

CRA EXPLORATION PTY. LIMITED

of M	A.O.	C.G.	E.O.	D.S.M.E
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FINAL REPORTMINERAL LEASES 20M/76, 72M/77, 103M/77, 104M/778M/78, 57M/78 and SPL's 774 and 781L AND B SYNDICATE BALFOUR

Author: T.W.Dickson
 Date: January, 1983.
 Copies: P.Laan and W.Baker (Estate)
Dept. of Mines, Tasmania.
 Geopeko(2 copies)
 CRAE Melbourne
 CRAE Hobart
 CRAE Burnie

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1. SUMMARY

Over the period January 1979 to December 1982, detailed investigations involving geological mapping, jacro bedrock sampling and various geophysical surveys were carried out over the Balfour grid. Within the area of the P.Laan and W.Baker (Estate) Leases 20M/76, 72M/77, 103M/77 104M/77, 8M/78, 57M/78 and SPL's 774 and 781 this work led to the development of two diamond drill holes, DD81 BC3 tested a zone of strongly anomalous zinc geochemistry south-west of Specimen Hill, while DD82 BC7 tested a narrow but intense magnetic anomaly centred on 10050 East on line 108 North. Six additional diamond drill holes were developed in adjacent areas held by other syndicates.

No significant mineralisation was intersected in the two drill holes, and as results from the nearby Specimen Hill area were also disappointing, CRA Exploration Pty.Limited, and Geopeko, withdrew from the Laan-Baker Option Agreement on 13th December, 1982.

2. INTRODUCTION

This report details work carried out on Mineral Leases 20M/76, 72M/77, 103M/77, 104M/77, 8M/78, 57M/78 and SPL's 774 and 781 held by P.Laan and the estate of W.Baker for the period January to December, 1982, and refers to the results of all work previously carried out from December 1978 through to December 1981.

The L and B Syndicate Option Agreement was dated 27th June, 1978, and it is one of a number of farm in - joint venture agreements negotiated between CRA Exploration Pty.Limited and various syndicates in the Balfour area:-

P.Laan and S.Caddy
Mining Lease 73M/77

P.Laan and Estate of W.Baker (L and B Syndicate)
Mining Leases 20M/76; 72M/77, 103M/77, 104M/77, 8M/77,
57M/78 SPL's 774 and 781

M.Laan and N.R.Langsford (Balfour Agreement)
Mining Leases 120M/67, 121M/67, 10M/73, 1M/76, 2M/76, 93M/77, 94M/77, 95M/77

P.Laan, M.Laan, N.R.Langsford, W.Baker
Mining Lease 19M/76

J.Holloway and R.South
Mining Lease 59M/68, 4M/74

S.Tatlow (Agreement 1)
Mining Lease 63M/68

S.Tatlow (Agreement 2)
Mining Lease 58M/68

All the above agreements are part of the Rocky Cape Joint Venture between CRA Exploration and Geopeko.

The township of Balfour is situated approximately 16km inland from Temma Harbour and lies some 50km south of Smithton.

The programme of work carried out within the L and B Syndicate leases includes.

- Geological mapping and both regional and detailed scales.
- Airborne magnetic and Dighem surveys with detailed ground follow up including I.P., S.P. and magnetic surveys.
- Jacro auger bedrock geochemical sampling programme.
- Three shallow jacro diamond drill holes and two deep diamond drill holes to test specific geochemical and geophysical targets.

Previous reports submitted to the L and B Syndicate are -

· CRAE Report 9755 T.M.Porter "The Balfour-Specimen Hill Programme, Six Monthly Report to June 26th 1979".

· CRAE Report 9991 T.M.Porter, "The Balfour-Specimen Hill Programme, Six Monthly Report to December 26th 1979.

· CRAE Report 10467 A.D.McKay and M.F.Flis, "Results of Geophysical Surveys in the Balfour Area N.W.Tasmania, November, 1980.

· CRAE Report 11205 P.Heithersay, "Mineral Leases 20M/76, 72M/77, 103M/77, 104M/77, 8M/78, 57M/78 and SPL's 774 and 781 Balfour Report for the Twelve Months Ending 31st December, 1981.

N.R.Langsford (for CRAE) Geology and Mineralisation, Specimen Hill Area, Balfour N.W.Tasmania 27th November, 1982.

3. CONCLUSIONS

An extensive and intensive exploration programme has been carried out over the L and B Syndicate Leases.

Two shallow jacro drill holes and two deep diamond drill holes have been developed to test specific geochemical and geophysical targets. Each hole has adequately tested its target zone, but the amount of mineralisation encountered was insignificant.

There are no untested geological, geochemical, or geophysical targets within the Land B Syndicate Leases that warrant additional drill testing.

4. RECOMMENDATION

CRA Exploration Pty.Limited, and Geopeko, have withdrawn from the L and B Option Agreement as from Monday, 13th December 1982.

5. PREVIOUS WORK

BHP conducted detailed investigations in the Specimen Hill area during 1963-64. They carried out detailed geological mapping with magnetic and gravity surveys and took peat and gravel samples to define surface areas where tin mineralisation appeared strongest. They dug a number of costeans (unsuccessfully) and developed six diamond drill holes for a total of 825 metres.

Four holes were drilled to test quartz veining on Specimen Hill and two holes BC5 and 6 were drilled to test broad magnetic anomalies to the north and south of Specimen Hill. Weakly disseminated pyrrhotite was intersected and remnant magnetic susceptibility measurements suggested that remnant magnetism of the pyrrhotite was sufficient to explain the size of the anomalies.

From 1969 - 1973 ACI extensively tested the Murrays Reward line of workings, a line of old copper workings occurring along the eastern margin of the Balfour leases. ACI put down at least 15 shallow drill holes and proved the existence of a small, low grade, discordant copper - quartz - dolomite body, striking north-west and dipping 50 to 60 degrees west. It contains 0.8% copper with dimensions of 220 metres length, 270 metres depth and five metres width. Grade and thickness were reported to decrease along strike to the north-west.

Exploration by the CRAE-Geopeko joint venture commenced in 1979 with the establishment of a 2.6km by 0.65km grid. The following work has been carried out and reported to the leaseholders.

Geological mapping at 1:5000 scale (CRAE Report 9755) at 1:2500 (CRAE Report 11205) together with detailed mapping at 1:1000 scale of selected areas at Specimen Hill and Peter's Ridge (Report by N.R.Langsford).

- Geochemistry - initial rock chip sampling (Report 9755), Jacro auger bedrock sampling (Reports 9991 and 11205) and selective vein sampling (Report by N.R.Langsford).
- Geophysics - aeromagnetic survey, ground magnetics and I.P. (Report 9755) follow up I.P. and S.P. surveys (Report 9991), Dighem (Multicoil EM) Survey of March 1980, and summary of geophysics (Report 10467). Details of computer modelling of the 108N magnetic anomaly are appended to this report.

A summary of all geophysical data together with the location of all the Balfour drill holes is given in Plan TASH 822 accompanying this report.

Four diamond drill holes have been developed within the L and B Syndicate leases. They are:-

DDB7 was collared at 9500N, 10 460E within 20M/76 and drilled -60 degrees to the west. It was developed to test a coincident rock chip geochemical and I.P. anomaly and was completed at 40.1 metres. The hole traversed white and green quartzites with a four metre band of pyjama siltstone between 33 and 37 metres. The only tin values of significance occurred in pyritic quartzite units adjacent to the

pyjama siltstone (0.11% Sn above 0.16% Sn below).

DDB10 was collared at 10,100 North, 9770 East within SPL 781. It was drilled -55° west to test a major coincident I.P. - Dighem anomaly which runs along the western side of Specimen Hill. It intersected black graphitic shale from 18 metres to the termination depth of 39 metres and this material is interpreted as the source of the electrical geophysical anomaly.

Full details of holes DDB7 and 10 are given in CRAE Report 9991.

DD81 BC3 (see CRAE Report 11205) was collared at 8800 North, 9275 East and drilled -45° to 227° magnetic (approximately grid west). It was developed to test a major "C" horizon soil geochemical anomaly with peak values of 0.26% zinc and 0.11% lead south west of Specimen Hill.

The hole penetrated a series of finely laminated siltstones. Minor pyrite occurred throughout the hole, but base metal mineralisation was restricted to three thin quartz-pyrite-sphalerite veins.

The fourth hole DD82 BC7 was developed to test the magnetic anomaly at 108 North. It is collared at 10800 North 9960 East, within SPL 781 and is described in detail in this report.

6. 1982 WORK PROGRAMME

Most of the Balfour work programme for 1982 was concentrated on the evaluation of quartz veining on Specimen Hill, an area outside the L and B Syndicate leases. Within the Syndicate leases detailed mapping was carried out over newly exposed areas on Peters Ridge and one diamond drill hole was developed to evaluate the magnetic anomaly on line 108N.

6.1 Peters Ridge

Peters Ridge is a prominent feature east of Specimen Hill occurring within leases 103M/77 and 20M/76 and extending south into 4M/74 of Holloway and South. It is separated from Specimen Hill by the broad valley of Tin Creek locally known as Peters Flat.

Recent mining operations by P.Laan had produced good exposures between 96N and 99N and N.Langsford was commissioned to map these exposures at 1:1000 scale. (See Report by N.R.Langsford) and Plan TASH 993.

Langsford suggests that the "backbone" of the ridge is a series of quartzite beds 1 to 3 metres thick interbedded with green chloritic siltstones. The quartzites mark the contact between the underlying (i.e. Western) Specimen Hill Siltstones (laminated siltstones, pyjama rocks and quartzites) and the overlying generally quartzite free green chloritic shale of the Balfour shale.

On Peters Ridge, Langsford suggests that tin mineralisation occurs in cassiterite bearing quartz veins that are mainly confined to the quartzites and the underlying rocks. He suggests the veins are from 1 - 5 centimetres wide. They are irregular and impersistent and spaced at something like 1 to 5 metres apart.

Where veins cut the uppermost quartzite, irregular impregnations and pods of coarse grained cassiterite occur, up to 3 metres long and 20 to 30 centimetres wide. A strong yellow clay alteration occurs over a wide area surrounding, but always stratigraphically below, the cassiterite pods and Langsford suggests it could represent some form of hydrothermal alteration associated with the mineralisation.

Langsford suggested a drill hole sited at 9660 North, 10515 East, and drilled west to test the mineralised green shale - siltstone contact but this same contact zone has already been drilled unsuccessfully by DD81 BC4 and 6 within 4M/74, immediately to the south. For these holes vein densities (total thickness of vein material per 10 metre length) ranged from 0 to a maximum of 3.9%. Average values for both holes are 0.32%. Average vein thickness is just over 3 centimetres and the recalculated average grade for the vein material in DD81 BC4 and 6 is 1.18% Tin and 0.66% Tungsten.

Similar veining occurs in Peters Flat to the west of Peters Ridge. Langsford suggests that the majority of veins strike parallel to the host strata but dip steeply west whereas the beds dip steeply east. Some east-west veins occur which dip shallowly south but there is nothing to suggest the total vein density is any greater than on Peters Ridge or in drill holes DD81 BC4 and 6.

Langsford also noted the occurrence of thin sulphide rich bands or lenses of quartzite in Peters Flat. The beds range from 0.5 to perhaps 2 metres thick and contain 15 - 20% pyrite with up to 2% sphalerite and some chalcopyrite. A similar band was intersected in drilling on Specimen Hill. The 0.5m section between 160.9 and 161.4 in DD81 BC2 returned 1.2% zinc, 0.5% copper, and 6.5 gm/tonne silver. Similar pyritic quartzite beds 1 metre thick in DDB7 returned 0.11 and 0.16% Tin.

6.2 The 108 North Magnetic Anomaly

This anomaly occurs just east of the baseline and extends from lines 104N to 114N. It reaches a maximum intensity of 650 gammas on line 108N. Unlike the wide anomalies on lines 89N and 100N - drilled by BHP and attributed to remnant magnetisation of disseminated pyrrhotite - the 108N anomaly is narrow and very sharply defined.

The anomaly was modelled by CRAE's MAGMOD inversion programme on the PDP 11/23 and full details are provided in Appendix 1.

The modelling suggested a dyke like source of considerable depth extent dipping 75 - 85° west with a top some 70 metres below the surface.

6.3 Diamond Drilling of 108N Anomaly

Modelling of the 108N anomaly was consistent with a narrow zone of pyrrhotite rich "lode" which represented the last untested major target within the Balfour area. Detailed mapping of the surface area (Plan TASH 954) however clearly indicated that any lode would be transgressive to the generally steep easterly dip.

Bedrock geochemical values in the general area were also not anomalous but as the depth to top of the body was estimated at 70 metres, it was decided that the anomaly did warrant a drill test.

