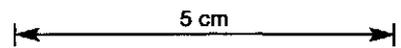


C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEDGER

Tenement name EL 7/73 Sheffield No. 1141489-500918-22 Sample numbers 1141489-500918-22 Collected by PA Temby Sheet no. 15 of 16  
 Area / Prospect Stonebridge Ba Grid Line 7300 E Date 2/11/84  
 Map / Photo reference Sheffield 1:25000 Soil Samples Analysed by A.L.S. DPO no. 31920  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au ppb	Fe %	As	Ba			N
		o/c sample type ***																			
		s sample type ****																			
1141489	B-C							20	30	35	<1			<3	3.07	<1	340	4400	235141		
90	B-C							15	35	20	<1			<3	2.87	<1	300	4375			
91	B							25	50	30	<1			<3	3.58	<1	310	4350			
92	B							20	35	35	<1			10	4.12	<1	170	4325			
93	C							45	40	40	<1			<3	4.51	<1	620	4300			
94	C							15	30	50	<1			<3	4.85	<1	560	4275			
95	B							40	60	35	<1			<3	6.32	3	470	4250			
96	C							95	80	40	<1			<3	7.37	5	780	4225			
97	C							30	35	25	<1			<3	4.26	<1	510	4200			
98	C							50	40	60	<1			<3	5.89	3	580	4175			
99	C							30	60	50	1			<3	4.62	3	430	4150			
1141500	C							25	50	80	<1			<3	5.20	6	1100	4125			
918	B							65	115	180	1			<3	6.59	4	680	4100			
19	B							105	200	155	1			<3	5.45	3	490	4075			
20	C							95	180	270	1			<3	6.28	4	900	4050			
21	C							90	70	185	1			<3	5.94	6	780	4025			
22	B							65	190	155	1			<3	3.90	6	510	4000			

\* 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)





PROJECT

GEOCHEMICAL SAMPLING LEDGER

DATES: 15 August 84

TENEMENT SNEPPFIELD EL7/73

AREA / PROSPECT STONEBRIDGE BARRYE

GEOLOGIST IMC

SAMPLE TYPE ROCK

PAGE NO. 1

SAMPLE NUMBER	GRID REF.	ANALYSES										DPO NUMBER	GEOLOGICAL OBSERVATIONS	CORRESP. -80 MESH STREAM SAMPLE			
		Cu	Pb	Zn	Ag	Mn	Fe%	As	Ba								
988801	442500E 6411830N	26%	30	260											30343	CuSO <sub>4</sub> fertilizer	
802	-	95	10	50	1	550	3.64	1	680					-	Mid grey oz-eyes left plus ? barite.		
803		75	10	35	<1	470	3.25	1	640					-	Dark grey aphanitic andesite. Massive, unaltered.		
804		85	20	35	1	670	3.18	<1	970					-	Dark grey aphanitic andesite plus carbonate veining and alteration.		
805		80	10	15	<1	70	2.81	<1	660					-	Dark grey banded shale with buff laminterbedding.		
806		30	5	65	<1	830	3.51	8	260					-	Mid to dark grey shale with ? laminae (or parallel shales) (veins) of calcareous (?) weathered ferruginous siliceous chloritic / ? sericitic buff (clitic - with shale fragments)		
807		45	10	25	<1	180	2.13	2	600					-	Mid grey massive mudstone ? slightly dark.		
808		25	20	55	<1	720	3.53	<1	480					-	Coarse blocky buff with shale fragments to loc. Slightly foliated		
988809	-	15	20	15	<1	860	2.75	3	470					-			

230143

APPENDIX 6

CORE REASSAY FOR GOLD -

RESULTS AND SUMMARY LOG

## GOWRIE PARK DRILL HOLES - GOLD ASSAYING

Hole	Sample No	From - To	Au (ppm)	Pb	Zn	Cu	Ag	Core Description
77GPC1	618828	34.0 - 35.5	0.03	.44%	420	35	3	Quartz-Feld porphyry, sericitic, quartz veins stringer zone 4% py, 4% hematite
	297372	44.0 - 47.0	0.07	270	340	360	8	As above with 2-4% py
	297374	50.0 - 53.0	0.27	660	460	160	2	As above with 7% hematite, 4% py
	297458	56.0 - 57.0	0.91	.28%	450	280	4	As above, 4% pyrite, minor hematite
	297459	57.0 - 58.0	1.1	.1%	450	310	4	As above, 4% pyrite, minor hematite
	618831	82.8 - 83.1	0.04	1.35%	1%	220	16	Sericitic Lapilli tuff, sparse quartz feld phenos. 1% py, minor hematite, minor graphite
	618833	89.0 - 90.3	0.04	.66%	.22%	10	5	As above, with 2-3% sulphides
77GPC2	297442	63.4 - 64.9	0.04	.25%	860	120	3	Quartz-feld porphyry, sericitized minor hematite, 2% sulphides, minor carbonate
	297443	64.9 - 65.9	0.16	1.25%	.49%	50	4	As above
	297444	65.9 - 66.9	0.04	.44%	.18%	15	2	As above
	297450	82.0 - 83.3	0.05	.72%	.64%	140	9	As above with 3% py in stringers
77GPC3	618971	39.7 - 40.6	0.03	.16%	.2%	410	4	Silicified sericitized lava breccia, carbonate veins 3% py, minor quartz veins

Hole	Sample No	From - To	Au (ppm)	Pb	Zn	Cu	Ag	Core Description
77GPC3 (contd)	618972	40.6 - 41.6	0.04	.14%	.12%	280	2	As above
	618973	41.6 - 42.6	0.04	2.75%	.95%	230	14	As above
	618974	42.6 - 43.4	0.02	.13%	.2%	500	4	As above
	618976	55.4 - 56.2	0.06	170	30	80	3	Weakly silicified and carbonated sericitic and hematitic acid volcanic containing phenos of quartz and feldspar and clasts of quartz and tuff, 8% py
	618977	56.2 - 57.5	0.06	.44%	560	270	4	As above

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

SHEET 1 OF 1  
TENEMENT NAME EL 7/73 Sheffield  
PLAN - MAP REFERENCE Cethana 1:25000  
DEPTH 107.1 m. HOLE No DD77GPC1  
AZIMUTH 180° INCLINATION -45 DRILL TYPE Diamond (F-30) COMPLETED 20/12/77 CASING LEFT 3m HQ 11m NQ DPO No(s) 31906

CO-ORDINATES 1700 E 1635 S DRILLERS Ass Diamond Drillers COMMENCED 17/12/77

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analyzed by <u>Genlysis</u> )					
From (M)	To (M)									Ag	Ppb				
						618825	26.1	27.1	-						
						26	27.1	28.1	-						
						27	28.1	29.1	-						
						297454	29.1	30.1	-						
						55	30.1	32.1	-						
						57	32.7	34.0	-						
						618828	34.0	35.5	30						
						297372	44.0	47.0	70						
						73	47.0	60.0	-						
						74	50.0	53.0	270						
						75	53.0	56.0	-						
						297458	56.0	57.0	910						
						59	57.0	58.0	1100						
						60	58.0	59.0	-						
						297377	59.0	62.0	-						
						78	62.0	65.0	-						
						297383	77.0	79.0	-						
						618830	81.1	82.8	-						
						31	82.8	83.5	40						
						297385	83.5	86.1	-						
						86	86.1	89.0	-						
						618833	89.0	90.3	40						
						618834	97.5	98.5	-						
						297390	98.5	101.0	-						
						91	101.0	104.0	-						
						92	104.0	107.1	-						

235147

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

SHEET 1 OF 1  
TENEMENT NAME EL 7/73 Sheffield  
PLAN - MAP REFERENCE Cethana 1:25000  
DEPTH 112.75m HOLE No DR776PC2  
CASING LEFT 9m NA DPO No(s) 21906

CO-ORDINATES 1600 E 1645 S  
Azimuth 180° INCLINATION -45°  
DRILLERS Ass. Diamond Drillers COMMENCED 22.12.77  
DRILL TYPE Diamond (F-30) COMPLETED 13.1.78

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by Genalysis)									
From (M)	To (M)									Au	ppb								
						618909	16.9	19.9		-									
						618914	31.9	34.9		-									
						297441	61.9	63.4		-									
						42	63.4	64.9		40									
						43	64.9	65.9		170									
						44	65.9	66.9		40									
						45	66.9	67.9		-									
						46	67.9	68.9		-									
						618929	68.9	71.7		-									
						297447	71.7	73.4		-									
						618931	73.4	74.7		-									
						297448	74.7	76.2		-									
						449	76.2	77.7		-									
						618934	77.7	80.0		-									
						297450	82.0	83.3		50									
						618937	83.3	86.8		-									
						38	86.8	87.8		-									
						618944	98.0	101.0		-									
						45	101.0	104.0		-									
						46	104.0	107.0		-									
						47	107.0	110.0		-									
						618949	110.0	112.7		-									

233148

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

SHEET 1 OF 1  
TENEMENT NAME EL 7/73 Sheffield

PLAN - MAP REFERENCE Cethana 1:25000

CO-ORDINATES 700 E 850 S DRILLERS Ass. Diamond Drillers COMMENCED 14.1.78 DEPTH 94.1 m HOLE No D.78.G.P.C.3

Azimuth 183° INCLINATION 50° DRILL TYPE Diamond (F-30) COMPLETED 17.1.78 CASING LEFT 3m HQ DPO No(s) 31906

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>Genalysis</u> )												
From (M)	To (M)									Au	ppb											
						618952	6.0	9.1	-													
						53	9.1	12.4	-													
						297451	12.4	13.3	-													
						618955	13.3	14.3	-													
						297452	34.0	35.3	-													
						618961	36.7	37.7	-													
						618963	35.7	39.7	-													
						618971	39.7	40.6	30													
						72	40.6	41.6	40													
						73	41.6	42.6	40													
						74	42.6	43.4	20													
						75	43.4	44.5	-													
						618969	47.0	50.0	-													
						70	50.0	52.0	-													
						618976	55.4	56.2	60													
						77	56.2	57.5	60													

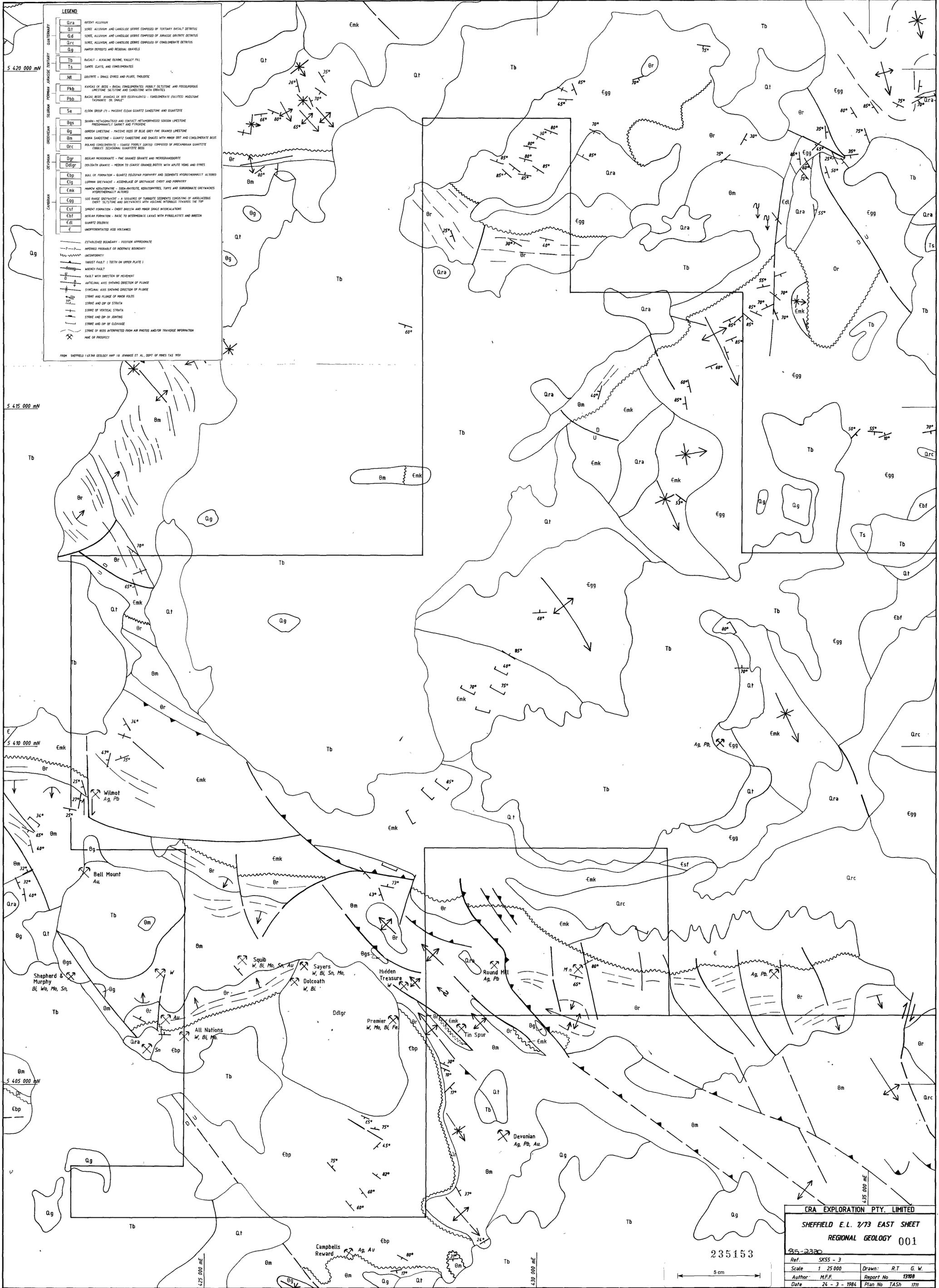
235149

APPENDIX 7

GOLD ANALYSES OF ORDOVICIAN CLASTIC ROCKS







**LEGEND**

Qra	Recent Alluvium
Qt	Recent Alluvium and Landslide Debris Composed of Tertiary Basalt Detritus
Qd	Recent Alluvium and Landslide Debris Composed of Jurassic Divergent Detritus
Qrc	Recent Alluvium and Landslide Debris Composed of Cretaceous Detritus
Qg	Recent Alluvium and Landslide Debris Composed of Devonian Detritus
Tb	Basalt - Alkaline Olivine Valley Fill
Ts	Sand, Clays, and Conglomerates
Jdt	Dolerite - Small Dykes and Plugs, Tholeiitic
PKb	Kansas Ev. Beds - Basal Conglomerates, Pebbles, Siltstone and Sandstone with Gravels
Pbb	Basal Beds - Kansas Ev. Beds (Equivalent) - Conglomerate (Foliated) Mottled Sandstone
Se	Elson Group (F) - Massive Clean Quartz Sandstone and Quartzite
Qgs	Skarn - Metasomatized and Contact Metamorphosed Gypsum Limestone, Sandstone and Sandstone with Gravels
Qg	Jordan Limestone - Massive Beds of Blue Grey Fine Grained Limestone
Qm	Maria Sandstone - Quartz Sandstone and Shales with Minor Grit and Conglomerate Beds
Qrc	Rockland Conglomerate - Coarse Poorly Sorted Composed of Precambrian Quartzite, Gneiss, Occasional Quartzite Beds
Qgr	Breccia Microgranite - Fine Grained Granite and Microgranite
Qdgr	Older Granite - Medium to Coarse Grained Granite with Aplite Veins and Dykes
Qbp	Skull of Formation - Quartz Feldspar Porphyry and Sediments Hydrothermally Altered
Qlg	Lorraine Gneiss - Assemblage of Gneiss, Quartzite and Porphyry
Emk	Minnow Metasandstone - Siderite, Keratophyre, Tuffs and Subordinate Gneisses Hydrothermally Altered
Qgg	Good Range Gneiss - A Sequence of Foliated Sediments Consisting of Argillaceous Gneiss, Siltstone and Gneisses with Volcanic Interbeds Towards the Top
Qsf	Spent Formation - Chert Breccia and Minor Sandstone Interbeds
Qbf	Breccia Formation - Basic to Intermediate Lavas with Pyroclastics and Breccia
Qdl	Quartz Dolerite
E	Undifferentiated Acid Volcanics

FROM SHEFFIELD 1:63,000 GEOLOGY MAP 18 JENNINGS ET AL. DEPT. OF MINES TAS 1959

**CRA EXPLORATION PTY. LIMITED**

**SHEFFIELD E.L. 7/73 EAST SHEET**

**REGIONAL GEOLOGY 001**

85-2330

Ref.	SK55 - 3	Drawn:	R.T. G.W.
Scale	1:25,000	Report No.	13108
Author:	M.F.F.	Date	24 - 3 - 1984
Plan No.	TASh 1711		

235153

5 cm



5 420 000 mN

5 415 000 mN

5 410 000 mN

5 405 000 mN

4 35 000 mE

4 30 000 mE

4 35 000 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



235155

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
 & Part of CETHANA E.L. 10/76  
 DIGHEM " BIRD " HEIGHT  
 WEST SHEET 003

Ref:	SK55 - 3	Drawn:	R.T. G.W.
Scale:	1 : 25,000	Report No.	13708
Author:	M.F.F.	Date:	24 - 3 - 1984
		Plan No.	TASH 1708

5 415 000 mN

5 410 000 mN

5 405 000 mN

440 000 mE

445 000 mE

450 000 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



235156

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
 DIGHEM " BIRD " HEIGHT  
 EAST SHEET 004

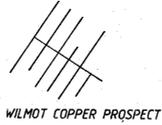
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Scale: 1 : 25 000	Drawn: R. T. G. W.
Author: M. F. F.	Report No. 13108
Date: 24 - 3 - 1984	Plan No. TASH 1709

