

CRA EXPLORATION PTY LIMITED

EL 1951 ALROY NORTH, N.T.

FINAL REPORT

PERIOD ENDING AUGUST, 1980

submitted by: A.A. Snelling

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.....
W.H. Johnston
.....

Accepted by: W.H. Johnston

Date: October, 1980

copy to: N.T. Dept of Mines & Energy
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1. SUMMARY

Interpretation of modelling of magnetic Anomaly B detected in the 1978 airborne survey indicated a weak source at 500-600 m or 930 m depth, depending on the model used. A ground magnetic and gravity survey was undertaken to aid modelling. The continuity of Anomaly A was modelled but drilling has only intersected a barren magnetite-bearing metasedimentary unit. Further drilling of magnetic anomalies has not been recommended.

2. INTRODUCTION

EL 1951 Alroy North of 31.1 sq miles was applied for on 26th September, 1978 by CRA Exploration Pty Ltd (see Plans NTd 1006 and 1180). The area was granted by the N.T. Government on 23rd January, 1979 and on 26th March, 1979 was included in the joint venture agreement with Australian Ores and Minerals Ltd (A.O.M.), which was initially signed on 28th August, 1978. The exploration strategy was to prospect for concealed Tennant Creek style mineralisation in what were assumed would be Lower Proterozoic rocks beneath the Palaeozoic sediments of the Georgina Basin. Exploration activities during the first year of tenure to 22nd January, 1980 are described by Steemson (1980). This report covers the period from that date until relinquishment of the exploration licence.

3. CONCLUSIONS

Neither further drilling of Anomaly A, into which 2 holes have already been drilled, nor drilling of the deeper Anomaly B is warranted. Both drill holes intersected a barren Middle Proterozoic magnetite-bearing metasedimentary unit which probably continues at depth to Anomaly B where the anomaly is produced by an anticline similar to that at Anomaly A.

4. GEOLOGY

As can be seen in Plan NTd 993 the Alroy North EL 1951 area is completely covered by Cainozoic fine red sand, most of which was once wind-borne, but now forms broad, low, vegetated dunes which are elongated many miles in the NW-SE direction of the prevailing south-easterly winds. There are minor patches of black soil, gravel, travertine, detrital laterite and red clayey soil. Beyond the EL area to the south-west and south-east are low outcrops of fossiliferous Middle Cambrian silicified limestones and dolomites, with interbedded siltstones and chert silicified shales. These are the Wonorah Beds of the Georgina Basin sequence and underlie the Cainozoic sand cover in the EL area.

5. PREVIOUS WORK

An airborne magnetometer and differential spectrometer survey was flown over the area late in 1978, the specifications of which were reported by Steemson (1980). No significant radiometric anomalies were detected by that survey. Evaluation of residual total field magnetic contours and stacked profiles indicated two anomalies, designated Anomaly A and Anomaly B (see Plans NTd 1430 and 1015), were comparable to magnetic features associated with Tennant Creek style copper-gold mineralisation.

Anomaly A was investigated, gridded and ground magnetics read over it by contractors (see Plan NTd 1431). From the ground magnetic profiles modelling was done in order to plan drill testing of the anomaly. DD79AL1 was finally collared at 9796N 10 000E but was abandoned at 193.1 m due to caving, the target not having been intersected. Plan NTd 1181 shows the drill section.

6. GEOPHYSICAL MODELLING

Magnetic modelling of Anomaly B was undertaken prior to ground investigation. Two lines, T94 and T95, from the airborne data were digitised and models constructed

to compare with these profiles (Bronskill, 1980). The models in Figures 1 and 2 resulted. A magnetic body at 500-600 m depth, about 450 m thick and with a susceptibility of .002 - .003 cgs matches the observed anomaly reasonably well.

Another model, the PRISM model, representing a dipping prism of finite strike, length and depth extent with sides orthongonal to its strike being vertical, was also run on the computer with data obtained by digitizing the aeromagnetic contour map on 800 m x 400 m centres (Jenke, 1980). The results are shown in Figures 3 and 4, the latter being a copy of the computer printout, and indicate a magnetic body about 1000 m below the sensor height (nominally 90 m) and dipping steeply to the north at 74°.

Detailed magnetic modelling of Anomaly A is discussed by Snelling (1980 a,b) and Steemson (1980). However, the continuity of the magnetic body at Anomaly A was tested by modelling from ground profiles its western extent in EL 1951 (Jenke, 1980). Lines 8400E and 8800E were chosen. The TABULAR model, representing a two dimensional dyke of infinite depth extent was used. The results are as follows:-

	k (c.g.s.)	Dip (°S)	Range on line	Depth (m)	True Width (m)
8400E	0.00248	65	9835N- 10022N	220	169
8800E	0.00190	67	9794N- 10104N	183	285

The parameters from the MAGMOD programme were used to calculate the response of such a body, and the results plotted in Figures 5 and 6 agree well with the observations. The susceptibilities, which were established by trial and error, are within a few percent of those which can be calculated from the MAGMOD results. When compared with the previously established modelling results (Snelling, 1980a and Steemson, 1980) as shown in Figure 7, there is an indication that the depth to this body increases from the centre towards each end. However, this is more likely to be a result of the body's limited strike length when the model used for interpretation assumes an

infinite strike extent, and the estimates from the centre of the response are likely to be the most accurate.

The dramatic change in the interpreted depth below ground level from "A" body (150 m) to "B" body (930 m) suggests that the source of each response may be a common geological unit downfaulted in the position of "B" body. A simple model of that situation (Figure 8) was run on the computer and showed that such a possibility could easily be checked with a gravity survey.

7. GROUND MAGNETICS - ANOMALY B

Anomaly B was located in the field by extending the baseline from Anomaly A to the appropriate grid coordinates derived from the aeromagnetic data. A 4 km N-S traverse was made along line 4800E with a Scintrex MP-2 magnetometer. The resultant magnetic profile is plotted on Plan NTd 1435 and closely matches those in Figures 1 and 2.

8. GRAVITY SURVEY

Gravity readings were taken at 50 m intervals along optically levelled lines 10 000mE, 10 400mE and 10 800mE from 9000mN to 11 000mN, and along 10 000mN from 10 000mE to 10 800mE (Plan NTd 1495). Barometric levelling was used for stations at 400 m intervals along the baseline from 2800mE to 10 000mE, and at 500 m intervals along the access track into the prospect (Plans NTd 1438 and 1439). For the latter traverse, the station positions are estimated only.

The following factors were used for the reduction of the data:-

Grid North:	347° True
Latitude Correction:	0.000517 mgals/m N-S
Bouguer Density:	2.3tm ⁻³
Elevation Correction:	0.212312 mgals/m
Base Station Location:	10 600mE 10 000mN
Base Station Value:	2080.00 mgals

The meter used was a Lacoste and Romberg (serial no.544), and in general readings repeated to within ± 0.02 mgals.

Individual station values are tabulated in the Appendix.

Barometric levelling was used to tie the RL's established on the prospect to bench marks located on the Barkly Highway. Using the elevations shown on the published 1:500 000 Bouguer Anomaly map, the grid RL of 100.00 m corresponds to an elevation of 239.0 m (784 ft).

Average difference in gravity readings between the bench marks and the prospect base station at 10 600mE 10 000mN are as follows:-

Bench Mark	Gravity (mgals) relative to 10 600mE 10 000mN
8917	-24.67
8918	-21.58
8919	-11.61
8920	-12.76

Because the location of the grid is not accurately known, no attempt has been made to relate the prospect data to the BMR measurements at these base stations.

No detailed interpretation of this data has yet been attempted.

9. DISCUSSION

The depth of 500 m - 600 m or 930 m, depending on which magnetic body model is accepted, and the low susceptibility (.002-.003 or .0075 cgs, lower than the .04 cgs measured on drill core from hole DD79AL2 over Anomaly A, EL 2043 Dalmore - see Snelling, 1980b) do not make Anomaly B an attractive target. Furthermore, since it is postulated that Anomalies A and B may actually be connected and therefore represent the same magnetic source, the drilling results from Anomaly A (Snelling, 1980a,b) are significant. The two holes drilled both intersected a barren magnetite-bearing metasedimentary unit, interbedded with dolomites that contain stromatolites of Middle Proterozoic age, not a Tennant Creek-type ironstone lode in Lower Proterozoic clastics. Thus it is considered that further drilling of Anomaly A is not warranted; neither is drilling of the

deeper Anomaly B, where the anomaly is probably produced by an anticline similar to that at Anomaly A.

A.A. SNELLING

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
NTd 1435	Alroy North EL 1951 Ground Magnetometer Profile 4800mE	1: 10 000
NTd 1438	Alroy North EL 1951 Dalmore EL 2043 Profiles of Bouguer Gravity	1: 10 000
NTd 1439	Alroy North EL 1951 Dalmore EL 2043 Profiles of Bouguer Gravity	1: 10 000
NTd 1495	Alroy North EL 1951 Dalmore EL 2043 Gravity Readings	1: 20 000

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- Figure 1 Alroy North Anomaly B
Magnetics Profile along line T94
- Figure 2 Alroy North Anomaly B
Magnetic Profile along line T95
- Figure 3 Alroy North Anomaly B
Digitisation of Contours and Modelling
- Figure 4 Alroy North Anomaly B
Computer Printout of Generated Model
- Figure 5 Alroy North Anomaly A line 8400mE
(a) Magnetics Profile for Generated Model
(b) Computer Printout of Generated Model
- Figure 6 Alroy North Anomaly A line 8800mE
(a) Magnetics Profile for Generated Model
(b) Computer Printout of Generated Model
- Figure 7 Alroy North Anomaly A
Ground Magnetics showing position extent,
depth to top and dip of the modelled body
on the various sections.
- Figure 8 Alroy North - Gravity Model for Fault
between Anomalies A and B

10. REFERENCES

- Bronskill, S. 1980 Results of Magnetic Modelling on Alroy Date CRAE Memo 29.1.80
- Jenke, G.P. 1980 Further MAGMOD Interpretation, Alroy North CRAE Memo 13.3.80
- Snelling, A.A. 1980a EL 2043 Dalmore, N.T. Annual Report Period ending 28.5.80 CRAE Report 10145
- Snelling, A.A. 1980b EL 2043 Dalmore, N.T. Final Report Period ending August, 1980 CRAE Report 10259
- Steemson, G.H. 1980 Alroy North EL 1951 Report for Year ending 22.1.80 CRAE Report 9918

11. KEYWORDS

Gold, copper, Alroy SE/53-15 1:250 000 map sheet, geophys-mag, geophys-grav, geophys-interpret. theory, Proterozoic-Md, dolomite, magnetite.

12. LOCATION

Alroy SE/53-15 1:250 000 map sheet

13. LIST OF PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
NTd 993	Exploration Licence Application Dalmore, N.T.	1:250 000
NTd 1006	Locality Map A.O.M. Joint Venture Exploration Licence No 1184 Alroy Northern Territory.	1:1 000 000
NTd 1015	Alroy North Residual Magnetic Contours	1: 20 000
NTd 1180	Current Title Situation Alroy North, Northern Territory.	1:250 000
NTd 1181	Alroy North 79ALD1 Section on 10 000E Looking 252° Magnetic	1: 2 000
NTd 1430	Alroy Area Residual Magnetic Contours	1:100 000
NTd 1431	Alroy North EL 1951 Dalmore EL 2043 Ground Magnetic Contours	1: 20 000

Gravity Survey

- Tabulated Station Values

PROSPECT ALROY NTH/DALMORE

DATE MAY 1980

BOUGUER DENSITY 2.3 tm^{-3}

CALCS BY GPJ

mE	mN	RL	Drift Corr Reading (mgals)	Bouguer Gravity	mE	mN	RL	Drift Corr Reading	Bouguer Gravity
10000	9000	100.481	2118.41	2139.24	10000	9950	100.506	2118.33	2139.64
	9050	100.406	2118.43	2139.27		10000	100.744	2118.32	2139.71
	9100	100.294	2118.51	2139.35		10050	100.910	2118.27	2139.72
	9150	100.96	2118.44	2139.26		10100	101.010	2118.21	2139.71
	9200	99.752	2118.49	2139.27		10150	101.031	2118.14	2139.67
	9250	99.625	2118.53	2139.30		10200	101.249	2117.99	2139.59
	9300	99.464	2118.59	2139.36		10250	101.148	2117.88	2139.48
	9350	99.495	2118.56	2139.36		10300	101.011	2117.77	2139.37
	9400	99.524	2118.40	2139.23		10350	101.53	2117.53	2139.18
	9450	99.560	2118.35	2139.21		10400	100.840	2117.47	2139.08
	9500	99.514	2118.31	2139.19		10450	100.952	2117.32	2138.98
	9550	99.463	2118.26	2139.15		10500	101.064	2117.17	2138.88
	9600	99.605	2118.19	2139.14		10550	100.853	2117.06	2138.75
	9650	99.565	2118.23	2139.19		10600	100.540	2117.00	2138.65
	9700	99.777	2118.23	2139.26		10650	100.205	2116.94	2138.54
	9750	99.844	2118.22	2139.29		10700	100.121	2116.85	2138.46
	9800	00.995	2118.24	2139.37		10750	99.869	2116.78	2138.36
	9850	100.081	2118.29	2139.46		10800	99.399	2116.82	2138.33
	990	100.444	2118.24	2139.52		10850	98.942	2116.86	2138.30

PROSPECT ALROY NTH/DALMORE... DATE .MAY.1980. BOUGUER DENSITY ..2.3..tm⁻³..... CALCS BY ...GPJ.....

mE	mN	RL	Drift Corr Reading (mgals)	Bouguer Gravity	mE	mN	RL	Drift Corr Reading	Bouguer Gravity
10400	9000	98.834	2118.66	2139.09	10400	9950	99.980	2118.58	2139.74
	9050	98.825	2118.58	2139.04		10000	100.334	2118.50	2139.76
	9100	98.805	2118.66	2139.14		10050	100.579	2118.41	2139.74
	9150	98.703	2118.74	2139.22		10100	100.653	2118.32	2139.69
	9200	98.624	2118.80	2139.29		10150	100.739	2118.21	2139.63
	9250	98.618	2118.84	2139.35		10200	100.797	2118.13	2139.59
	9300	98.609	2118.84	2139.38		10250	101.121	2117.94	2139.49
	9350	98.611	2118.73	2139.29		10300	101.301	2117.74	2139.35
	9400	98.474	2118.65	2139.21		10350	101.441	2117.54	2139.21
	9450	98.541	2118.60	2139.20		10400	101.364	2117.37	2139.05
	9500	98.570	2118.59	2139.22		10450	101.459	2117.24	2138.96
	9550	98.904	2118.58	2139.31		10500	101.269	2117.10	2138.81
	9600	98.488	2118.75	2139.41		10550	101.118	2117.07	2138.77
	9650	98.536	2118.78	2139.48		10600	100.867	2117.06	2138.73
	9700	98.698	2118.72	2139.48		10650	100.446	2117.03	2138.64
	9750	98.676	2118.79	2139.57		10700	100.244	2116.99	2138.58
	9800	98.839	2118.77	2139.61		10750	100.231	2116.87	2138.48
	9850	99.167	2118.69	2139.62		10800	99.838	2116.87	2138.42
	9900	99.632	2118.60	2139.66		10850	99.584	2116.85(ave)	2138.37