DD82 BC7 was collared at 10800 North 9660 East depressed -46° to 047° magnetic (grid east). It traversed a series of siltstones quartzite and greywacke with a variable but general easterly dip. A major fault zone - a continuation of the Specimen Hill Fault? - was intersected at 160 metres and the hole was abandoned at 179 metres. A detailed log is appended and the hole is shown in sections in Plan TASH 1122.

Traces of pyrite and pyrrhotite were present throughout the core but pyrrhotite was slightly more abundant in the target zone between 95 and 115 metres. Base metal and tin-tungsten values throughout the hole do not rise above normal background levels. Magnetic susceptibility readings were taken through the full length of the hole using a Scintrex SM5 instrument. Readings in the target zone between 95 - 115 metres are consistently higher than for the remainder of the hole. Pyrrhotite is only slightly more abundant in this section but over this interval the pyrrhotite tends to be smeared out into the cleavage. Remnant magnetisation of this remobilised pyrrhotite is the only explanation for the major magnetic anomaly associated with this zone.

The magnetic susceptibility readings are provided with the drill log (Appendix 2) and are shown graphically on Plan TASH 951.

7. KEYWORDS

Tin Tungsten, veins, Drill-diamond, Geology, Geophysics, Mag, I.P.

8. LIST OF PLANS

Balfour Tenements Locality Plan	TASh 585
Summary of Geophysical Data	TASh 822
Geological Map Peters Ridge Area 1:1000	TASh 993
Geology of Drill Site DD82 BC7	TASh 954
Drill Section DD82 BC7	TASh 1122
Magnetic Susceptibility DD82 BC7	TASh 951

9. LIST OF APPENDICES

Appendix I Computer Modelling 108N Anomaly - M.Flis.
Appendix II Diamond Drill log DD82 BC7.

APPENDIX I

COMPUTER MODELLING OF 108N ANOMALY



CRA EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

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TELEGRAMS: CRAEX
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TELEPHONE: 44 3533
AREA CODE: (002)

IN REPLY PLEASE QUOTE

20th July, 1982.

Memorandum To: T.W.DICKSON

From: M.FLIS

BALFOUR GROUND MAGNETIC ANOMALY LINES 106N to 110NINTRODUCTION

The dyke-like magnetic anomaly on lines 104N to 114N of the Balfour grid was modelled by the inversion programme MAGMOD on the PDP 11/23. Only lines 106N to 110N were included in the modelling procedure as these exhibited the most classic and simple dyke form.

Data from lines 106 to 110N were used as bulk input to the 3-D PRISM model option whilst data for lines 107N to 109N were used on a line by line basis as input to the TABULAR (2-D infinite depth extent dyke) option and RIBBON (2-D limited depth extent thin dyke) option.

The parameters modelled (magnetization, dip position, half width, depth and regional components) were allowed to vary within a range deemed reasonable for the situation.

DISCUSSION OF RESULTS

Final inversion outputs for the three sets of models are attached. A few pertinent observations and interpretations:

- a) the ribbon model for all lines has resulted in a rather poor profile fit. In all cases the MAGNET parameter which, for this model is the magnetization x thickness, and the WIDTH parameter (the dyke's depth extent) have blown out. This would suggest that the causitive body has a substantial thickness and thus cannot be described by this model,
- b) the 3-D PRISM model obtained a markedly better fit than the RIBBON model, reflecting the necessity of having some finite defined thickness. As this model utilizes five lines of data an "average" model result is expected in which the fit is not necessarily the best for all data points but the data set as a whole,
- c) modelling of individual lines (107, 108 and 109N) by the TABULAR model gives the best data fits. This model indicates that the causitive body is plunging, and changing dip from a steep easterly dip to a steep westerly dip to the north. An increase in magnetic susceptibility is also evident in that direction, however this may be misleading as the body's half width parameters are usually highly correlateable and antipathetic. The TABULAR models give depths to source top in the range 42 to 59 metres (cf PRISM model gives 73 metres).

GENERAL

It is interesting to note that the data is best fitted by a large depth extent body: the TABULAR model being "infinitely" deep whilst the PRISM model giving a depth extent of greater than 2000 metres - that is, effectively infinite. This may be in line with Carey's hypothesis of a deep seated crustal feature passing through the area - the "Balfour Trend".

The problem of remanence is ever present. Samples from core drilled from the magnetic anomaly at the southern end of the grid indicated that the pyrrhotite present had a significant remanence component, taken to be parallel to the earths' present field. If the remanence direction is as stated then the geometric parameters of the models can be accepted. If, however the remanence is in any other direction then little faith can be placed in the model. Susceptibilities ascribed to the models are generally low - in the range of .002 - 0.02 cgs. This range could quite easily describe pyrrhotite of near-massive volume.

CONCLUSIONS AND RECOMMENDATIONS

The north-Balfour magnetic anomaly is adequately modelled as being due to a depth extensive dyke-type body. The body has variable dips along it's length but, in general, can be assigned a near vertical dip to the west.

Depths and thicknesses are confused between the models, however they do overlap significantly. If geological interpretation favour a magnetic target - particularly for tin associated pyrrhotites then the following target is recommended for drilling:-

Line: 108N
10045mE

Depth: 85 metres

Dip of target zone: 75 - 85° west.



MARCUS FLIS

WEIGHTED LEAST SQUARES FIT - TABLE

1 PACE FOR GRID LINE 107 MM

ITERATION NUMBER 2

PARAMETER KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1 1.390E+02	1.0E+02 3.0E+03	1.323E+02	1.0E+00	6.7E+00
DIP	1 8.800E+01	7.5E+01 1.4E+02	8.722E+01	1.0E+00	3.0E+00
BASE LEVEL	1 2.460E+02	0.0E+01 0.0E+01	2.455E+02	1.0E+00	1.0E+01
BASE SLOPE	1 -6.000E-02	0.0E-01 0.0E-01	-3.750E-02	1.0E+00	5.0E-02
POSITION	1 1.000E+04	1.0E+04 1.0E+04	1.002E+04	1.0E+00	4.5E+00
HALF WIDTH	1 4.900E+01	1.0E+01 7.5E+01	5.028E+01	1.0E+00	2.3E+00
DEPTH	1 4.500E+01	3.0E+01 1.2E+02	4.289E+01	2.0E+00	4.0E+00
INCLNATN	0 -7.200E+01	0.0E-01 0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 4.700E+01	0.0E-01 0.0E-01	4.700E+01	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01

POSITION	WEIGHT	OBS	FITTED
9800.0000	10.00	211.	222.
9825.0000	10.00	211.	220.
9850.0000	10.00	215.	220.
9875.0000	10.00	221.	221.
9900.0000	10.00	228.	229.
9925.0000	10.00	266.	251.
9950.0000	10.00	319.	308.
9975.0000	10.00	423.	424.
10000.0000	15.00	547.	557.
10025.0000	15.00	632.	644.
10050.0000	15.00	636.	663.
10075.0000	15.00	608.	601.
10100.0000	10.00	486.	504.
10125.0000	10.00	411.	431.
10150.0000	10.00	360.	384.
10175.0000	10.00	359.	354.
10200.0000	10.00	347.	333.
10225.0000	5.00	346.	318.
10250.0000	5.00	356.	306.
10275.0000	10.00	326.	297.
10300.0000	10.00	303.	289.
10325.0000	10.00	294.	293.
10350.0000	1.00	229.	278.
10375.0000	10.00	256.	273.
10400.0000	5.00	255.	269.
10425.0000	1.00	250.	265.
10450.0000	5.00	233.	262.
10475.0000	5.00	241.	259.
10500.0000	5.00	235.	256.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0334

615018

WEIGHTED LEAST SQUARES FIT - TABULAR

.1 BALFOUR GRID LINES 108 MN

ITERATION NUMBER 2

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1	2.880E+02	1.0E+02	3.0E+03	3.067E+02	1.0E+00 1.4E+01
DIP	1	9.900E+01	7.5E+01	1.4E+02	7.812E+01	1.0E+00 3.3E+00
BASE LEVEL	1	2.400E+02	0.0E-01	0.0E-01	2.394E+02	1.0E+00 3.5E+00
BASE SLOPE	1	4.000E-02	0.0E-01	0.0E-01	3.927E-02	1.0E+00 3.9E-02
POSITION	1	1.005E+04	1.0E+04	1.0E+04	1.005E+04	1.0E+00 3.2E+00
HALF WIDTH	1	2.000E+01	1.0E+01	7.5E+01	1.868E+01	1.0E+00 3.8E-01
DEPTH	1	4.500E+01	3.0E+01	1.2E+02	4.504E+01	2.0E+00 3.0E+00
INCLNATN	0	-7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01 0.0E-01
DECLNATN	0	4.700E+01	0.0E-01	0.0E-01	4.700E+01	0.0E-01 0.0E-01
VERTICAL	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01
TRAV DIR	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01

POSITION	WEIGHT	OBS	FITTED
9800.0000	10.00	209.	217.
9825.0000	10.00	213.	219.
9850.0000	10.00	221.	221.
9875.0000	10.00	224.	224.
9900.0000	10.00	235.	230.
9925.0000	2.00	259.	240.
9950.0000	10.00	256.	259.
9975.0000	10.00	300.	299.
10000.0000	10.00	394.	386.
10025.0000	15.00	545.	546.
10050.0000	15.00	677.	679.
10075.0000	15.00	648.	635.
10100.0000	15.00	502.	514.
10125.0000	5.00	460.	427.
10150.0000	10.00	356.	375.
10175.0000	10.00	334.	344.
10200.0000	10.00	327.	324.
10225.0000	10.00	319.	311.
10250.0000	10.00	317.	302.
10275.0000	1.00	335.	295.
10300.0000	1.00	350.	290.
10325.0000	1.00	357.	286.
10350.0000	1.00	343.	284.
10375.0000	1.00	319.	282.
10400.0000	10.00	298.	280.
10425.0000	10.00	280.	279.
10450.0000	10.00	265.	278.
10475.0000	10.00	263.	277.
10500.0000	10.00	261.	277.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0346

017

615020

WEIGHTED LEAST SQUARES FIT - TABULAR

1 BALFOUR GRID LINES 109 MN

ITERATION NUMBER 5

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0277

ITERATION NUMBER 5

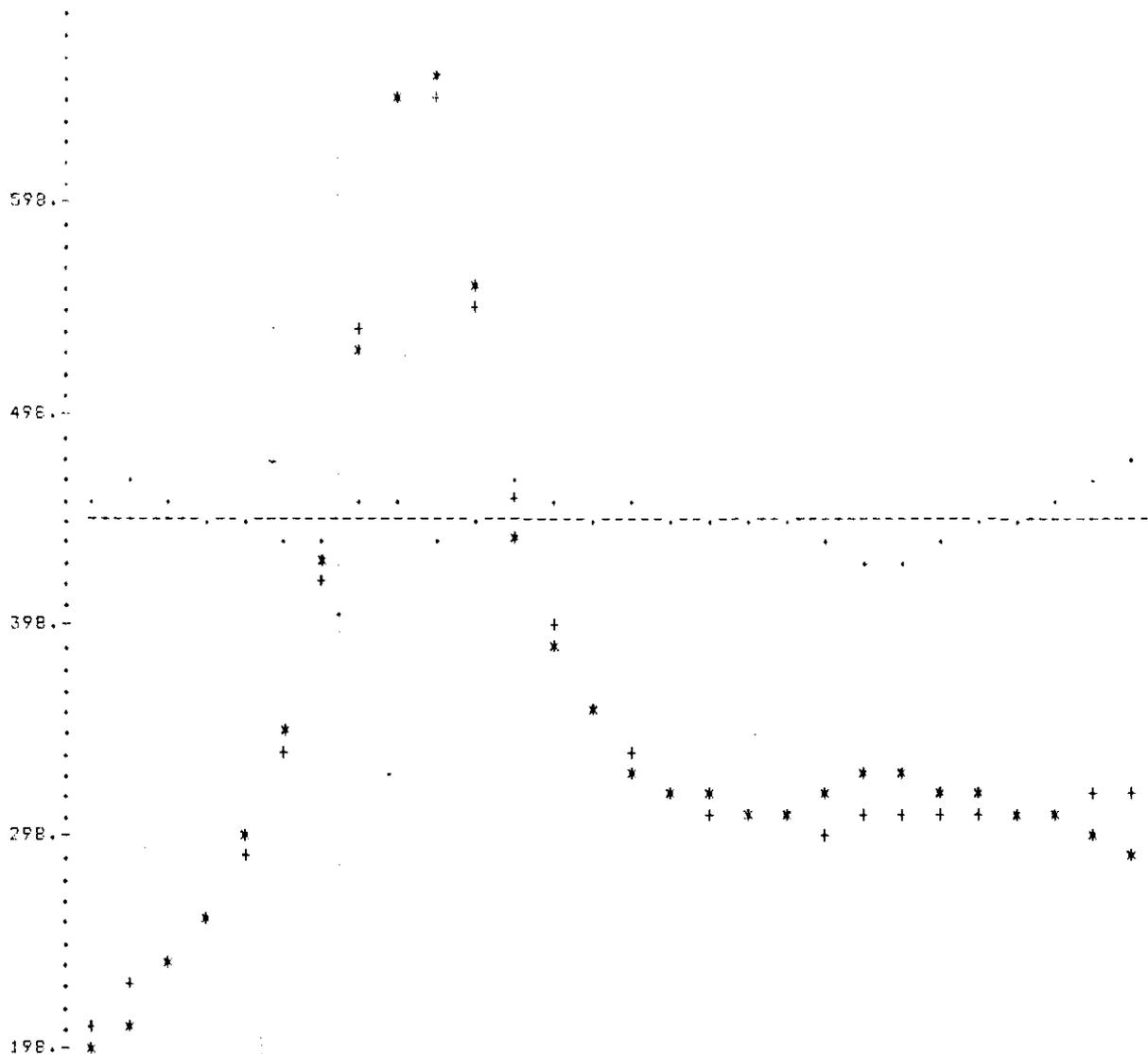
PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1 6.230E+02	1.0E+02	3.0E+03	6.441E+02	1.0E+00	2.3E+01
DIP	1 1.100E+02	7.5E+01	1.4E+02	1.105E+02	1.0E+00	2.5E+00
BASE LEVEL	1 2.220E+02	0.0E-01	0.0E-01	2.218E+02	1.0E+00	6.9E+00
BASE SLOPE	1 -1.700E-01	0.0E-01	0.0E-01	1.695E-01	1.0E+00	3.1E-02
POSITION	1 1.003E+04	1.0E+04	1.0E+04	1.003E+04	1.0E+00	3.2E+00
HALF WIDTH	2 1.200E+01	1.0E+01	7.5E+01	1.140E+01	1.0E+00	0.0E-01
DEPTH	1 5.900E+01	3.0E+01	1.2E+02	5.903E+01	2.0E+00	4.2E-01
INCLNATN	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 4.700E+01	0.0E-01	0.0E-01	4.700E+01	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01

