

MT SAMUEL
GML774E SHERIDEN JOINT VENTURE
W.APPEL & L.APPEL
ANNUAL STATUTORY REPORT
PERIOD ENDING 28 OCTOBER, 1984

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Ref: Tennant Creek
SF53-14

CRAE Report No.13011

NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR 85 / 028A

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1. SUMMARY

CRAE Exploration Pty.Ltd. (CRAE), under Joint Venture Agreement with W.Appel and L.Appel, carried out gold exploration on the Sheriden, GML 774E, lease area.

CRAE carried out a detailed grid and level survey with photogrammetric mapping at 1:1000 scale to establish a base for detailed geological mapping and geophysical surveys. These surveys entailed geological mapping at 1:1000 scale; detailed ground magnetics at five metre station spacing and 50m line intervals; and a detailed gravity survey on 25m centres at 50 and 100m line intervals.

An area of anomalous magnetics with coincident excess mass was delineated. The anomaly is downdip from surface outcrops of quartz-haematite ironstone which cover an area of 100 x 100m. Modelling of the geophysical data suggests considerable downpitch extent of ironstone and drillholes have been designed to test the body at depth below the zone of surface leaching.

2. CONCLUSIONS

The coincident magnetic and gravity anomaly indicates considerable subsurface extension of outcropping quartz-haematite ironstone.

Orientation geochemistry on composite rockchip samples of ironstone from surface outcrop and shallow workings indicates extreme surface leaching. This is typical of the Tennant Creek central field. Nonetheless values for Mo, Bi, Cu and Au are within the range considered anomalous for the field. Highest values for Au of 5.71g/t over 5m are associated with highly anomalous Mo and Bi at 100ppm and 200ppm respectively.

3. INTRODUCTION

CRAE entered into joint venture agreement with W.Appel and L.Appel on 16 May, 1984. This agreement allows for CRAE to carry out mineral exploration on GML 774E, Tennant Creek central field. Although gold is the primary commodity sought, all minerals are considered prospective. This report covers the exploration activity carried out by CRAE from the commencement date of the agreement up to 28 October, 1984.

4. GEOLOGY

- 4.1 Exploration philosophy at the Sheridan prospect is based on delineation of significant tonnages of near surface ironstone which could be potential host for gold orebodies of the Tennant Creek type.

Elsewhere on the Tennant Creek field orebodies carrying up to 46,000kg contained gold have been discovered hosted in discordant haematite-magnetite-chlorite (ironstone) bodies of enigmatic origin. Of some 700 mapped and drilled ironstones approximately 150 are known to carry greater than trace amounts of gold. The gold is often associated with highly anomalous and ore-grade bismuth and copper. Seven of the ironstones can be considered small to moderate sized orebodies which have been mined on an industrial scale and represent suitable exploration targets;

<u>Orebody</u>	<u>Contained gold</u>	<u>Tonnage</u>	<u>Grade (g/t Au)</u>
Warrego	46 tonnes	7,000,000 t	6.6
Nobles Nob	39	2,000,000	19.5
Peko	12.9	3,700,000	3.5
Orlando	6	680,000	8.8
Juno	25.3	450,000	56.1
Explorer 46	3.5	184,000	19.0
Eldorado	3.3	146,000	22.7

4.2 Past Production and Exploration : Mt Samuel:Sheriden J/V

Several accessible shafts are present on GML 774E and the amount of underground development is considerable. Two shafts, the Southern Cross and the Southern Cross Extended, have several hundreds of metres of drives over three levels. These are interconnected at depth allowing for good ventilation. The workings are accessible on two levels and underground plans are presented on plan NTd 3829. Although stope development is minimal there was significant **capital** development in the form of tracks and plumbing. Surface workings are also considerable. Several opencuts up to 10m deep in extremely hard quartz-haematite ironstone suggest local pockets of rich ore were mined by gougers.

Total recorded production from 1935 to 1977 was 129.7 kg of gold recovered from 3,286 tonnes of ore at average grade 39.5 g/t. The actual shaft(s) or surface workings where most of the production was from is unknown.

4.3 Ironstone

Surface exposure of ironstone of GML774E comprises a series of eastwest elongate lodes making up a large roughly circular mass of ironstone, breccia and intervening sediments some 100 x 100m in total area. A number of NE trending faults cut the mass as a whole (see plan NTd 3829). Geophysical measurements suggest the ironstone bodies are not connected at depth.

At surface the ironstone consists of hard siliceous massive blue grey quartz and haematite in varying proportions. Geochemical rockchip samples from surface exposure, mullock from around shafts and from underground (samples 824363 - 824380 and 970495 - 970500) reported mildly to highly anomalous Cu, Mo, Bi and Au (see Appendix I). The range of geochemical values and averages are listed below.

<u>Cu</u>	10 - 200ppm	40ppm
<u>Mo</u>	<10 - 350ppm	70ppm
<u>Bi</u>	<10 - 520ppm	127ppm
<u>Au</u>	0.017 - 5.71ppm	0.715ppm

Magnetic susceptibilities of surface exposure and of ironstone mullock were in the range .001-1 SI.

The original relationship of ironstone to sediments is difficult to establish due to the extensive brecciation at contacts and widespread faulting. Clearly the ironstone is discordant to bedding but, in part, notably away from the central body, concordant contacts may be present. Breccia dykes and contacts were emplaced after ironstone formation.

4.4 Country Rock

Turbiditic country rock units display typical bouma characteristics; load structures, small-scale cross bedding, normal grading, sharp erosive bases, common rip-ups at basal contacts, and wispy lamination to fine shale horizons. Grain size ranges from coarse basal grits to mudstones. Clast lithologies are dominantly lithic, probably volcanic, and weathered feldspars. At surface the sediments have an overall pink haematitic hue.

Argillaceous BIF is exposed rarely on the lease area but is clearly evident in mullock about shafts indicating it is present in abundance at depth. This is consistent with observations to the east of the lease area where BIF units up to 2m thick are apparent in open antiform structures

with near vertical axial planes. The folds commonly have discordant quartz-haematite ironstones in the axial core.

Volcanic rocks sensu stricto are not present within the lease area although the redeposited turbidite rocks probably contain predominant proportions of accidental and accessory volcanoclastic material.

A dominant and pervasive vertical eastwest cleavage is present throughout the area within the sedimentary lithologies but not within ironstone. At surface preferential weathering of cleavage planes has resulted in the almost complete destruction of bedding traces.

4.5 Structure

Sedimentary rocks within the lease area are gently folded about near vertical E-W axial planes with the dips on limbs not exceeding 30 degrees. The folds plunge east and west at angles of 15-30 degrees with the resulting overall structure being a series of gentle domal closures somewhat resembling an egg carton. Massive quartz-haematite ironstones often occupy positions within the domal closures.

Faulting is apparent in the area along NE-SW trends and appears to have broken up and displaced the original ironstone. Breccia is more commonly associated with discontinuous dyke-like and localised irregular pipes. A major NE-SW fault appears to be present between GML 774E and the ironstone on the adjacent GML 793E to the west. Actual movement on the faults is unknown but there appears to be a dextral strike-slip component based on relative positions of ironstone outcrops.

Relative timing of folding and faulting is unknown but was probably folding first. Actual timing was probably seafloor or early diagenetic for first movements of both phases of deformation.

5. GRID AND LEVEL SURVEY

A detailed grid survey and photogrammetric mapping at 1:5000 scale were carried out by surveyors, Markey, Campbell & Thompson Pty. Limited, on behalf of CRAE. A sunshot was taken to establish true north on the leases and all grid lines were established on 0-180 degrees true. The grid was subsequently tied to the Australian Metric Grid. Grid lines were marked at 50m intervals by wooden pegs one metre in height and marked at alternate 25m intervals by nailed flagging in the ground. These N-S lines were tied to a baseline which passed through the lease area at 90-270 degrees true through the Mt Samuel trig point.

All 25m stations were levelled to the Australian Height Datum and these elevations are presented in Appendix IV. During the course of the survey the lease corner pegs and shaft collars were picked up and plotted on the base plane. The topographic and grid control plan are presented in plane NTd 3522.

6. GROUND MAGNETIC SURVEY

A ground magnetic survey was carried out at 50m and 100m line intervals on true N-S orientation. The instrument used was a Scintrex MP-2 with data recorded by hand and subsequently transferred and stored on computer tape. Sensor height clearance was two metres and no diurnal corrections were applied. Diurnal correction was considered unnecessary due to the extreme range in the magnetic readings ($\pm 10,000$ nT). Surface ironstone with susceptibilities in the range 0.001- 1 SI resulted in extremely erratic data in the vicinity of ironstone outcrops.