5 420 000 mN

5 415 000 mN

5 410 000 mN

5 405 000 mN

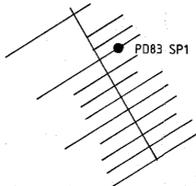


WILMOT COPPER PROSPECT



LAKE BARRINGTON

PROMISED LAND



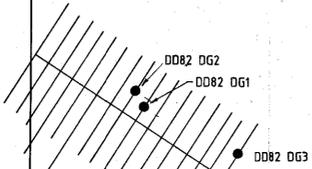
STAVERTON



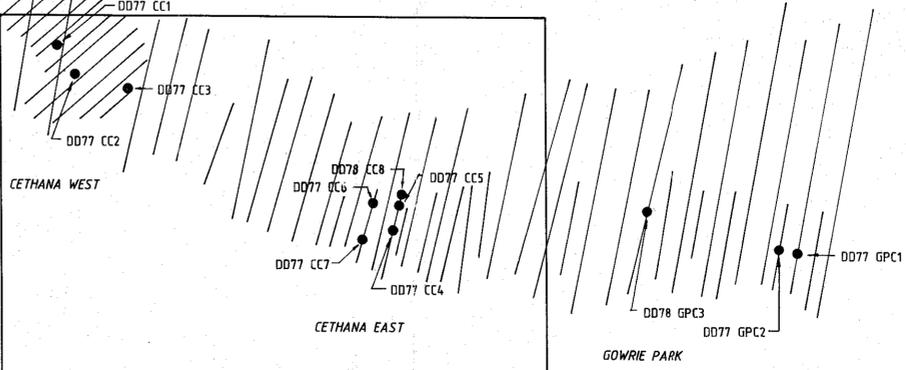
WEST MT. ROLAND



CETHANA PICNIC AREA



DOLCOATH GRANITE



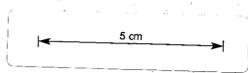
CETHANA WEST

CETHANA EAST

GOWRIE PARK

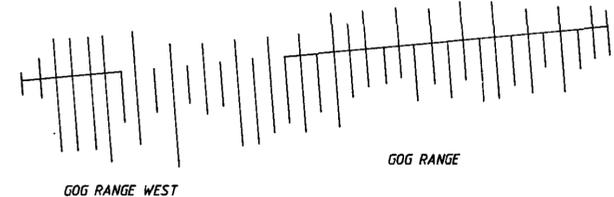
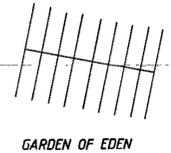
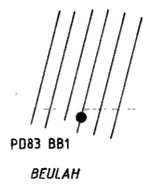
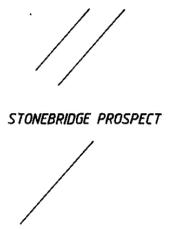
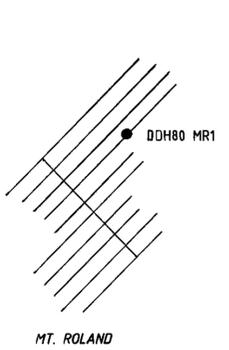
435 000 mE

430 000 mE

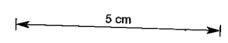


235157

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73 & CETHANA E.L. 10/76	
PROSPECT LOCATION PLAN 005	
WEST SHEET	
Ref: SK55 - 3	Scale: 1 : 25,000
Author: M.F.F.	Drawn: R.T. G.W.
Date: 24 - 3 - 1984	Report No. 13108
	Plan No. TASH 1719



235158



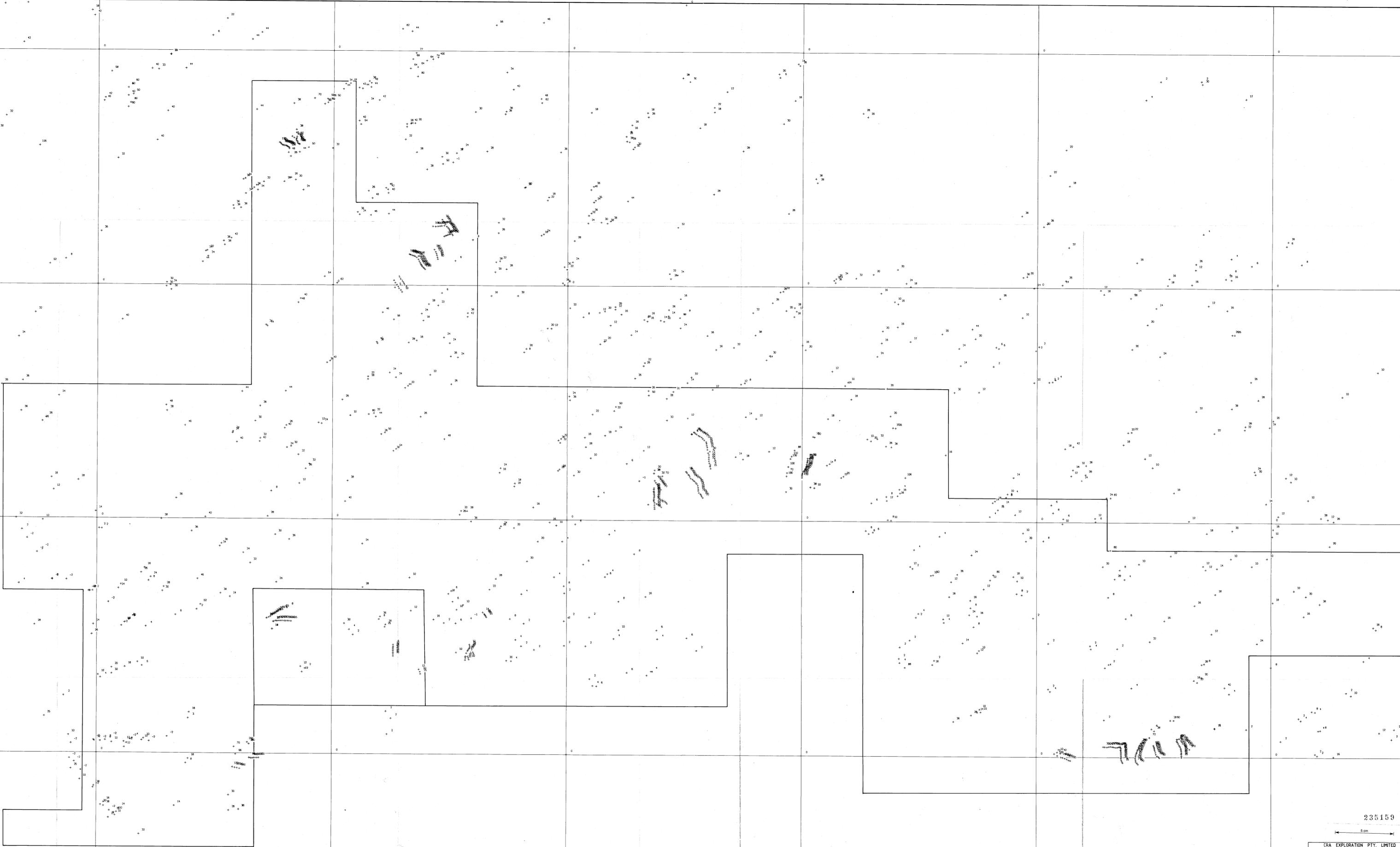
CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73		006	
PROSPECT LOCATION PLAN			
EAST SHEET			
Ref	SK55 - 3	Drawn	R T G W
Scale	1 25000	Report No.	13108
Author	M. F. F.	Date	24 - 3 - 1984
		Plan No.	TASH 1720

440 000 mE

445 000 mE

450 000 mE

007

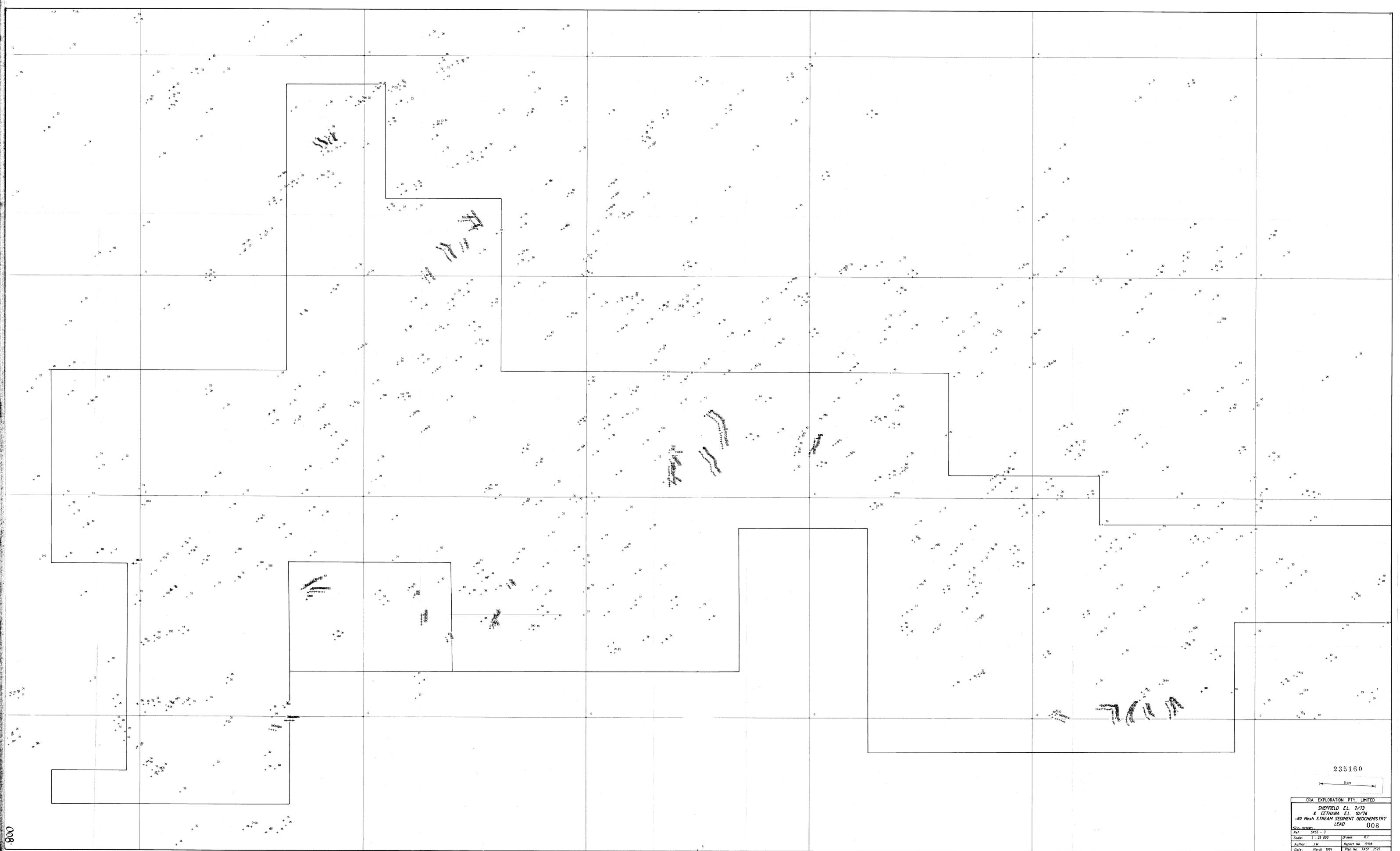


235159

5 cm

CRA EXPLORATION PTY. LIMITED	
SHEPFIELD E.L. 7/73	
& CETHANA E.L. 10/76	
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY	
COPPER 007	
Ref: SK55 - 3	Drawn: P.T.
Scale: 1 : 25 000	Author: J.W.
Date: March 1984	Report No. 12103
	Plan No. TASH 2524

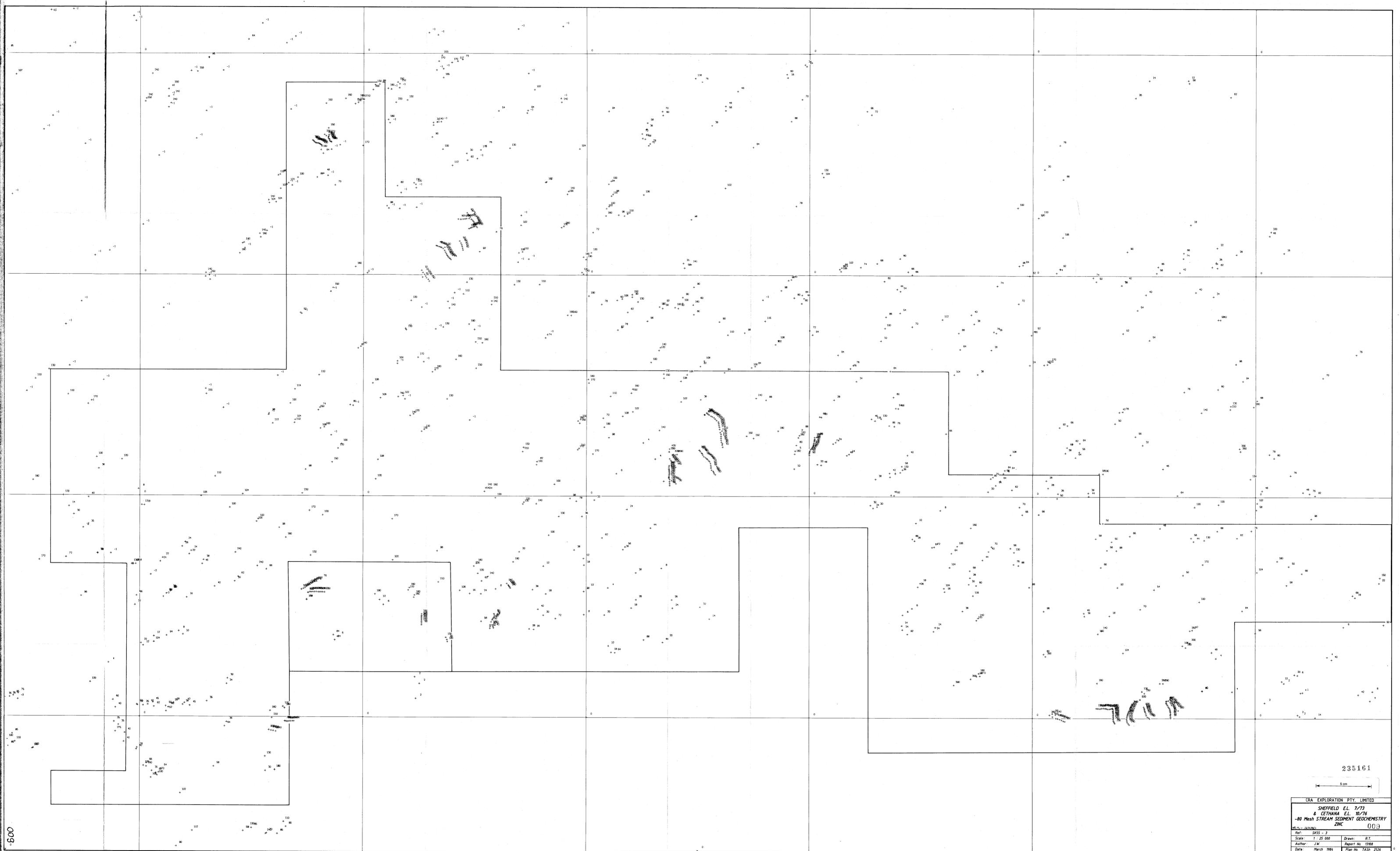
800



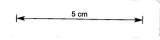
235160



CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73			
& CETHANA E.L. 10/76			
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY			
LEAD 008			
Ref	SXSS - 3	Drawn	R.T.
Scale	1:25 000	Report No.	13104
Author	J.W.	Date	March 1984
Plan No.	TASH 2525		

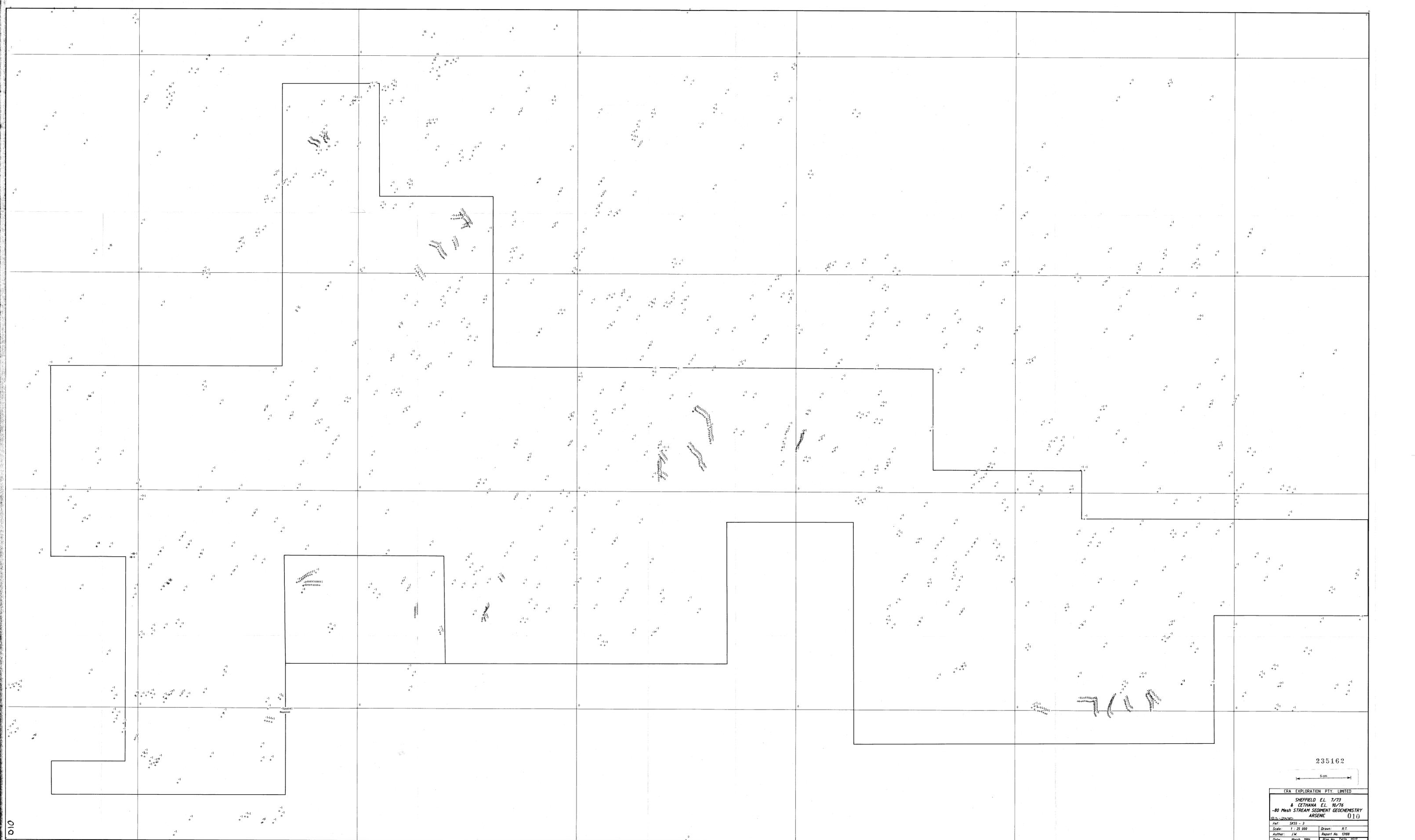


235161



CRA EXPLORATION PTY. LIMITED	
SHEFFIELD EL. 7/73	
& CETHANA EL. 10/76	
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY	
ZINC	
Ref: SK55 - J	003
Scale: 1:25 000	Drawn: R.T.
Author: J.W.	Report No. 13100
Date: March 1984	Plan No. TASH 2526