POSITION	WEIGHT	OBS	FITTED
9825.0000	8.00	198.	207.
9850.0000	10.00	207.	219.
9875.0000	10.00	229.	234.
9900.0000	10.00	256.	255.
9925.0000	10.00	289.	286.
9950.0000	10.00	348.	335.
9975.0000	10.00	428.	415.
10000.0000	15.00	526.	533.
10025.0000	15.00	640.	644.
10050.0000	15.00	654.	642.
10075.0000	15.00	549.	546.
10100.0000	10.00	432.	451.
10125.0000	10.00	384.	389.
10150.0000	10.00	353.	351.
10175.0000	10.00	326.	328.
10200.0000	10.00	316.	315.
10225.0000	10.00	311.	306.
10250.0000	10.00	306.	301.
10275.0000	10.00	303.	299.
10300.0000	8.00	316.	293.
10325.0000	6.00	320.	298.
10350.0000	5.00	320.	299.
10375.0000	6.00	318.	301.
10400.0000	8.00	310.	303.
10425.0000	8.00	306.	305.
10450.0000	10.00	303.	308.
10475.0000	10.00	297.	311.
10500.0000	10.00	287.	314.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0277

019

MAGMOP PLOT OF FIT 1



MODEL TABULAR

TITLE BALFOUR GRID LINES 109 M

NUMBER OF STATIONS 28 MAX AMPLITUDE 456. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...%*% FITTED CURVE...%+% ERROR CURVE...%*%
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0277 PARFIT FLAG 2 ERROR CURVE DATUM 448.000

WEIGHTED LEAST SQUARES FIT - RIRRON

1 BALFOUR GRID LINE 107 MN

ITERATION NUMBER 5

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.4809

ITERATION NUMBER 10

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.4593

ITERATION NUMBER 15

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.3183

ITERATION NUMBER 20

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2648

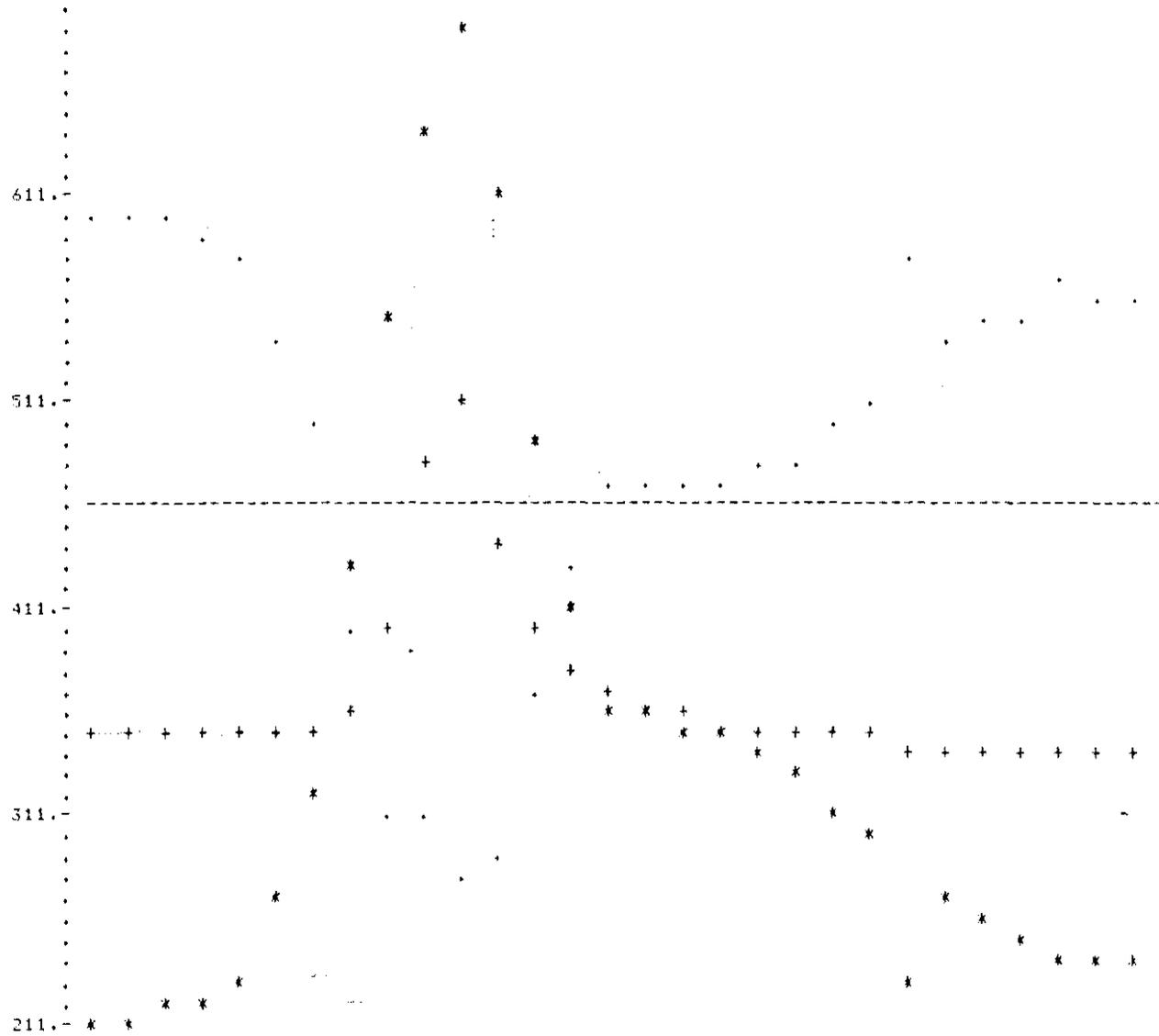
ITERATION NUMBER 20

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	2 1.390E+02	1.0E+02	3.0E+03	2.998E+03	1.0E+00	0.0E-01
DIP	1 8.800E+01	7.5E+01	1.4E+02	9.829E+01	1.0E+00	3.8E+03
BASE LEVEL	1 2.460E+02	0.0E-01	0.0E-01	3.536E+02	1.0E+00	8.7E+01
BASE SLOPE	1 -6.000E-02	0.0E-01	0.0E-01	-3.845E-02	1.0E+00	6.7E+01
POSITION	1 1.007E+04	1.0E+04	1.0E+04	1.004E+04	1.0E+00	3.4E-01
WIDTH	2 4.700E+01	1.0E+01	5.0E+02	4.991E+02	1.0E+00	0.0E-01
DEPTH	2 4.500E+01	3.0E+01	1.2E+02	3.235E+01	2.0E+00	0.0E-01
INCLNATN	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 4.700E+01	0.0E-01	0.0E-01	4.700E+01	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01

POSITION	WEIGHT	OBS	FITTED
9800.0000	10.00	211.	350.
9825.0000	10.00	211.	348.
9850.0000	10.00	216.	347.
9875.0000	10.00	221.	346.
9900.0000	10.00	228.	345.
9925.0000	10.00	266.	346.
9950.0000	10.00	319.	349.
9975.0000	10.00	428.	360.
10000.0000	15.00	547.	394.
10025.0000	15.00	632.	481.
10050.0000	15.00	686.	502.
10075.0000	15.00	608.	435.
10100.0000	10.00	488.	396.
10125.0000	10.00	411.	377.
10150.0000	10.00	360.	366.
10175.0000	10.00	355.	359.
10200.0000	10.00	347.	354.
10225.0000	5.00	346.	351.
10250.0000	5.00	336.	348.
10275.0000	10.00	326.	346.
10300.0000	10.00	308.	344.
10325.0000	10.00	294.	342.
10350.0000	1.00	229.	341.
10375.0000	10.00	266.	339.
10400.0000	5.00	255.	338.
10425.0000	1.00	250.	337.
10450.0000	5.00	233.	336.
10475.0000	5.00	241.	335.
10500.0000	5.00	235.	334.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2648

MAGMOD PLOT OF FIT 1



MODEL RIBBON

TITLE BALFOUR GRID LINE 107 MN

NUMBER OF STATIONS 29 MAX AMPLITUDE 475. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...X% FITTED CURVE...X% ERROR CURVE...X%
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .2648 PARFIT FLAG 2 ERROR CURVE DATUM 461.000

WEIGHTED LEAST SQUARES FIT - RIBBON

1 BALFOUR GRID LINES 108 MM

ITERATION NUMBER 5

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.4089

ITERATION NUMBER 10

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.3746

ITERATION NUMBER 15

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2461

ITERATION NUMBER 20

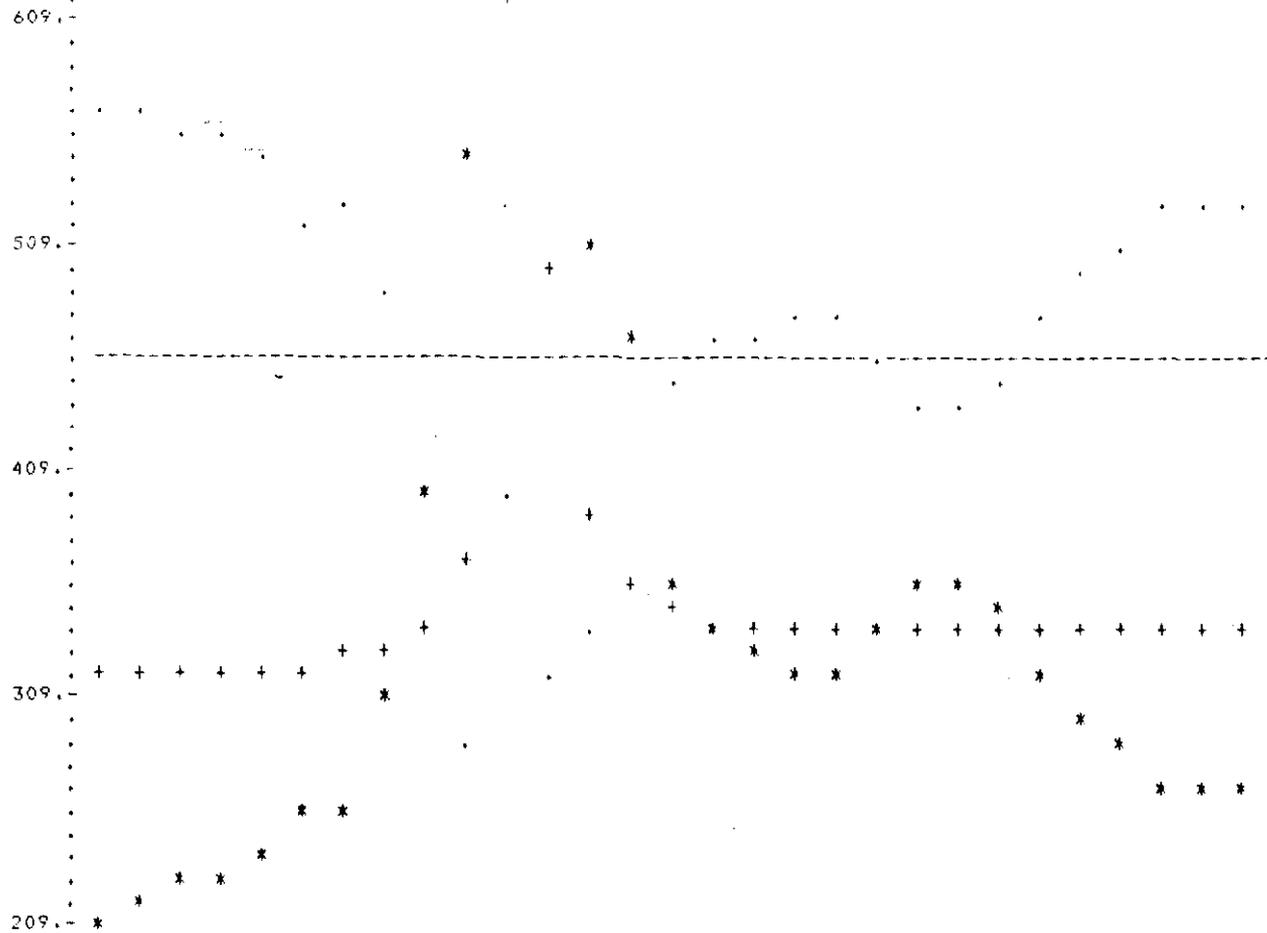
NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2230