All manipulation and subsequent modelling of magnetic data were carried out on Tektronix 4052 computer using in-house software. Unfiltered data are presented in profile form in Appendix II. Filtered data are presented as a contour plot on plan NTd 3830. A spike filter of 100nT and an averaging array filter of .5-1-1-1-.5 were applied to smooth the data and enable contour plotting.

The very noisy character of the magnetic data due to extensive surface ironstone makes the data almost useless for modelling purposes. However, on line 1200mE it is possible to make out a broad dipole through the background of noise. The dipole indicates depth extent of ironstone at this position centred on 1050mN but it is impossible to model an absolute depth or orientation (see Appendix VI). Elsewhere in the lease area the magnetic response is surficial and highly erratic.

7. GRAVITY SURVEY

A detailed gravity survey was carried out on N-S lines 100m and 50m apart.

The instrument used was a Lacoste Romberg (No.649); loops were run to allow correction for instrument and tidal drift. Data were hand recorded and transferred to computer tape for corrections to be made. All corrections and manipulations were carried on a Tektronix 4052 computer using in-house software. Levels and latitudes used were those supplied by contracted surveyors (Appendix IV and plan NTd 3522). Raw gravity data were loop corrected and the density used for Bouguer correction was 2.67. An arbitrary number of 970410 was added to all calculated gravity readings to bring them up to a small positive interger for convenience. Profiled Bouguer gravity are presented in Appendix III, contoured data are presented on plan NTd 3831.

A very prominent excess mass anomaly exists over the ironstone outcropping within the lease area. Modelling of the anomaly suggests much of the ironstone has no depth extent beyond 30 or 40m (see Appendix VI). The data further suggests that low density zones, corresponding to sediments and possible breccias, are present between denser, ironstone, bodies.

On line 1200mE the gravity data indicates significant down-plunge extent to a dense ironstone body. The body appears to reach 200m below surface with a near vertical to steeply north dipping attitude. It is truncated sharply to the east probably by a NE-SW trending fault. These interpretations are consistent with magnetic observations and surface geological mapping.

8. DISCUSSION

The combination of surface mapping, gravity survey and magnetics has enabled a detailed three dimensional picture of the ironstone body on GML 793E to be constructed. Surface mapping provides information on the top 10m "slab" of the geological model. Gravity appears to provide optimal information on density contrasts in the region 0-50m below surface; deeper interpretation is possible with increasing degrees of uncertainty. Magnetics, although hampered by erratic surface responses, provides optimal information on magnetic contrasts below the oxidation interface (approximately 50m) i.e. within the magnetic zone of the ironstone body.

Using all three techniques it has been possible to model the overall strike extent and dip and pitch of the ironstone. The disconnected ironstone bodies at surface appear to retain their disconnected character at depth probably seperated by breccia zones and faulted segments of sedimentary country rock. To the west of line 1200mE the ironstone appears to have no depth continuity beyond 30 or 40m, however, on line 1200mE and centered

at 1050mN the ironstone has depth extent of close to 200m over a true width of some 30-40m. The first drillhole into the prospect should be on this section.

B.E.HARVEY

9. KEYWORDS

Assays-surf, geol-mapping, geophys-grav-mag, gold, haematite, ironstone, magnetite, Proterozoic-Lr, Tennant Creek, SF53-14.

10. LIST OF PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
NTd 3522	Mt Samuel : Topographical and Control Plan	1:1000
NTd 3829	Mt Samuel : Geology and structural Interp.	1:1000
NTd 3830	Mt Samuel : Ground Magnetic Contours	1:1000
NTd 3831	Mt Samuel : Bouguer Gravity Contours	1:1000
NTd 3832	Mt Samuel : Location Plan	1:25000

APPENDIX I

GEOCHEMICAL LEDGERS

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL ROCK CHIP SAMPLING LEDGER

PROJECT Ternat Creek
 E.L. Mt Samuel.

gr - grab
 co - composite
 ch - channel

D.P.O. No. 20796

DATE 28-8-94

SAMPLE Nos. _____

COLLECTED BY BEH

SHEET No. _____

MAP OR PHOTO REFERENCE _____

ANALYSED BY Arata DAWIN

Grid Co-ordinates	Sample Number	Sample		Metal Content, p.p.m.																	Scint. Mag Size x10 ⁵ !	Geological Observations	
		Width	Sample Type	Pb	Zn	Cu	Ni	Co	Cr	Mo	W	Sn	As	Ag	Au	Mn	B ₁			U			Th
5m W No 2 Shall.	824363	10	Co			200				BLD					0.050		50					20-40	Siliceous haematite sericite ironstone Surface of 5m west of "No 2" shall.
"No 2 shall"	824364		C _{gr}			55				80					0.150		460					20-40	Sericite-haematite ironstone - plum red stain Mulch dump from "No 2" shall
1235E 1225N	824365	10	Co			20				20					0.050		BLD					10-15	Haematite shale breccia: low density :- highly weathered clay rock matrix
1210E 1210N	824366		C _{gr}			10				BLD					0.067		BLD					4-6	Haematite flooded and veined sediments in mulch dump

Printer.

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL ROCK CHIP SAMPLING LEDGER

PROJECT Ternat Creek

E.L. Mt Samuel

MAP OR PHOTO REFERENCE _____

* gr - grab
co - composite
ch - channel

SAMPLE Nos. _____

D.P.O. No. 20796

DATE 28-8-94

COLLECTED BY BEH

SHEET No. _____

ANALYSED BY Analyst DRAWIN

Grid Co-ordinates	Sample Number	Sample		Metal Content, p.p.m.																		Scint. Max 500 500 11051	Geological Observations
		Width	Type	Pb	Zn	Cu	Ni	Co	Cr	Mo	W	Sn	As	Ag	Au	Mn	B ₁			U	Th		
✓ 1140E 1150N	824367	Ch	gr			15				840					0.175		30					1-2	Atx haemite monstane : red streak Mudch about small shaft - shallow
✓ 1109DE 1160N	824368	Ch	gr			20				150					0.108		80					1-2	Dense haemite monstane with creamy mud on joints : Red streak to haemite Mudch from Southern Cross shaft.
✓ 1100E 1150N	824369	Sm	Co			40				280					0.975		240					2-4	Breccia from open/cut adjacent to southern cross shaft. Underlay on north side of open/cut
✓ 1092E 1150N	824370	Sm	Co			55				100					5.71		200					1-2	Breccia from open/cut adjacent to southern cross shaft well within weathered zone - extremely rusty : West end of open/cut underlay.
✓ 1100E 1150N	824371	Ch	gr			20				140					2.39		120					2-4	Composite grab of spill over rusty limonite haemite monstane from ramp out of open/cut.
✓ 1075E 1090N	824372	Sm	Co			15				840					0.108		30					4-6	Limonite appearing limonite breccia in vertical structure peripheral to haemite and in joints.
✓ 1140E 1115N	824373	Ch	gr			20				840					0.017		840					2-5	Dense specular haemite with red streak and white clay coating from mudch plus about zig zag shaped gangings
✓ 1135E 1015N	824374	Ch	gr			35				100					0.442		130					10-20	Dense specular haemite monstane from mudch about shaft collar.

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL ROCK CHIP SAMPLING LEDGER

PROJECT Tennant Creek

E.L. Mc Samuel

* gr - grab
co - composite
ch - channel

SAMPLE Nos

D.P.O. No. 20796

DATE 28-8-84

SHEET No.

MAP OR PHOTO REFERENCE

COLLECTED BY BEH

ANALYSED BY Annals Drawn

Grid Co-ordinates	Sample Number	Sample		Metal Content, p.p.m.																	Scinto.	Geological Observations	
		Width	Sample Type *	Pb	Zn	Cu	Ni	Co	Cr	Mo	W	Sn	As	Ag	Au	Mn	Bi			U	Th		Wg gms Jug x10 ⁵ SI
1140E 100N	824375	5	Co			10				50					0.342		110					4-6	Dumey clay rich powdery ironstone material in shear on NW wall of open cut
Underground refer Map	824376	8	Co			40				280					1.63		110						Mixed sandstone and ironstone, abundant soft clay rich with schists
"	824377	5	Co			40				100					2.50		100						Soft pulverulent mixed sed. & ironstone. abundant white (Bi?) mineral
"	824378	10	Co			20				50					0.133		130						Festose and white clays. Tale in veins in haematite?
"	824379	10	Co			20				40					0.100		110						Festose and white clay rich veins. Tale in veins in haematite
"	824380	3	Co			10				350					3.08		520						Haematite + Mn stringers and mottled ore from stage. Abundant white Bi(?) Mineral + clays.
"	970495	10	Co			75				BLD					0.175		BLD						Pulverulent haematite rich sed. and kaolin stringers, sericite and Festose
"	970496	10	Co			15				BLD					0.117		BLD						Greenish lime haematite ironstone
"	970497	5	Co			30				40					0.88		100						Hard clay and ironstone

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL ROCK CHIP SAMPLING LEDGER

D.P.O. No. 20796

DATE 28-8-84

SHEET No.