003



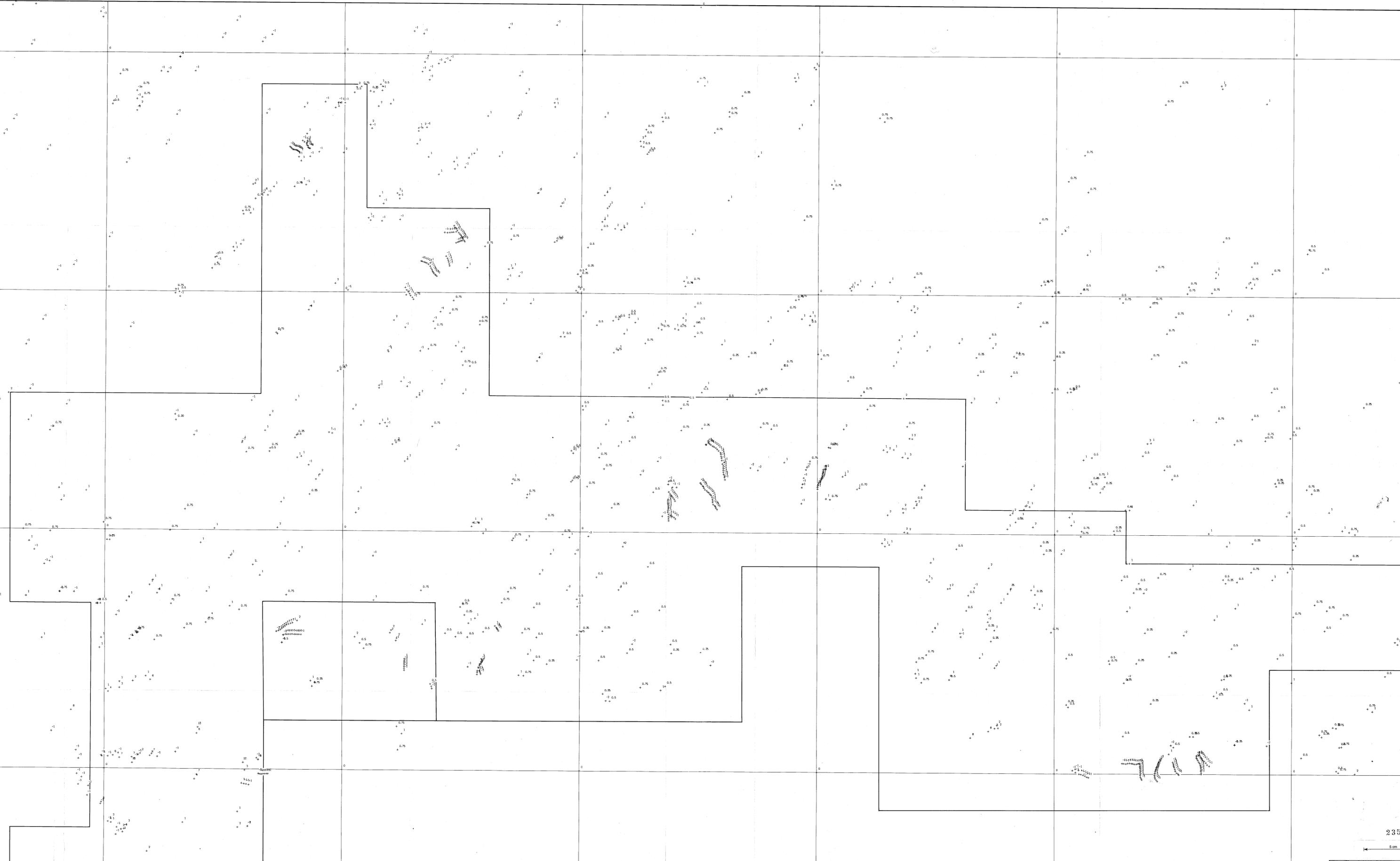
235162



CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73			
& CETHANA E.L. 10/76			
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY			
ARSENIC 010			
Ref:	SK55 - 3	Drawn:	R.T.
Scale:	1 : 25 000	Author:	J.W.
Date:	March 1984	Report No:	1304
		Plan No:	TASH 2527

010

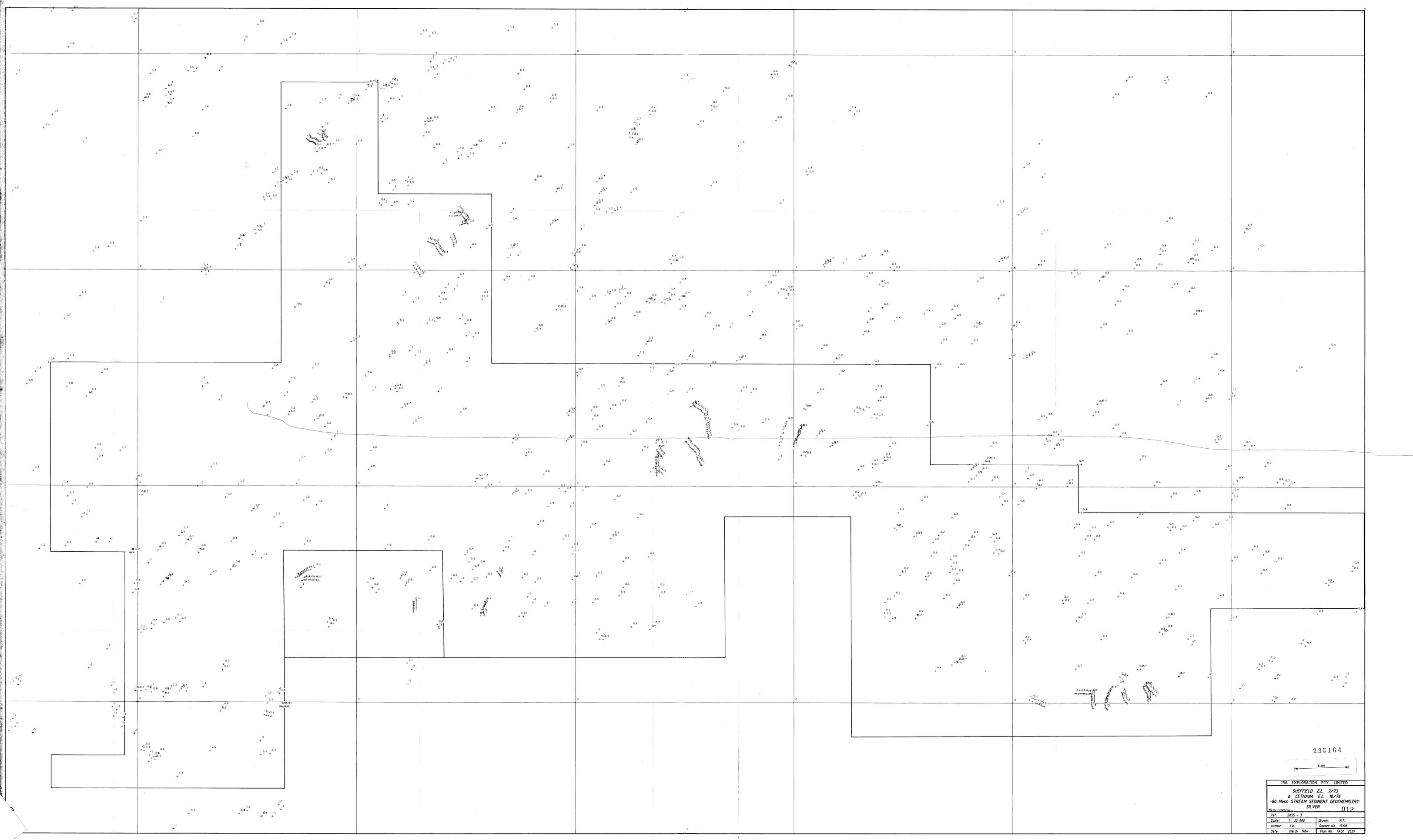
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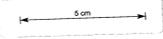
235163



CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73	
& CETHANA E.L. 10/76	
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY	
MOLYBDENUM 011	
Ref: SK55 - 3	Drawn: R.T.
Scale: 1:25,000	Report No: 1308
Author: J.W.	Plan No: TASH 2528
Date: March 1984	

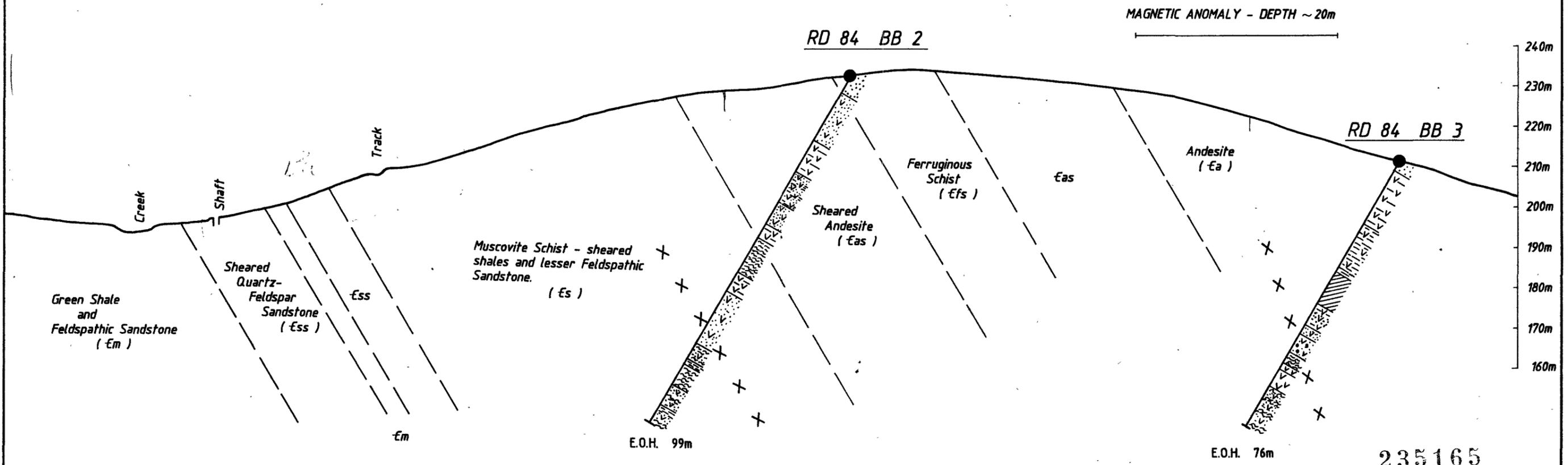


235164



ERA EXPLORATION PTY. LIMITED	
SHEPFIELD E.L. 7/73	
& CETHANA E.L. 10/76	
-80 Mesh STREAM SEDIMENT GEOCHEMISTRY	
SILVER 012	
Ref: SK55 - 3	
Scale: 1:25 000	Drawn: R.T.
Author: J.M.	Report No: 1704
Date: March 1984	Plan No: TASH 2329

2150 mN 2200 mN 2250 mN 2300 mN 2350 mN 2400 mN 2450 mN 2500 mN



Green Shale and Feldspathic Sandstone (Em)

Sheared Quartz-Feldspar Sandstone (Ess)

Muscovite Schist - sheared shales and lesser Feldspathic Sandstone. (Es)

Sheared Andesite (Eas)

Ferruginous Schist (Efs)

Andesite (Ea)

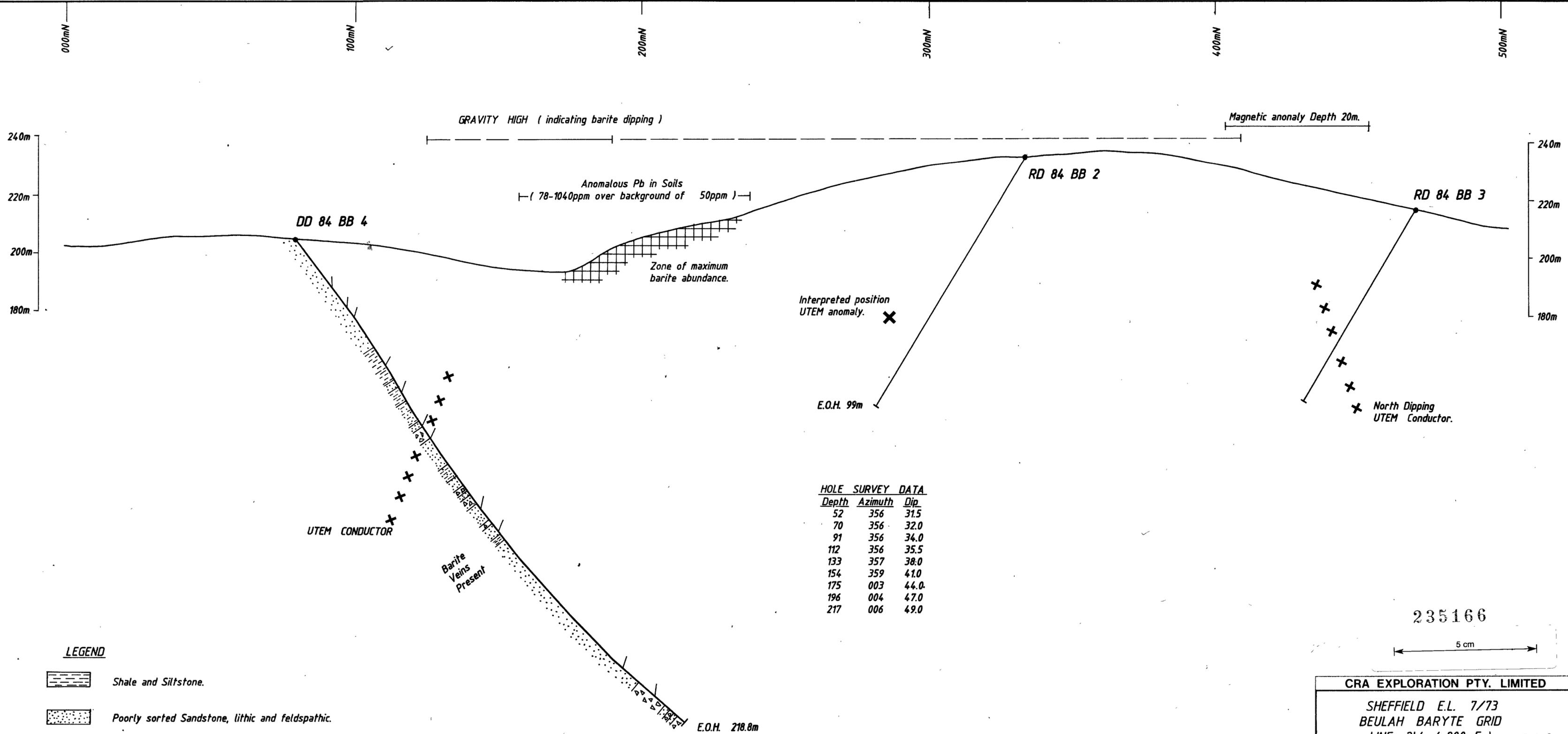
**LEGEND**

- |  |                        |  |  |
|--|------------------------|--|--|
|  | SOIL                   |  | CHLORITIC TUFF                               |
|  | WEATHERED? ANDESITE    |  | CLAY FILLED FAULT ZONE                       |
|  | TUFFACEOUS SHALE       |  | COARSE FRAGMENTAL TUFFS                      |
|  | MASSIVE VOLCANIC? TUFF |  | SHALE / MUDSTONE                             |
|  | SANDY TUFF             |  | INTERPRETED CONDUCTOR (assuming conformity). |

235165

5 cm

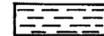
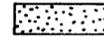
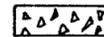
<b>CRA EXPLORATION PTY. LIMITED</b>	
SHEFFIELD E.L. 7/73 BEULAH BARYTE GRID LINE 800mE (2W) 013 RD 84 BB 2&3 SECTIONS	
REF. SK55 - 3	
SCALE 1 : 1000	DRAWN R.T.
AUTHOR I.M.C.	REPORT No. 13108
DATE 17 - 10 - 1984	PLAN No. TASH 2160



**HOLE SURVEY DATA**

Depth	Azimuth	Dip
52	356	31.5
70	356	32.0
91	356	34.0
112	356	35.5
133	357	38.0
154	359	41.0
175	003	44.0
196	004	47.0
217	006	49.0

**LEGEND**

-  Shale and Siltstone.
-  Poorly sorted Sandstone, lithic and feldspathic.
-  Polymictic breccias, dominantly sandstone and tuff clasts, minor primary volcanics.
-  Drill Plot Showing Core Angle.