ITERATION NUMBER 20

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	2	2.880E+02	1.0E+02	3.0E+03	2.998E+03	1.0E+00 0.0E-01
DIP	1	9.900E+01	7.5E+01	1.4E+02	1.073E+02	1.0E+00 2.0E+03
BASE LEVEL	1	2.400E+02	0.0E-01	0.0E-01	3.319E+02	1.0E+00 3.9E+01
BASE SLOPE	1	4.000E-02	0.0E-01	0.0E-01	1.685E-03	1.0E+00 5.5E+01
POSITION	1	1.005E+04	1.0E+04	1.0E+04	1.006E+04	1.0E+00 2.5E-01
WIDTH	2	2.000E+01	1.0E+01	5.0E+02	4.984E+02	1.0E+00 0.0E-01
DEPTH	1	4.500E+01	1.0E+01	1.2E+02	1.544E+01	2.0E+00 1.1E+01
INCLNATN	0	-7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01 0.0E-01
DECLNATN	0	4.700E+01	0.0E-01	0.0E-01	4.700E+01	0.0E-01 0.0E-01
VERTICAL	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01
TRAV DIR	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01

POSITION	WEIGHT	ORBS	FITTED
9800.0000	10.00	209.	319.
9825.0000	10.00	213.	318.
9850.0000	10.00	221.	318.
9875.0000	10.00	224.	318.
9900.0000	10.00	235.	318.
9925.0000	2.00	259.	318.
9950.0000	10.00	256.	319.
9975.0000	10.00	300.	322.
10000.0000	10.00	394.	331.
10025.0000	15.00	545.	369.
10050.0000	15.00	677.	614.
10075.0000	15.00	648.	499.
10100.0000	15.00	502.	381.
10125.0000	5.00	460.	352.
10150.0000	10.00	356.	341.
10175.0000	10.00	334.	336.
10200.0000	10.00	327.	333.
10225.0000	10.00	319.	332.
10250.0000	10.00	317.	331.
10275.0000	1.00	335.	330.
10300.0000	1.00	350.	330.
10325.0000	1.00	357.	329.
10350.0000	1.00	343.	329.
10375.0000	1.00	319.	329.
10400.0000	10.00	298.	329.
10425.0000	10.00	280.	329.
10450.0000	10.00	265.	329.
10475.0000	10.00	263.	329.
10500.0000	10.00	261.	330.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2230



MODEL RIBBON

TITLE BALFOUR GRID LINES 108 M

NUMBER OF STATIONS 29 MAX AMPLITUDE 448. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...%*% FITTED CURVE...%*% ERROR CURVE...%*%
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .2230 PARFIT FLAG 2 ERROR CURVE DATUM 459.000

024

615025

WEIGHTED LEAST SQUARES FIT - RIBBON

1 BALFOUR GRID LINES 109 MM

ITERATION NUMBER 5

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.5329

ITERATION NUMBER 10

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.2008

ITERATION NUMBER 40

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.1957

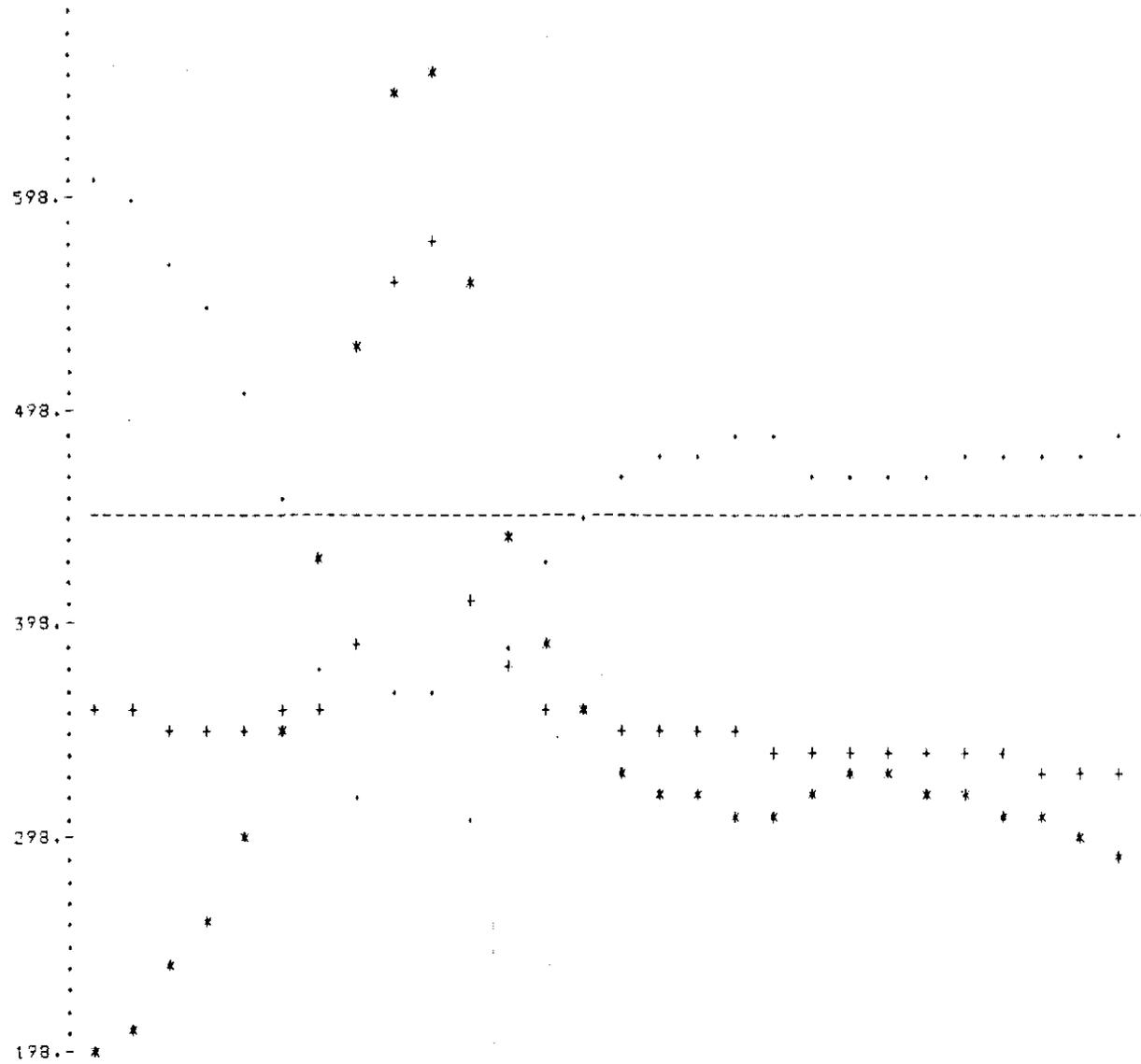
ITERATION NUMBER 42

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	2 6.230E+02	1.0E+02	3.0E+03	2.999E+03	1.0E+00	0.0E-01
DIP	1 1.100E+02	7.5E+01	1.4E+02	1.104E+02	1.0E+00	2.1E+03
BASE LEVEL	1 2.220E+02	0.0E-01	0.0E-01	3.519E+02	1.0E+00	3.6E+01
BASE SLOPE	1 -1.700E-01	0.0E-01	0.0E-01	-5.042E-02	1.0E+00	4.9E+01
POSITION	1 1.003E+04	1.0E+04	1.0E+04	1.004E+04	1.0E+00	2.2E-01
WIDTH	2 1.200E+01	1.0E+01	5.0E+02	4.987E+02	1.0E+00	0.0E-01
DEPTH	1 5.900E+01	1.0E+01	1.2E+02	1.653E+01	2.0E+00	1.1E+01
INCLNATN	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 4.700E+01	0.0E-01	0.0E-01	4.700E+01	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01

POSITION	WEIGHT	ORBS	FITTED
9825.0000	8.00	198.	350.
9850.0000	10.00	207.	349.
9875.0000	10.00	229.	348.
9900.0000	10.00	256.	347.
9925.0000	10.00	289.	348.
9950.0000	10.00	348.	350.
9975.0000	10.00	428.	357.
10000.0000	15.00	526.	386.
10025.0000	15.00	640.	552.
10050.0000	15.00	654.	569.
10075.0000	15.00	549.	408.
10100.0000	10.00	432.	370.
10125.0000	10.00	384.	356.
10150.0000	10.00	353.	350.
10175.0000	10.00	326.	345.
10200.0000	10.00	316.	342.
10225.0000	10.00	311.	340.
10250.0000	10.00	306.	338.
10275.0000	10.00	303.	337.
10300.0000	8.00	316.	335.
10325.0000	6.00	320.	334.
10350.0000	5.00	320.	333.
10375.0000	6.00	318.	331.
10400.0000	8.00	310.	330.
10425.0000	8.00	306.	329.
10450.0000	10.00	303.	328.
10475.0000	10.00	297.	327.
10500.0000	10.00	287.	325.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.1950

MAGMOD PLOT OF FIT 1



MODEL RIBBON

TITLE BALFOUR BRID LINES 109 M

NUMBER OF STATIONS 28 MAX AMPLITUDE 436. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...%*% FITTED CURVE...%*% - ERROR CURVE...%*%
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .1950 PARFIT FLAG 2 ERROR CURVE DATUM 448.000