PROJECT Tennant Creek

EL. Mt. Summit.

- * gr - grab
- co - composite
- ch - channel

SAMPLE Nos. _____

COLLECTED BY BEH

ANALYSED BY Analabs DOEWIN

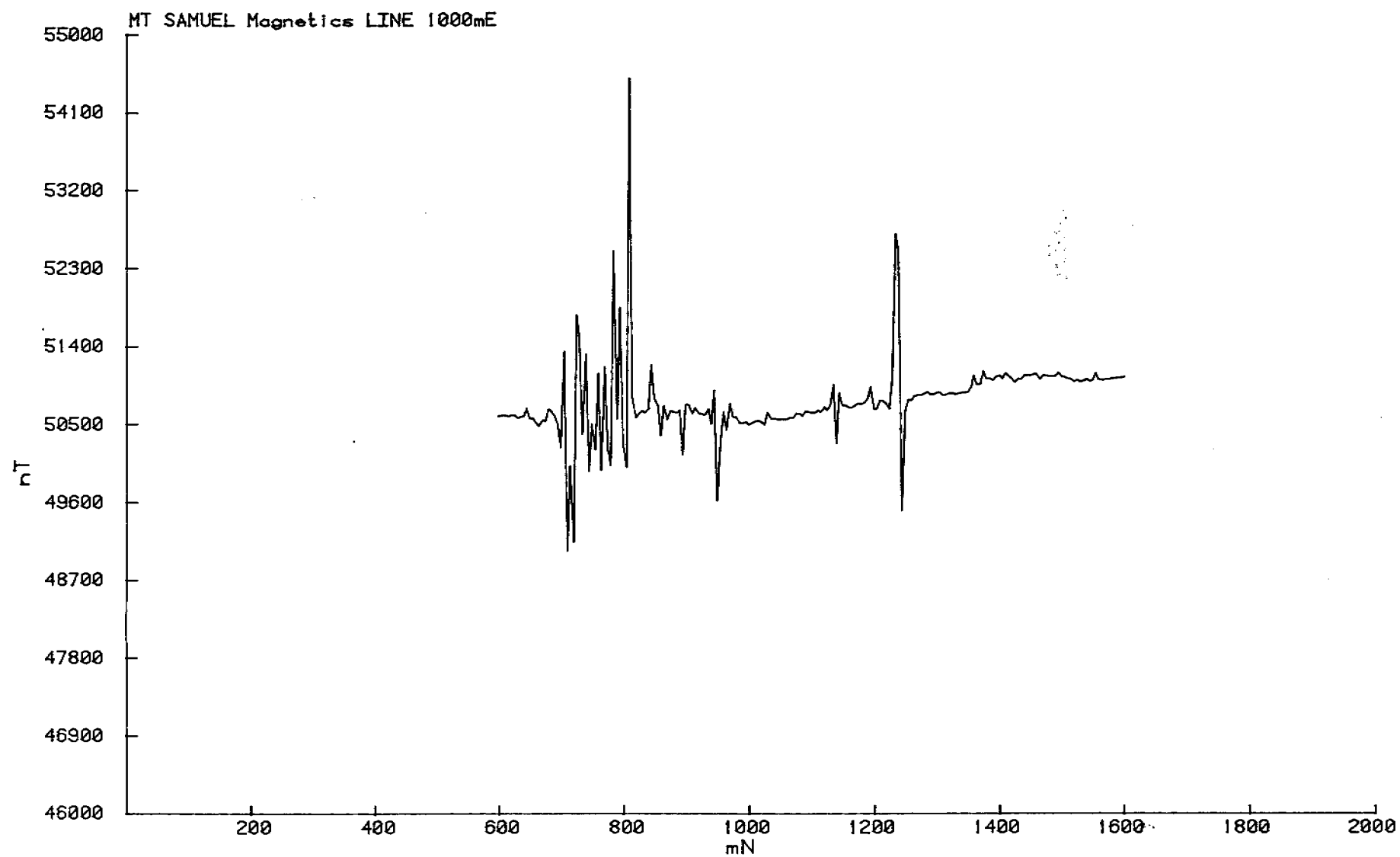
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