235166

5 cm

CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73			
BEULAH BARYTE GRID			
LINE 2W ( 800mE )			
DD 84 BB 4 SECTION 014			
REF.	SK55 - 3		
SCALE	1 : 1000	DRAWN	R.T.
AUTHOR	P.A.T.	REPORT No.	13108
DATE	18 - 2 - 1985	PLAN No.	TASh 2521

000mN 100mN 200mN 300mN 400mN 500mN

GRAVITY HIGH

Anomalous Pb in soils  
( 130 - 450 ppm )

Anomalous Pb in soils 55 - 500 ppm

PD 83 BB 1 ( Projected position Line 0 )

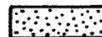
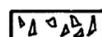
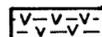
DD 84 BB 5

chert horizon

SWEETWATER CREEK

E.O.H. 116m

E.O.H. 207 m

- LEGEND**
-  Poorly sorted Sandstone, lithic and feldspathic.
  -  Polymictic breccias, dominantly sandstone and tuff clasts, minor primary volcanics.
  -  Vitric tuff, shards present, sometimes feldspathic.
  -  Sandy tuff - very poorly sorted, minor lithic components.
  -  Andesitic dyke rock.
  -  Drill Plot Showing Core Angle.

UTEM Conductor

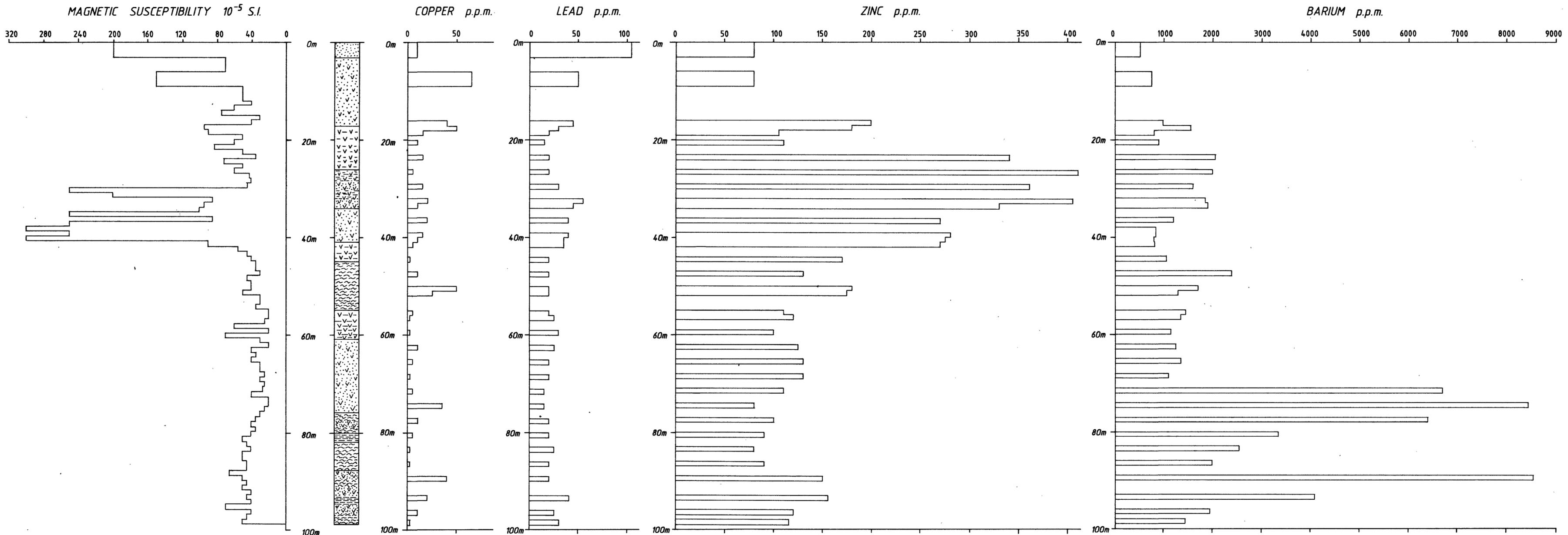
**HOLE SURVEY DATA**

Depth	Azimuth	Dip
105	007	42.0
135	007.5	45.0
161	009	45.5
185.5	009	46.0
206.5	010	46.0

235167

5 cm

<b>CRA EXPLORATION PTY. LIMITED</b>	
SHEFFIELD E.L. 7/73 BEULAH BARYTE GRID LINE 2E 015 DD 84 BB 5 SECTION	
REF. SK55 - 3	
SCALE 1 : 1000	DRAWN R.T.
AUTHOR P.A.T.	REPORT No. 13108
DATE 19 - 2 - 1985	PLAN No. TASH 2522

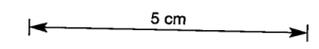


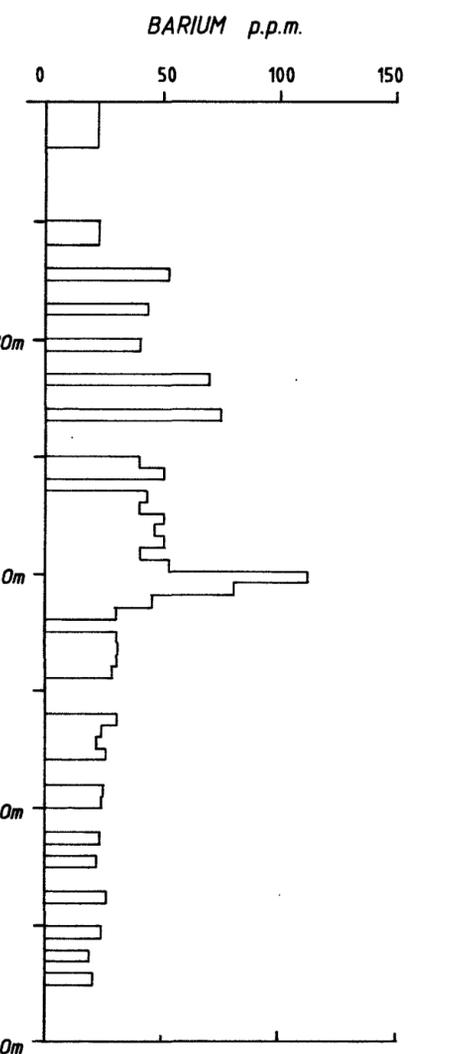
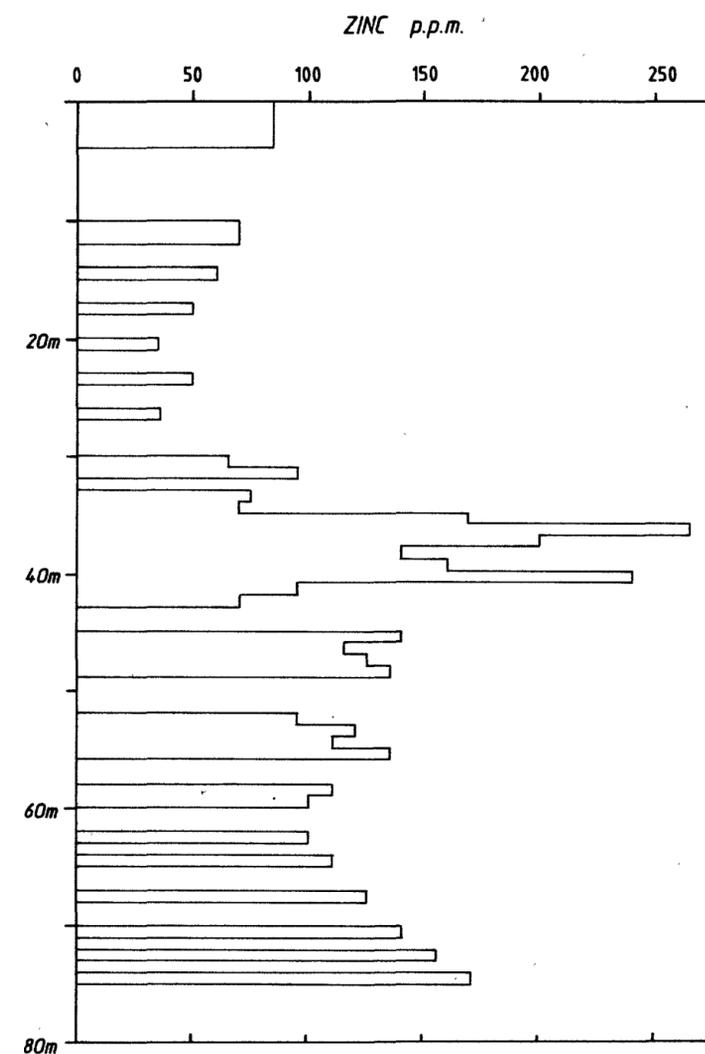
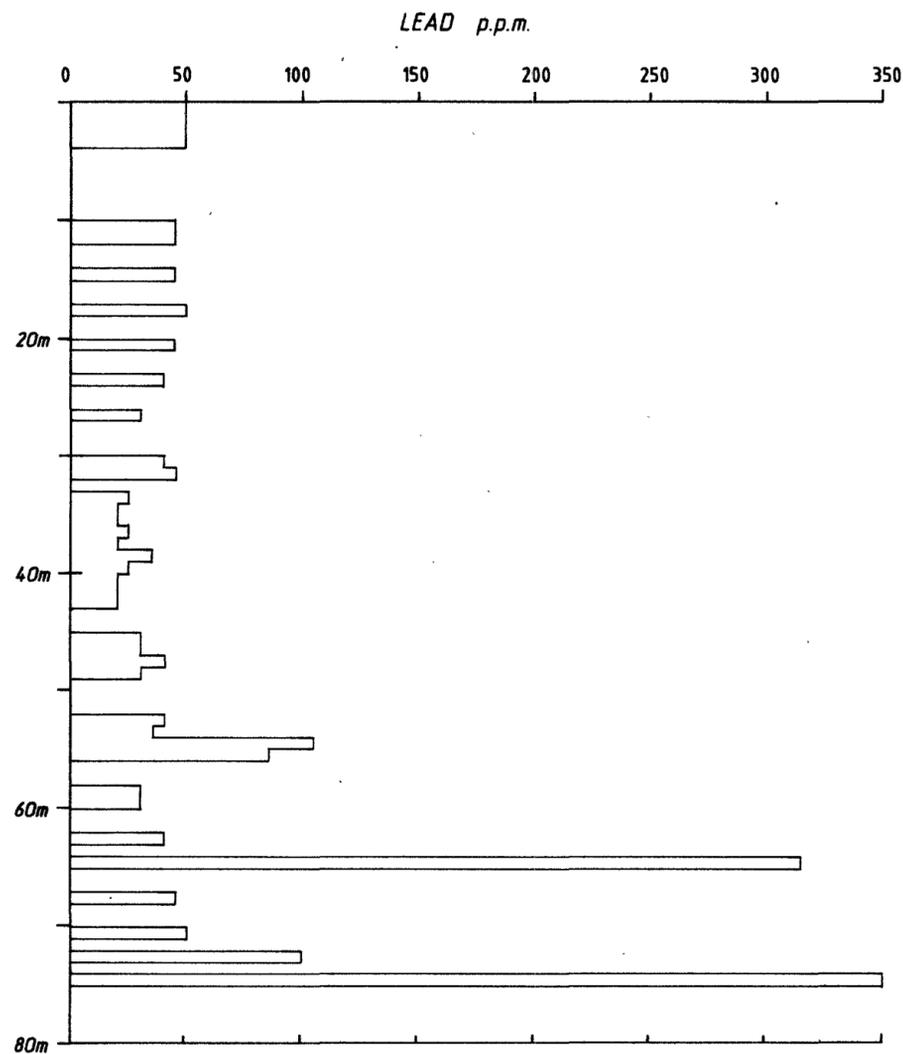
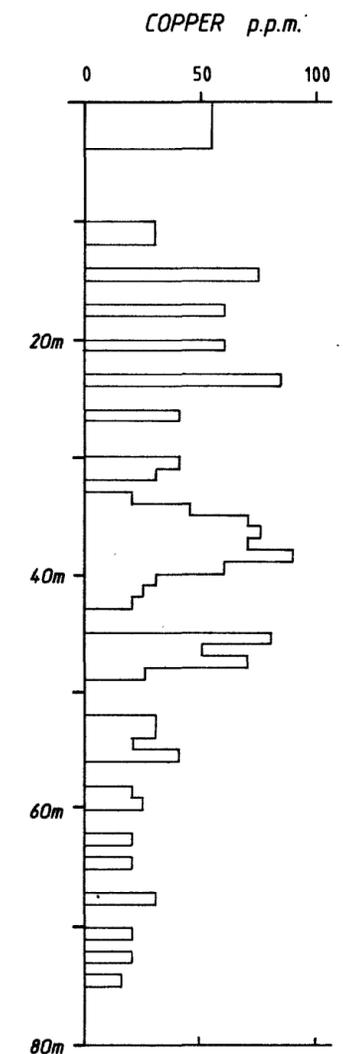
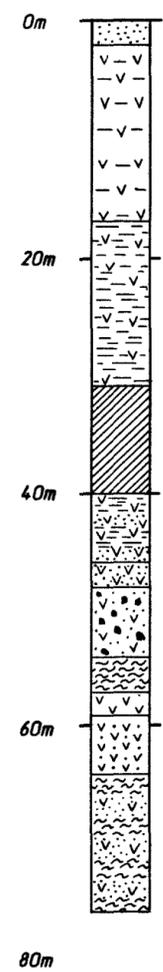
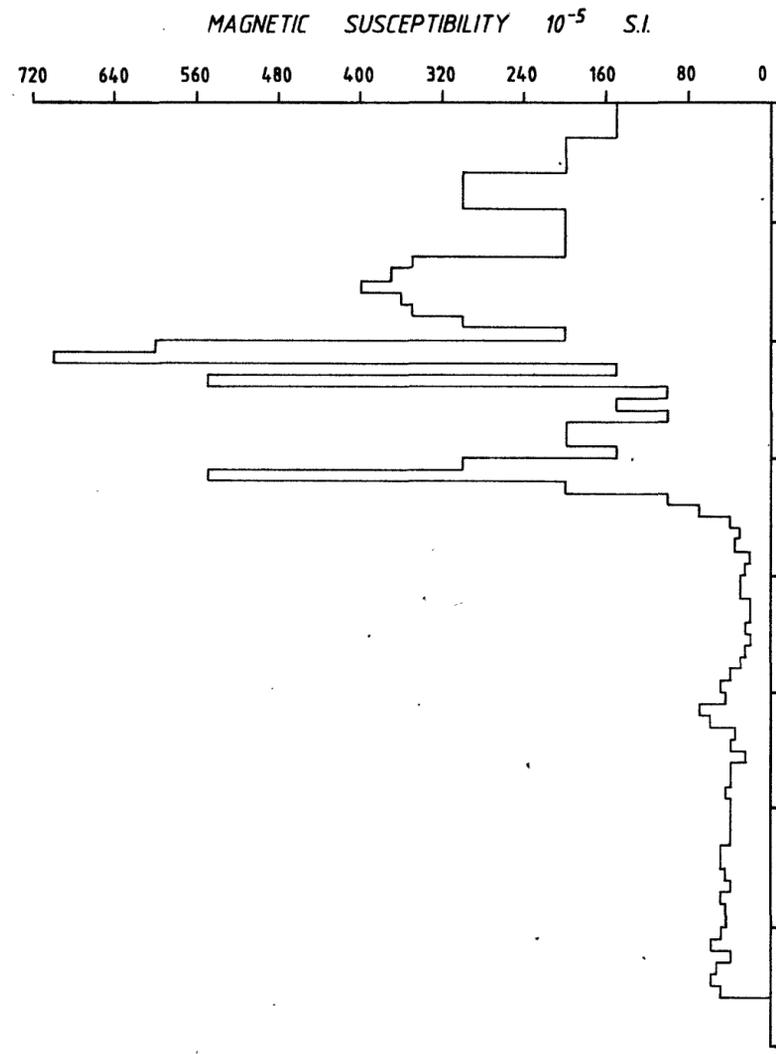
**LEGEND**

-  SOIL
-  SANDY TUFF
-  WEATHERED? ANDESITE
-  CHLORITIC TUFF
-  TUFFACEOUS SHALE
-  SHALE / MUDSTONE

235168

CRA EXPLORATION PTY. LIMITED	
SHEFFIELD E.L. 7/73 016	
BEULAH BARYTE PROSPECT	
RD 84 BB 2 SECTION, GEOCHEM. & MAG. SUSCEPTABILITY HISTOGRAMS	
REF. SK55 - 3	
SCALE 1 : 500	DRAWN R.T.
AUTHOR I.M.C.	REPORT No. 13708
DATE 17 - 10 - 1984	PLAN No. TASH 2161