WEIGHTED LEAST SQUARES FIT - PRISM

1 BALFOUR GRID LINES 106 TO 110 MN

ITERATION NUMBER 10

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.1006

ITERATION NUMBER 20

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.1006
INCOMPLETE FIT - UNABLE TO IMPROVE LAST ITERATION

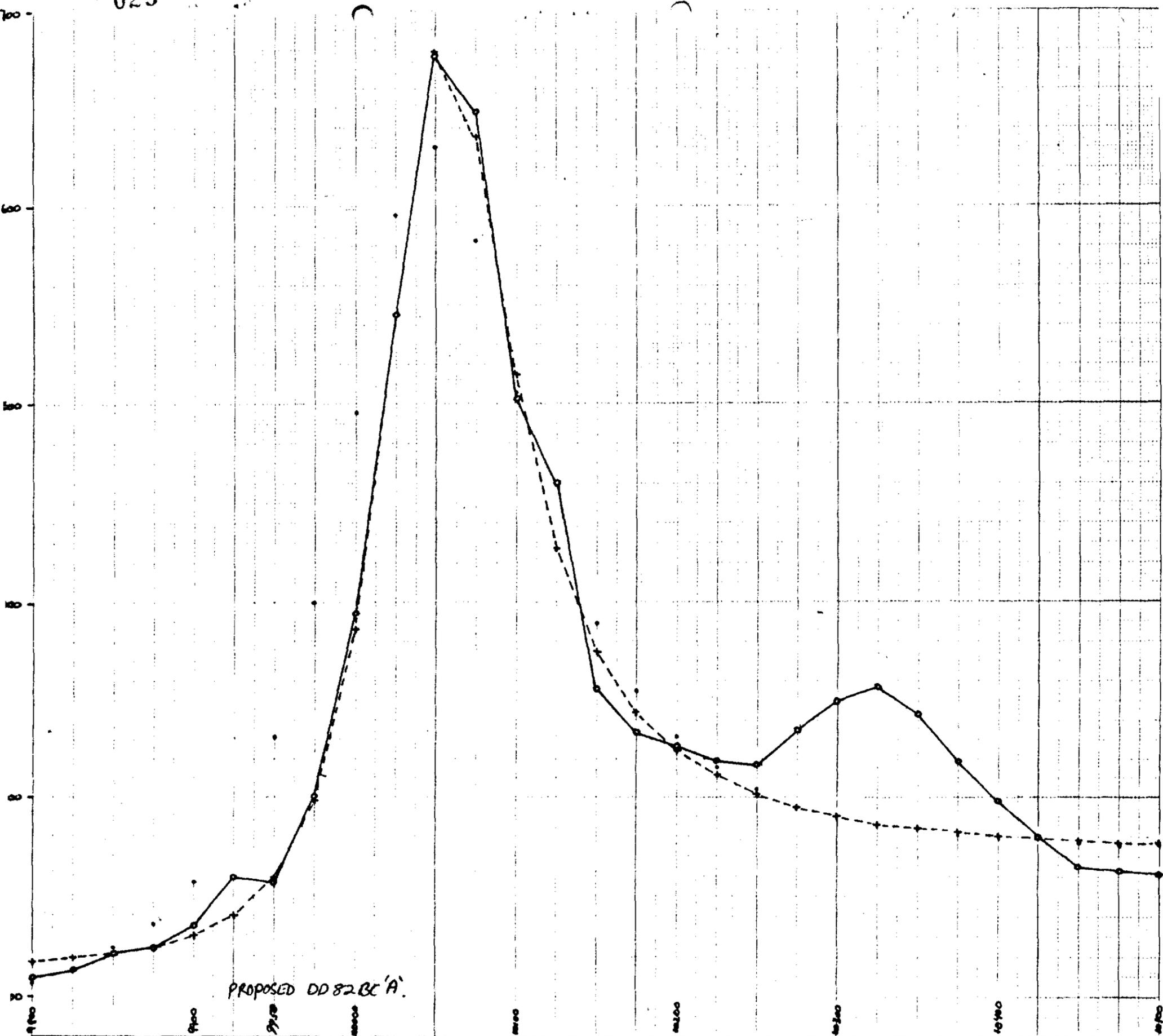
ITERATION NUMBER 25

PARAMETER KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1	1.272E+03	1.0E+02 3.0E+03	1.267E+03	1.0E+00 0.0E-01
DIP	1	1.030E+02	7.5E+01 1.4E+02	1.028E+02	1.0E+00 0.0E-01
BASE LEVEL	1	2.380E+02	0.0E-01 0.0E-01	2.239E+02	1.0E+00 0.0E-01
X SLOPE	1	7.500E-02	0.0E-01 0.0E-01	8.171E-02	1.0E+00 0.0E-01
Y SLOPE	1	1.500E-02	0.0E-01 0.0E-01	4.912E-02	1.0E+00 0.0E-01
X POSITION	1	1.004E+04	1.0E+04 1.0E+04	1.004E+04	1.0E+00 0.0E-01
Y POSITION	0	1.030E+04	1.1E+04 1.1E+04	1.080E+04	0.0E-01 0.0E-01
X H-WIDTH	1	7.000E+00	1.0E+00 7.5E+01	6.521E+00	1.0E+00 0.0E-01
Y H-WIDTH	2	5.000E+02	1.0E+02 1.0E+03	9.998E+02	2.0E+00 0.0E-01
DEPTH	1	7.400E+01	3.0E+01 1.0E+02	7.283E+01	2.0E+00 0.0E-01
THICKNESS	1	5.000E+02	5.0E-01 1.0E+04	2.090E+03	2.0E+00 0.0E-01
INCLNATN	0	-7.200E+01	0.0E-01 0.0E-01	-7.200E+01	0.0E-01 0.0E-01
DECLNATN	0	4.700E+01	0.0E-01 0.0E-01	4.700E+01	0.0E-01 0.0E-01
VERTICAL	0	0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01 0.0E-01
ORIENTATN	0	0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01 0.0E-01

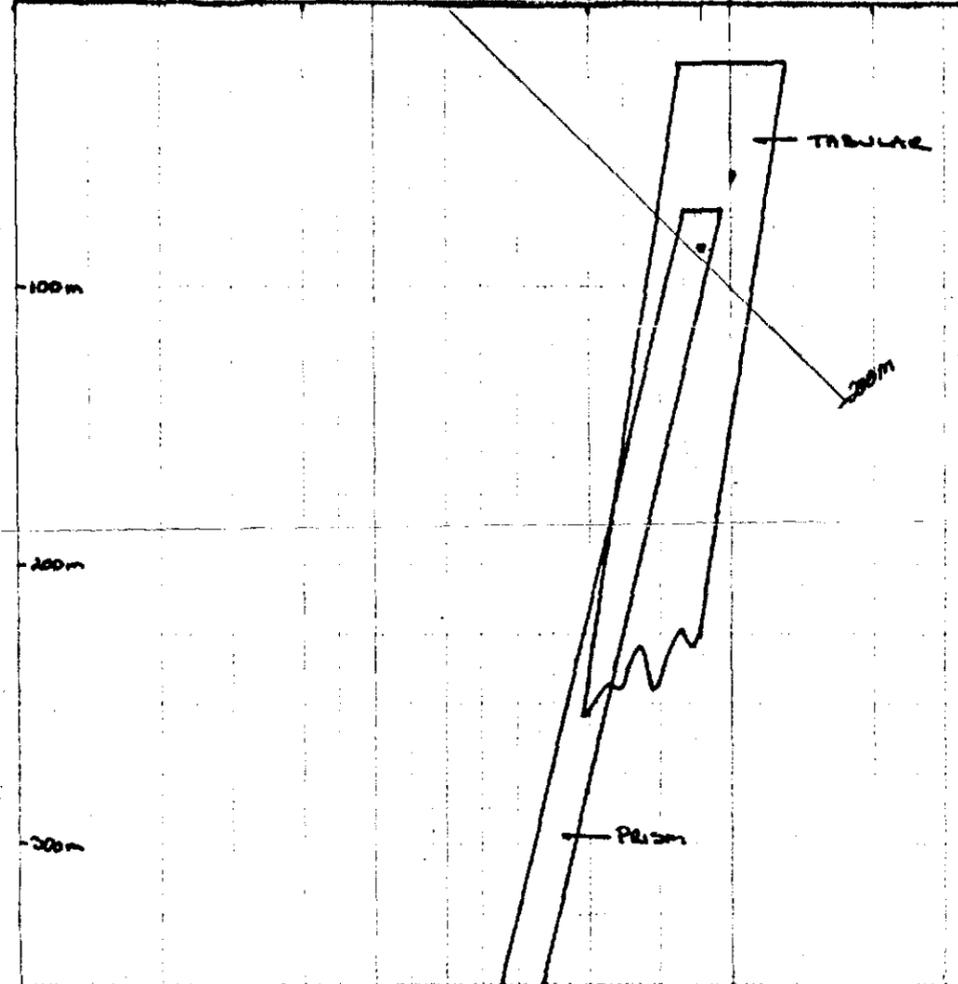
POSITION-X	Y	WEIGHT	OBSERVED	FITTED
7800.000	10600.000	10.00	203.	195.
7900.000	10600.000	10.00	203.	245.
7925.000	10600.000	10.00	250.	273.
7950.000	10600.000	10.00	322.	318.
7975.000	10600.000	10.00	462.	484.
8000.000	10600.000	10.00	503.	582.
8025.000	10600.000	10.00	533.	617.
8050.000	10600.000	10.00	558.	570.
8075.000	10600.000	10.00	512.	492.
8100.000	10600.000	10.00	473.	425.
8125.000	10600.000	10.00	425.	378.
8150.000	10600.000	10.00	393.	340.
8175.000	10600.000	10.00	365.	319.
8200.000	10600.000	10.00	327.	291.
8225.000	10600.000	10.00	322.	283.
8250.000	10600.000	10.00	297.	273.
8275.000	10600.000	10.00	292.	270.
8300.000	10600.000	10.00	283.	268.
8325.000	10600.000	10.00	279.	266.
8350.000	10600.000	10.00	271.	265.
8375.000	10600.000	10.00	260.	265.
8400.000	10600.000	10.00	250.	265.

9800.00010700.000	10.00	201.	201.
9800.00010700.000	10.00	211.	201.
9825.00010700.000	10.00	211.	208.
9850.00010700.000	10.00	216.	218.
9875.00010700.000	10.00	221.	232.
9900.00010700.000	10.00	228.	251.
9925.00010700.000	10.00	246.	280.
9950.00010700.000	10.00	319.	325.
9975.00010700.000	10.00	428.	394.
10000.00010700.000	15.00	547.	490.
10025.00010700.000	15.00	632.	588.
10075.00010700.000	15.00	608.	576.
10100.00010700.000	10.00	488.	498.
10125.00010700.000	10.00	411.	431.
10150.00010700.000	10.00	360.	382.
10175.00010700.000	10.00	355.	349.
10200.00010700.000	10.00	347.	325.
10225.00010700.000	10.00	346.	309.
10350.00010700.000	10.00	229.	276.
10375.00010700.000	10.00	266.	274.
10400.00010700.000	5.00	255.	272.
10450.00010700.000	5.00	233.	271.
10475.00010700.000	5.00	241.	271.
9800.00010800.000	10.00	209.	207.
9825.00010800.000	10.00	213.	214.
9850.00010800.000	10.00	221.	224.
9875.00010800.000	10.00	224.	238.
9900.00010800.000	10.00	235.	257.
9950.00010800.000	10.00	256.	331.
9975.00010800.000	10.00	300.	400.
10000.00010800.000	10.00	394.	496.
10025.00010800.000	15.00	545.	594.
10050.00010800.000	15.00	677.	630.
10075.00010800.000	15.00	648.	582.
10100.00010800.000	15.00	502.	505.
10150.00010800.000	10.00	356.	389.
10175.00010800.000	10.00	334.	355.
10200.00010800.000	10.00	327.	332.
10225.00010800.000	10.00	319.	315.
10250.00010800.000	10.00	317.	304.
10450.00010800.000	10.00	265.	277.
10475.00010800.000	10.00	263.	277.
10500.00010800.000	10.00	261.	277.
9825.00010900.000	8.00	198.	221.
9850.00010900.000	10.00	207.	230.
9875.00010900.000	10.00	229.	244.
9900.00010900.000	10.00	256.	263.
9925.00010900.000	10.00	289.	292.
9950.00010900.000	10.00	348.	337.
9975.00010900.000	10.00	428.	406.
10000.00010900.000	15.00	526.	503.
10025.00010900.000	15.00	640.	601.
10050.00010900.000	15.00	654.	636.
10075.00010900.000	15.00	549.	589.
10100.00010900.000	10.00	432.	511.
10125.00010900.000	10.00	384.	443.
10150.00010900.000	10.00	353.	395.
10175.00010900.000	10.00	326.	361.
10200.00010900.000	10.00	316.	338.
10225.00010900.000	10.00	311.	321.
10250.00010900.000	10.00	306.	310.
10275.00010900.000	10.00	303.	302.
10400.00010900.000	2.00	310.	284.
10425.00010900.000	2.00	306.	283.
10450.00010900.000	2.00	303.	283.
10475.00010900.000	2.00	297.	283.
10500.00010900.000	10.00	287.	283.
9800.00011000.000	10.00	205.	219.
9825.00011000.000	10.00	209.	227.
9850.00011000.000	10.00	231.	237.
9875.00011000.000	10.00	263.	250.
9900.00011000.000	10.00	331.	269.
9925.00011000.000	10.00	417.	298.
9950.00011000.000	10.00	466.	343.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.1006



PROPOSED DD 82 BC 'A'



- OBSERVED
- - - - - TABULAR MODEL
- PRISM MODEL

615030
 BALFOUR GRID
 LINE 108 N
 MAGNETIC MODEL
 20-7-82 M. FLIS

APPENDIX II

DIAMOND DRILL LOG DD82 BC7

CO-ORDINATES 10800N 9360E AZIMUTH 47° (GRID EAST) DRILLERS PARRY COMMENCED 09.08.82 DEPTH 179.1 metres HOLE No. DD 82 807

RL COLLAR INCLINATION -46° DRILL TYPE BOYLES COMPLETED 15.08.82 CASING LEFT NIL DPO No(s) 30207

DEPTH		Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANALABS</u>)								
From (M)	To (M)										Cu	Pb	Zn	As	B:	Mo	W	Sn	
0.0	0.3				TRUNCED - NO CORE														
0.3	38.0	21.1	NQ		SILTSTONES														
					Grey to black laminated siltstones laminar often < 0.5mm upto 2mm. with thin beds to 20cm. Thin beds carbonaceous gy bands more sandy &	Some lt gy bands more weathered Py. min ² upto 5% between 8+8.5m. Pec. ss dykelets - flame structures from more sandy layers into more F.g. layers. Py min ² 5% at 10m after 1-2% py @ 12m. 10.8m int. L 65°	372872* 873* 874* 875* 876* 877 878*	0.3 3.0 14.0 20.0 26.0 30.5 32.0	3.0 4.0 20.0 26.0 30.5 32.0 38.0	26 38 385 3.2 3.5 0.95 3.2	55 30 20 20 20 100 30	20 10 10 10 20 450 15	90 70 85 80 65 140 50	X X X X X X X	X X X X X 10 X	- - - - - - -	X 10 X X X X 8		
					13-38m Banded carbonaceous siltstones and occ med. gy sandstones, laminations in parts of core 1-2m but generally 5-15cm wide. More sandy lt gy bands 13-15.5m above flame structures much core loss 17.5-20m. pyg - sandy - pyg - Fault? Sandstone bands micaceous 25.8-26.3 dendritic py. Med gy ofite band 30.5-32.0m. pyg upto 10% very fractured. At 35m first fractured bands of ab. elloritic pyritic sandstones (pale gr-gy) bands upto 10cm interbedded with dk gy carbonaceous siltstones	Fault at 13m - broken at 13m core - white - lt gy elloritic ss veinlets after pyg. V low int L of 20° at 21m int L 40° at 22m } indicates X-bedding int L 4° at 26m } slump structures. Core loss 29.5-30m - Fault?													