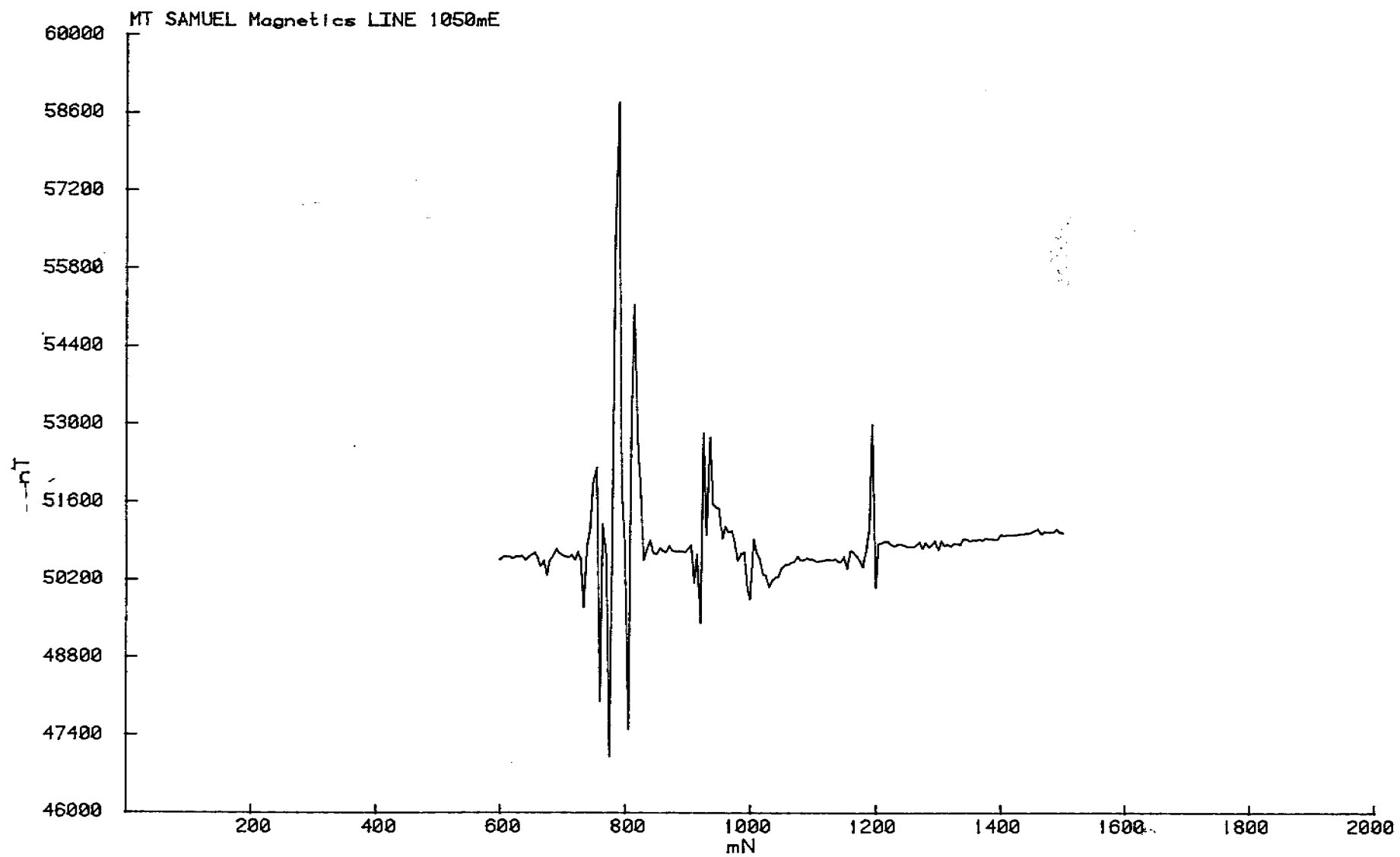
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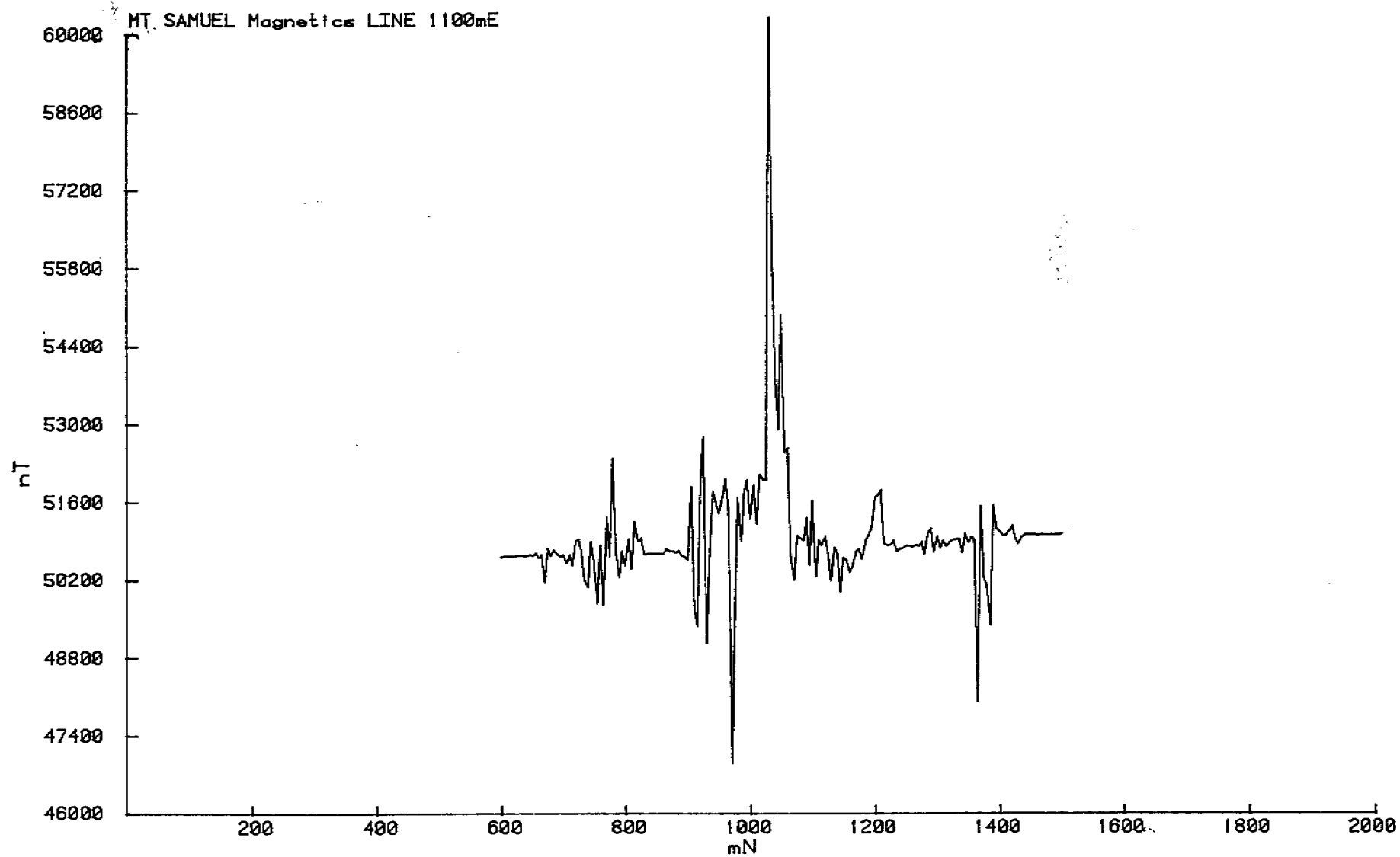
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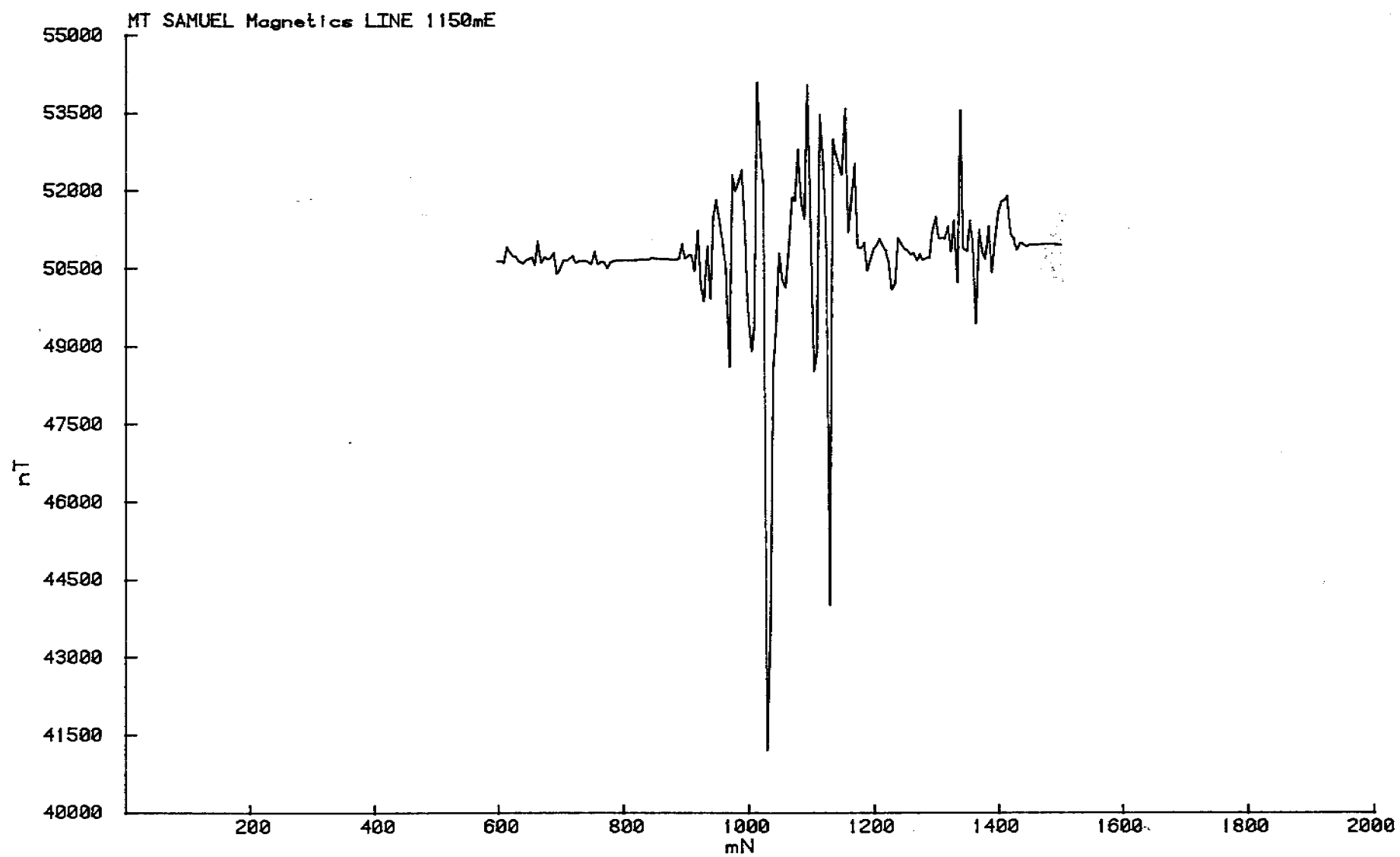
APPENDIX II