PROSPECT ALROY NTH/DALMORE DATE MAY 1980 BOUGUER DENSITY 2.3 gm^{-3} CALCS BY GPJ

mE	mN	RL	Drift Corr Reading (mgals)	Bouguer Gravity	mE	mN	RL	Drift Corr Reading	Bouguer Gravity
10800	9000	98.274	2118.69	2138.96	10800	9950	98.418	2118.89	2139.67
	9050	98.270	2118.59	2138.88		10000	98.675	2118.75	2139.61
	9100	98.306	2118.47	2138.80		10050	98.583	2118.72	2139.58
	9150	98.363	2118.46	2138.82		10100	98.660	2118.65	2139.55
	9200	98.389	2118.50	2138.89		10150	98.610	2118.58	2139.50
	9250	98.231	2118.61	2139.00		10200	98.598	2118.45	2139.39
	9300	98.316	2118.60	2139.03		10250	98.628	2118.36	2139.33
	9350	98.104	2118.75	2139.16		10300	98.665	2118.20	2139.21
	9400	98.072	2118.82	2139.25		10350	98.805	2118.02	2139.08
	9450	97.979	2118.91	2139.34		10400	98.643	2117.87	2138.92
	9500	97.989	2118.92	2139.38		10450	98.391	2117.84	2138.86
	9550	98.513	2118.80	2139.40		10500	98.339	2117.72	2138.77
	9600	97.989	2118.93	2139.44		10550	98.416	2117.56	2138.64
	9650	98.020	2118.96	2139.50		10600	98.611	2117.46	2138.61
	9700	98.053	2118.97	2139.54		10650	98.352	2117.44	2138.56
	9750	98.156	2119.00	2139.62		10700	98.291	2117.38	2138.51
	9800	98.261	2119.06	2139.73		10750	98.200	2117.31	2138.44
	9850	98.388	2119.02	2139.74		10800	98.046	2117.30	2138.43
	990	98.338	2118.98	2139.72		10850	97.936	2117.21	2138.34

ave
rdg

PROSPECT ALROY NTH/DALMORE... DATE MAY 1980. BOUGUER DENSITY ...2.3 gm⁻³..... CALCS BY ..GPJ.....

mE	mN	RL Barometric	Drift Corr Reading (mgals)	Bouguer Gravity	mE	mN	RL	Drift Corr Reading	Bouguer Gravity
10000	10000	100.744 97.96	2118.32	2139.71					
9600		100.73	2118.42	2139.85					
9200		99.99	2118.68	2140.00					
8800		99.81	2118.60	2139.93					
8400		98.89	2117.85	2139.03					
8000		95.64	2117.61	2138.15					
7600		99.35	2117.52	2138.89					
7200		99.77	2117.05	2138.56					
6800		97.17	2116.91	2137.91					
6600	9900	98.47	2117.22	2138.47					
6400	9800	98.42	2117.29	2138.50					
6000		97.96	2117.08	2138.24					
5600		99.81	2117.27	2138.87					
5200		99.35	2117.34	2138.89					
5000	9700	97.49	2117.39	2138.52					
4800	9600	98.41	2117.57	2138.87					
4400		98.14	2118.09	2139.38					
4000		98.89	2118.09	2139.58					
3600		101.02	2117.67	2139.66					
3200		100.74	2117.68	2139.66					
2800		101.20	2117.64	2139.76					

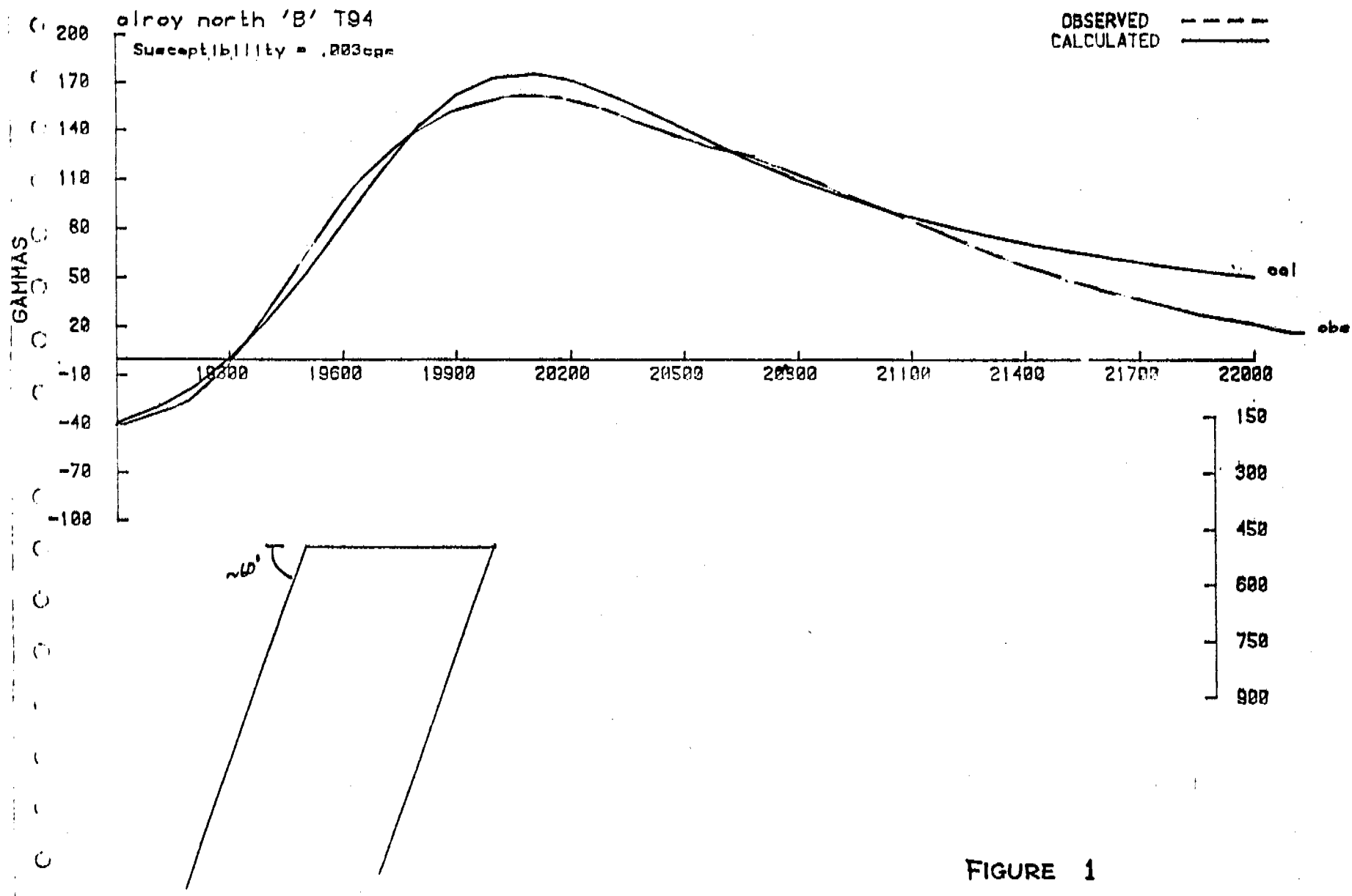


FIGURE 1

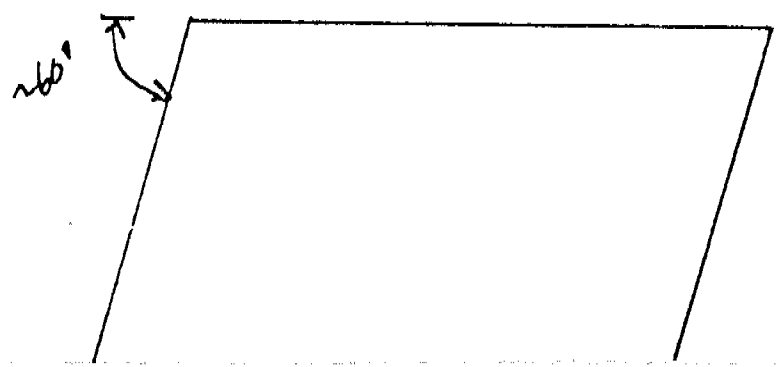
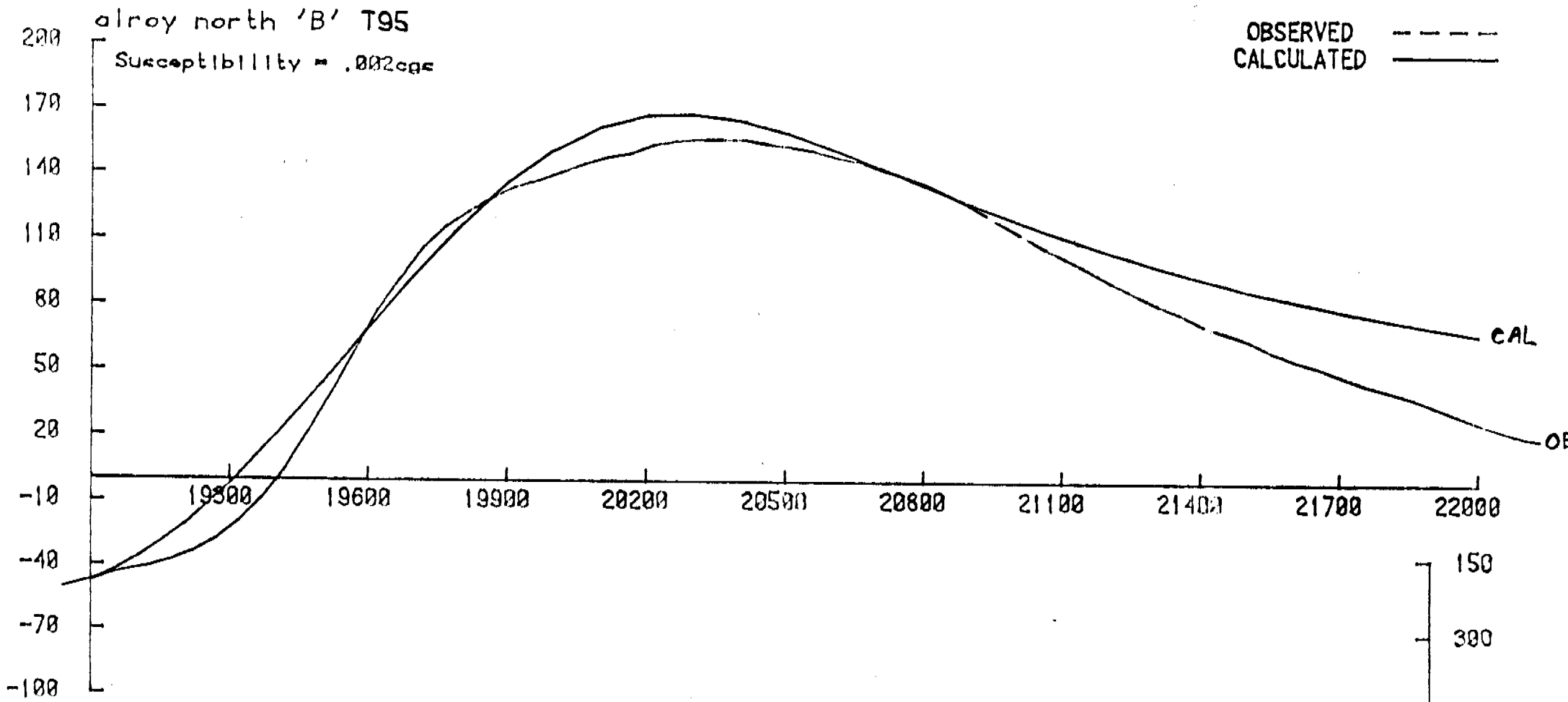


FIGURE 2

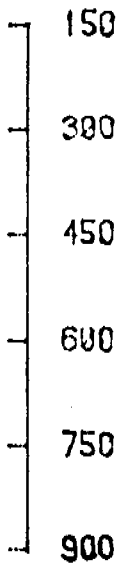
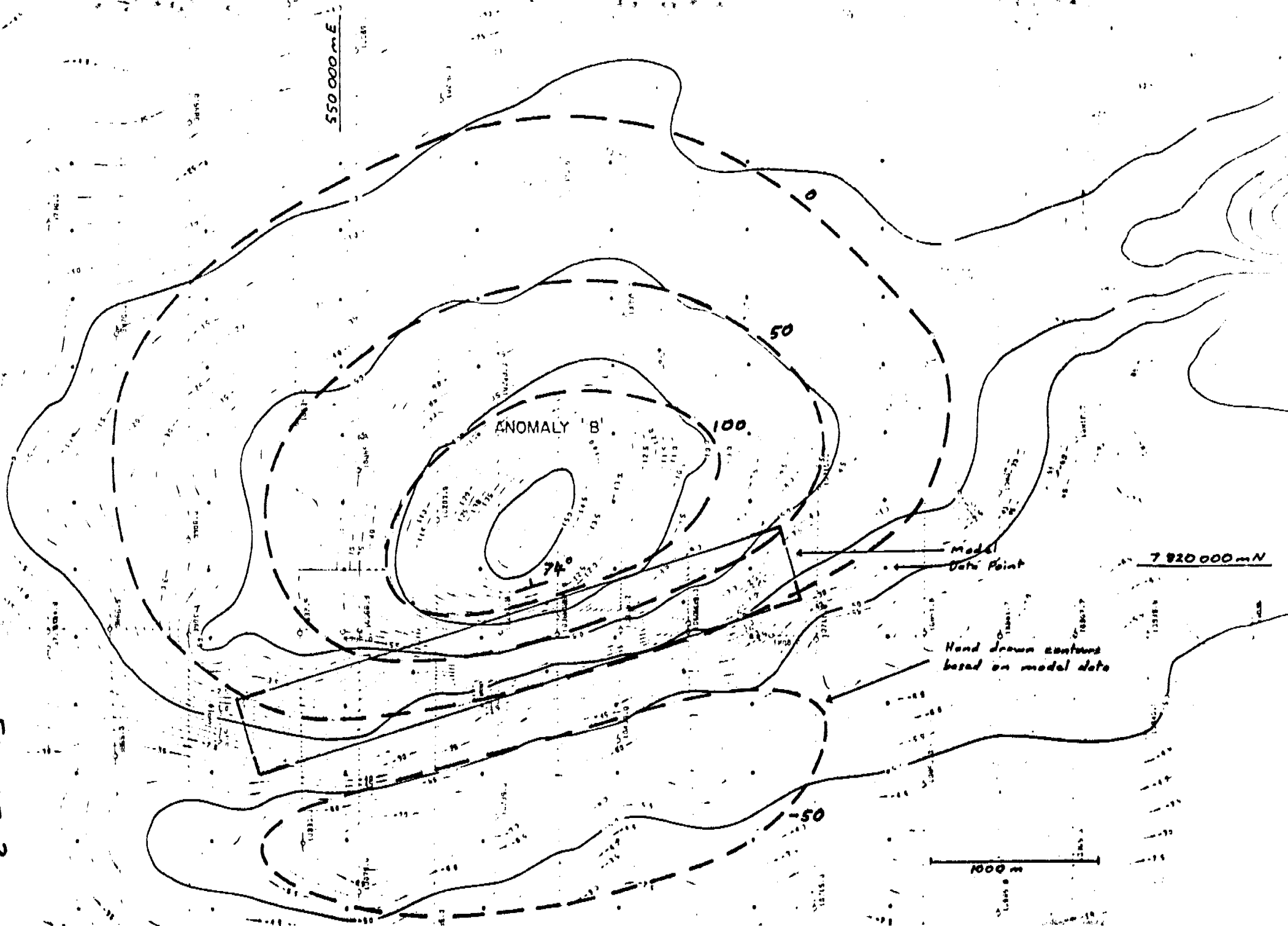