* GROUND CAP

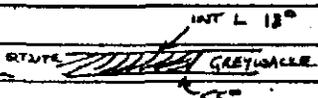
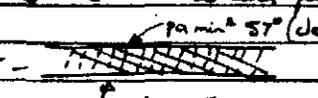
033

615034

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

SHEET No. 3 of 5

TENEMENT NAME ROCKY CAPE No. 177PLAN - MAP REFERENCE BALFOUR GRIDCO-ORDINATES 10800N 9360 E AZIMUTH 47° (GRID EAST) DRILLERS PARRY COMMENCED 09.08.82 DEPTH 179.1 meters HOLE No. DD82 807RL COLLAR INCLINATION -46° DRILL TYPE BOYLES COMPLETED 15.08.82 CASING LEFT N/A DPO No(s) 30207

DEPTH From (M)	To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANALABS</u>)									
											Cu	Pb	Zn	As	Bi	Mo	W	Sn		
80.0	98.3	18.0	NQ		<u>QUARTZITE</u>															
					med gy - m-c.g. some bedding evident at 81m. At 83.2-83.7m v. black c.g. carbonaceous? leached zone v. unusual.	min ² mainly po > py. py restricted to joints. Po seems aligned to cleavage direction. Intersection angles	972894	80.0	83.0	2.97	10	x	40	x	x	x	-	x		
							895	83.0	83.4	0.40	15	25	70	x	x	x	-	x		
							896	83.4	85.1	1.7	x	x	25	x	x	x	-	5		
							897	85.1	87.0	1.90	5	x	25	x	x	x	-	x		
					Unit becomes ab. finer grained at 86m - x-bedded, slump features more prominent. At 96m coarser grained bands also elliptical	62° @ 81m 22° @ 84m 20° @ 88m 25° @ 94m.	898	87.0	89.0	2.0	5	x	20	x	x	x	-	4		
							899	89.0	92.0	2.8	x	5	25	x	x	x	-	6		
					alt ² - transition zone - some beds more carbonaceous - greywacke	elliptical alt ² and po min ² more prevalent in c.g. beds	900	92.0	94.7	2.7	15	10	35	x	x	x	-	x		
							901	94.7	95.43	0.73	15	x	30	x	x	x	-	x		
							902	95.43	98.3	2.80	10	10	25	x	x	x	-	x		
58.3	111.4	12.23	NQ		<u>QUARTZITE - GREYWACKE</u>															
					med - lt gr gy m-c.g. X-bedded slump structures - loading features SS - dykes occ qtzite bands which seem to contain more po min ² Greywacke beds poorly sorted but ab. graded wacke beds at 113 often very low. (eg) 109m // to core.	100m  <u>GREYWACKE</u> 55°	903	98.3	99.4	0.85	20	20	50	x	x	x	-	x		
							904	99.4	101.0	1.6	30	40	50	x	x	x	-	x		
						lt. angles 104m - 50°	905	101.0	104.0	2.86	15	x	40	x	x	x	-	x		
						5-10° @ 106m - also east features.	906	104.0	106.45	2.2	35	20	40	x	x	x	-	x		
						109.5 -  <u>GREYWACKE</u> 19 min ² 57° (cleavage)	907	106.45	107.35	0.9	15	5	40	x	x	x	-	4		
							908	107.35	108.55	1.20	40	20	35	x	x	x	-	x		
							909	108.55	110.15	1.47	25	15	45	x	x	x	-	x		
						(There is about 20° of rotation between maximum readings)	910	110.15	111.4	1.15	20	5	45	x	x	x	-	x		
111.4	155.0	42.64	BQ		<u>GREYWACKE</u>															
					Med - v. dk gy fairly massive unit (first 2m fine banded)	po. min ² strong until 113.6m then po blebs and py on joints not	911	111.4	113.4	1.58	30	25	45	x	x	x	-	x		
					At 134.2m (20cm) tuff band	po blebs and py on joints not as min ² . Core heavily broken	912	113.4	114.03	0.63	30	45	60	x	x	x	-	x		
					At 141.0m (10cm) tuff band	at 120m - fractured.	913*	114.03	116.23	2.2	30	10	70	x	x	x	-	x		
							914*	116.23	119.0	2.7	55	10	105	x	x	x	-	x		

034

615035

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

SHEET No. 4 of 5

TENEMENT NAME ROCKY CAPE No. 177

CO-ORDINATES 10800N 9960 E AZIMUTH 47°m (GRID EAST) DRILLERS PARRY COMMENCED 09.08.82
RL COLLAR..... INCLINATION -46° DRILL TYPE ROYLES COMPLETED 15.08.82

PLAN - MAP REFERENCE BALFOUR GRID

DEPTH 179.1m HOLE No. DD 82 807

CASING LEFT Nil DPO No(s) 30207

DEPTH om M)	To (M)	Core Rec. (M)	Core Size	Graphic Log	CORE DESCRIPTION	SPECIAL FEATURES Weath, Alteration, Fracturing, Veining, Mineralization	Sample No.	From (M)	To (M)	Rec (M)	ASSAY VALUES (Analysed by <u>ANALABS</u>)								
											Cu	Pb	Zn	As	Bi	Mo	W	Sn	
					Greywacke - qtzite 140-144m less argillaceous but still dk gy. Occ fine lt gy - white fracture - joint infillings - 2 nd qtz - carb?	Intersection angles:- 15° @ 115m 5° @ 121m 35° @ 127m 43° @ 130m 50° @ 134.2m (tuff bed U. contact) 25° @ 140m 60° @ 141m (tuff bed) 15° @ 148m 42° @ 152m.	972916* 917* 918* 919* 920* 921 922* 923	122.0 125.0 128.0 131.0 131.0 137.0 143.0 146.0 152.0 155.0	125.0 128.0 131.0 137.0 143.0 146.0 152.0 155.0	3.0 3.0 3.0 3.0 5.53 6.0 3.0 6.0 3.0 3.0		30 45 20 30 25 25 25 5	x x x x S S S x	x x x x x x x x	x x x x x x x x	- - - - - - - -	x x x x x x x x		
155.0	158.0	3.0	BQ		GREYWACKE AND QUARTZITES V. dk gy argillaceous qtzite and med gy qtzite bands - often sweet? qtz veins upto 10mm with creamy clay infilling - often carbonate? - py upto 5% - banded.	Mod. fractured becomes v. fractured chlorite alt ⁿ 156.8m - fault slickensided core over 10cm. Int. L's 45° @ 156m 63° @ 157.7m.	924	155.0	158.0	3.0		x x	x x	35	x x	x x	x x	- -	x x
158.0	160.5	2.38	BQ		FAULT ZONE leached for first 0.5m - fractured core several pug zones - pale yellow clayey - pyritic.	Chlorite alt ⁿ - qtz veining py min ⁺ associated - fractured.	925 926	158.0 159.0	159.0 160.5	0.9 1.48		x 5	x x	40 60	x x	x x	x x	x x	
160.5	170.0	3.3	BQ		BANDED MUDSTONES AND QUARTZITES Med-dk gy chloritic mudstones rhythmically banded with quartzites Banding 0.5mm to 30mm. Heavily fractured with many thin sweet? qtz veins with ass. py. min ⁺ . Fault pug 169m	Chloritic mudstones with very fractured, sweet? qtz veining developed - close to major fault zone.	927 928 929 930 931	160.5 162.5 164.0 165.27 167.12	162.5 164.0 165.27 167.12 170.0	1.9 1.47 1.2 1.85 2.88		x x S x x	x x x x x	55 35 45 30 35	x x x x x	x x x x x	6 x S x 17	x x x x x	

615037

MAGNETIC SUSCEPTIBILITY READINGS FROM DD82 B17 (BALFOUR PROSPECT)

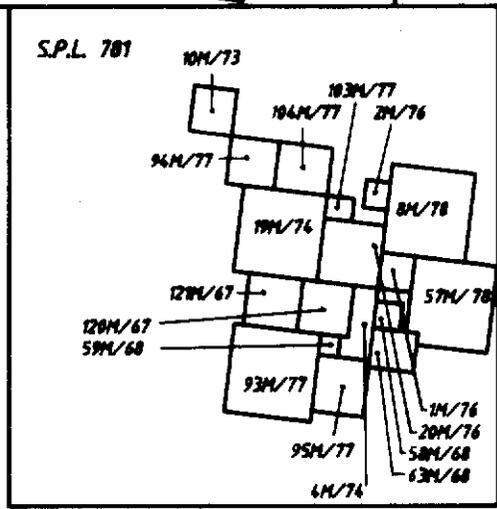
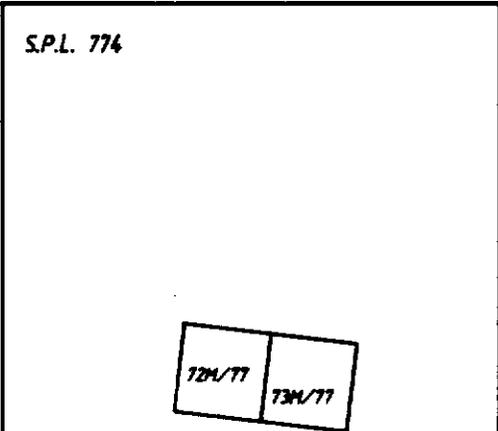
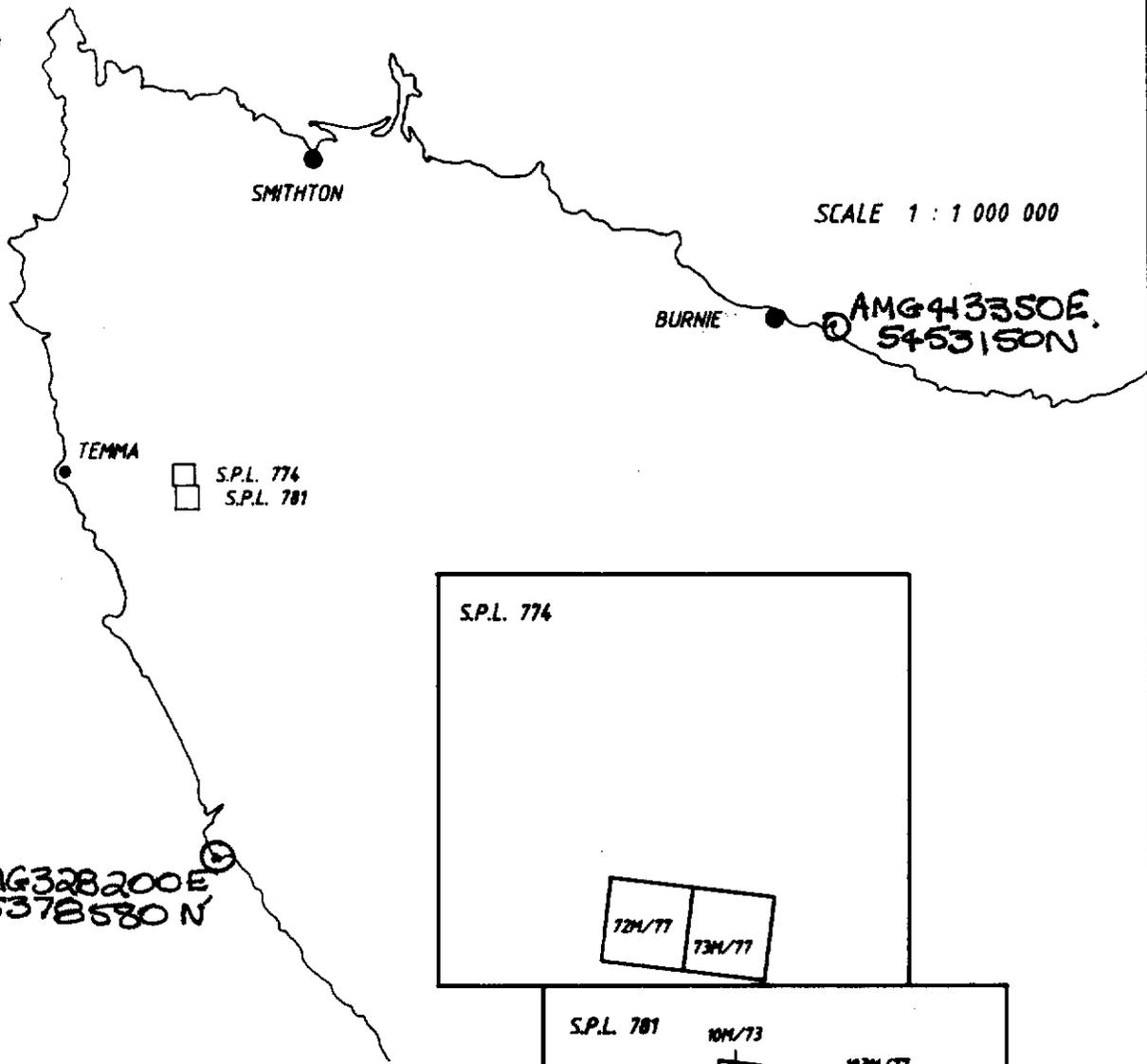
READINGS IN 10^{-3} c.g.s. units using a SCINTREX SM 5

NO CORRECTIONS HAVE BEEN MADE FOR CORE DIAMETERS.