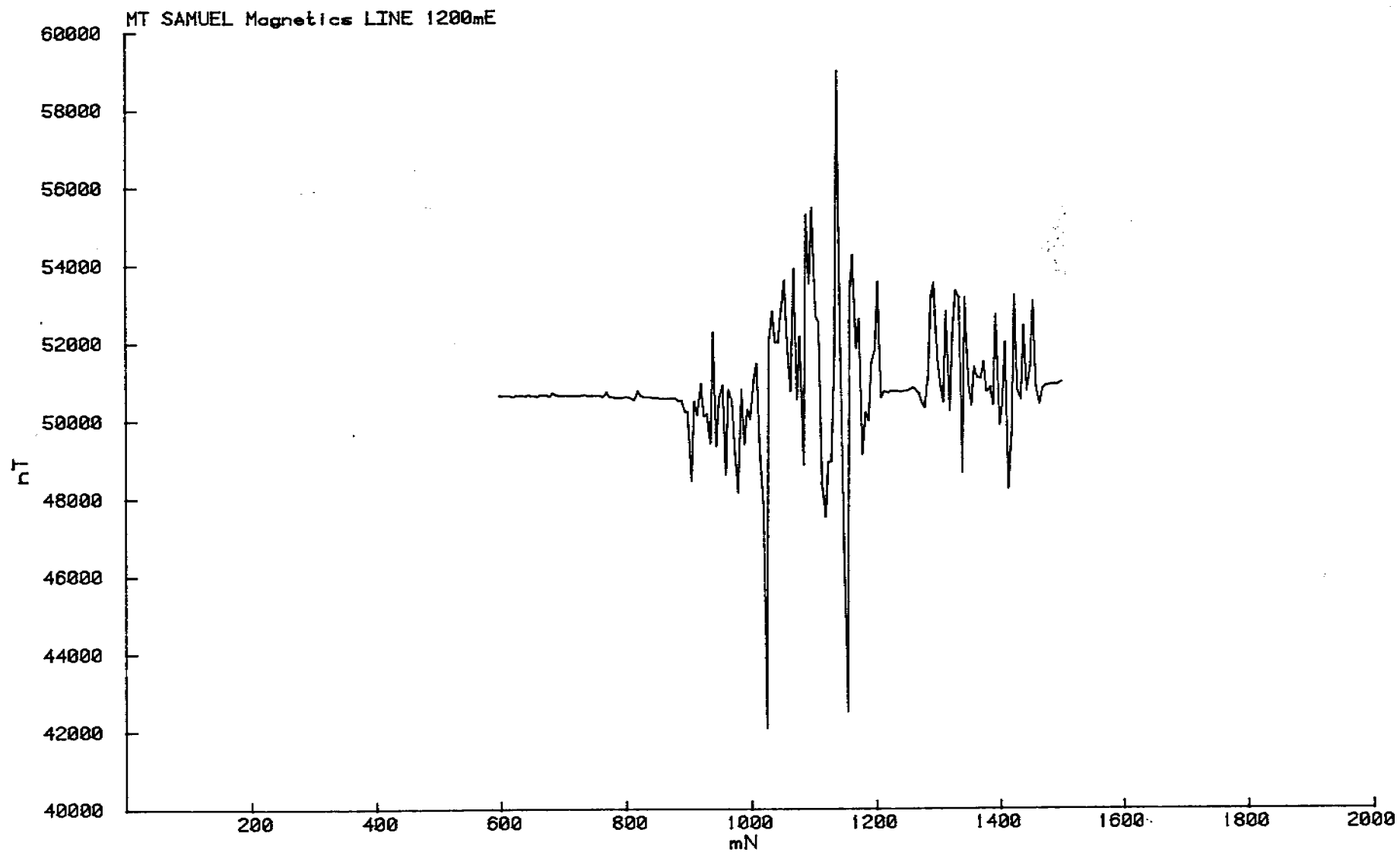
GROUND MAGNETIC PROFILES
UNFILTERED DATA