FIGURE 3



4163491

WEIGHTED LEAST SQUARES FIT - PRISM

1 ALROY ANOMALY B

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE	
MAGNET	1	7.700+02	0.0	0.0	5.107+02	7.7+01	0.0
DIP	1	1.100+02	0.0	0.0	1.097+02	5.0+00	0.0
BASE LEVEL	1	-3.000+01	0.0	0.0	-4.165+01	2.0+01	0.0
X SLOPE	1	0.000	0.0	0.0	-1.098-01	5.0+00	0.0
Y SLOPE	1	0.000	0.0	0.0	-1.952-01	5.0+00	0.0
X POSITION	1	5.120+03	0.0	0.0	5.115+03	9.0+00	0.0
Y POSITION	1	1.980+03	0.0	0.0	1.988+03	9.0+00	0.0
X H-WIDTH	1	8.000+01	5.0+00	2.5+02	5.048+01	9.0+00	0.0
Y H-WIDTH	1	1.400+02	5.0+00	2.5+02	1.083+02	9.0+00	0.0
DEPTH	1	9.000+01	8.0+00	1.5+02	1.312+02	9.0+00	0.0
THICKNESS	1	5.000+02	2.0+01	2.0+03	2.118+02	9.0+00	0.0
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0	0.0
DECLNATN	0	8.500+01	0.0	0.0	8.500+01	0.0	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0	0.0
ORIENTATN	0	1.080+02	0.0	0.0	1.080+02	0.0	0.0

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .5473

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE	
MAGNET	1	7.700+02	0.0	0.0	4.246+02	7.7+01	0.0
DIP	1	1.100+02	0.0	0.0	7.023+01	5.0+00	0.0
BASE LEVEL	1	-3.000+01	0.0	0.0	-1.013+01	2.0+01	0.0
X SLOPE	1	0.000	0.0	0.0	-2.069-02	5.0+00	0.0
Y SLOPE	1	0.000	0.0	0.0	-9.480-02	5.0+00	0.0
X POSITION	1	5.120+03	0.0	0.0	5.105+03	9.0+00	0.0
Y POSITION	1	1.980+03	0.0	0.0	1.950+03	9.0+00	0.0
X H-WIDTH	1	8.000+01	5.0+00	2.5+02	2.155+01	9.0+00	0.0
Y H-WIDTH	1	1.400+02	5.0+00	2.5+02	1.677+02	9.0+00	0.0
DEPTH	1	9.000+01	8.0+00	1.5+02	1.063+02	9.0+00	0.0
THICKNESS	1	5.000+02	2.0+01	2.0+03	1.819+02	9.0+00	0.0
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0	0.0
DECLNATN	0	8.500+01	0.0	0.0	8.500+01	0.0	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0	0.0
ORIENTATN	0	1.080+02	0.0	0.0	1.080+02	0.0	0.0

26/2/80

FASDAC FILE ALROYB CO

1 DISTANCE UNIT IS 10 METRES

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .2169

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE	
MAGNET	1	7.700+02	0.0	0.0	3.796+02	7.7+01	4.3+01
DIP	1	1.100+02	0.0	0.0	7.355+01	5.0+00	7.9+00
BASE LEVEL	1	-3.000+01	0.0	0.0	-1.115+01	2.0+01	7.9+00
X SLOPE	1	0.000	0.0	0.0	-2.031-02	5.0+00	5.3-02
Y SLOPE	1	0.000	0.0	0.0	-1.083-01	5.0+00	5.6-02
X POSITION	1	5.120+03	0.0	0.0	5.104+03	9.0+00	2.2+01
Y POSITION	1	1.980+03	0.0	0.0	1.951+03	9.0+00	9.4+00
X H-WIDTH	2	8.000+01	5.0+00	2.5+02	2.155+01	9.0+00	0.0
Y H-WIDTH	1	1.400+02	5.0+00	2.5+02	1.693+02	9.0+00	2.5+00
DEPTH	1	9.000+01	8.0+00	1.5+02	1.020+02	9.0+00	2.4+01
THICKNESS	1	5.000+02	2.0+01	2.0+03	2.573+02	9.0+00	9.0+00
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0	0.0
DECLNATN	0	8.500+01	0.0	0.0	8.500+01	0.0	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0	0.0
ORIENTATN	0	1.080+02	0.0	0.0	1.080+02	0.0	0.0

379.6
73.55°
-11.15°
-0.0203
-0.1083
5104
1951
2155
169.3
102.0
257.3

Susceptibility at 50900nT = 0.00746 cgs

-0.00203 nT/m
-0.01083 nT/m ESTIMATED AT -0.0105
551040 mE
7819510 mW
215.5 m
169.3 m
102.0 m
257.3 m

FIGURE 4

POSITION-Y -Y WEIGHT OBSERVED FITTED

4163412

AMG	m E	m N		
x 10	x 10			
4840.000	2240.000	6.00	-30.	-24.
4840.000	2200.000	6.00	-19.	-18.
4840.000	2160.000	6.00	-5.	-12.
4840.000	2120.000	6.00	-1.	-7.
4840.000	2080.000	6.00	10.	-4.
4840.000	2040.000	6.00	15.	-3.
4840.000	2000.000	6.00	3.	-6.
4840.000	1960.000	6.00	-9.	-12.
4840.000	1920.000	6.00	-20.	-20.
4840.000	1880.000	6.00	-35.	-26.
4840.000	1840.000	6.00	-37.	-25.
4840.000	1800.000	6.00	-30.	-19.
4920.000	2240.000	6.00	-25.	-14.
4920.000	2200.000	6.00	-12.	-4.
4920.000	2160.000	6.00	7.	6.
4920.000	2120.000	6.00	22.	17.
4920.000	2080.000	6.00	41.	27.
4920.000	2040.000	6.00	41.	35.
4920.000	2000.000	6.00	40.	35.
4920.000	1960.000	2.00	51.	22.
4920.000	1920.000	6.00	10.	-6.
4920.000	1880.000	6.00	-40.	-34.
4920.000	1840.000	6.00	-55.	-43.
4920.000	1800.000	6.00	-46.	-35.
5000.000	2240.000	6.00	-17.	-2.
5000.000	2200.000	6.00	7.	13.
5000.000	2160.000	6.00	27.	30.
5000.000	2120.000	6.00	44.	49.
5000.000	2080.000	9.00	62.	70.
5000.000	2040.000	9.00	65.	88.
5000.000	2000.000	9.00	67.	95.
5000.000	1960.000	9.00	55.	72.
5000.000	1920.000	9.00	22.	12.
5000.000	1880.000	9.00	-34.	-44.
5000.000	1840.000	6.00	-71.	-60.
5000.000	1800.000	6.00	-55.	-49.
5080.000	2240.000	6.00	11.	7.
5080.000	2200.000	6.00	25.	27.
5080.000	2160.000	6.00	48.	50.
5080.000	2120.000	6.00	77.	77.
5080.000	2080.000	9.00	106.	105.
5080.000	2040.000	9.00	130.	125.
5080.000	2000.000	9.00	145.	119.
5080.000	1960.000	9.00	60.	65.
5080.000	1920.000	9.00	-17.	-14.
5080.000	1880.000	9.00	-59.	-62.
5080.000	1840.000	6.00	-68.	-67.
5080.000	1800.000	6.00	-38.	-53.
5160.000	2240.000	6.00	12.	9.
5160.000	2200.000	6.00	37.	30.
5160.000	2160.000	6.00	68.	56.
5160.000	2120.000	6.00	102.	87.
5160.000	2080.000	9.00	133.	118.
5160.000	2040.000	9.00	130.	131.
5160.000	2000.000	9.00	108.	101.
5160.000	1960.000	9.00	30.	25.
5160.000	1920.000	9.00	-30.	-43.
5160.000	1880.000	9.00	-63.	-68.
5160.000	1840.000	6.00	-41.	-62.
5160.000	1800.000	6.00	-41.	-62.

5160.000	1800.000	6.00	-23.	-47.
5240.000	2240.000	6.00	-2.	-0.
5240.000	2200.000	6.00	15.	17.
5240.000	2160.000	6.00	37.	39.
5240.000	2120.000	6.00	60.	64.
5240.000	2080.000	9.00	79.	86.
5240.000	2040.000	9.00	71.	88.
5240.000	2000.000	9.00	35.	49.
5240.000	1960.000	9.00	-20.	-13.
5240.000	1920.000	9.00	-56.	-51.
5240.000	1880.000	9.00	-60.	-58.
5240.000	1840.000	6.00	-43.	-50.
5240.000	1800.000	6.00	-27.	-38.
5320.000	2240.000	6.00	-6.	-17.
5320.000	2200.000	6.00	2.	-7.
5320.000	2160.000	6.00	21.	4.
5320.000	2120.000	6.00	35.	14.
5320.000	2080.000	6.00	30.	18.
5320.000	2040.000	6.00	15.	11.
5320.000	2000.000	6.00	-34.	-9.
5320.000	1960.000	6.00	-68.	-31.
5320.000	1920.000	6.00	-65.	-42.
5320.000	1880.000	6.00	-50.	-42.
5320.000	1840.000	6.00	-38.	-36.
5320.000	1800.000	6.00	-28.	-28.
5040.000	1980.000	9.00	102.	101.
5040.000	1940.000	9.00	26.	41.
5120.000	1980.000	9.00	115.	86.
5120.000	1940.000	9.00	-5.	5.
5200.000	1980.000	9.00	35.	43.
5200.000	1940.000	9.00	-34.	-28.

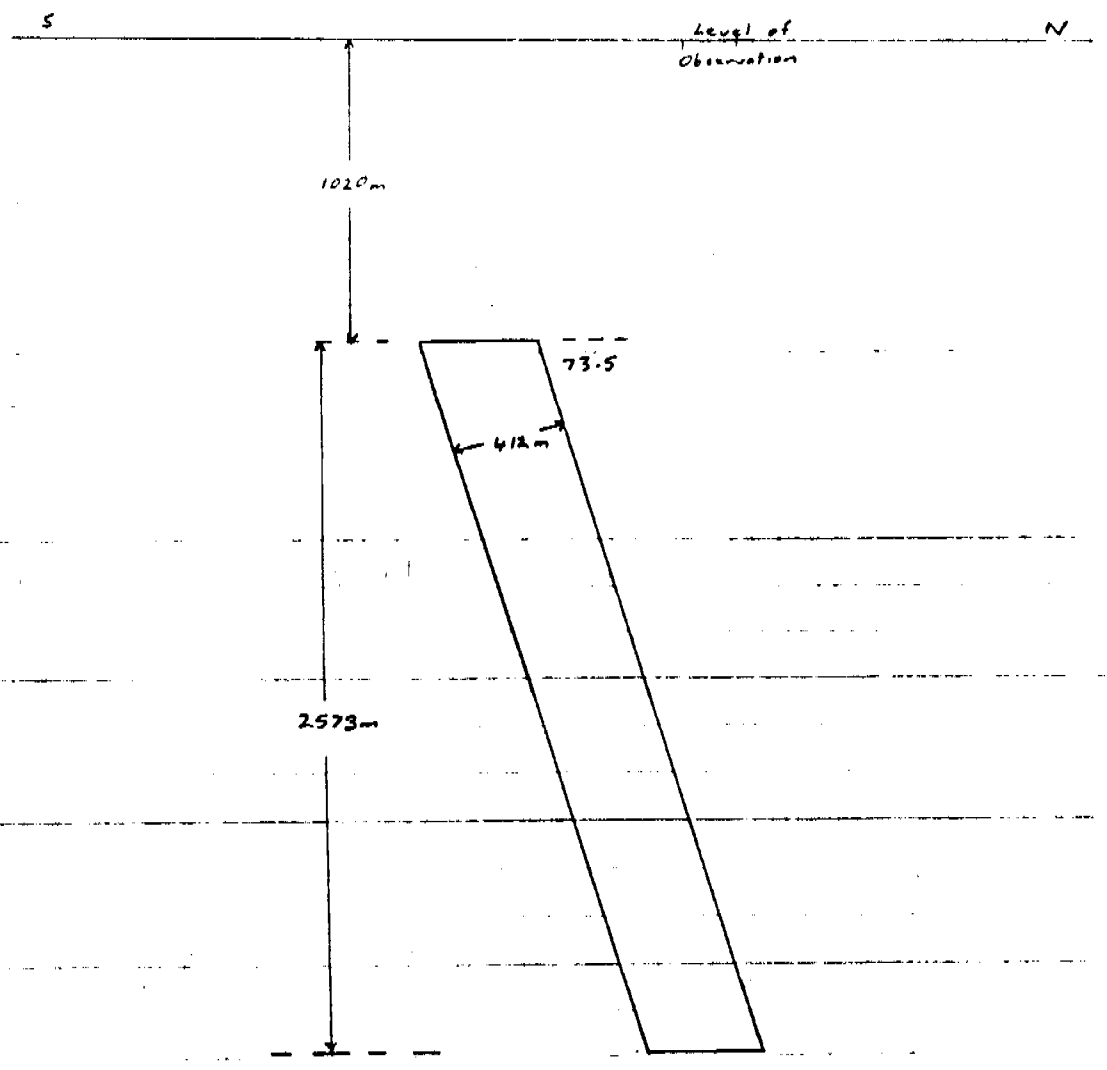
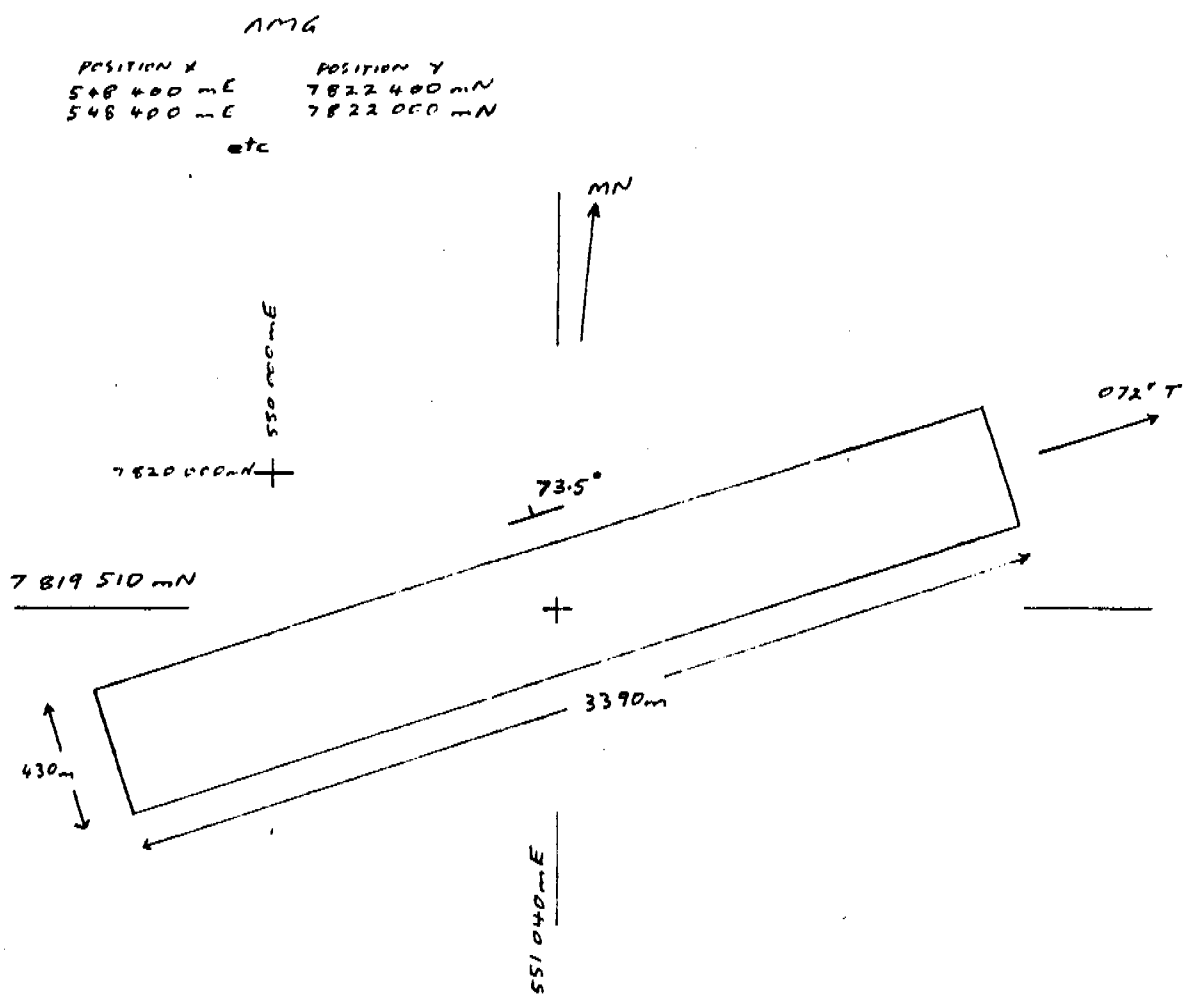


FIGURE 4 (cont.)