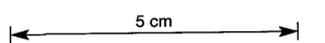




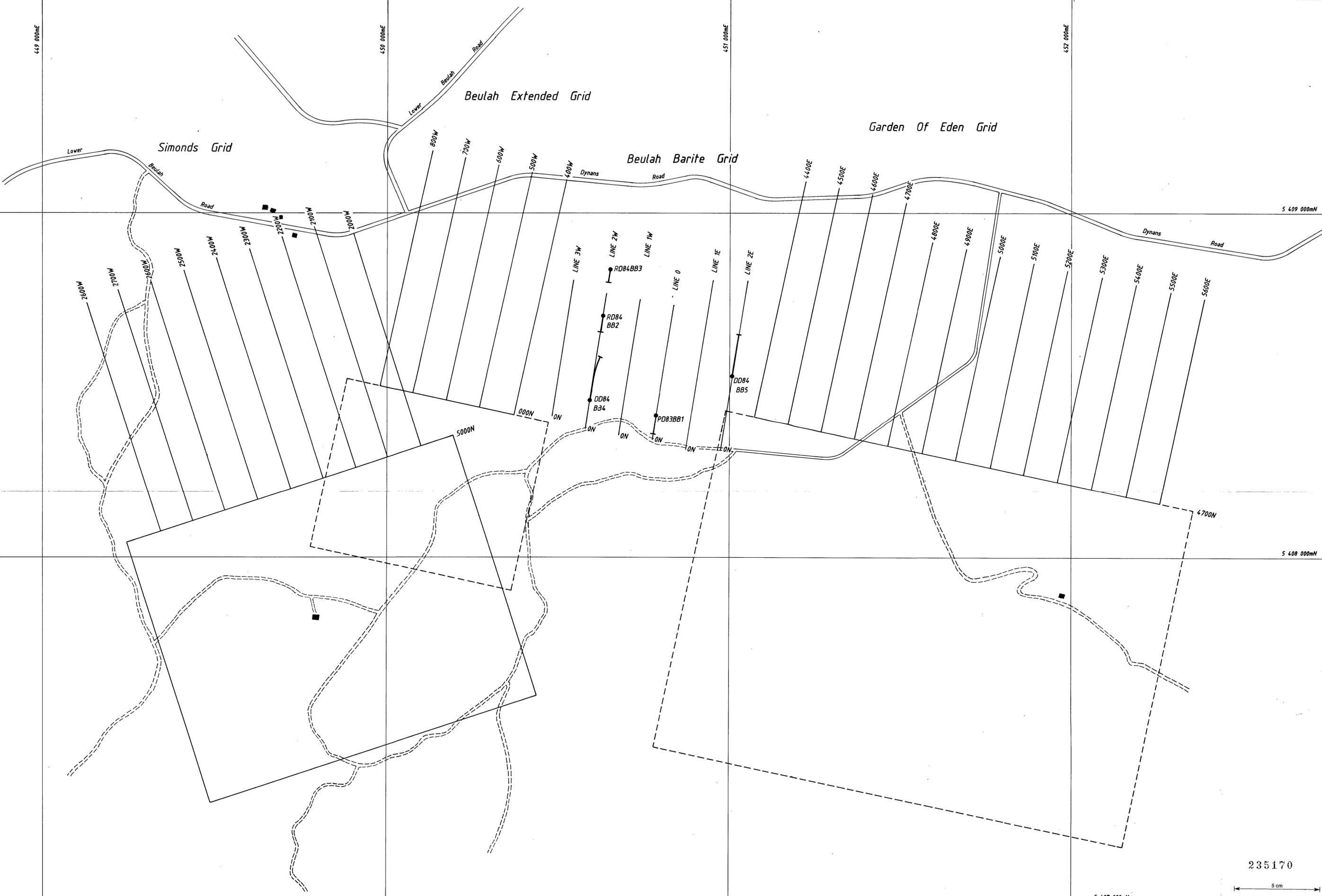
**LEGEND**

- |  |                        |  |                         |
|--|------------------------|--|-------------------------|
|  | SOIL                   |  | SANDY TUFF              |
|  | WEATHERED? ANDESITE    |  | CHLORITIC TUFF          |
|  | TUFFACEOUS SHALE       |  | CLAY FILLED FAULT ZONE  |
|  | MASSIVE VOLCANIC? TUFF |  | COARSE FRAGMENTAL TUFFS |

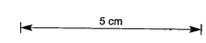
235169



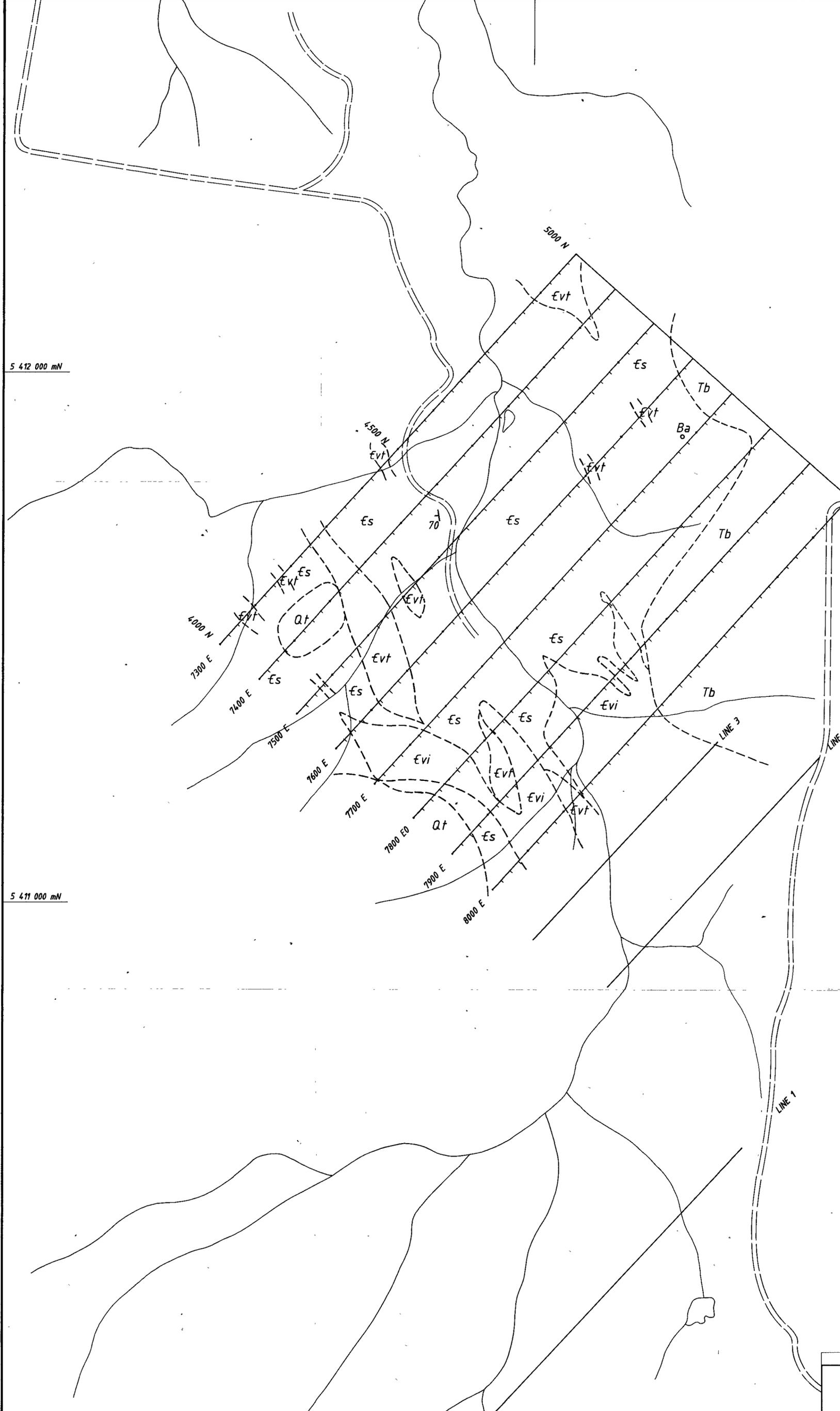
CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73 017			
BEULAH BARYTE PROSPECT			
RD 84 BB 3 SECTION, GEOCHEM. & MAG. SUSCEPTABILITY HISTOGRAMS			
85-2320			
REF.	SK55 - 3		
SCALE	1 : 500	DRAWN	R.T.
AUTHOR	I.M.C.	REPORT No.	13108
DATE	17 - 10 - 1984	PLAN No.	TASh 2162



235170



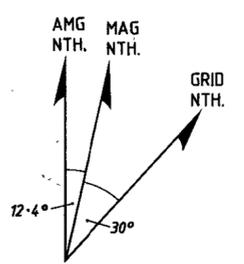
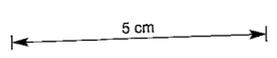
CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L.7/73		018	
PLAN OF THE SIMONDS, BEULAH, & GARDEN OF EDEN GRIDS			
REF.	3/55-3	DRAWN	M.D.
SCALE	1:5 000	REPORT No.	13708
AUTHOR	P.A.T.	PLAN No.	TASH 2507
DATE	13-2-1985		



**LEGEND**

- Qt - Talus composed of Roland conglomerate and Moina sandstone.
- Tb - Tertiary basalt and associated scree
- Es - Rapidly varying fine to coarse clastic sequence, quartz bearing and quartz free tuffaceous sandstones, siltstones, and shales.
- Evt - Matrix rich tuffs, possibly some ignimbrites, quartz bearing and quartz free varieties. Some are lithic rich.
- Evi - Mafic phenocryst rich intermediate lava(?).
- Ba - Reported barium locality.

235171



CRA EXPLORATION PTY. LIMITED			
SHEFFIELD EL7/73			
STONEBRIDGE BARITE GRID			
GEOLOGY PLAN			
			019
85-2330			
REF	SK55 - 3		
SCALE	1 : 5000	DRAWN	R.T. M.D.
AUTHOR	P.A.T.	REPORT No.	13108
DATE	25 - 1 - 1985	PLAN No.	TASH 2466

5 412 000 mN

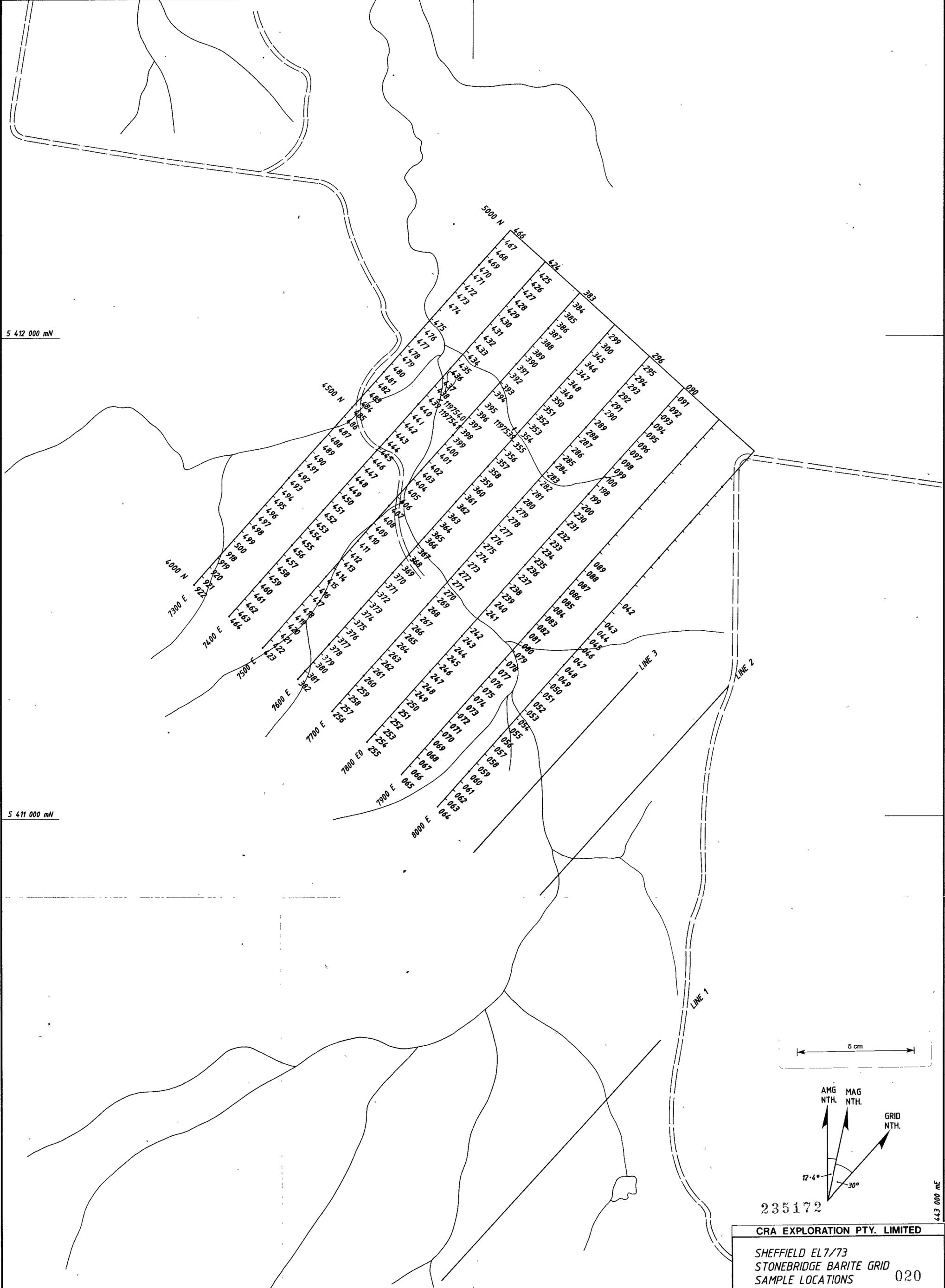
5 411 000 mN

5 410 000 mN

441 000 mE

442 000 mE

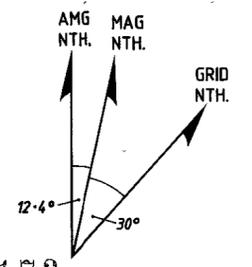
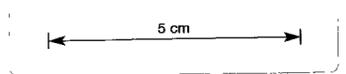
443 000 mE



5 412 000 mN

5 411 000 mN

5 410 000 mN



235172

CRA EXPLORATION PTY. LIMITED			
SHEFFIELD EL7/73			
STONEBRIDGE BARITE GRID			
SAMPLE LOCATIONS			020
35-2320			
REF.	SK55 - 3		
SCALE	1 : 5000	DRAWN	R.T. M.D.
AUTHOR	P.A.T	REPORT No.	13108
DATE	25 - 1 - 1985	PLAN No.	TASH 2467

44.3 000 mE

44.2 000 mE

5 412 000 mN

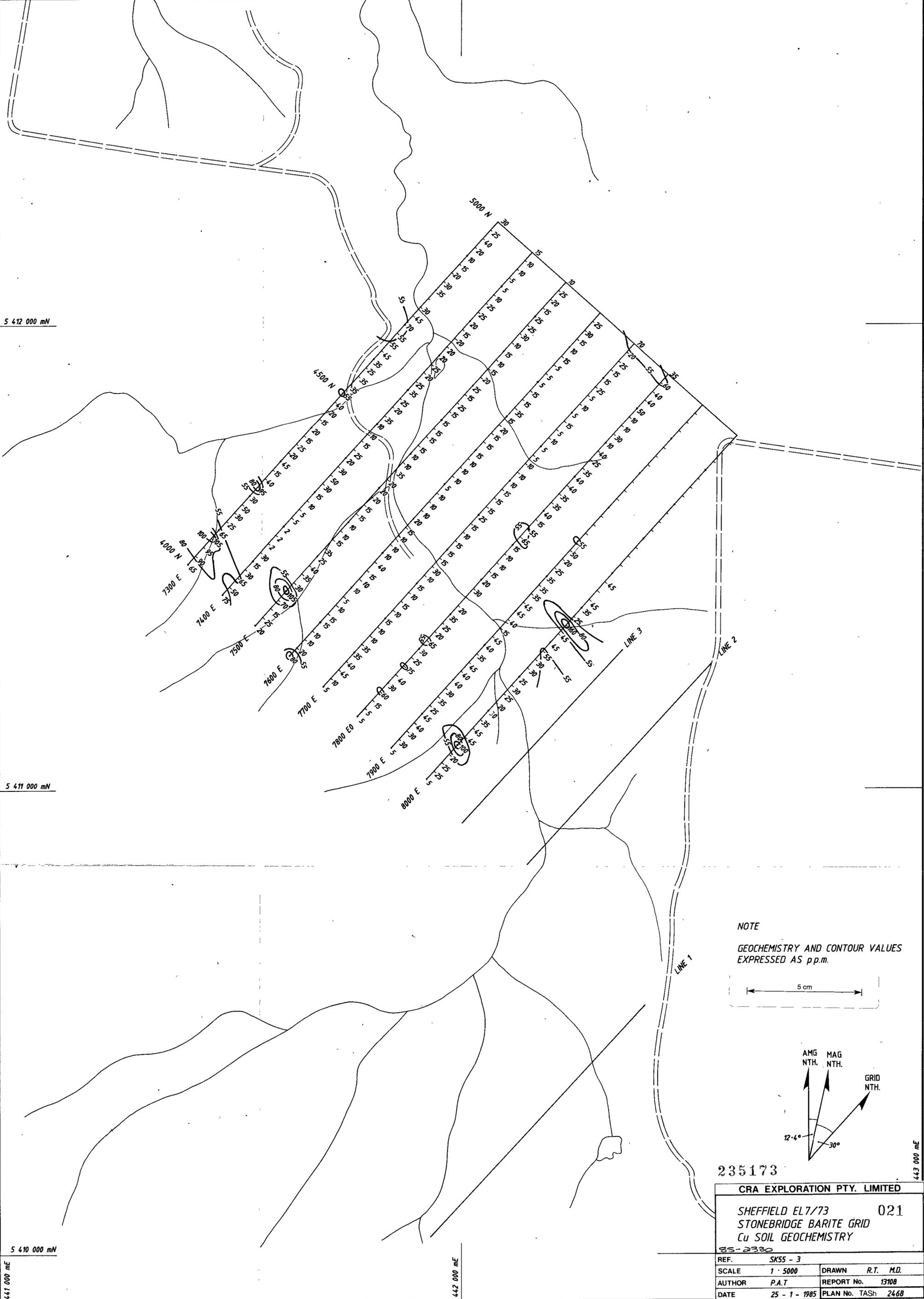
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5 410 000 mN

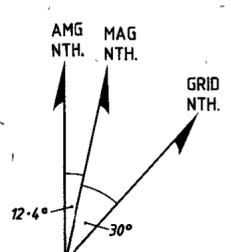
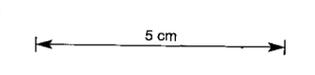
441 000 mE

442 000 mE

443 000 mE



NOTE  
 GEOCHEMISTRY AND CONTOUR VALUES  
 EXPRESSED AS ppm.