FIRST 111m NQ THEN BQ TO E.O.H.

DEPTH	READING	DEPTH	READING	DEPTH	READING	DEPTH	READING
4m	0.0	55	0.1	95.3	0.7	127	0.2
6m	0.1	59	0.2	96	0.2	132	0.1
9	0.0	62	0.2	97	0.0	134	0.1
10.5	0.1	64	0.0	98.3	0.2	137	0.0
14	0.0	66	0.1	99	0.0	142.5	0.1
17	0.0	68	0.0	100	0.3	144	0.4
21	0.0	71	0.0	101.3	0.4	145	0.3
23	0.1	73.5	0.1	102	0.0	147	0.0
26	0.0	74	0.2	106	0.4	151	0.2
29	0.1	75	0.2	107	0.0	155	0.1
32	0.0	76	0.4	108.3	0.6	157.8	0.0
36	0.0	79	0.1	111	0.5	160	0.0
39	0.0	81	0.2	113	1.1	167	0.1
40	0.0	84	0.0	116	0.0	171	0.1
42	0.0	87	0.1	117	0.1	174	0.0
43.5	0.1	88	0	119	0.1	176	0.0
48	0.0	92	0	122	0.1		
50	0.1	93	0.2	125	0.1		

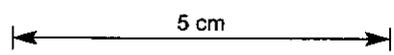
037



SCALE 1 : 50 000

615038

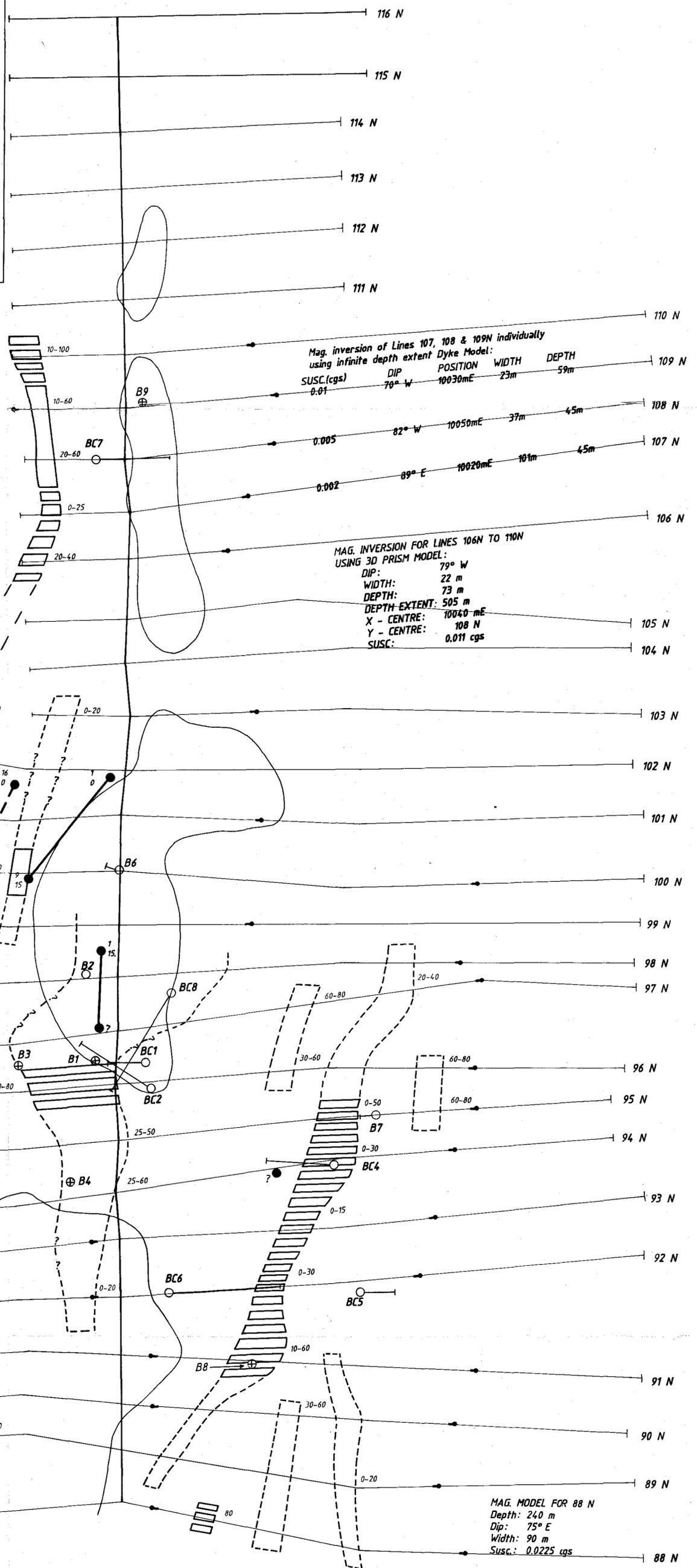
AMG REFERENCE POINTS ADDED



CRA EXPLORATION PTY. LIMITED	
BALFOUR TENEMENTS	
LOCALITY PLAN	
Ref. s SK55 - 3	83-1934 R
Scale. AS SHOWN	Drawn. R. T.
Author. T. W. D.	Report N°. 11914
Date. 16th Feb. 1982	Plan N°. TASH 585

LEGEND

- LINES SURVEYED WITH I.P.
- I.P. ANOMALY - DEFINITE (Approx. depth range if shallow or depth to top if deep, in metres)
- PROBABLE (Approx. depth range if shallow or depth to top if deep, in metres)
- POSSIBLE (Approx. depth range if shallow or depth to top if deep, in metres)
- POSSIBLE EXTENSION (Approx. depth range if shallow or depth to top if deep, in metres)
- GROUND MAGNETIC ANOMALY OUTLINE (APPROX 300nT ABOVE BACKGROUND)
- DIGHEM AIRBORNE E.M. ANOMALY 7 - (conductivity in mhos)
30 (min. depth to modelled dyke body in metres)
- DRILL HOLE B7



615039

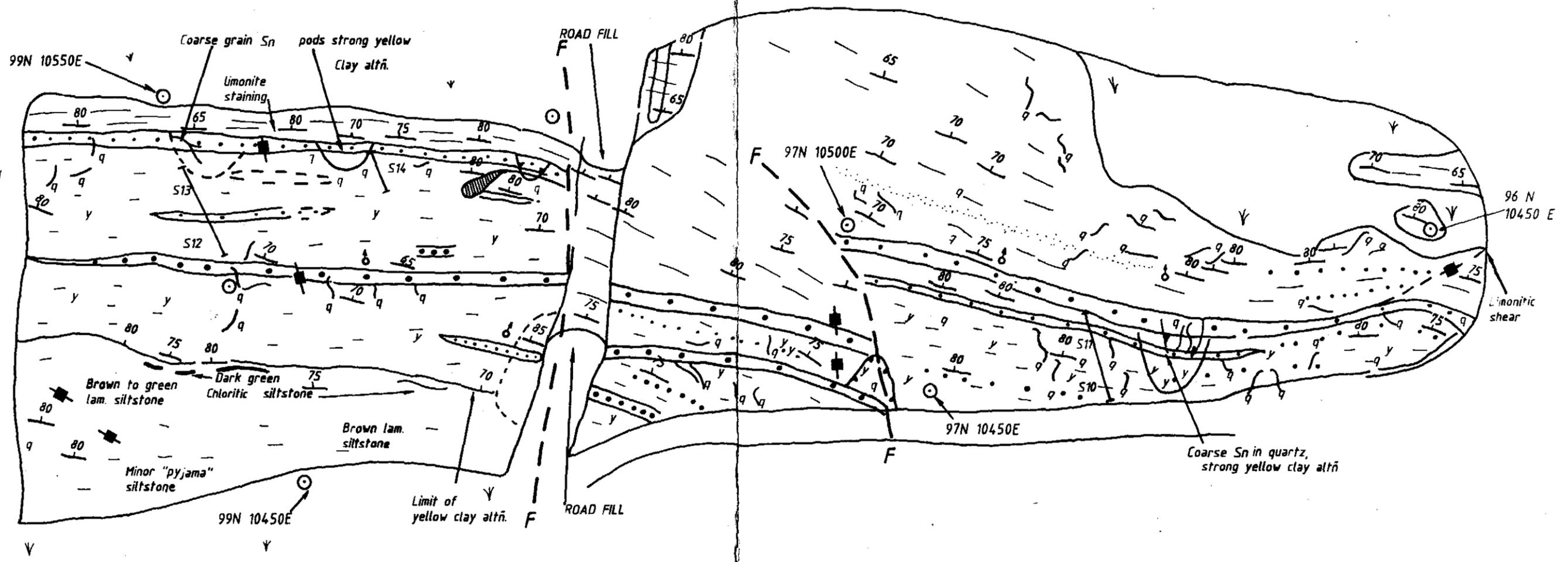
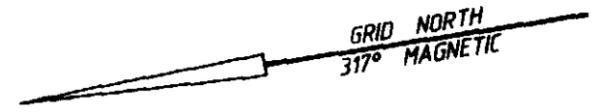
CRA EXPLORATION PTY. LIMITED

BALFOUR

SUMMARY OF GEOPHYSICS

Ref:	SK55 - 3	83-1934 R
Scale:	1 : 5000	Drawn: R. T.
Author:	M. F. F.	Report No. 11914
Date:	21 - 7 - 1982	Plan No. TASH 822



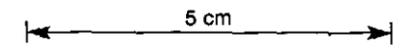


LEGEND

- Irregular Quartz vein with variable amounts of cassiterite
- Quartz "blow"
- Yellow clay "alteration"
- Pit excavated on qtz - SnO₂ Pads" in fractured quartzite
- Fault: - Definite
- ? inferred
- Peat cover
- Sample traverse