ALROY NORTH
LINE 8400m E

— 1100 nT

• Observed
x Calculated

— 1000 nT

Base Level

— 850 nT

— 800 nT

Base Level	922.9 nT
Base Level Slope	-0.02245 nT/m
Dip	115°
Depth	220 m
Width	187 m
Strike	072° Mag.
Susceptibility	0.002476
I_0	-51°
T_0	50900 nT

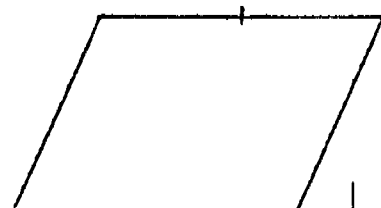
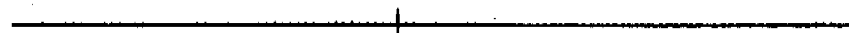
FIGURE 5 (a)

1500 m N

10000 m N

GPS 29/2/80

15000 m N



4163569

WEIGHTED LEAST SQUARES FIT - TABULAR

26/2/80

1 ALLOY LINE 8400ME

FASBAC FILE AL8400 CO

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE	
MAGNET	1	1.000+02	0.0	0.0	1.224+02	1.0+01	0.0
DIP	1	1.100+02	0.0	0.0	1.158+02	5.0+00	0.0
BASE LEVEL	1	9.000+02	0.0	0.0	9.227+02	2.0+01	0.0
BASE SLOPE	1	0.000	0.0	0.0	-2.050-01	1.0-02	0.0
POSITION	1	1.000+03	0.0	0.0	9.931+02	1.5+00	0.0
HALF WIDTH	1	7.000+00	1.0+00	2.0+01	9.699+00	1.5+00	0.0
DEPTH	1	1.500+01	5.0+00	1.0+02	2.172+01	1.5+00	0.0
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0	0.0
DECLNATN	0	1.080+02	0.0	0.0	1.080+02	0.0	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0	0.0
TRAV DIR	0	0.000	0.0	0.0	0.000	0.0	0.0

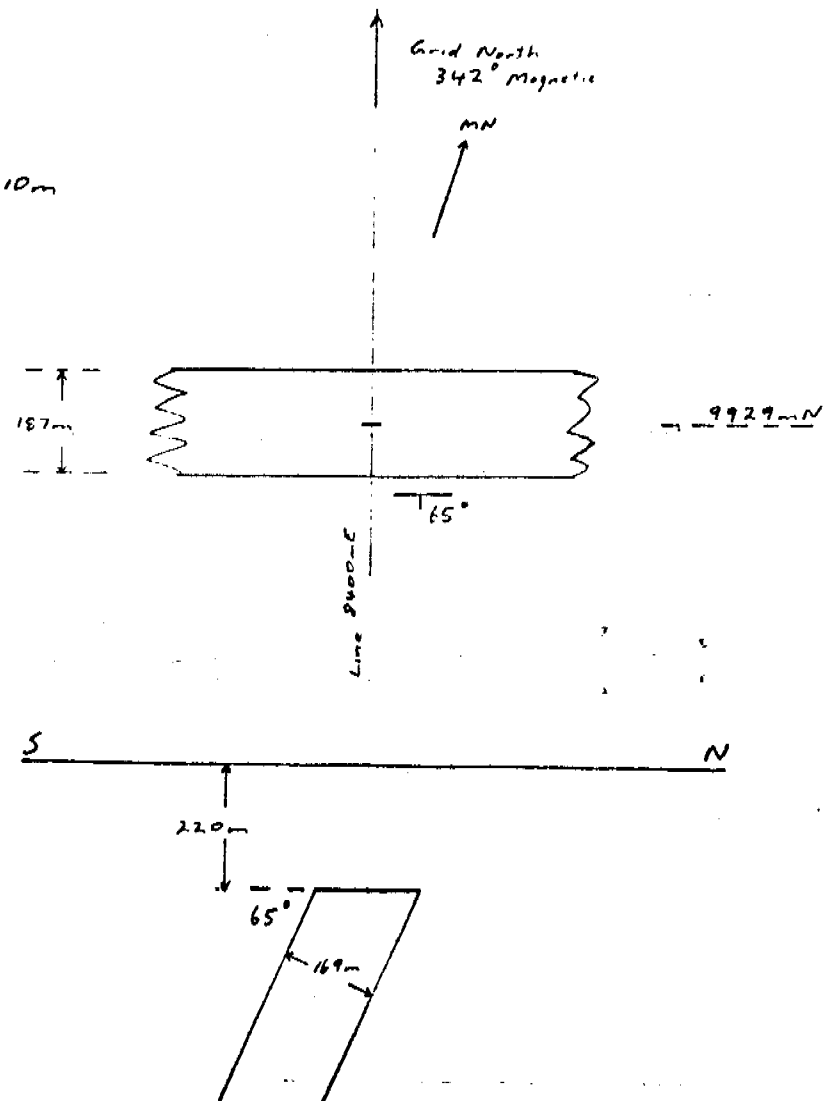
NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0040

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE	
MAGNET	1	1.000+02	0.0	0.0	1.281+02	1.0+01	3.3+00
DIP	1	1.100+02	0.0	0.0	1.152+02	5.0+00	1.6+00
BASE LEVEL	1	9.000+02	0.0	0.0	9.229+02	2.0+01	2.5+00
BASE SLOPE	1	0.000	0.0	0.0	-2.245-01	1.0-02	9.6-02
POSITION	1	1.000+03	0.0	0.0	9.929+02	1.5+00	6.7-01
HALF WIDTH	1	7.000+00	1.0+00	2.0+01	9.356+00	1.5+00	2.6-01
DEPTH	1	1.500+01	5.0+00	1.0+02	2.203+01	1.5+00	7.0-01
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0	0.0
DECLNATN	0	1.080+02	0.0	0.0	1.080+02	0.0	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0	0.0
TRAV DIR	0	0.000	0.0	0.0	0.000	0.0	0.0

128.1
115.2
64.8°
922.9
-0.2245
992.9
7.356
22.03
9929 mN
93.56 m
220.3 m

POSITION	WEIGHT	OBS	FITTED
1060.0000	4.00	959.	963.
1055.0000	4.00	960.	969.
1050.0000	4.00	979.	975.
1045.0000	4.00	988.	982.
1040.0000	4.00	994.	991.
1035.0000	4.00	1004.	1000.
1030.0000	4.00	1013.	1011.
1025.0000	4.00	1024.	1023.
1020.0000	4.00	1036.	1037.
1017.5000	4.00	1042.	1044.
1015.0000	4.00	1049.	1051.
1012.5000	4.00	1056.	1057.
1010.0000	4.00	1063.	1062.
1007.5000	4.00	1069.	1067.
1005.0000	4.00	1074.	1069.
1002.5000	4.00	1074.	1068.
1000.0000	4.00	1050.	1065.
998.0000	4.00	1060.	1060.
996.0000	4.00	1054.	1053.
994.0000	4.00	1045.	1044.
992.2000	4.90	1036.	1034.
990.0000	4.00	1022.	1021.
988.0000	4.00	1011.	1008.
986.0000	4.00	998.	995.
984.0000	4.00	982.	982.
982.0000	4.00	968.	970.

Position
10600 mN
10550 mN
etc
1 distance unit = 10m



980.0000	4.00	959.	958.
978.0000	4.00	946.	948.
976.0000	4.00	935.	938.
974.0000	4.00	930.	930.
972.0000	4.00	923.	923.
970.0000	4.00	916.	918.
968.0000	4.00	914.	908.
960.0000	4.00	913.	902.
955.0000	4.00	902.	900.
950.0000	4.00	896.	900.
945.0000	2.00	904.	900.
940.0000	4.00	898.	901.
935.0000	4.00	901.	903.
930.0000	4.00	904.	905.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0040

4163570

— 1100 nT

• Observed
x Calculated

— 1000 nT

— 900 nT

— 800 nT

Base Level

ALROY NORTH
LINE 8800mE

Base Level Slope 0

Base Level 912.8 nT

Dip 113°

Depth 183m

Width 310m

Strike 072° Magnetic

Susceptibility 0.00190456 cg

I_0 -57°

T_0 50900 nT

GPS 29/21

9500mN

10000mN

10500mN

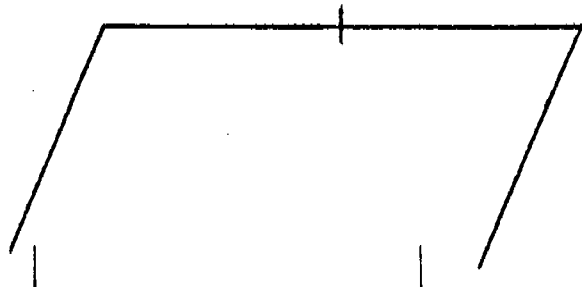


FIGURE 6 (a)

ALLOY LINE 8800 mE

26/2/80

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0029

PARAMETER	KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1	1.000+02	0.0	0.0	9.980+01	1.0+01 1.4+00
DIP	1	1.100+02	0.0	0.0	1.126+02	5.0+00 8.3-01
BASE LEVEL	1	9.000+02	0.0	0.0	9.128+02	2.0+01 1.8+00
BASE SLOPE	1	0.000	0.0	0.0	-8.969-02	1.0-02 4.9-02
POSITION	1	1.000+03	0.0	0.0	9.949+02	1.5+00 3.8-01
HALF WIDTH	1	7.000+00	1.0+00	2.0+01	1.550+01	1.5+00 2.5-01
DEPTH	1	1.500+01	5.0+00	1.0+02	1.833+01	1.5+00 4.0-01
INCLNATN	0	-5.100+01	0.0	0.0	-5.100+01	0.0
DECLNATN	0	1.080+02	0.0	0.0	1.080+02	0.0
VERTICAL	0	0.000	0.0	0.0	0.000	0.0
TRAV DIR	0	0.000	0.0	0.0	0.000	0.0

99.80
112.6 67.4°S
912.8
-0.02969
994.9 9949 mN
15.50 15.5 m
18.33 183.3 m

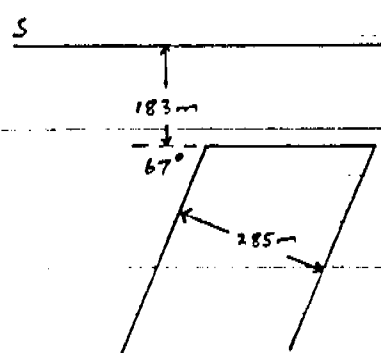
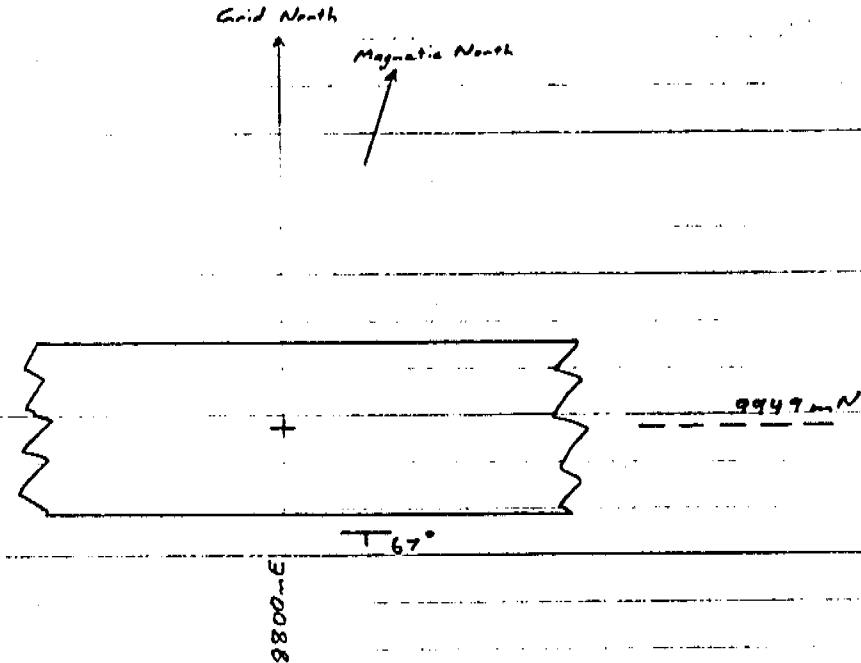
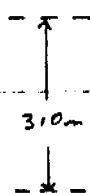
POSITION WEIGHT OBS FITTED

POSITION	WEIGHT	OBS	FITTED
1080.0000	4.00	964.	963.
1075.0000	4.00	972.	972.
1070.0000	4.00	973.	972.
1065.0000	4.00	978.	978.
1060.0000	4.00	983.	984.
1055.0000	4.00	989.	991.
1050.0000	6.00	998.	1000.
1045.0000	6.00	1004.	1009.
1040.0000	6.00	1019.	1021.
1035.0000	6.00	1041.	1035.
1030.0000	9.00	1053.	1051.
1027.0000	9.00	1063.	1062.
1024.0000	9.00	1072.	1074.
1021.0000	9.00	1087.	1086.
1017.5000	9.00	1097.	1100.
1015.0000	9.00	1109.	1108.
1012.0000	9.00	1116.	1116.
1009.0000	9.00	1119.	1119.
1005.0000	9.00	1119.	1115.
1002.5000	9.00	1109.	1108.
1000.0000	2.00	1079.	1097.
997.0000	9.00	1078.	1079.
994.0000	9.00	1061.	1057.
991.0000	9.00	1028.	1032.
988.0000	9.00	1007.	1006.
985.0000	9.00	979.	978.
982.0000	9.00	951.	952.
979.0000	9.00	926.	928.
976.0000	9.00	908.	907.
973.0000	9.00	892.	891.
970.0000	9.00	882.	879.
965.0000	4.00	862.	867.
960.0000	4.00	860.	861.
955.0000	4.00	862.	860.
950.0000	4.00	859.	860.
945.0000	4.00	860.	862.
940.0000	4.00	860.	864.
935.0000	4.00	866.	867.
930.0000	4.00	871.	870.
925.0000	4.00	875.	872.
920.0000	4.00	877.	875.