235173

CRA EXPLORATION PTY. LIMITED			
SHEFFIELD EL7/73			021
STONEBRIDGE BARITE GRID			
Cu SOIL GEOCHEMISTRY			
85-2380			
REF.	SK55 - 3		
SCALE	1 : 5000	DRAWN	R.T. M.D.
AUTHOR	P.A.T	REPORT No.	13108
DATE	25 - 1 - 1985	PLAN No.	TASh 2468

5 412 000 mN

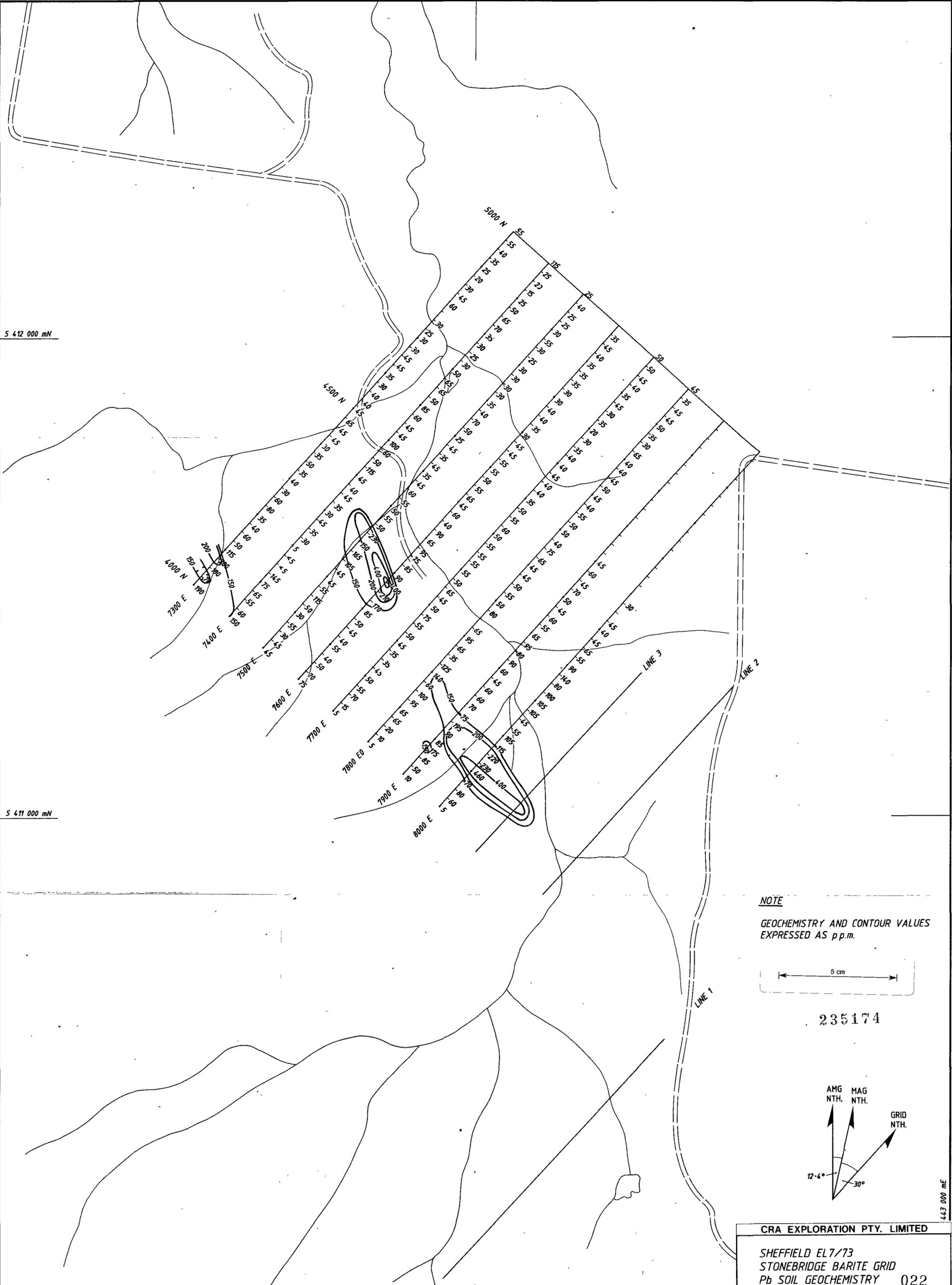
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5 410 000 mN

441 000 mE

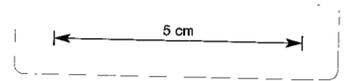
442 000 mE

443 000 mE

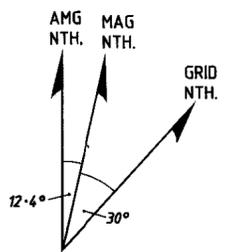


**NOTE**

GEOCHEMISTRY AND CONTOUR VALUES EXPRESSED AS p.p.m.



235174



CRA EXPLORATION PTY. LIMITED			
SHEFFIELD EL7/73			
STONEBRIDGE BARITE GRID			
Pb SOIL GEOCHEMISTRY 022			
REF	SK55 - 3		
SCALE	1 : 5000	DRAWN	R.T. M.D.
AUTHOR	P.A.T	REPORT No.	13108
DATE	25 - 1 - 1985	PLAN No.	TASH 2469

5 412 000 mN

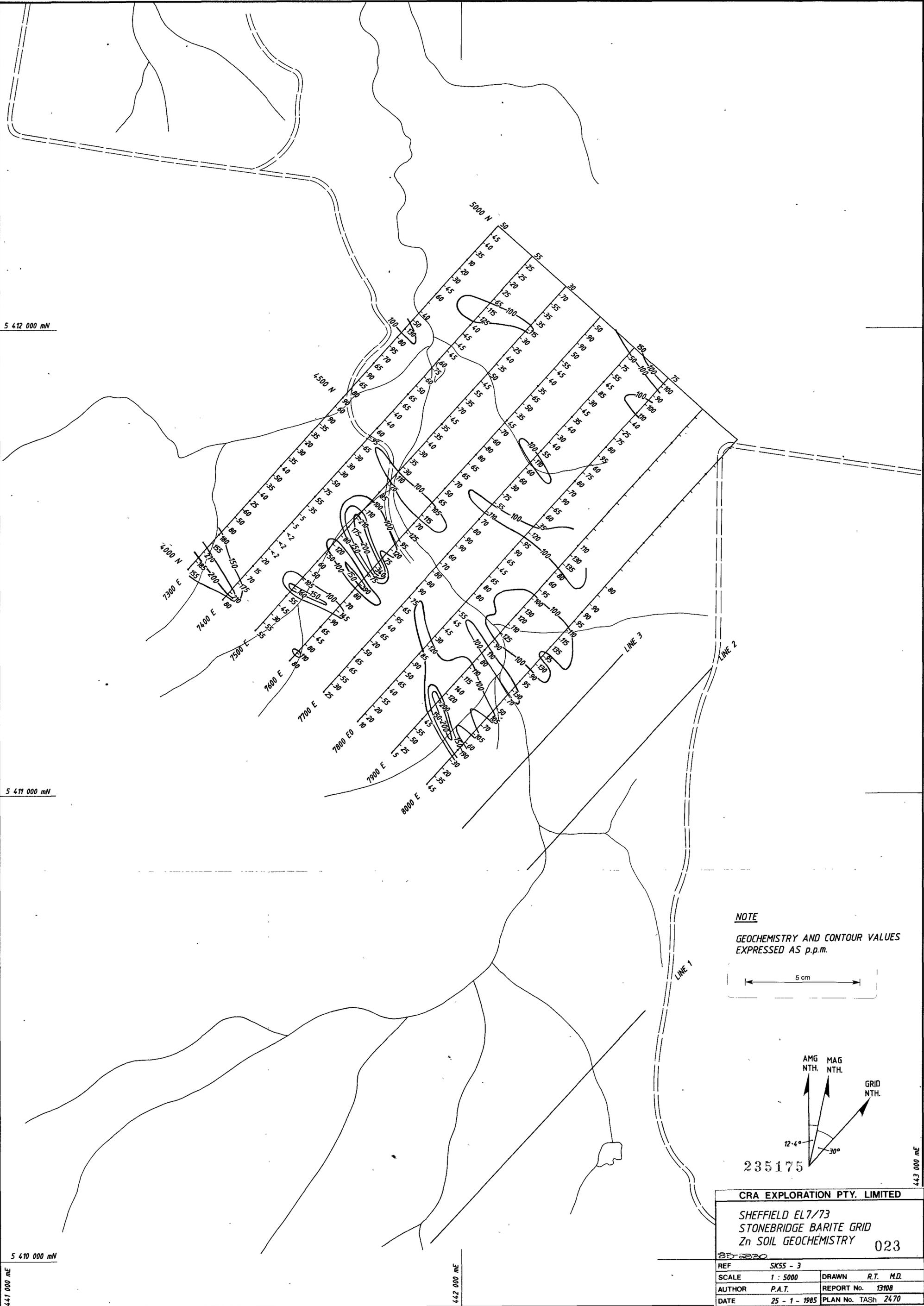
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5 410 000 mN

441 000 mE

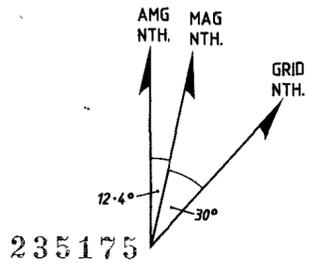
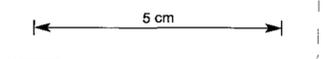
442 000 mE

443 000 mE

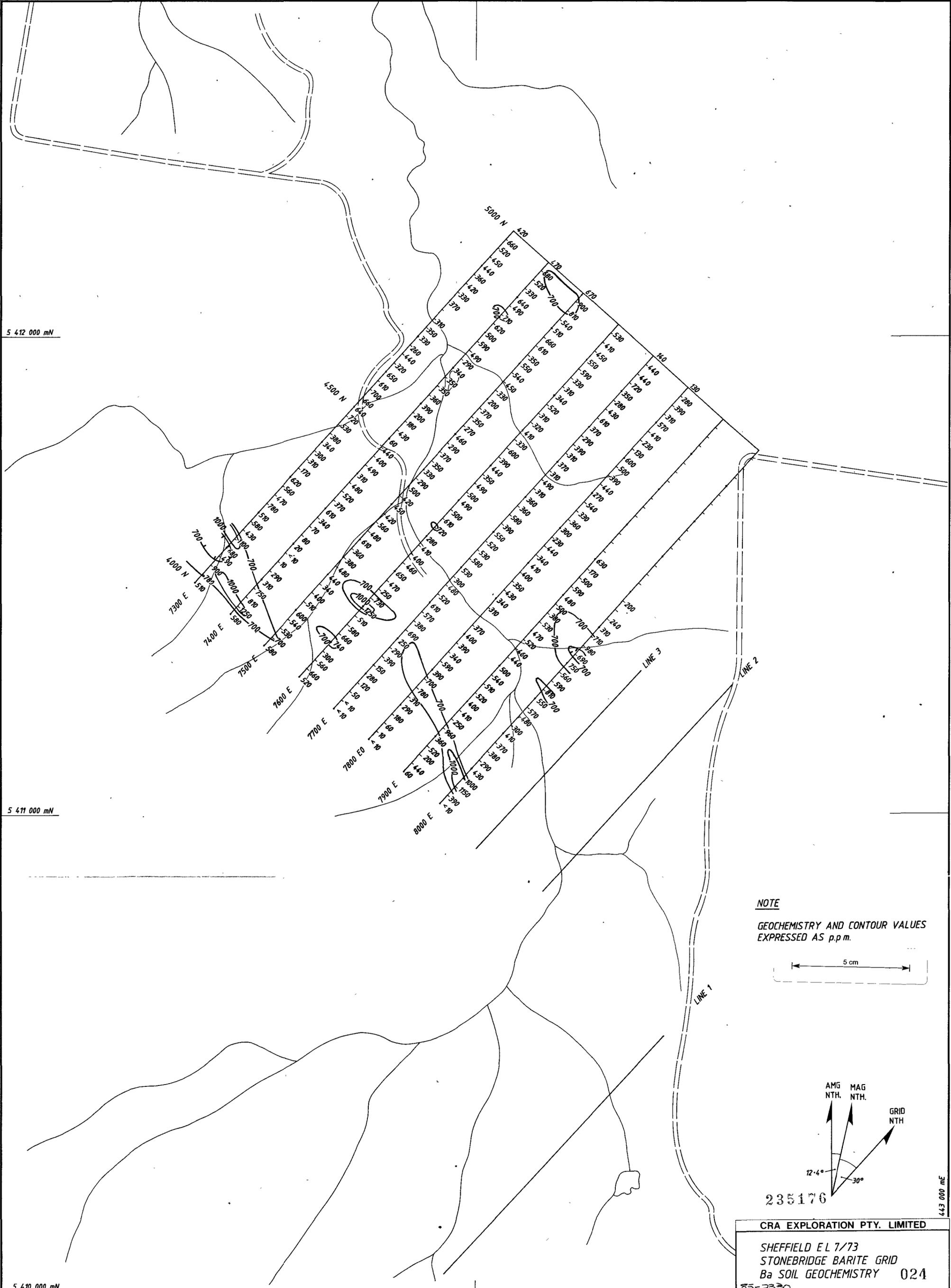


**NOTE**

GEOCHEMISTRY AND CONTOUR VALUES EXPRESSED AS p.p.m.



CRA EXPLORATION PTY. LIMITED	
SHEFFIELD EL7/73	
STONEBRIDGE BARITE GRID	
Zn SOIL GEOCHEMISTRY	023
REF	SK55 - 3
SCALE	1 : 5000
AUTHOR	P.A.T.
DATE	25 - 1 - 1985
DRAWN	R.T. M.D.
REPORT No.	13108
PLAN No.	TASh 2470



5 412 000 mN

5 411 000 mN

5 410 000 mN

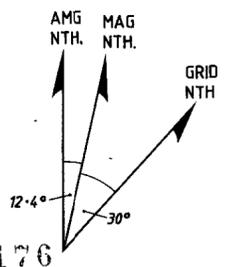
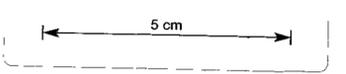
441 000 mE

442 000 mE

443 000 mE

**NOTE**

GEOCHEMISTRY AND CONTOUR VALUES EXPRESSED AS p.p.m.



235176

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E L 7/73  
STONEBRIDGE BARITE GRID  
Ba SOIL GEOCHEMISTRY 024

REF.	SK55 - 3	
SCALE	1 : 5000	DRAWN R.T. M.D.
AUTHOR	P.A.T	REPORT No. 13108
DATE	25 - 1 - 1985	PLAN No. TASH ' 2471

SOUTH

NORTH

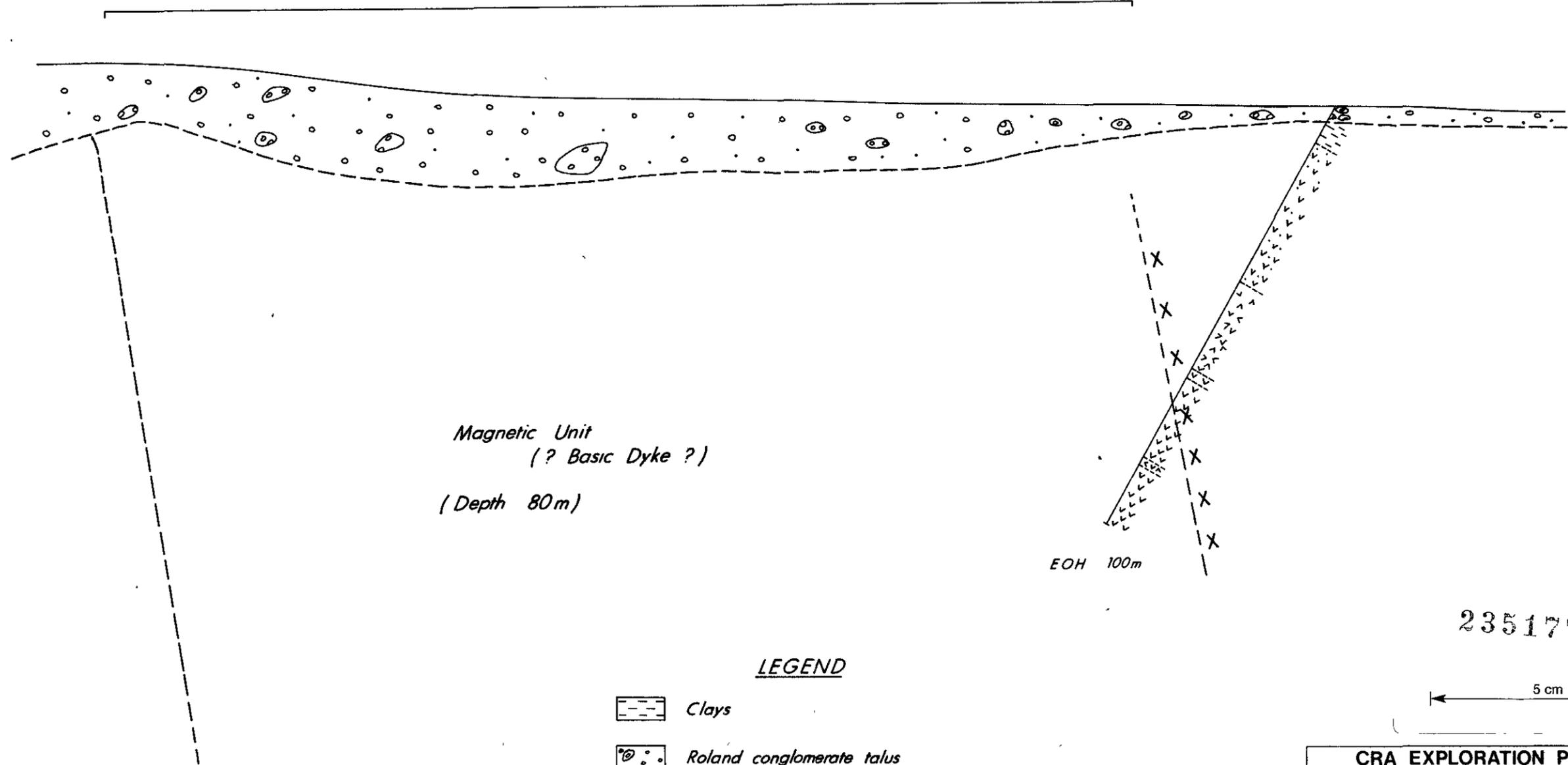
5 200 mN

5 300 mN

5 400 mN

5 500 mN

Ground Magnetic Anomaly



Magnetic Unit  
 (? Basic Dyke ?)  
 (Depth 80m)