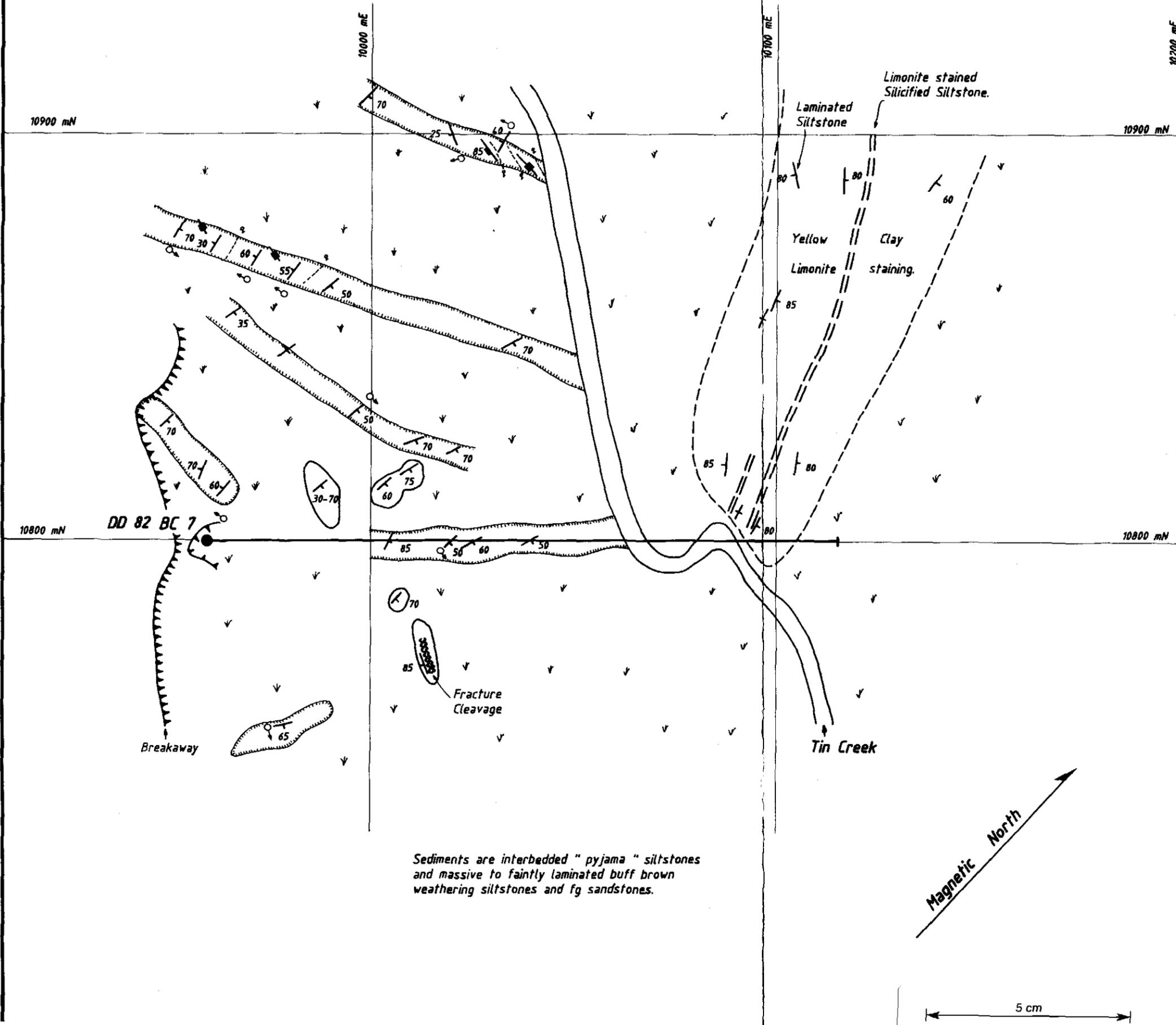
- BALFOUR SHALE**
 - Thinly regularly laminated green to brown green to brown siltstone.
 - Minor black siltstones, interbedded quartzites.
 - Laminated friable fissile Mg sandstone
- SPECIMEN HILL SILTSTONE**
 - Massive to faintly laminated white quartzites silicified in part, interbedded green siltstones.
 - Laminated to massive grey - green to brown siltstones, interbedded "pyjama" siltstones.
 - Green chloritic siltstone

615040



CRA EXPLORATION PTY. LIMITED			
GEOLOGICAL MAP			
PETERS RIDGE AREA BALFOUR			
(20M / 76 & 103M / 77)			
REF.	SK55-3	83-1934 R	
SCALE.	1 : 1000	DRAWN. R. B. G.	
AUTHOR.	N. D. L.	REPORT N°. 11914	
DATE.	15 - 12 - 1982	TASH N°. 293	

041



LEGEND

- Facing
- Dip and Strike at Bedding
- Quartz vein (unmineralized)
- Silicified sheared siltstones
- O/C limits
- Joints
- Shearing fracture cleavage
- Marsh
- Coastline

DD 82 BC 7
 Drilled 47° magnetic,
 -46°

Sediments are interbedded "pyjama" siltstones and massive to faintly laminated buff brown weathering siltstones and fg sandstones.

615041

CRA EXPLORATION PTY. LIMITED

S.P.L. 781 BALFOUR
 GEOLOGY OF DRILL SITE
 AREA DD 82 BC 7

REF.	SK55 - 3	83-1934 R
SCALE.	1 : 1000	DRAWN. R. T.
AUTHOR.	N. R. L.	REPORT N°. 11914
DATE.	26 - 11 - '82	TASH N°. 954

9900 E

10000 E

10100 E

DD 82 BC 7
 CO-ORDS: 10800 N
 ..9960 E
 -46° at 47° Mag.
 (GRID EAST)

TIN CREEK

Gry-bl laminated siltstones
 some beds carbonaceous
 interbedded med. gry f.g.
 sandstones sl micaceous.

Quartzite: Lt grn-gry fairly massive
 med f.g. qtzite 51 mm speckled
 sl chloritic int Ls 15°-65°

Quartzite - Greywacke
 Dk - v dk gry int Ls 10°-41°
 Ss dykelets py+po min. sl
 po increasing with depth.

Quartzite med gry m-cg. some beds carbonaceous
 po py - po aligned with cleavage.
 chloritic alt^N increasing.

Quartzite - Greywacke
 Med - lt grn gry m-cg x bedded qtzite + greywacke
 - poorly sorted carbonaceous int Ls v. low po min² on cleavages.

Greywacke med - v dk gry carbonaceous
 fairly massive po; min aligned to cleavage
 int Ls 15° - 60°.

Greywacke + Quartzite

Banded mudstones and Quartzites.
 Chloritic mdsts. many sweat ? qtz veins.

Interpreted Target
 from computer modeling.

Zone of
 increased
 magnetic
 response
 in core.

50m

100m

150m

E.O.H. 179m

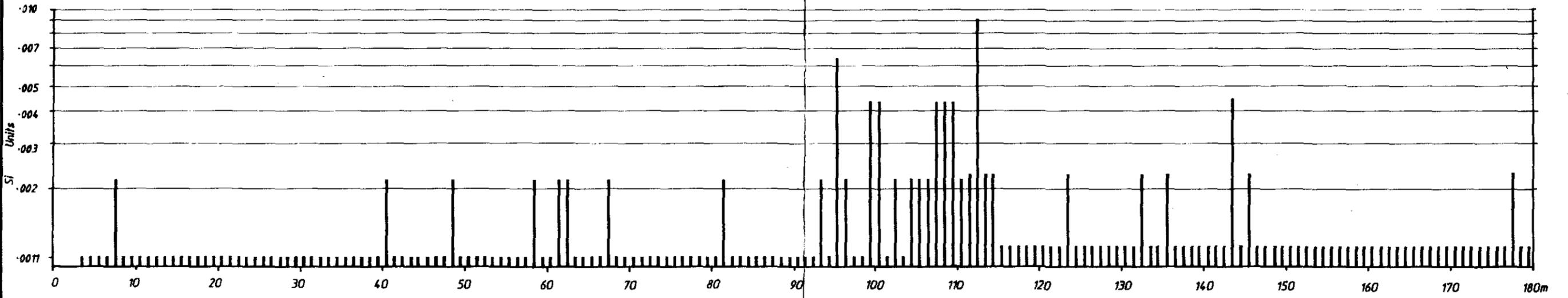
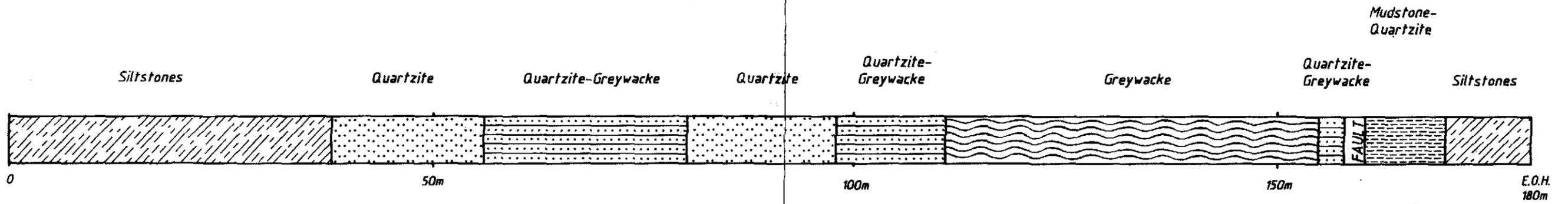
615042

5 cm

CRA EXPLORATION PTY. LIMITED

BALFOUR GRID
 DRILLHOLE SECTION
 DD 82 BC 7

REF. SK55 - 3	83-1934 R
SCALE. 1 : 1000	DRAWN. R. T.
AUTHOR. G. W.	REPORT N°. 11914
DATE. DEC 1982	TASH N°. 1122



→ NQ

→ BQ

M.S. Readings taken with a Scintrex MP-5
 Instrument in c.g.s. Units.
 Correction Factors:
 NQ CORE x 1.8 } Conversion to S.I. Units
 BQ CORE x 1.85 } x 4 π

5 cm

615043

CRA EXPLORATION PTY. LIMITED	
S.P.L. 781 BALFOUR MAGNETIC SUSCEPTIBILITY S. I. UNITS DD 82 BC 7	
REF. SK55 - 3	83-1934 R
SCALE. 1 : 500	DRAWN. R. T.
AUTHOR. G. W.	REPORT N°. 11914
DATE. 23 - 11 - 1982	TASR N°. 951

BALFOUR DIAMOND DRILL HOLES

GRID CO-ORDINATES

B.H.P. Diamond Drill Holes (coords approx.)

DDB 1 Coords 7640 N 9960 E
 Incln: Vertical
 Depth: 88.6 m
 DDB 2 Coords 9810 N 9940 E
 Incln: Vertical
 Depth: 73.15 m
 DDB 3 Coords 7640 N 9860 E
 Incln: Vertical
 Depth: 30.6 m
 DDB 4 Coords 7440 N 9860 E
 Incln: Vertical
 Depth: 167.49 m
 DDB 5 Coords 8860 N 9730 E
 Incln: Vertical
 Depth: 281.54
 DDB 6 Coords 10000 N 10000 E
 Bearing: 236° M
 Incln: -55°
 Depth: 181.81 m

GEOPEKO Jacro Diamond Drill Holes

DDB 7 Coords: 9500 N 10460 E
 Bearing: 227° M
 Incln: -60°
 Depth: 40.1 m
 DDB 8 Coords: 9100 N 10240 E
 Bearing: 227° M
 Incln: -60°
 Depth: 40.3 m
 DDB 9 Coords: 10300 N 10050 E
 Bearing: 47° M
 Incln: -60°
 Depth: 15.5 m
 DDB 10 Coords: 10100 N 9770 E
 Bearing: 227° M
 Incln: 55°
 Depth: 39 m

CRAE/GEOPEKO Diamond Drill Holes

DDBC 1 Coords: 9630 N 10075 E
 Bearing: 227° M
 Incln: -45°
 Depth: 11.9 m
 DDBC 2 Coords: 9585 N 10060 E
 Bearing: 260° M
 Incln: -45°
 Depth: 210.5 m
 DDBC 3 Coords: 8800 N 9275 E
 Bearing: 260° M
 Incln: -45°
 Depth: 143.1 m
 DDBC 4 Coords: 9387 N 10425 E
 Bearing: 227° M
 Incln: -55°
 Depth: 211.4 m

DDBC 5 Coords = 9175 N 10460 E
 Bearing = 047° M
 Incln = -55°
 Depth = 100 m
 DDBC 6 Coords = 9200 N 10100 E
 Bearing = 047° M
 Incln = -45°
 Depth = 274.55 m

DDBC 7 Coords = 10800 N 9660 E
 Bearing = 047° M
 Incln = -46°
 Depth = 179 m

DDBC 8 Coords = 8770 N 10090 E
 Bearing = 167° M
 Incln = -60°
 Depth = 300 m

RE CALCULATED AMG CO-ORDINATES

SAMPLE No.	SAM_TYPE	REPEAT LEVEL	DPO/SURVEY No.	EASTING	NORTHING	ZONE	QUADRANT
DDB0001	DD		C000145	323662	5429477	55	SE
DDB0002	DD		C000145	323567	5429510	55	SE
DDB0003	DD		C000145	323579	5429430	55	SE
DDB0004	DD		C000145	323671	5429262	55	SE
DDB0005	DD		C000145	323834	5428714	55	SE
DDB0006	DD		C000145	323528	5429797	55	SE
DDB0007	DD		C000145	324147	5428593	55	SE
DDB0008	DD		C000145	324150	5429154	55	SE
DDB0009	DD		C000145	323148	5430576	55	SE
DDB0010	DD		C000145	323288	5429773	55	SE
DDBC001	DD		C000145	323764	5429522	55	SE
DDBC002	DD		C000145	323772	5429477	55	SE
DDBC003	DD		C000145	323481	5428451	55	SE
DDBC004	DD		C000145	324171	5429482	55	SE
DDBC005	DD		C000145	324301	5429320	55	SE
DDBC006	DD		C000145	323986	5429173	55	SE
DDBC007	DD		C000145	322868	5430310	55	SE
DDBC008	DD		C000145	324179	5428807	55	SE