POSITION

10800 mN
10750 mN

1 distance unit = 10m

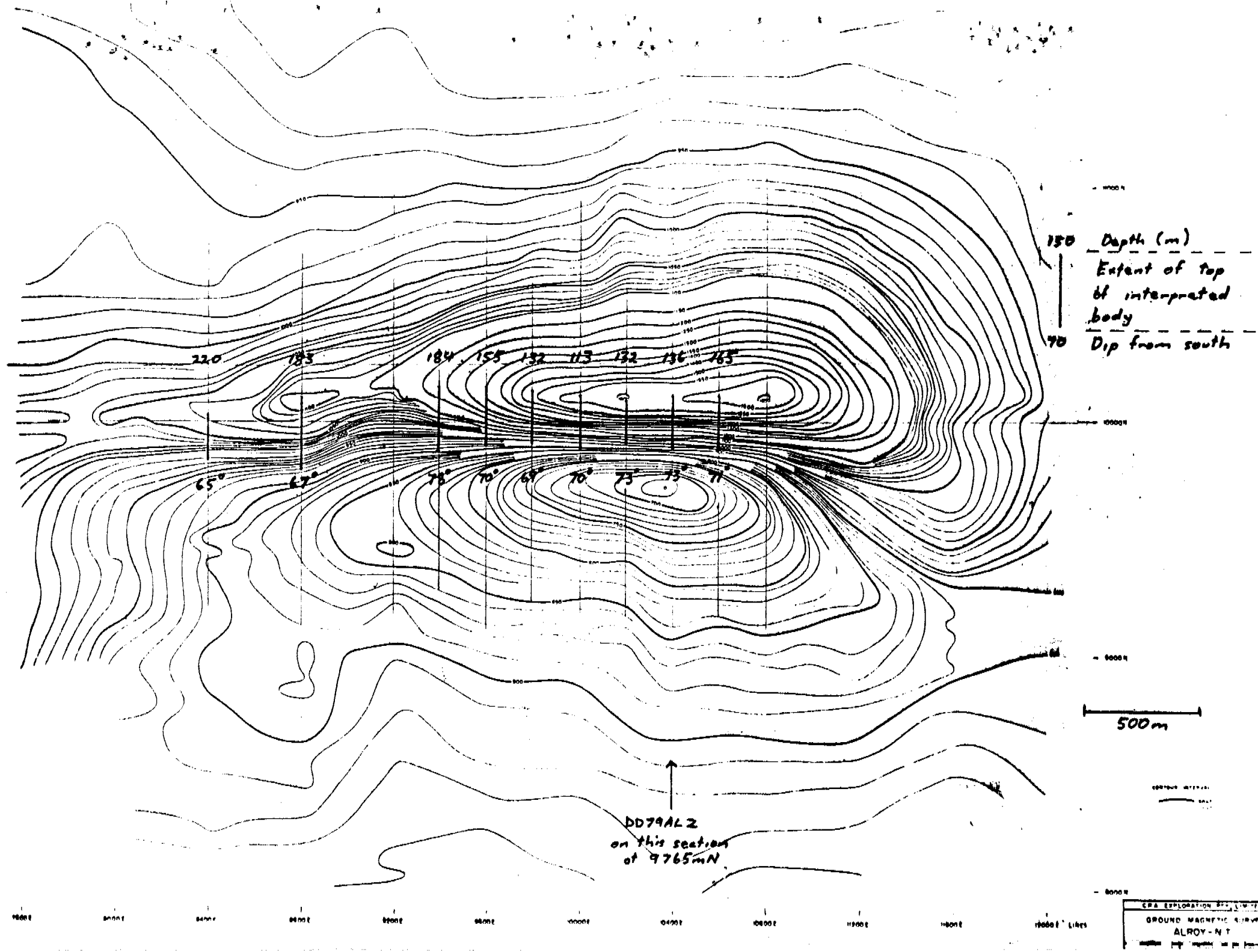


NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0029

4163561

FIGURE 6 (b)

FIGURE 7



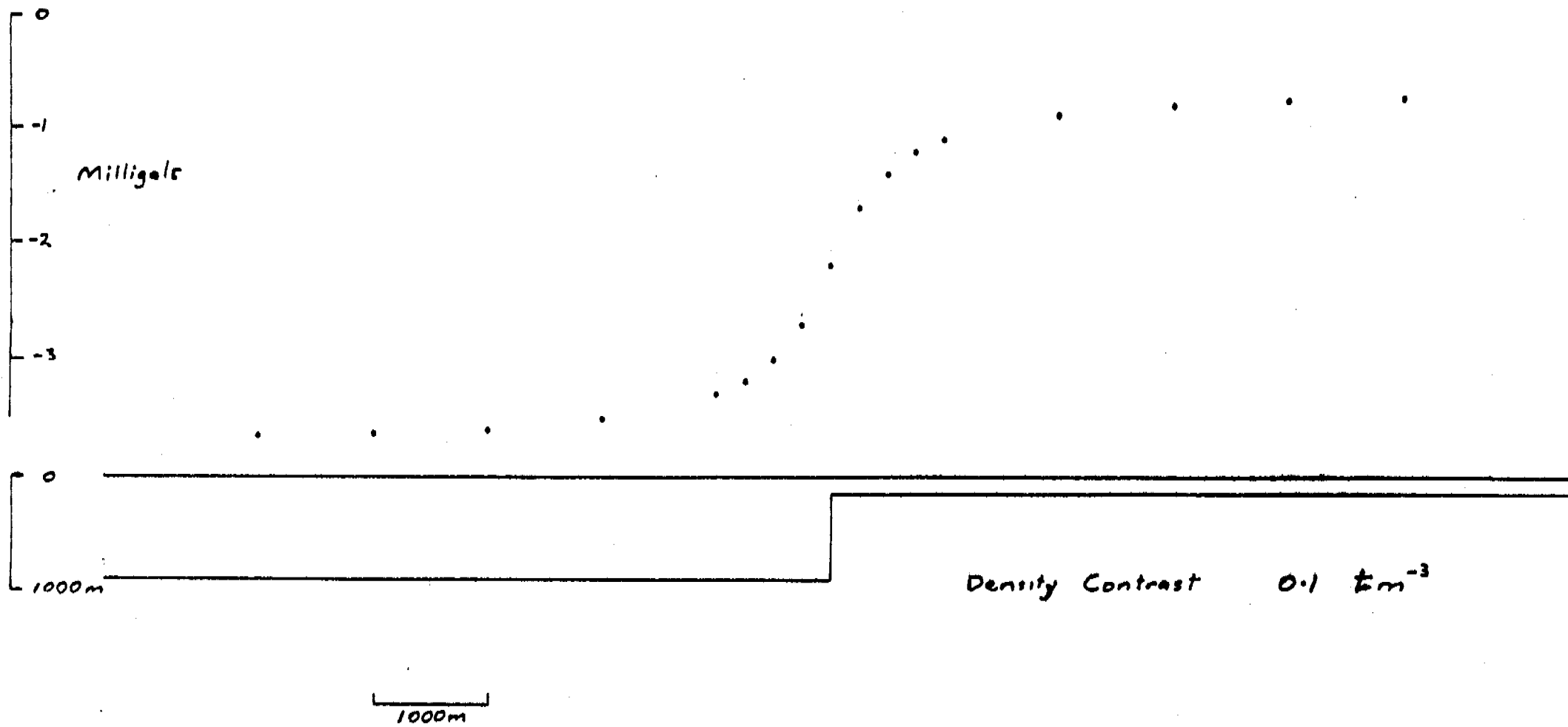
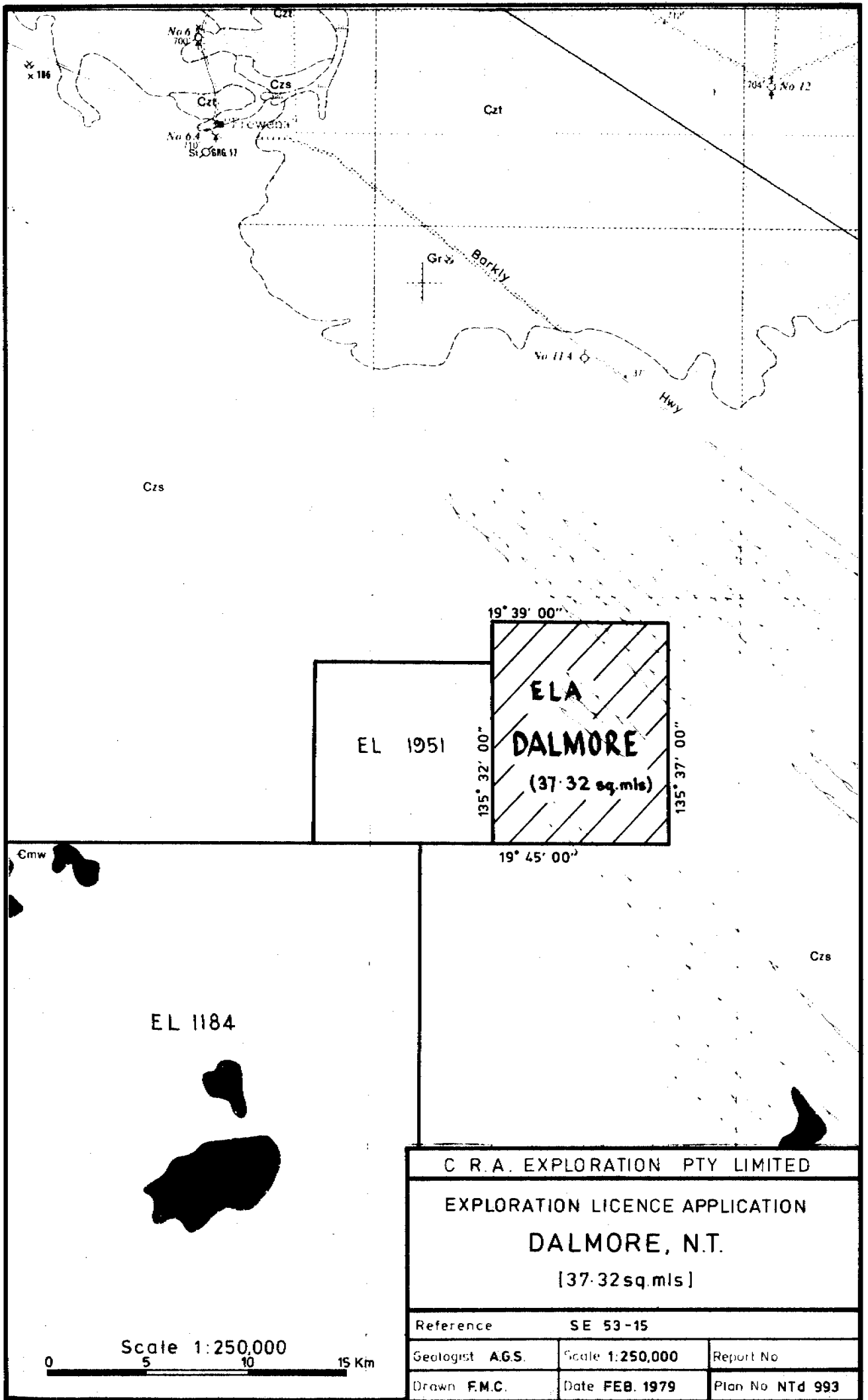


FIGURE 8



19° 39' 00"

EL 1951

ELA

DALMORE

(37.32 sq.mls)

135° 32' 00"

135° 37' 00"

19° 45' 00"

Cmw

EL 1184

Czs

C R. A. EXPLORATION PTY LIMITED

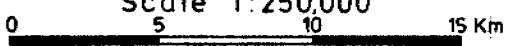
EXPLORATION LICENCE APPLICATION

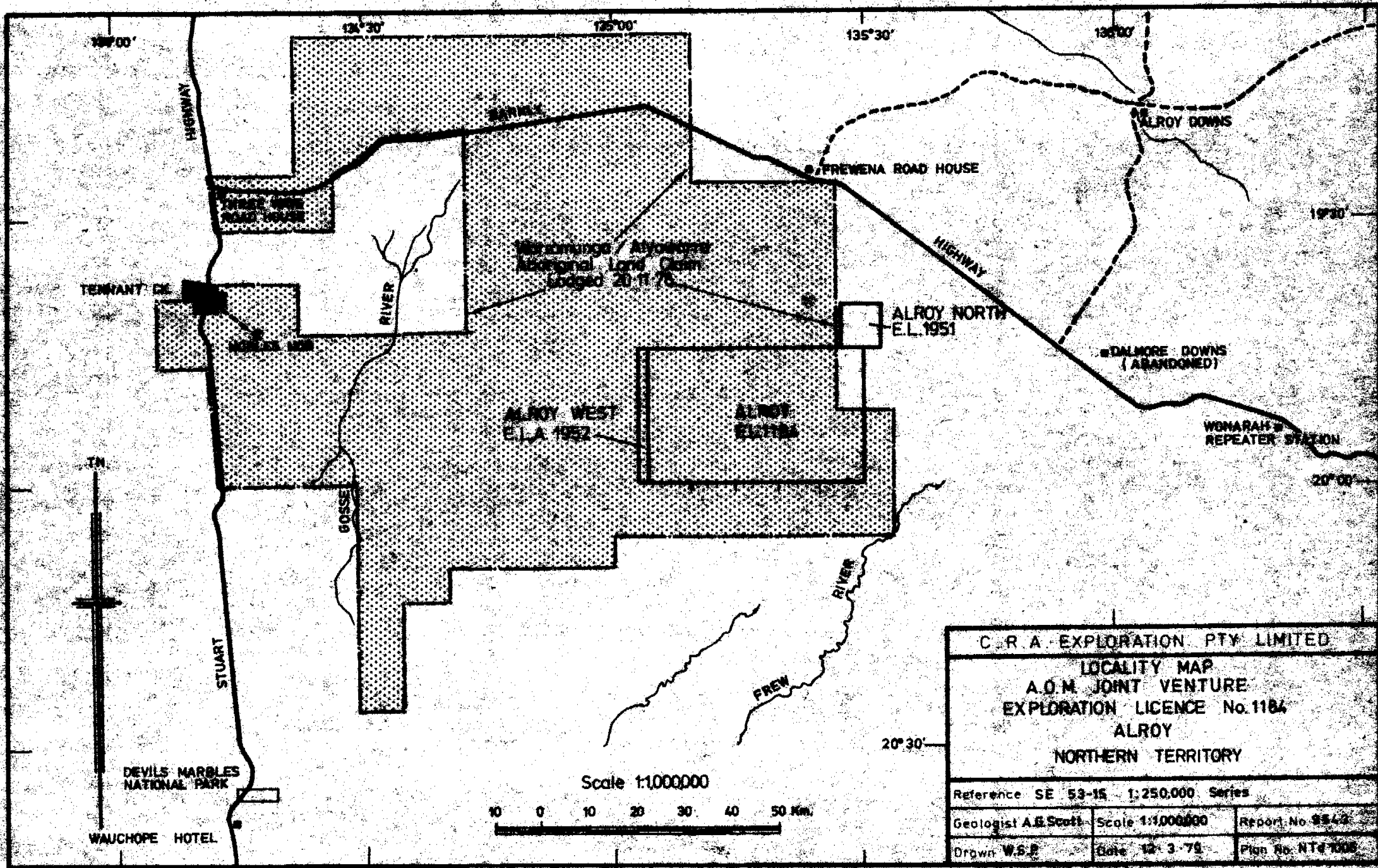
DALMORE, N.T.