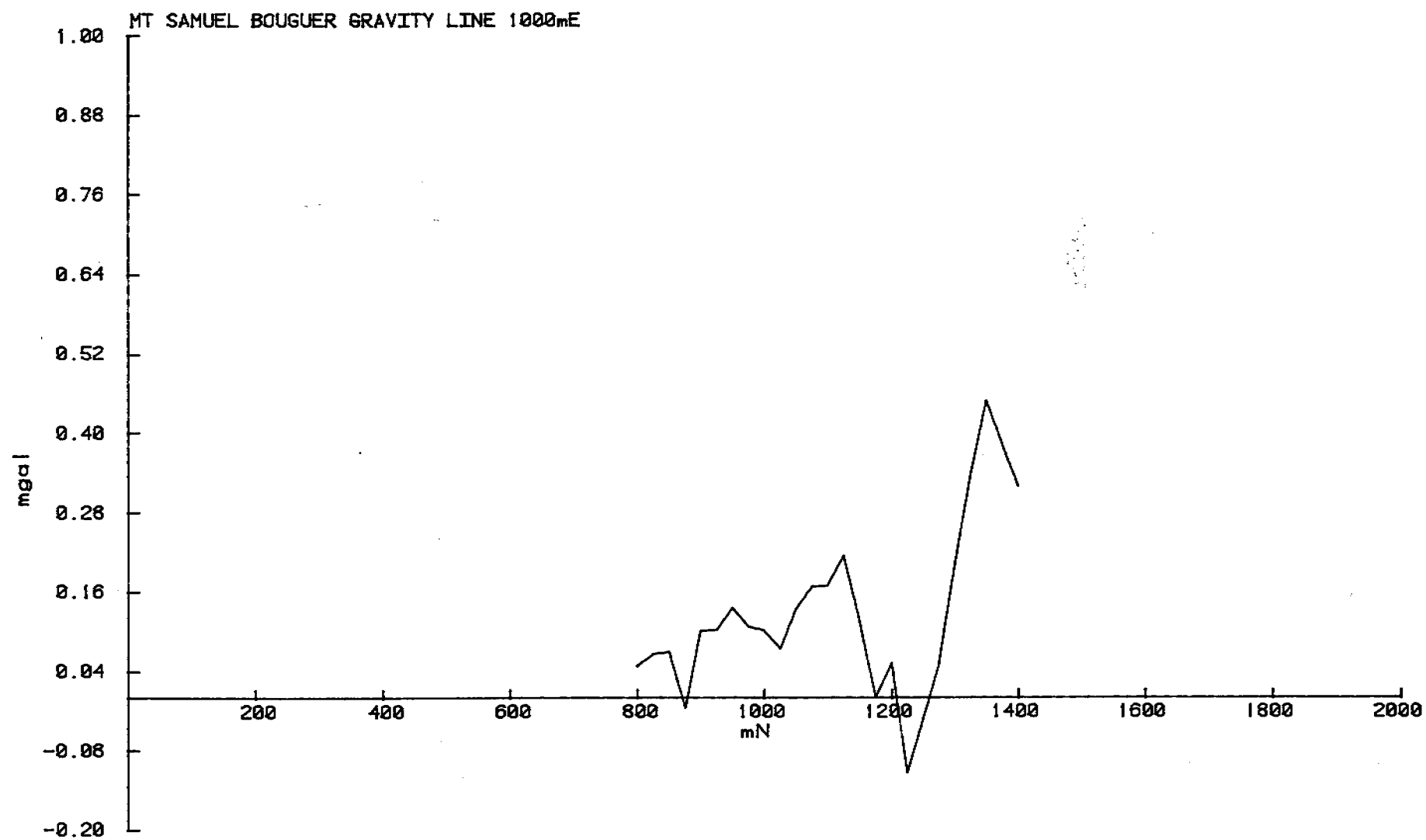


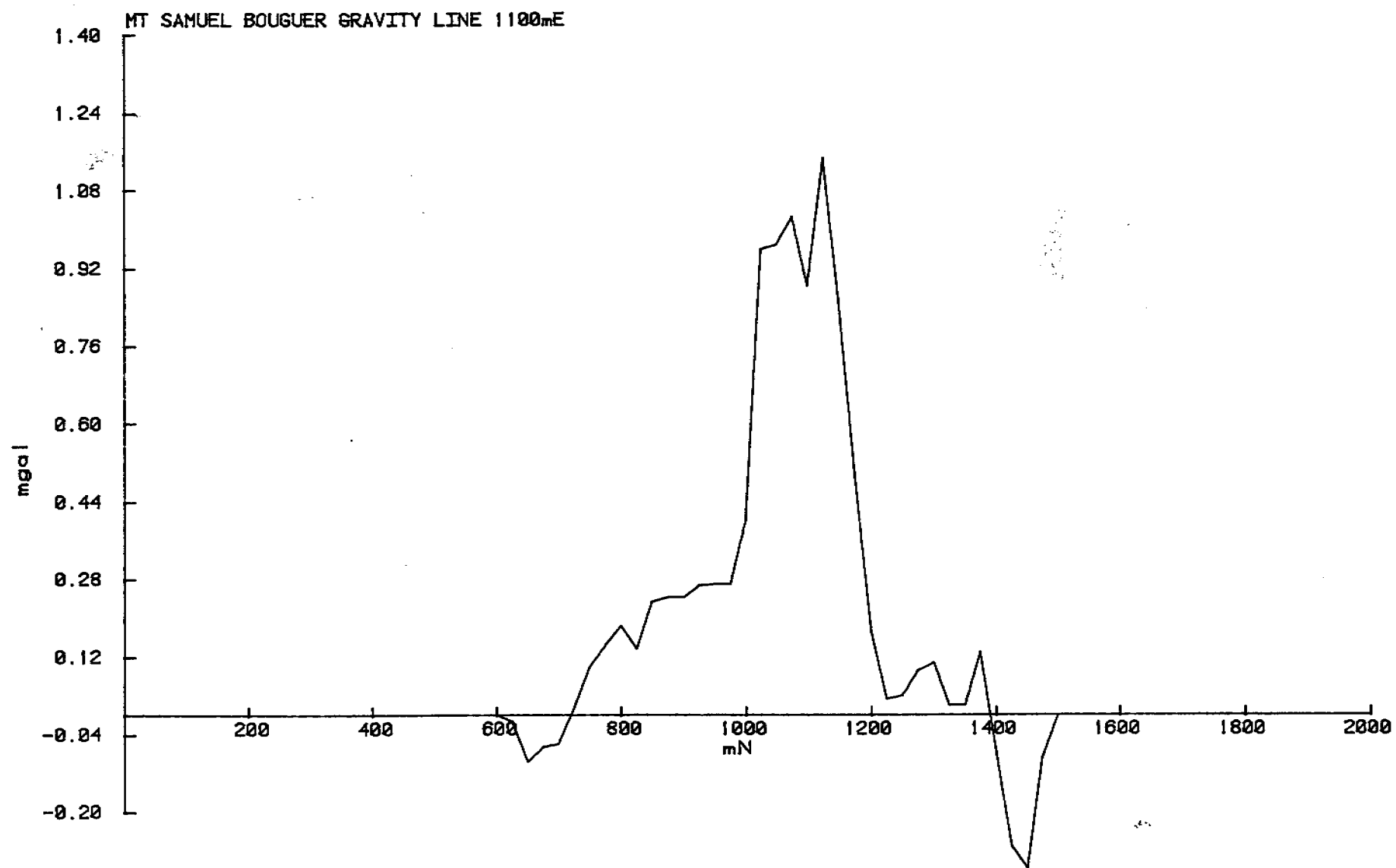


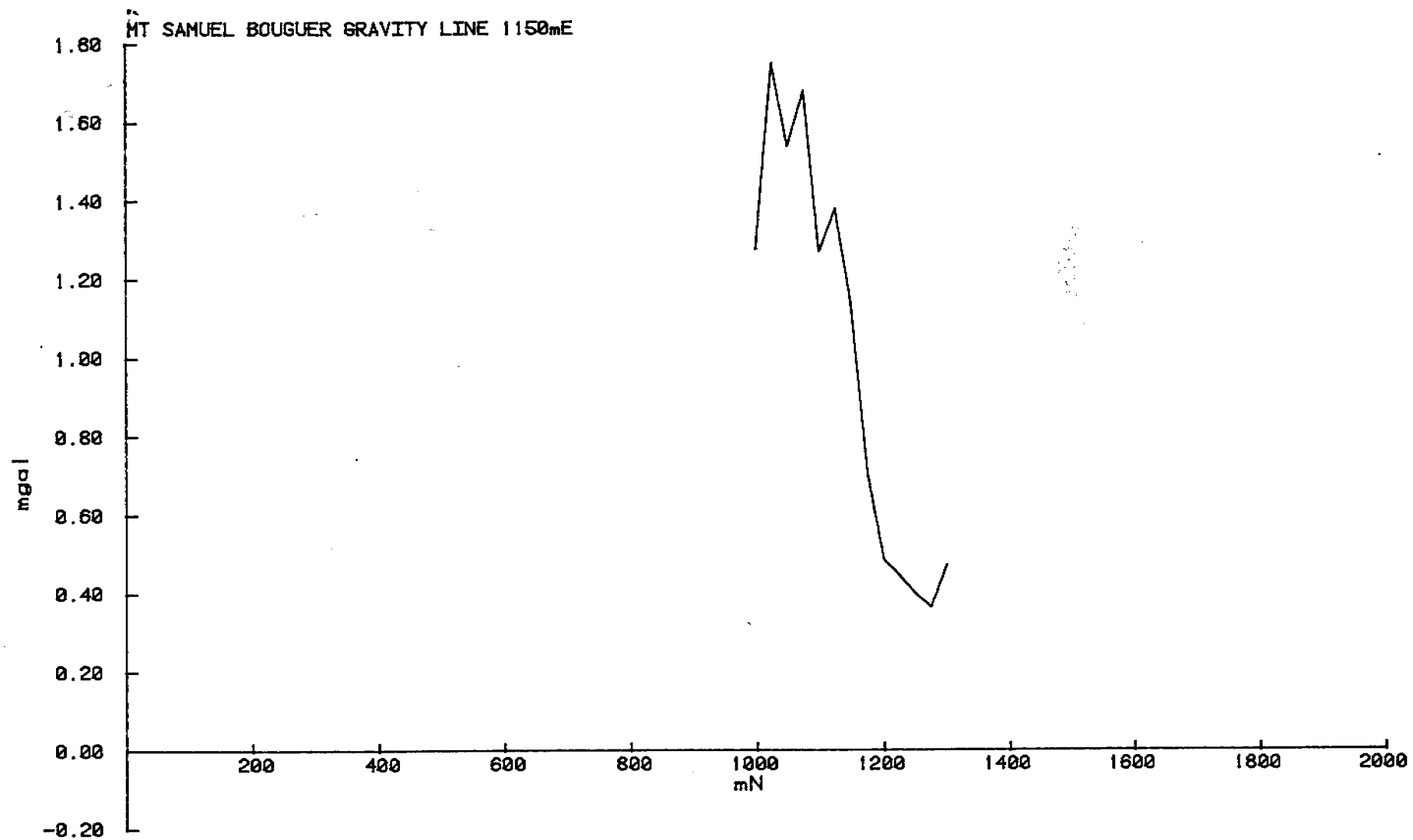


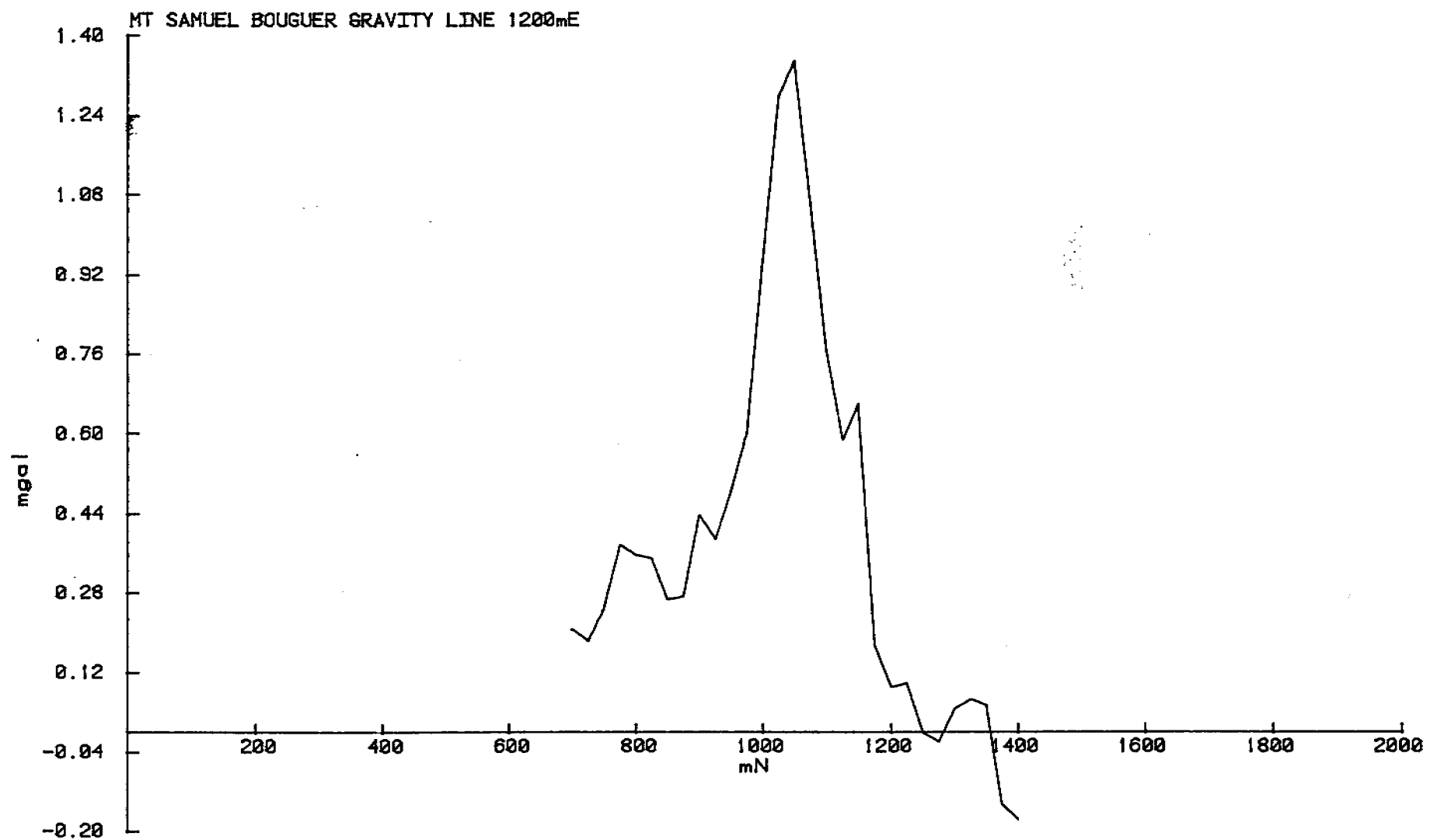
APPENDIX III

BOUGUER GRAVITY PROFILES
REGIONAL REMOVED



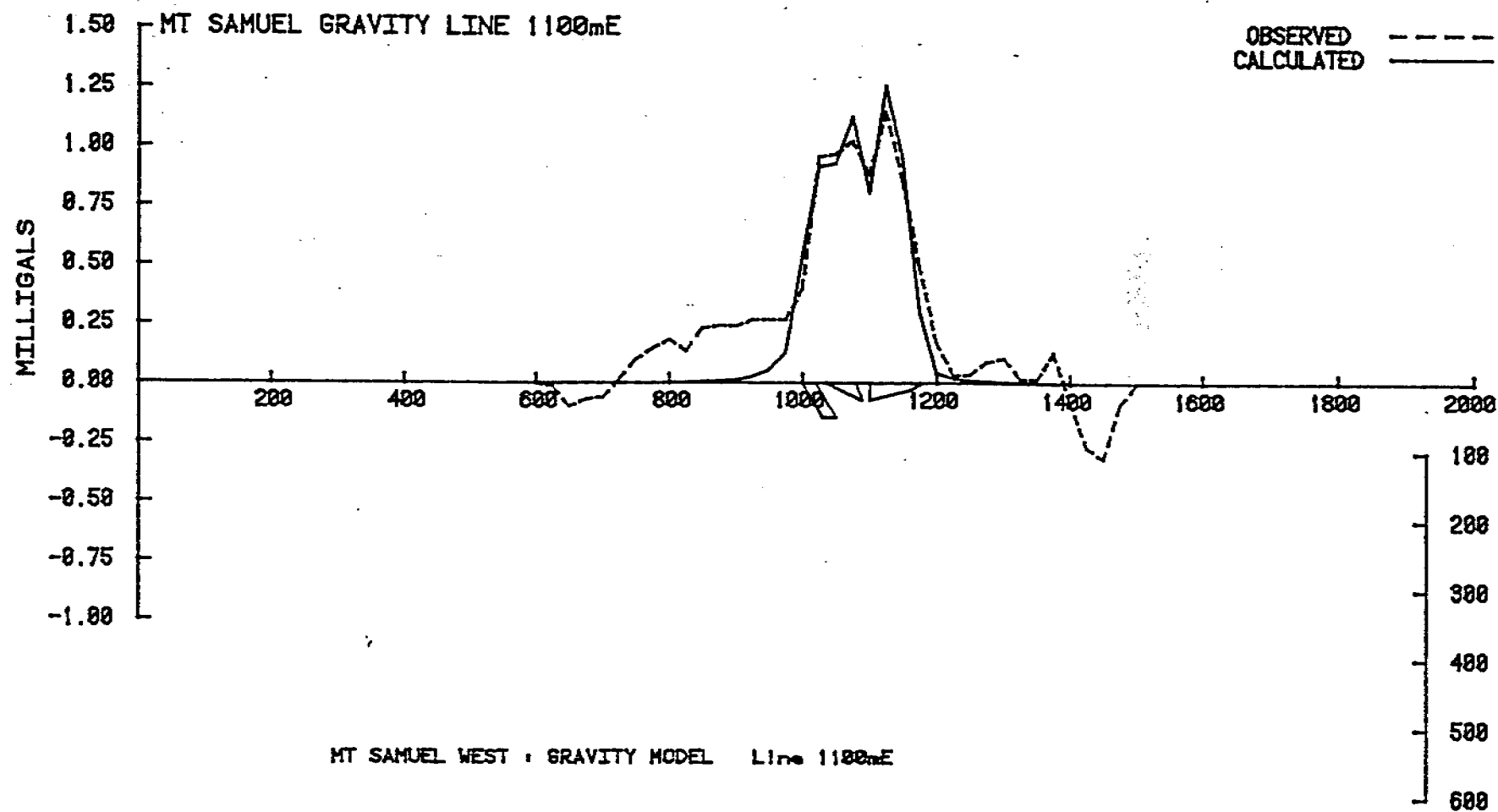


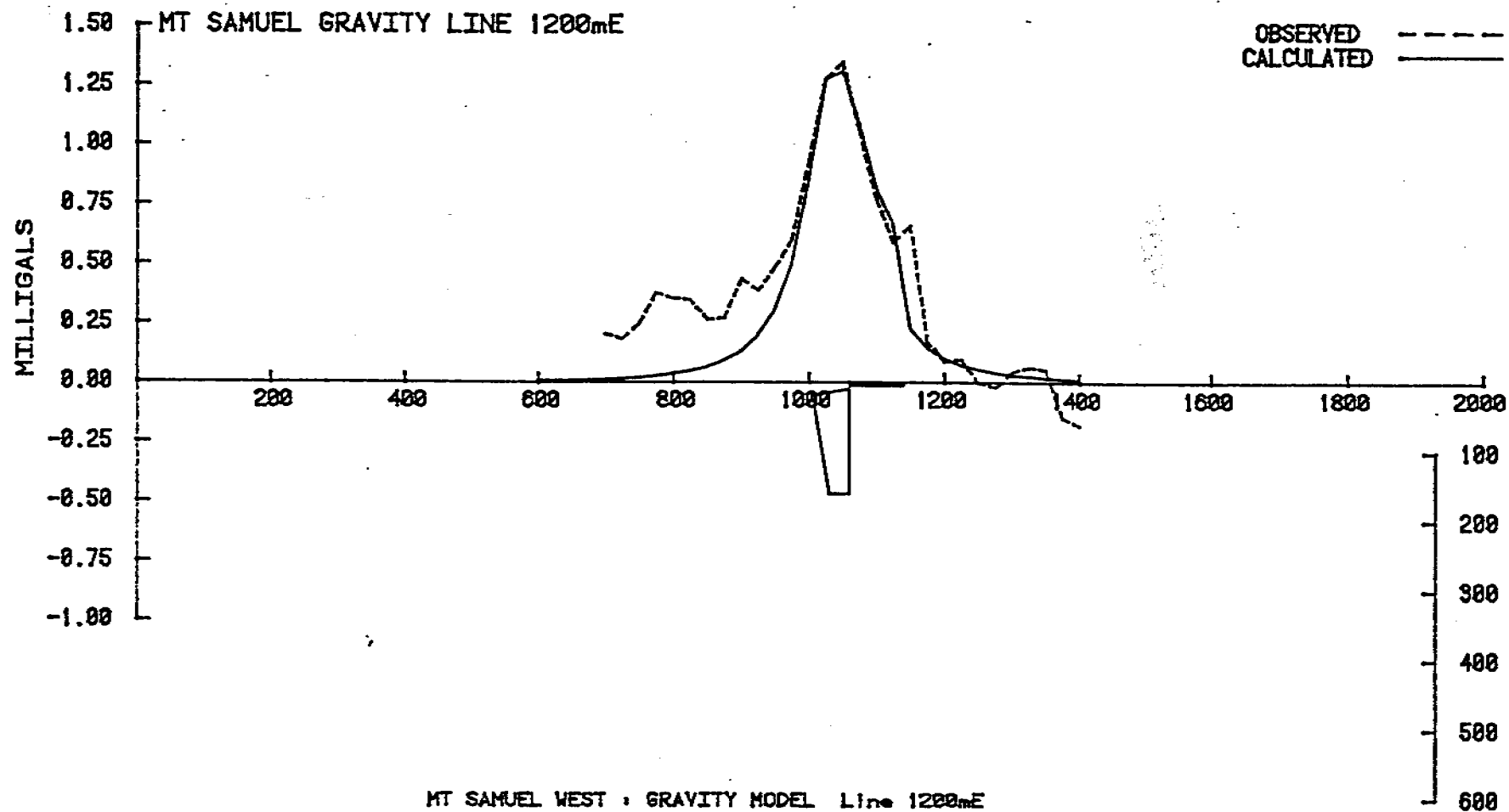




APPENDIX IV

AND LEVELS AND BOUGUER GRAVITY





APPENDIX V

RAW MAGNETIC DATA

mNORTH	mEAST	MAGNETICS (nT)
--------	-------	----------------

600	1000	50600
605	1000	50607
610	1000	50599
615	1000	50587
620	1000	50608
625	1000	50608
630	1000	50572
635	1000	50585
640	1000	50599
645	1000	50683
650	1000	50567
655	1000	50565
660	1000	50512
665	1000	50474
670	1000	50550
675	1000	50531
680	1000	50674
685	1000	50645
690	1000	50587
695	1000	50490
700	1000	50228
705	1000	51338
710	1000	49034
715	1000	50020
720	1000	49128
725	1000	51763
730	1000	51500
735	1000	50382
740	1000	51315
745	1000	49954
750	1000	50507
755	1000	50208
760	1000	51090
765	1000	49970
770	1000	51158
775	1000	50222
780	1000	50017
785	1000	52504
790	1000	50555
795	1000	51846
800	1000	50262
805	1000	50005
810	1000	54498
815	1000	50799
820	1000	50574
825	1000	50619
830	1000	50655
835	1000	50630
840	1000	50682
845	1000	51188
850	1000	50803
855	1000	50707
860	1000	50365
865	1000	50716
870	1000	50557
875	1000	50659
880	1000	50638
885	1000	50629
890	1000	50662

mNORTH	mEAST	MAGNETICS (nT)
--------	-------	----------------

895	1000	50144
900	1000	50730
905	1000	50720
910	1000	50626
915	1000	50688
920	1000	50623
925	1000	50614
930	1000	50604
935	1000	50677
940	1000	50500
945	1000	50891
950	1000	49605
955	1000	50312
960	1000	50645
965	1000	50431
970	1000	50746
975	1000	50578
980	1000	50591
985	1000	50509
990	1000	50508
995	1000	50526
1000	1000	50497
1005	1000	50522
1010	1000	50534
1015	1000	50546
1020	1000	50523
1025	1000	50491
1030	1000	50643
1035	1000	50565
1040	1000	50572
1045	1000	50558
1050	1000	50557
1055	1000	50555
1060	1000	50559
1065	1000	50579