EOH 100m

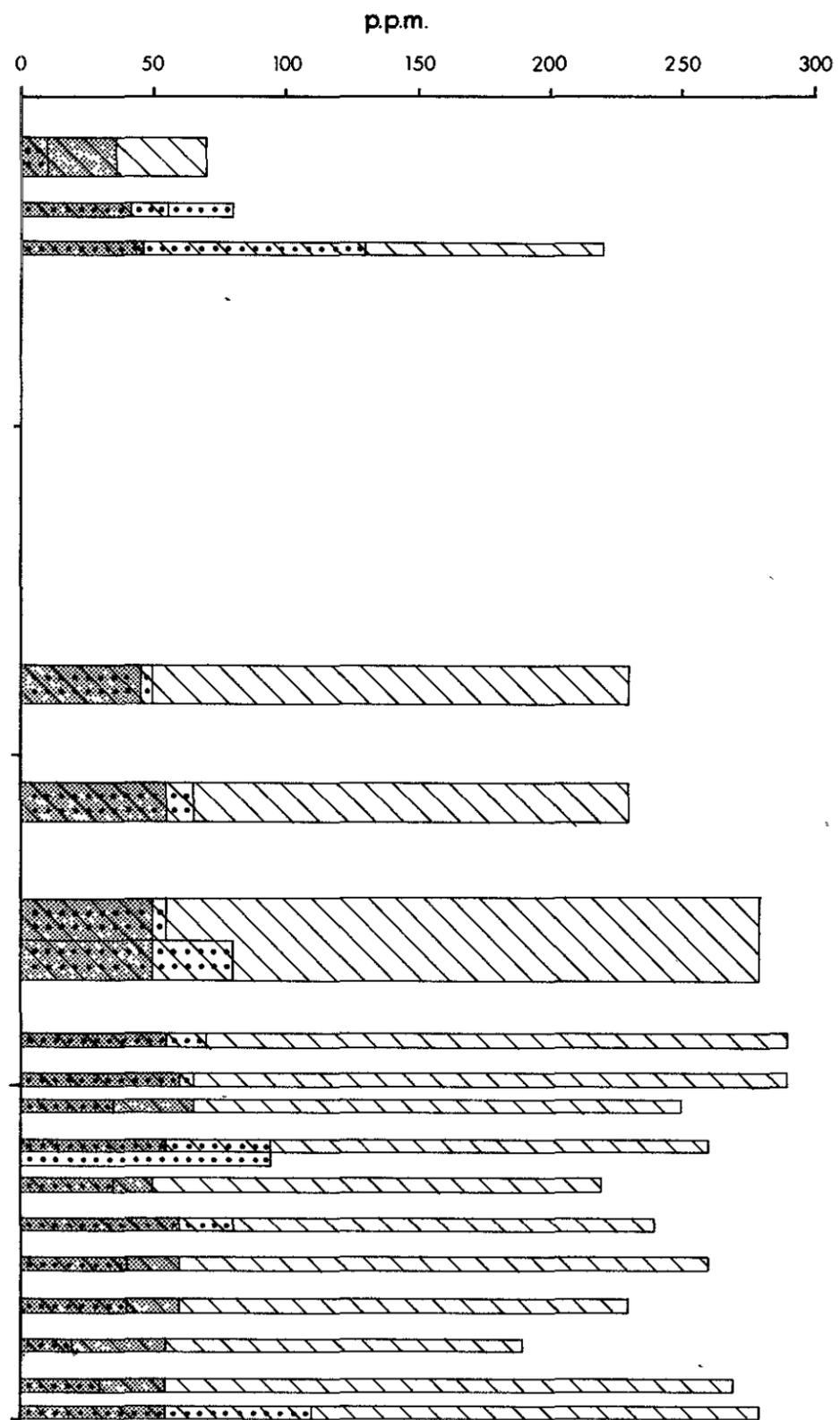
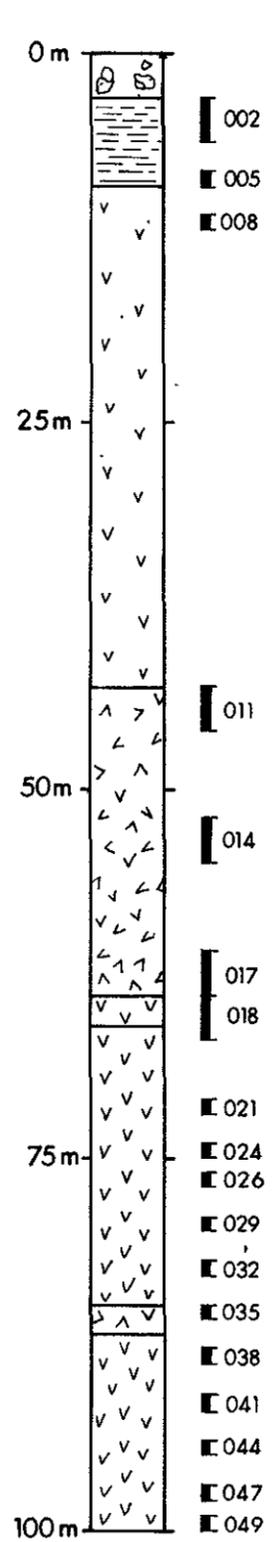
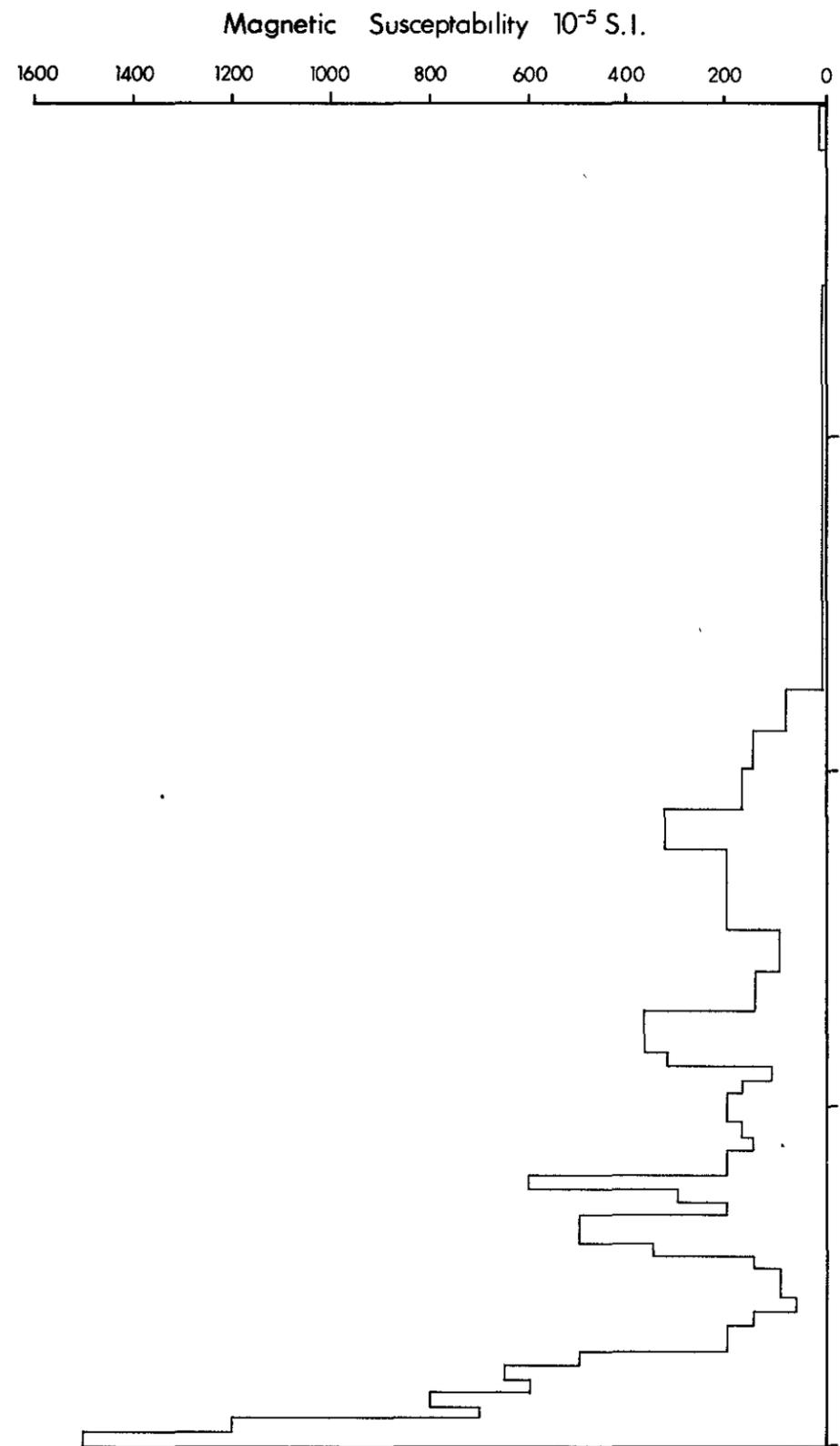
235177

LEGEND

-  Clays
-  Roland conglomerate talus
-  Weathered intermediate volcanic / tuff
-  Andesite - dominantly green
-  Andesite - dominantly red
-  Interpreted location of EM target

5 cm

<b>CRA EXPLORATION PTY. LIMITED</b>	
SHEFFIELD E.L. 7/73 MT. ROLAND WEST PROSPECT RD 84 MR 2 SECTION 025	
85-2330	
REF.	
SCALE 1 1000	DRAWN DML
AUTHOR I MC	REPORT No. 13108
DATE 4 - 10 - 84	PLAN No. TASH 2158



- LEGEND**
- Roland conglomerate talus
  - Clays
  - Weathered intermediate volcanics / tuff
  - Andesite dominantly green
  - Andesite dominantly red

5 cm

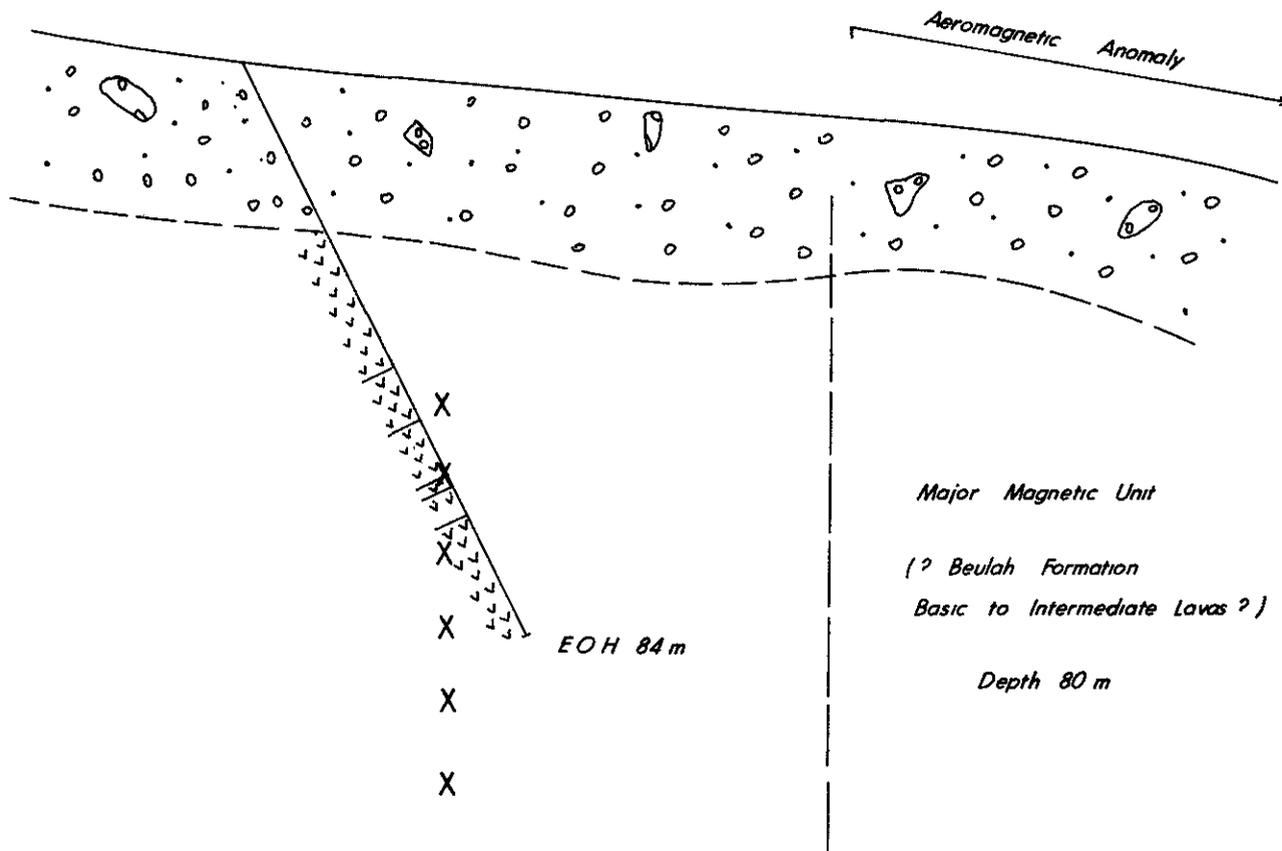
- GEOCHEM. LEGEND**
- Copper
  - Lead
  - Zinc
  - Sample interval, sample prefix 990

235178 026

<b>CRA EXPLORATION PTY. LIMITED</b>			
SHEFFIELD E.L. 7/73			
MT. ROLAND WEST PROSPECT			
RD 84 MR 2 SECTION, GEOCHEM. &			
MAG. SUSCEPTIBILITY HISTOGRAMS			
25-2330			
REF.			
SCALE	1 500	DRAWN	RT
AUTHOR	I M C	REPORT No.	13108
DATE	4 - 10 - 84	PLAN No.	TASh 2159

4 500 m N

4 600 m N



Aeromagnetic Anomaly

Major Magnetic Unit

(? Beulah Formation Basic to Intermediate Lavas ?)

Depth 80 m

EOH 84 m

235179

5 cm

LEGEND

-  Roland conglomerate talus
-  Andesite - dominantly red
-  Weathered intermediate volcanic / tuff
- X Interpreted location of EM target

CRA EXPLORATION PTY. LIMITED

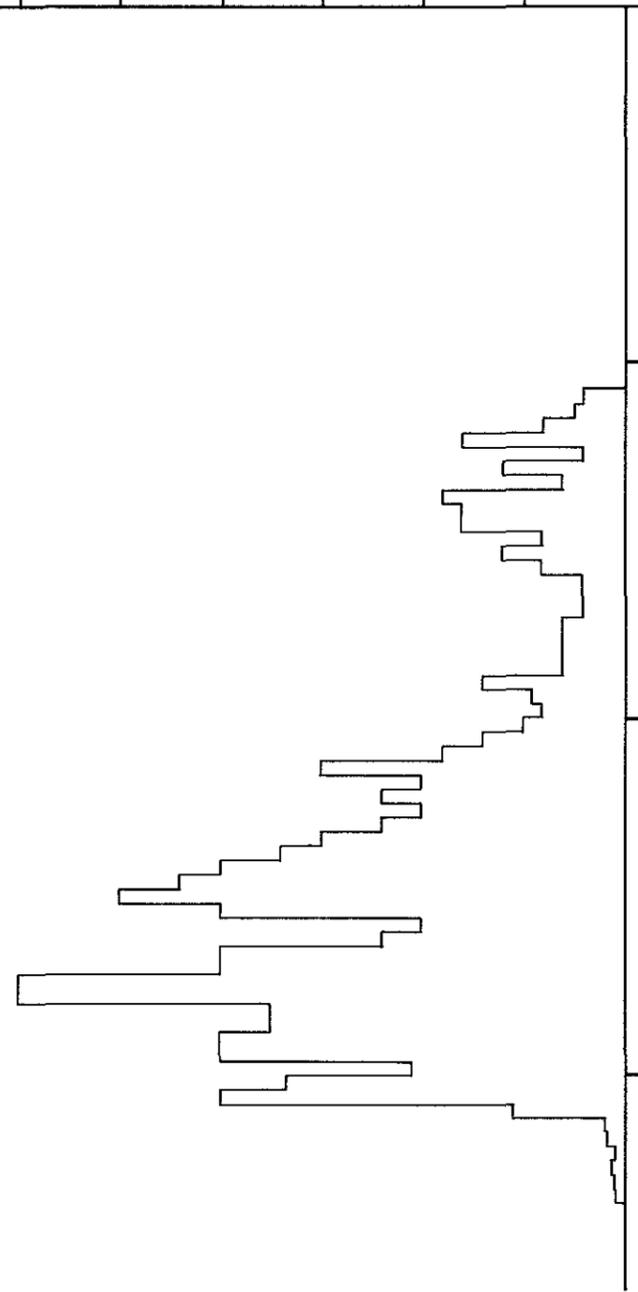
SHEFFIELD E.L. 7/73  
GOWRIE PARK PROSPECT  
RD 84 GP 4 SECTION

85-2330.