[37.32 sq.mls]

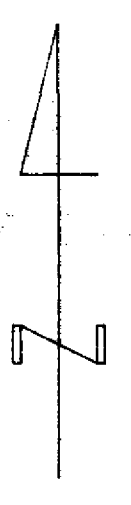
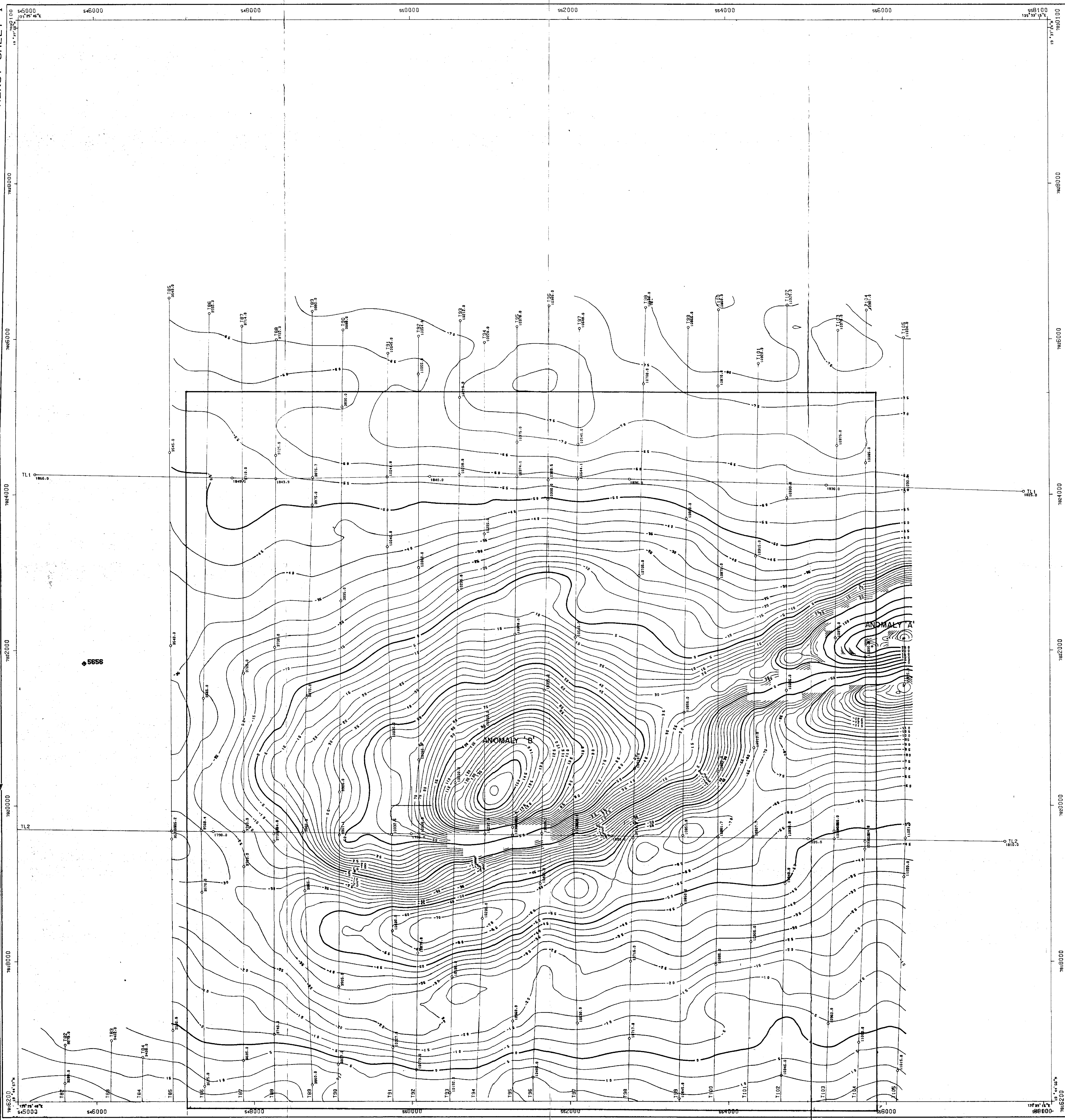
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Geologist	AGS.	Scale 1:250,000
Report No.		
Drawn	F.M.C.	Date FEB. 1979
Plan No	NTd 993	

Scale 1:250,000





C. R. A. EXPLORATION PTY. LIMITED		
LOCALITY MAP		
A.O.M. JOINT VENTURE		
EXPLORATION LICENCE No. 1184		
ALROY		
NORTHERN TERRITORY		
Reference SE 53-15 1:250,000 Series		
Geologist A.B. Scott	Scale 1:1,000,000	Report No. 9549
Drawn W.S.P.	Date 12-3-79	Plan No. NT4700



SHEET INDEX
(1:500,000)

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6	7	8	9

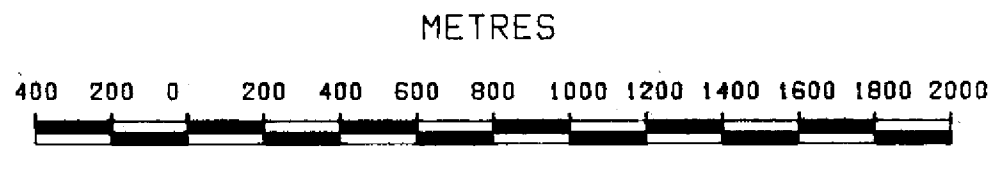
FLOWN FOR CRA EXPLORATION BY GEOMETRICS
GEOMETRICS JOB NUMBER 9187
DECEMBER, 1978

SURVEY SPECIFICATIONS

MAGNETOMETER: GEOMETRICS G-803 PROTON PRECESSION
SENSITIVITY: 0.5 NANOTESLAS
FLIGHT LINE DIRECTION: NORTH TO SOUTH
FLIGHT LINE SEPARATION: 500 METRES
MEAN TERRAIN CLEARANCE: 90 METRES
ALONG LINE SAMPLING: 50 METRES

SURVEY FLOWN BY DOPPLER
IGRF REMOVED

CONTOUR INTERVAL 5 NANOTESLAS

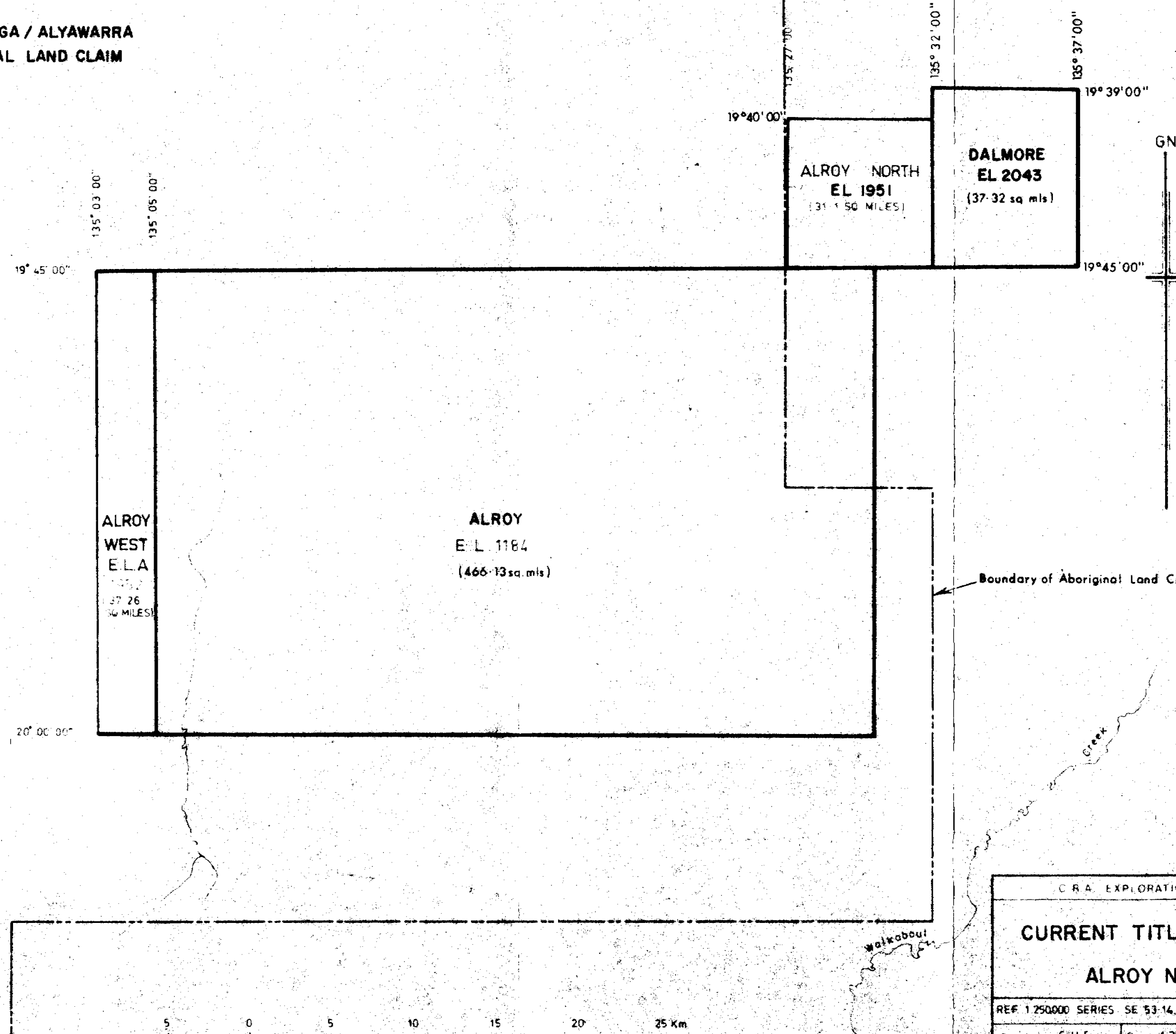


CRA EXPLORATION PTY LTD
SHEET 1

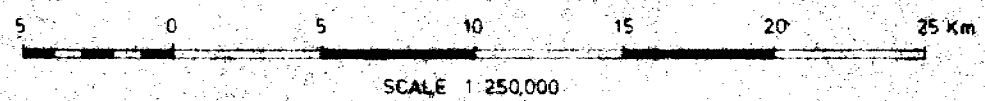
ALROY NORTH
RESIDUAL MAGNETIC CONTOURS

SCALE: 1:20,000	DATE:
DRAWN:	REVN
CHECKED:	PLAN NO
APPROVED:	Ntd IO15

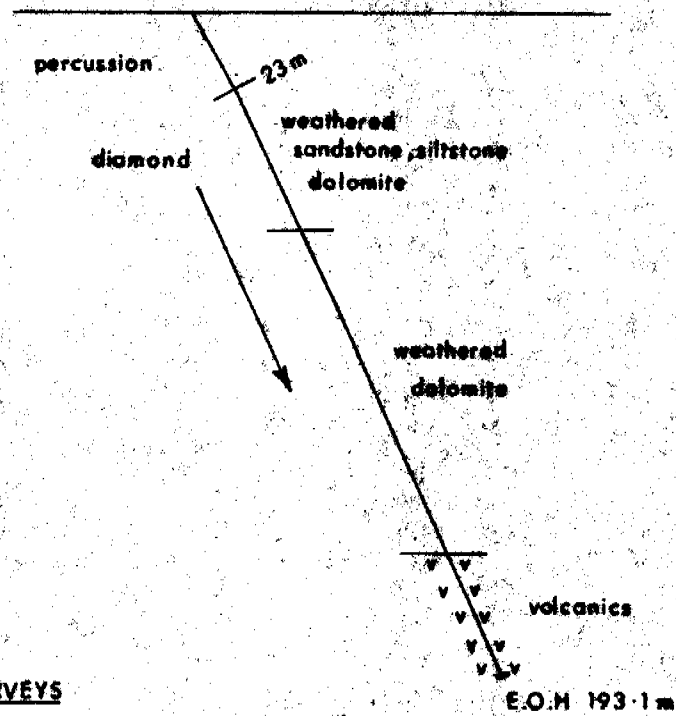
**WARRAMUNGA / ALYWARRA
ABORIGINAL LAND CLAIM**



C.R.A. EXPLORATION PTY LIMITED		
CURRENT TITLE SITUATION		
ALROY NORTH N.T.		
REF 1 250000 SERIES SE 53-14, SE 53-15, SF 53-2 & SF 53-3		
Geologist G.H.S.	Scale 1 250000	Drawn W.S.P., S.P.S.
Report No 9918	Date JAN 1980	PLAN No NTd 1180