1070	1000	50573
1075	1000	50625
1080	1000	50620
1085	1000	50598
1090	1000	50646
1095	1000	50640
1100	1000	50629
1105	1000	50627
1110	1000	50667
1115	1000	50639
1120	1000	50696
1125	1000	50665
1130	1000	50714
1135	1000	50962
1140	1000	50278
1145	1000	50867
1150	1000	50718
1155	1000	50713
1160	1000	50692
1165	1000	50702
1170	1000	50729
1175	1000	50742
1180	1000	50732
1185	1000	50756
1190	1000	50801

mNORTH	mEAST	MAGNETICS (nT)
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1195	1000	50940
1200	1000	50677
1205	1000	50689
1210	1000	50776
1215	1000	50767
1220	1000	50732
1225	1000	50680
1230	1000	51056
1235	1000	52699
1240	1000	52500
1245	1000	49500
1250	1000	50663
1255	1000	50781
1260	1000	50773
1265	1000	50823
1270	1000	50844
1275	1000	50832
1280	1000	50852
1285	1000	50878
1290	1000	50846
1295	1000	50844
1300	1000	50870
1305	1000	50872
1310	1000	50834
1315	1000	50847
1320	1000	50860
1325	1000	50859
1330	1000	50846
1335	1000	50863
1340	1000	50872
1345	1000	50867
1350	1000	50880
1355	1000	50928
1360	1000	51069
1365	1000	50951
1370	1000	50975
1375	1000	51115
1380	1000	51020
1385	1000	51021
1390	1000	51004
1395	1000	51050
1400	1000	51063
1405	1000	51024
1410	1000	51095
1415	1000	51057
1420	1000	51022
1425	1000	50982
1430	1000	51027
1435	1000	51024
1440	1000	51065
1445	1000	51065
1450	1000	51067
1455	1000	51085
1460	1000	51076
1465	1000	51026
1470	1000	51066
1475	1000	51053
1480	1000	51052
1485	1000	51055
1490	1000	51055

mNORTH	mEAST	MAGNETICS (nT)
--------	-------	----------------

1495	1000	51100
1500	1000	51052
1505	1000	51038
1510	1000	51025
1515	1000	51014
1520	1000	50991
1525	1000	51016
1530	1000	50990
1535	1000	51005
1540	1000	51022
1545	1000	50996
1550	1000	51014
1555	1000	51090
1560	1000	51017
1565	1000	51007
1570	1000	51024
1575	1000	51013
1580	1000	51031
1585	1000	51033
1590	1000	51043
1595	1000	51042
1600	1000	51049

600	1050	50571
605	1050	50622
610	1050	50604
615	1050	50610
620	1050	50585