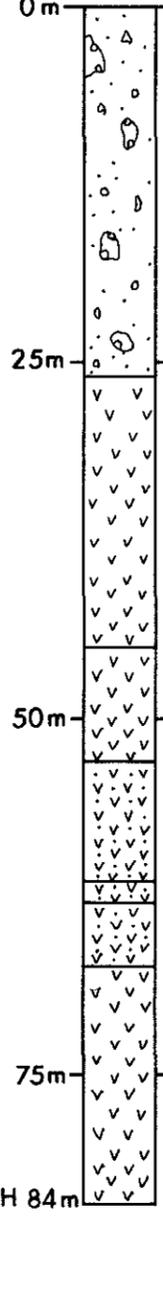
REF. SK 55-3	
SCALE 1:1000	DRAWN D M L
AUTHOR I M C	REPORT No. 13108
DATE 4 - 10 - 84	PLAN No. TASH 2156

Magnetic Susceptibility  $10^{-5} S I$

3500 3000 2500 2000 1500 1000 500 0



0m



EOH 84m

- █ 208
- █ 211
- █ 214
- █ 217
- █ 220
- █ 224
- █ 227
- █ 230
- █ 233
- █ 236
- █ 239
- █ 242
- █ 245
- █ 248
- █ 251
- █ 254
- █ 257

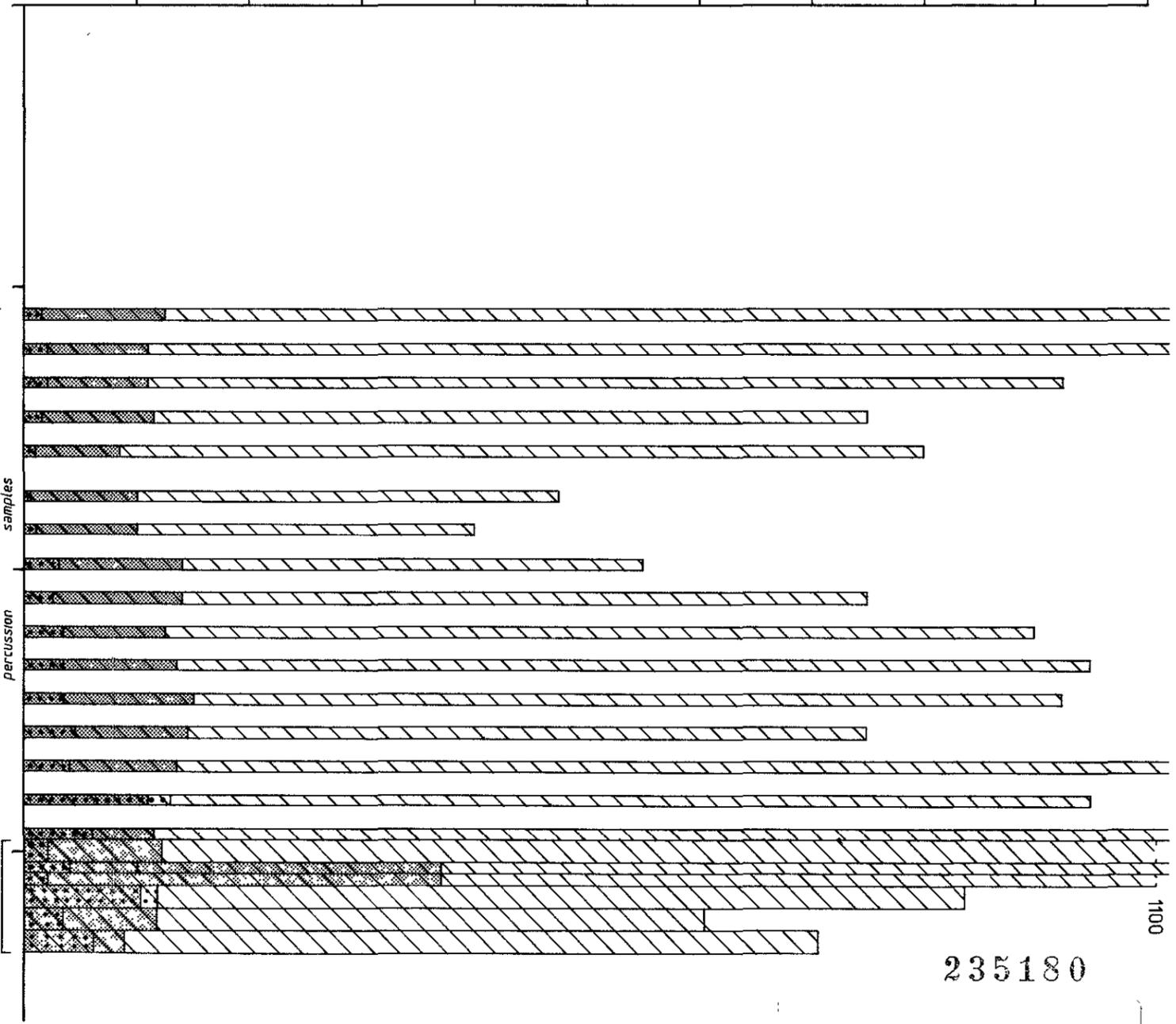
samples

percussion

ground core samples

ppm

0 100 200 300 400 500 600 700 800 900 1000



1900  
2400  
1400  
1050  
1200  
1100

235180

5 cm

**LEGEND**

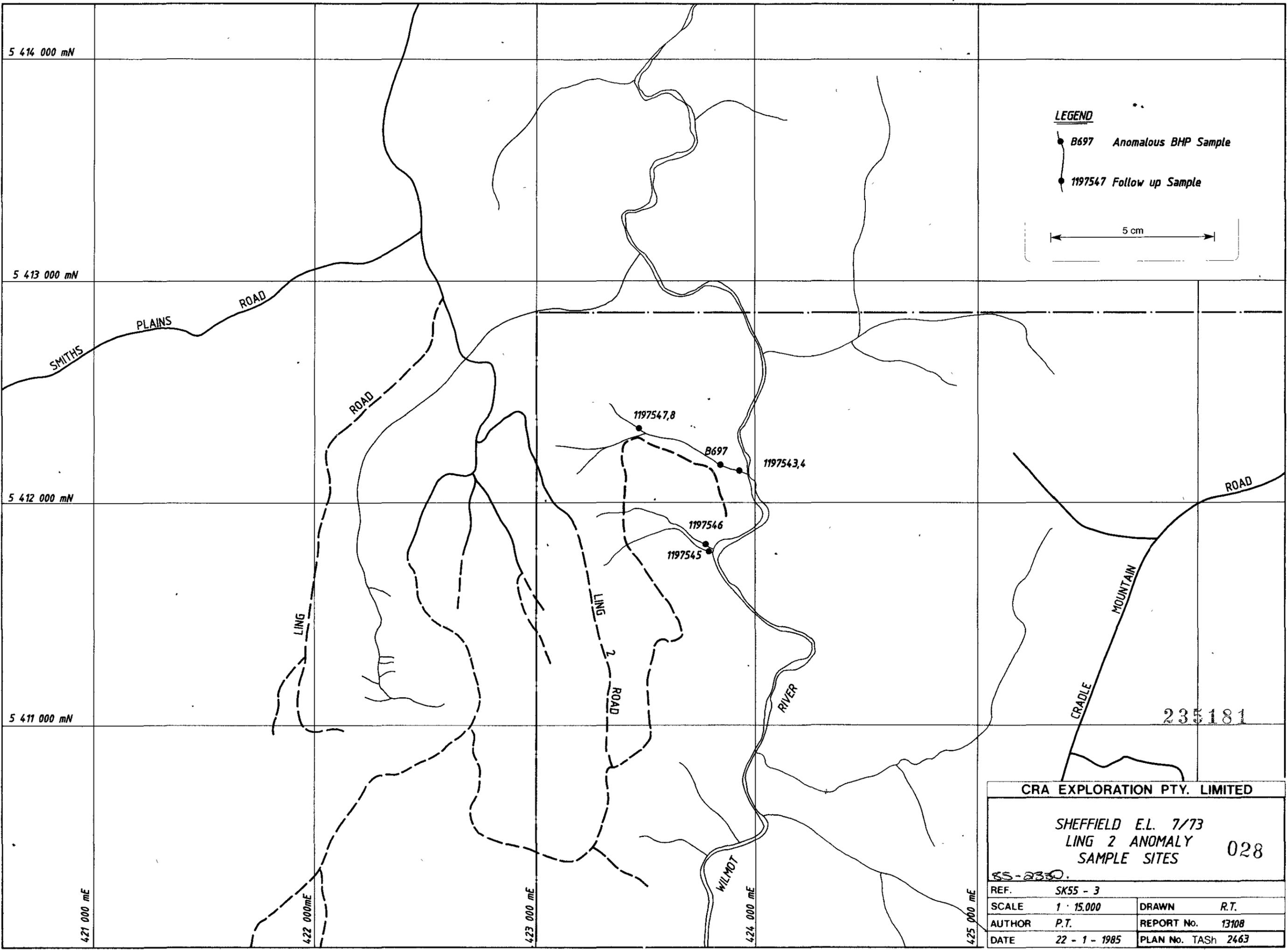
- Roland Conglomerate Talus
- Andesite - Dominantly Red
- Weathered Intermediate Volcanics / Tuff

**GEOCHEM LEGEND**

- Copper
- Lead
- Zinc

█ Sample Interval, sample prefix 990

<b>CRA EXPLORATION PTY. LIMITED</b>			
SHEFFIELD E.L. 7/73 027			
GOWRIE PARK PROSPECT			
RD 84 GP 4 SECTION, GEOCHEM. & MAG. SUSCEPTABILITY HISTOGRAMS			
REF.	SK55 - 3		
SCALE	1 : 500	DRAWN	R.T.
AUTHOR	I.M.C.	REPORT No.	13108
DATE	17 - 10 - 1984	PLAN No.	TASh 2157



CRA EXPLORATION PTY. LIMITED			
SHEFFIELD E.L. 7/73			028
LING 2 ANOMALY			
SAMPLE SITES			
85-2350			
REF.	SK55 - 3		
SCALE	1 : 15,000	DRAWN	R.T.
AUTHOR	P.T.	REPORT No.	13108
DATE	22 - 1 - 1985	PLAN No.	TASh 2463

5 414 000 mN

5 413 000 mN

5 412 000 mN

5 411 000 mN

421 000 mE

422 000 mE

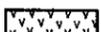
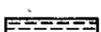
423 000 mE

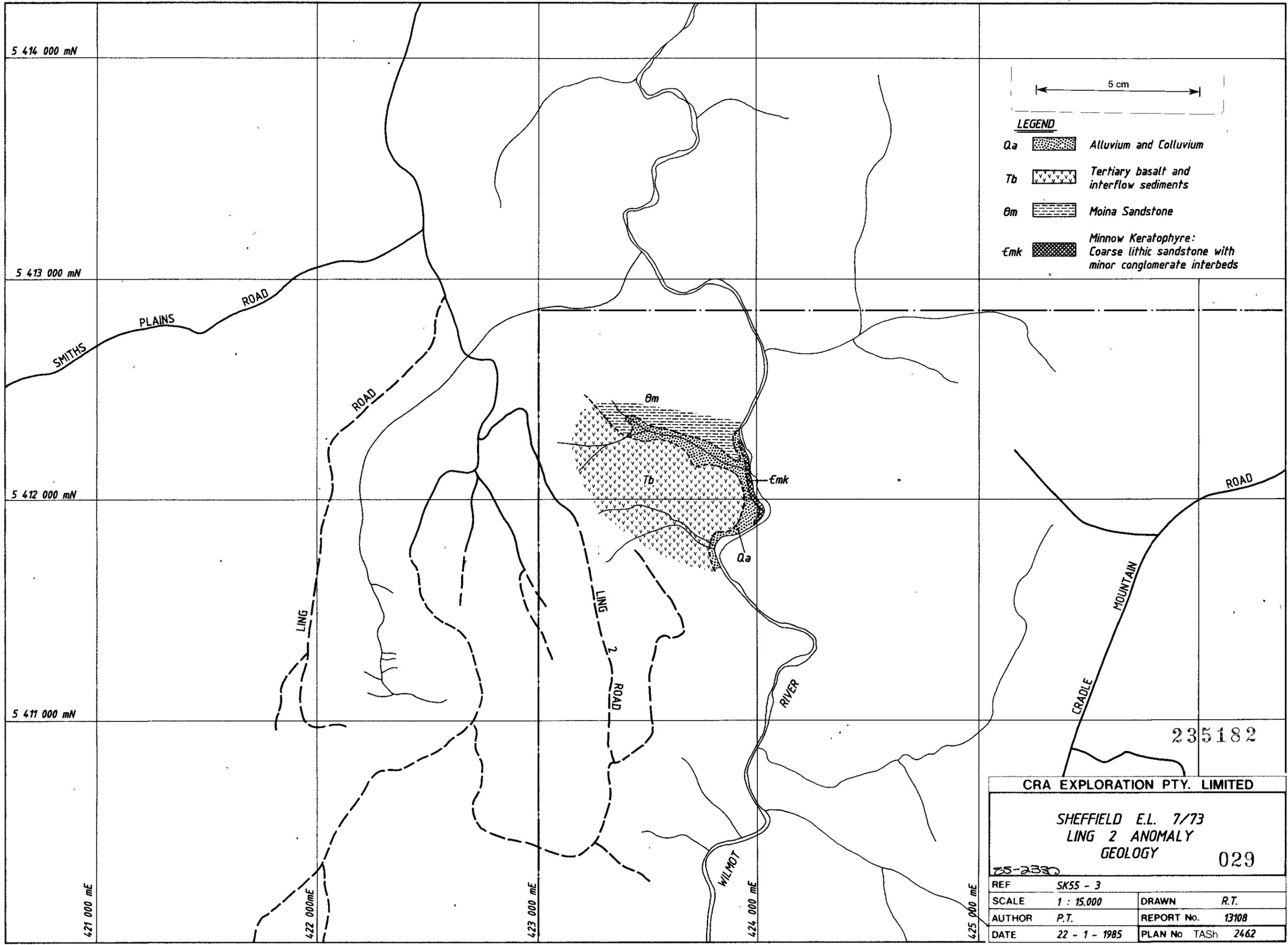
424 000 mE

425 000 mE

5 cm

LEGEND

- Qa  Alluvium and Colluvium
- Tb  Tertiary basalt and interflow sediments
- θm  Moina Sandstone
- Emk  Minnow Keratophyre:  
Coarse lithic sandstone with minor conglomerate interbeds



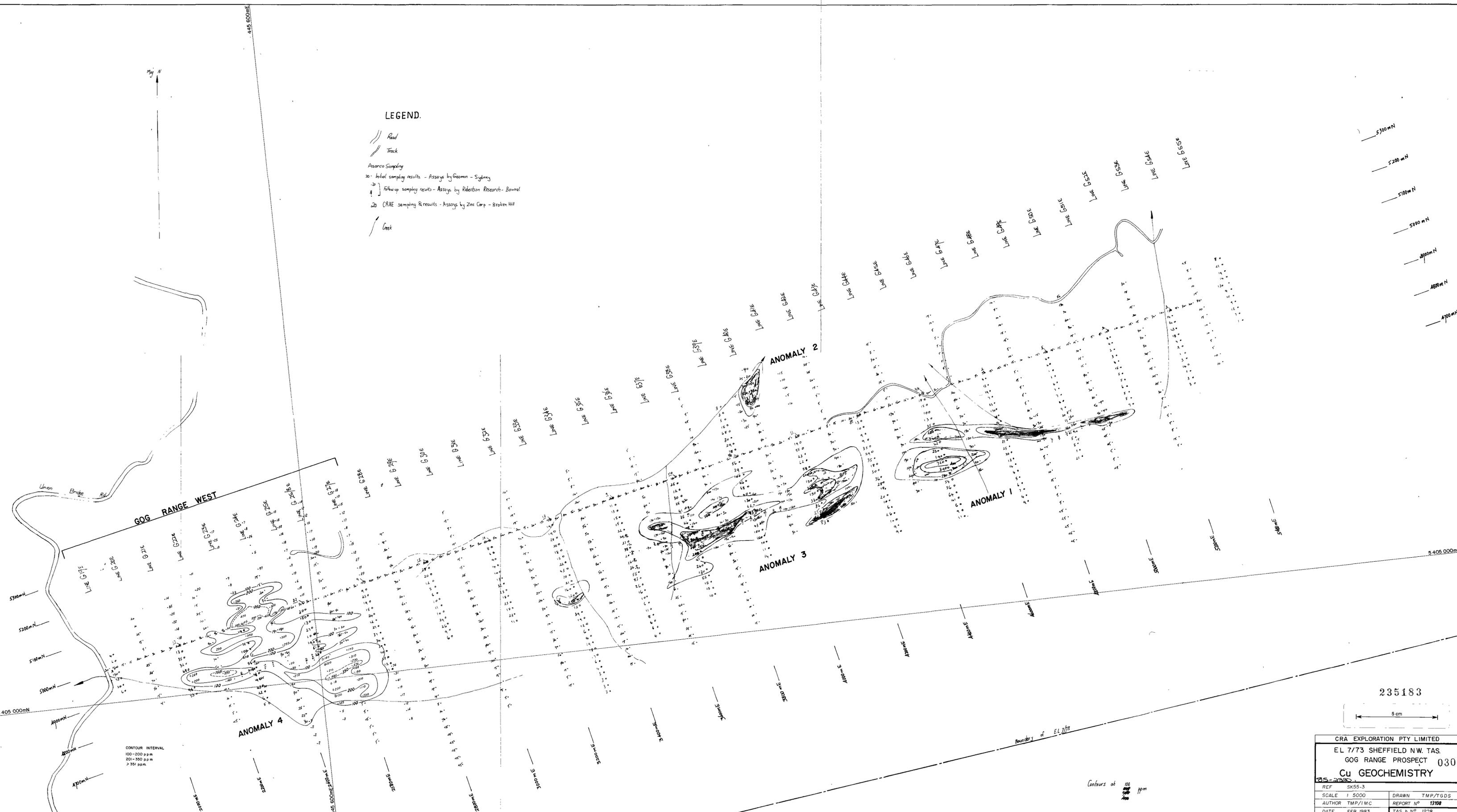
235182

CRA EXPLORATION PTY. LIMITED

SHEFFIELD E.L. 7/73  
LING 2 ANOMALY  
GEOLOGY

029

REF	SK55 - 3	DRAWN	R.T.
SCALE	1 : 15,000	REPORT No.	13108
AUTHOR	P.T.	PLAN No	TASh 2462
DATE	22 - 1 - 1985		



**LEGEND.**

- Road
- Track
- Asarco Sampling
  - 20 Initial sampling results - Assays by Geomin - Sydney
  - 20 Follow-up sampling results - Assays by Robertson Research - Bowral
  - 20 CRAE sampling results - Assays by Zinc Corp - Broken Hill
- Creek

CONTOUR INTERVAL  
 100-200 ppm  
 200-300 ppm  
 > 300 ppm

235183  
 5 cm

CRA EXPLORATION PTY LIMITED	
EL 7/73 SHEFFIELD NW. TAS.	
GOG RANGE PROSPECT 030	
Cu GEOCHEMISTRY	
REF SK55-3	
SCALE 1 5000	DRAWN TMP/TGDS
AUTHOR TMP/IMC	REPORT N° 13108
DATE FEB 1983	TAS h N° 1229

Contours at 100 ppm