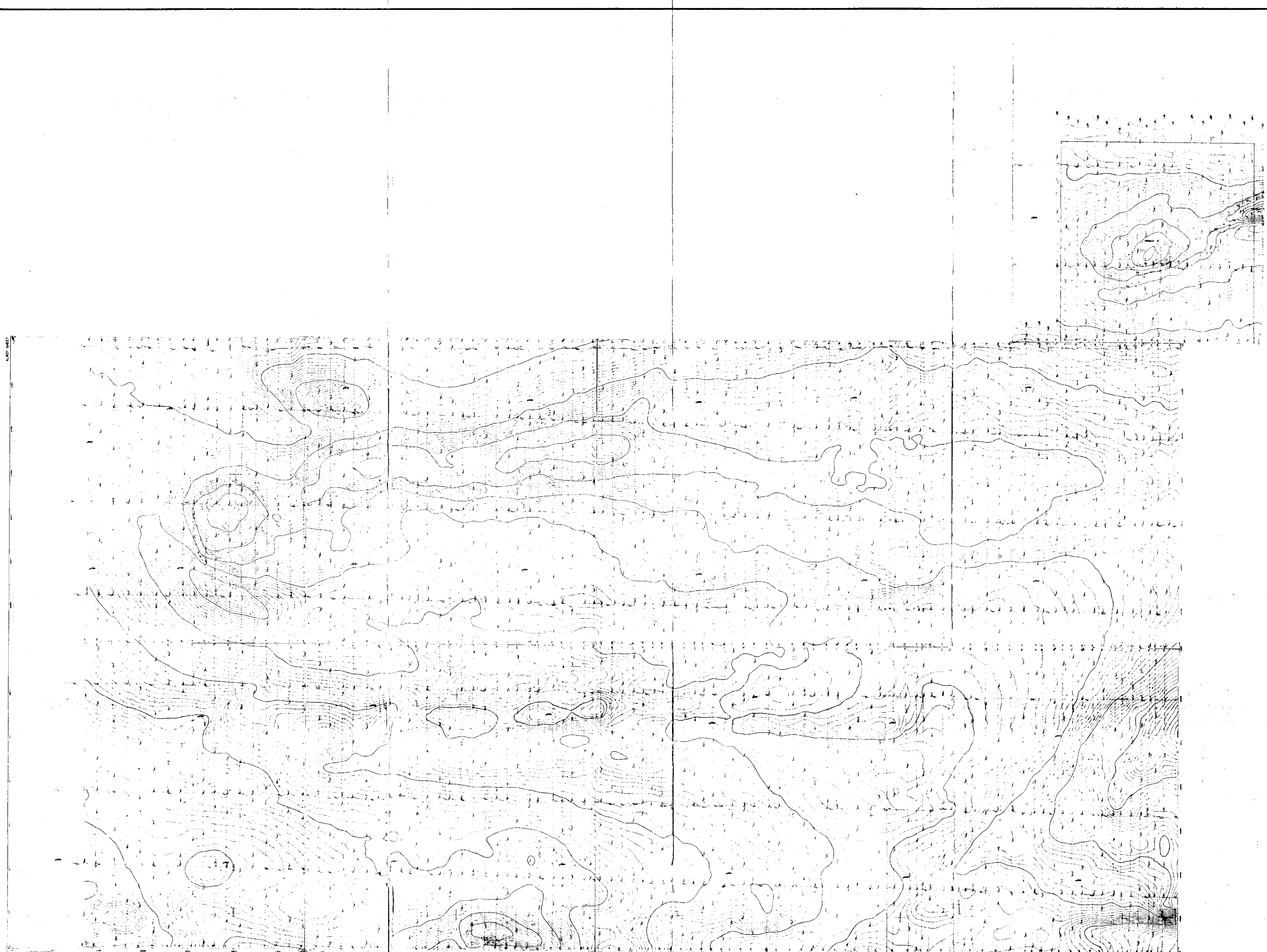
Collar position 79 ALD 1
 9796 N
 10,002 E



SURVEYS

DEPTH	DIP
0 m	60°
50 m	64°
124 m	65°
193.1 m	E.O.H

C R A. EXPLORATION PTY LIMITED		
ALROY NORTH		
79 ALD 1		
SECTION ON 10,000E		
LOOKING 252° MAGNETIC		
Reference SE 53-15		
Geologist G.H.S.	Scale 1:2,000	Report No 998
Drawn S.P.S.	Date JAN 1980	Plan No NW 181



SHEET INDEX

2		3	4	5
6		7	8	9

FLOWN FOR CRA EXPLORATION BY GEOMETRICS
 GEOMETRICS JOB NUMBER 9187
 DECEMBER, 1978

SURVEY SPECIFICATIONS

MAGNETOMETER: GEOMETRICS G-803 PROTON PRESSION
 SENSITIVITY: 0.5 NANOTESLAS
 FLIGHT LINE DIRECTION: NORTH TO SOUTH
 FLIGHT LINE SEPARATION: 500 METRES
 MEAN TERRAIN CLEARANCE: 90 METRES
 ALONG LINE SAMPLING: 50 METRES

SURVEY FLOWN BY DOPPLER
 IGRF REMOVED

CONTOUR INTERVAL 5 NANOTESLAS

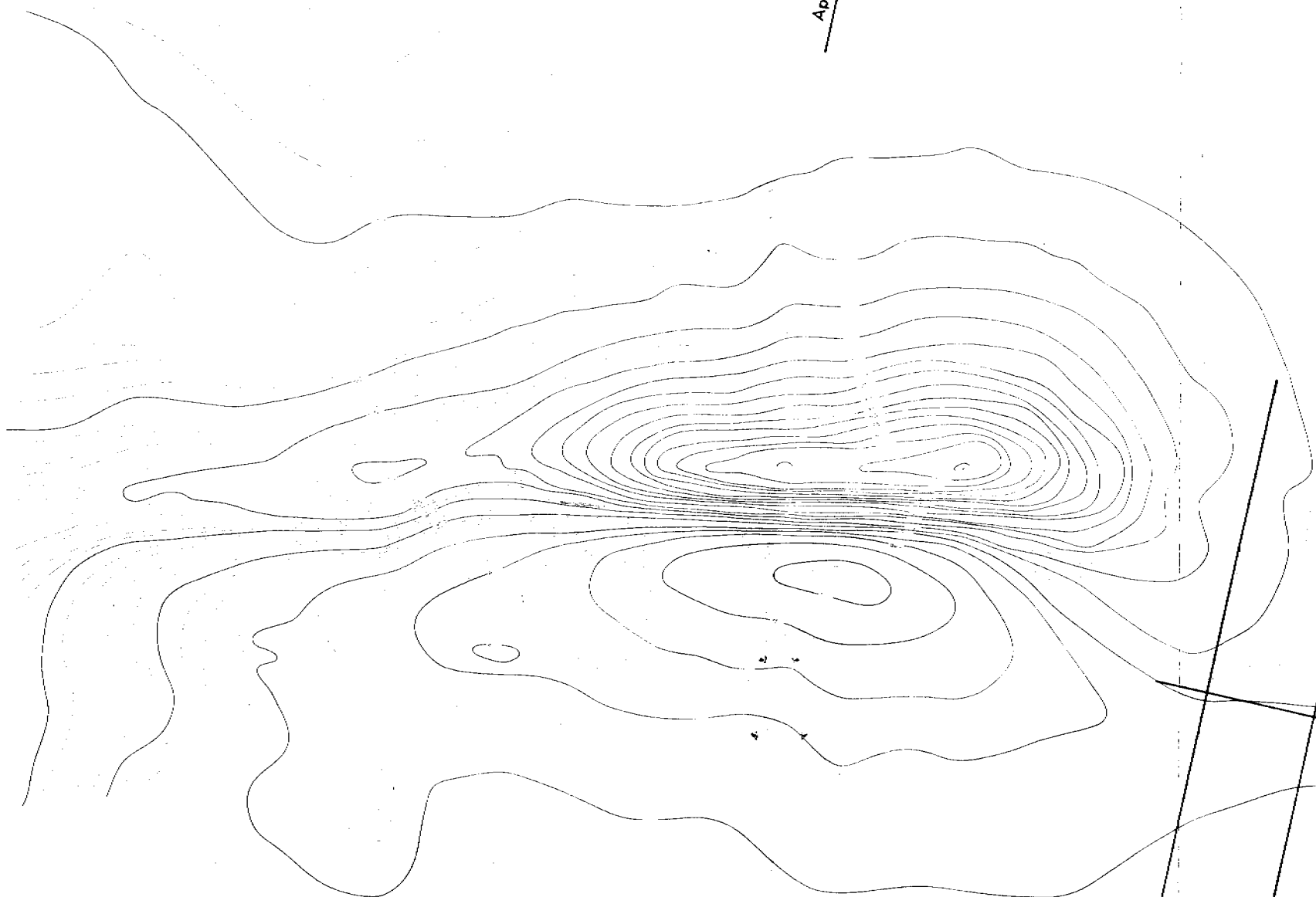
SCALE 1:100,000
 0 2 4 6 8 10 12 Kilometres

CRA EXPLORATION PTY LTD
 ALROY AREA

EL's 2043, 1951, 1952, 1184
 RESIDUAL MAGNETIC CONTOURS
 ALROY SE 53-15

SCALE: 1:100,000	DATE:	
DRAWN:	REVN	PLAN NO
CHECKED:		NTd 1430
APPROVED:		

Approx 135° 32'



558000 m E
Approx.

TN
MN

7822000 m N
Approx.

19° 42' S
Approx.

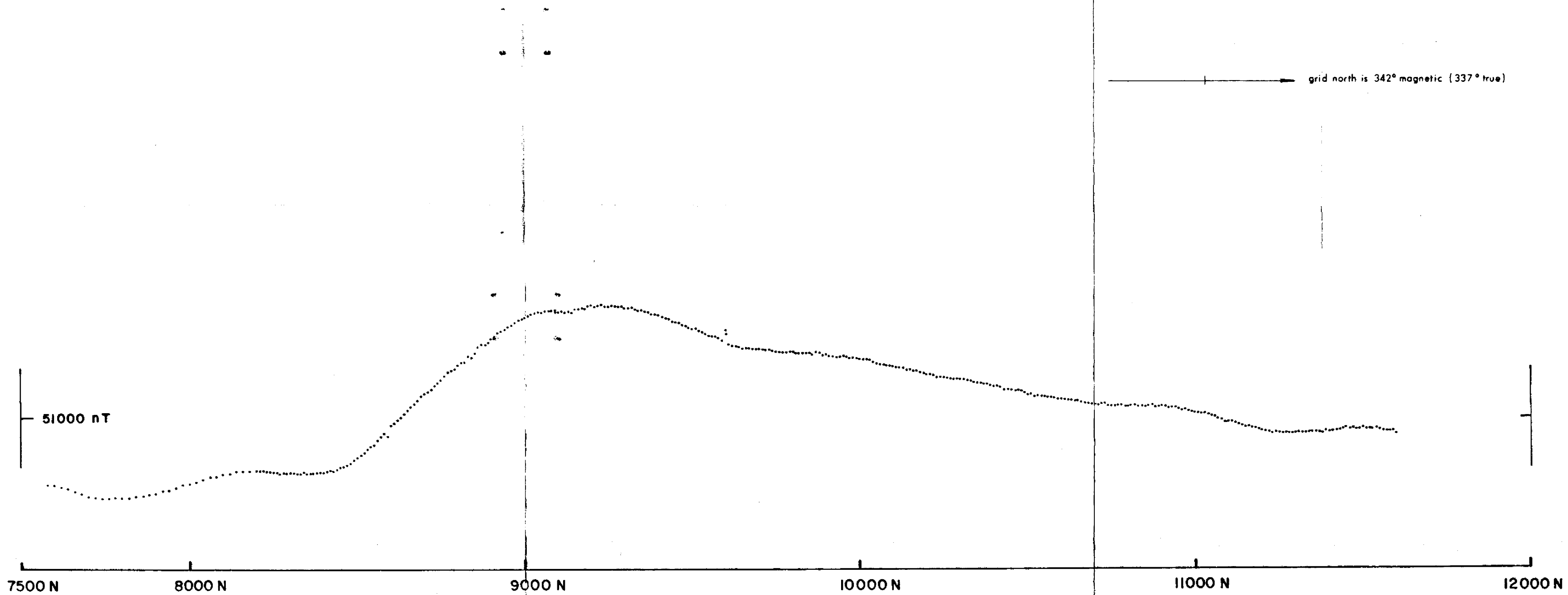
135° 33'
Approx.

7600E 5000E 9600E 1000E 8600E 1000E 1000E 1000E 1000E 1000E 1000E 1000E

EL 1951 / EL 2043

AFTER PLAN NTd 1431
REF: ALROY SE 53-15

C. R. A. EXPLORATION P. L.
ALROY NTH. EL 1951, DALMORE EL 2043
GROUND MAGNETIC CONTOURS
SCALE: 1:20000 DRAWN: SOLO GEOPHYSICS
GEOPHYS 6 P. J. DATE: APRIL 1980

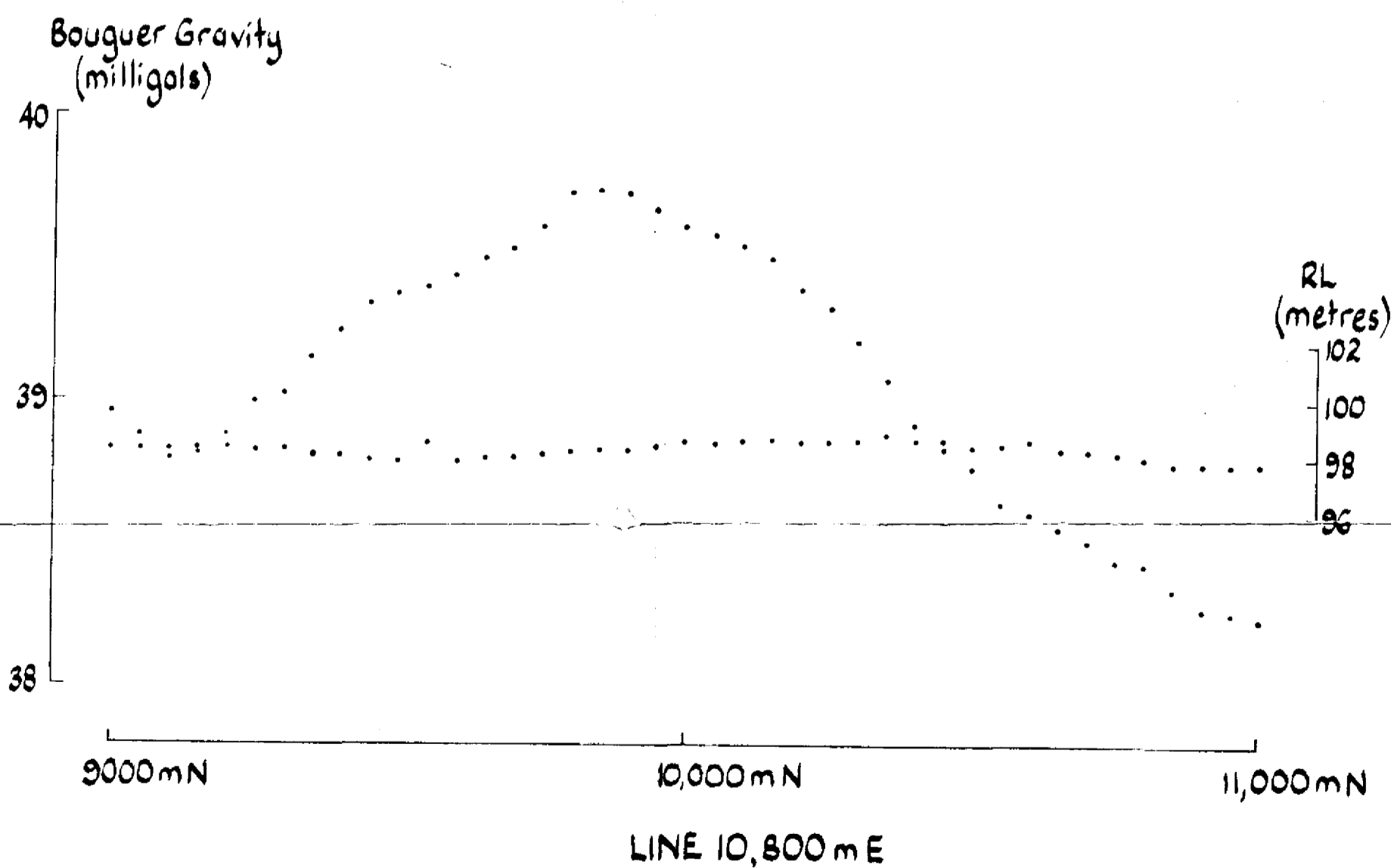
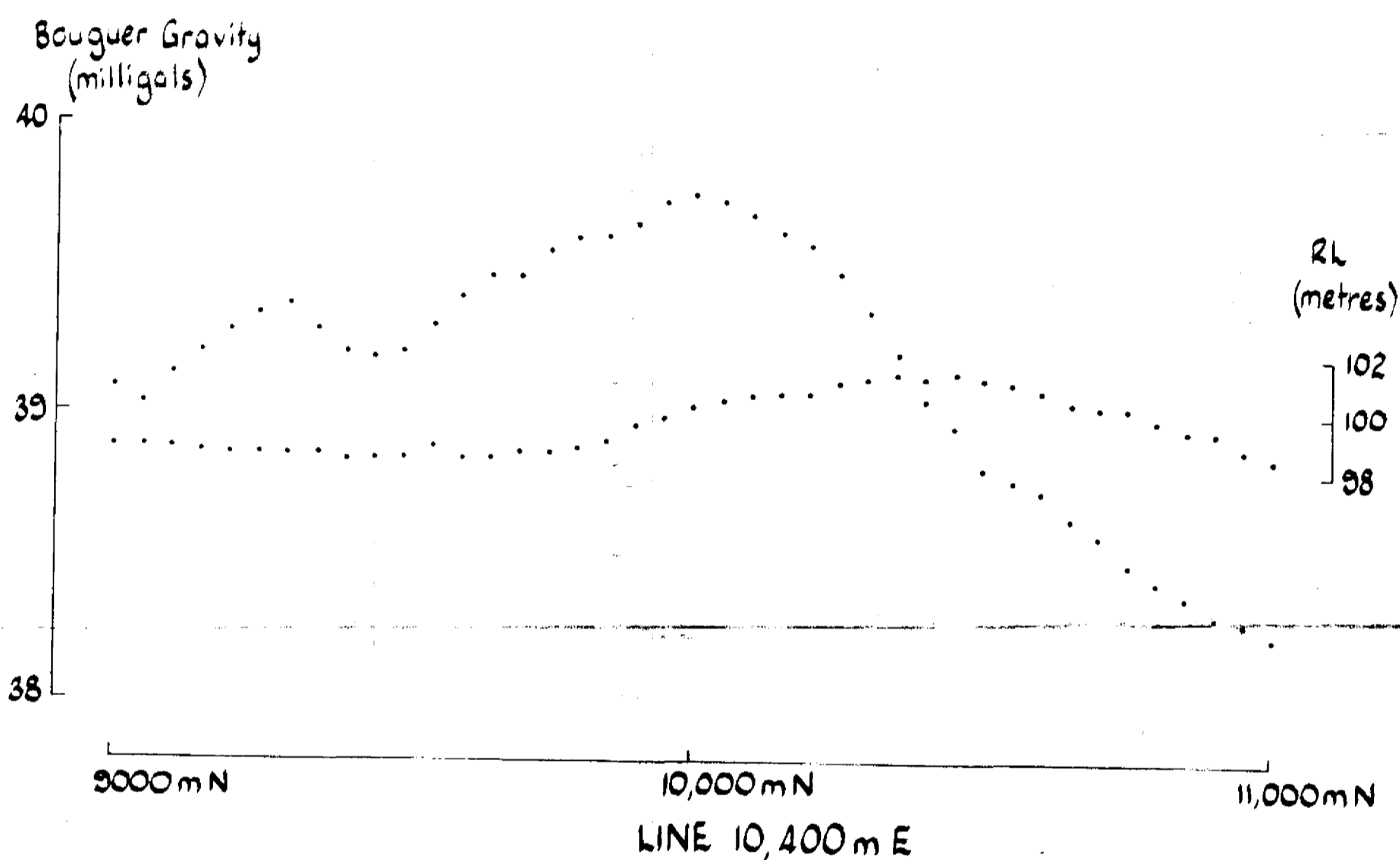
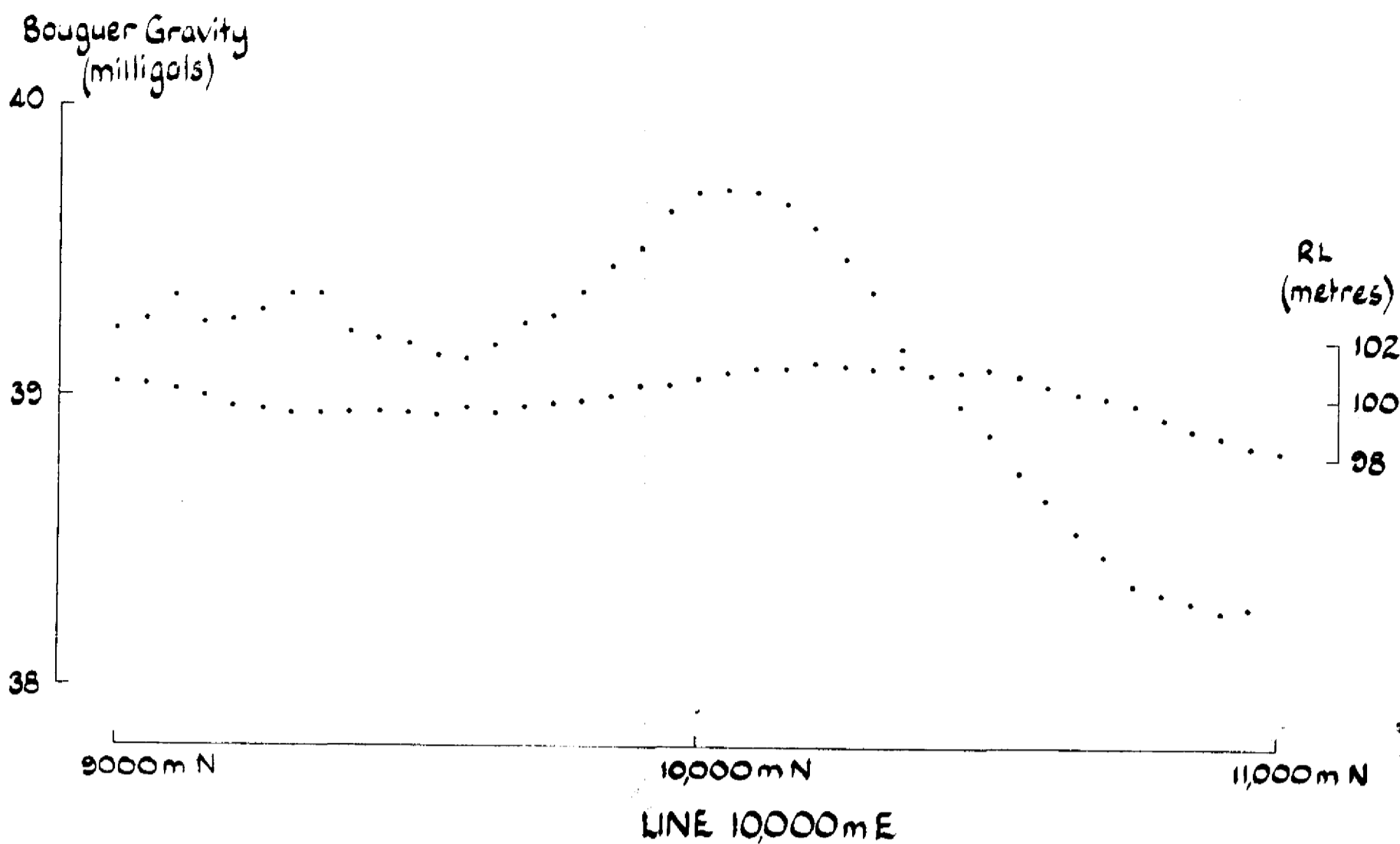


LINE 4800 m E

vertical scale : 1 cm = 50 nT
 base level : 51000 nT
 horizontal scale : 1:10,000

Instrument : Scintrex MP-2 magnetometer
 Sensor height : 3 m

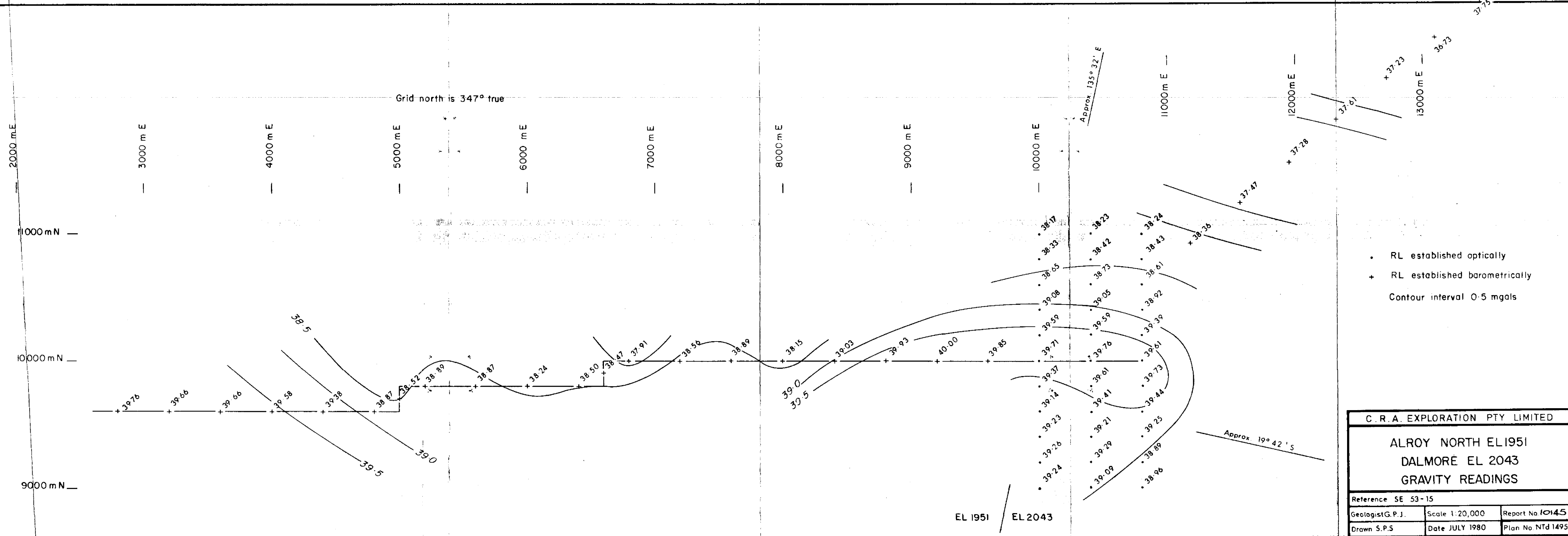
C. R. A. EXPLORATION PTY LIMITED		
ALROY NORTH EL 1951 GROUND MAGNETOMETER PROFILE 4800 m E		
Reference SE 53 - 15		
Geologist G.P.J	Scale 1:10,000	Report No.
Drawn S.P.S.	Date May 1980	Plan No. NTD 1435



Bouguer density 2.3 t m^{-3}

G. R. A. EXPLORATION COMPANY		
ALROY NORTH EL 1951		
DALMORE EL 2043		
PROFILES OF BOUGUER GRAVITY		
SE 53 - 15		
G.P.J.	1:10,000	10145
S.P.S.	JUNE 1980	NTd 1438

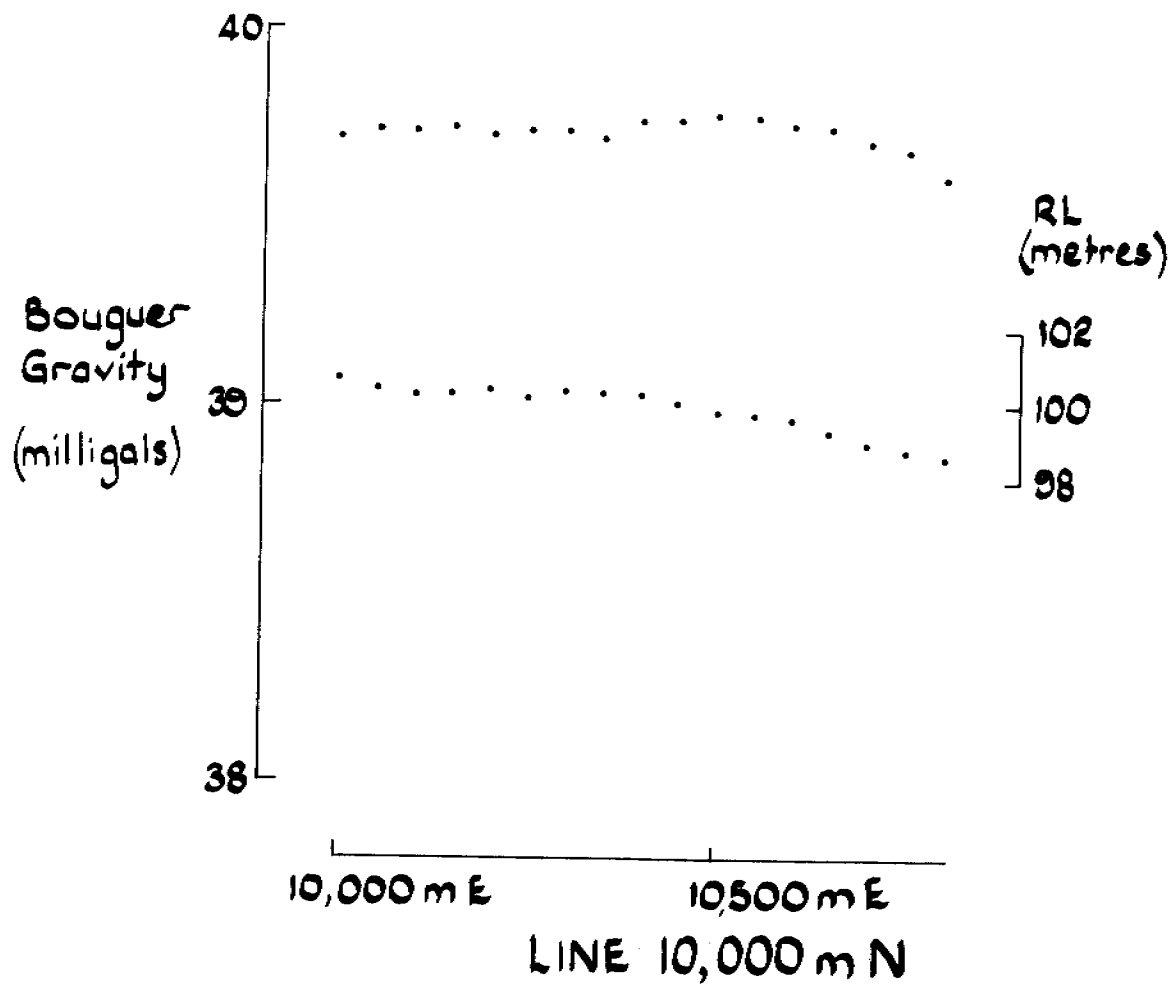
CR 80/234



- RL established optically
 - + RL established barometrically
- Contour interval 0.5 mgals

C. R. A. EXPLORATION PTY LIMITED		
ALROY NORTH EL1951 DALMORE EL 2043 GRAVITY READINGS		
Reference SE 53-15		
Geologist G.P.J.	Scale 1:20,000	Report No 10145
Drawn S.P.S.	Date JULY 1980	Plan No. NTd 1495

CR 80/234



Bouguer density 2.3 tm^{-3}

C R A EXPLORATION PTY LIMITED

ALROY NORTH EL 1951

DALMORE EL 2043

PROFILES OF BOUGUER GRAVITY

Reference SE 53 - 15

Geologist G.P.J

Scale 1:10,000

Sheet No.

Drawn S.P.S

Date JUNE 1980

Plot No NTD 1439