625	1050	50625
630	1050	50601
635	1050	50638
640	1050	50550
645	1050	50601
650	1050	50650
655	1050	50681
660	1050	50596
665	1050	50435
670	1050	50545
675	1050	50276
680	1050	50556
685	1050	50627
690	1050	50750
695	1050	50680
700	1050	50631
705	1050	50603
710	1050	50598
715	1050	50642
720	1050	50554
725	1050	50695
730	1050	50570
735	1050	49691
740	1050	50837
745	1050	51123
750	1050	51961
755	1050	52220
760	1050	48000
765	1050	51199
770	1050	50595
775	1050	47000
780	1050	50929

mNORTH	mEAST	MAGNETICS (nT)
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785	1050	56312
790	1050	58800
795	1050	51889
800	1050	50816
805	1050	47500
810	1050	52921
815	1050	55150
820	1050	52690
825	1050	51760
830	1050	50536
835	1050	50722
840	1050	50918
845	1050	50673
850	1050	50642
855	1050	50767
860	1050	50716
865	1050	50683
870	1050	50809
875	1050	50717
880	1050	50706
885	1050	50701
890	1050	50699
895	1050	50692
900	1050	50747
905	1050	50822
910	1050	50124
915	1050	50655
920	1050	49412
925	1050	52844
930	1050	51001
935	1050	52766
940	1050	51554
945	1050	51500
950	1050	51464
955	1050	50941
960	1050	51170
965	1050	51057
970	1050	51080
975	1050	50849
980	1050	50547
985	1050	50678
990	1050	50696
995	1050	50070
1000	1050	49835
1005	1050	50932
1010	1050	50683
1015	1050	50579
1020	1050	50283
1025	1050	50264
1030	1050	50069
1035	1050	50192
1040	1050	50248
1045	1050	50267
1050	1050	50406
1055	1050	50473
1060	1050	50469
1065	1050	50518
1070	1050	50545
1075	1050	50625
1080	1050	50560

mNORTH	mEAST	MAGNETICS (nT)
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1085	1050	50574
1090	1050	50590
1095	1050	50561
1100	1050	50567
1105	1050	50532
1110	1050	50544
1115	1050	50554
1120	1050	50570
1125	1050	50562
1130	1050	50550
1135	1050	50578
1140	1050	50522
1145	1050	50533
1150	1050	50622
1155	1050	50401
1160	1050	50720
1165	1050	50706
1170	1050	50615
1175	1050	50536
1180	1050	50429
1185	1050	50736
1190	1050	51127
1195	1050	53000
1200	1050	50057
1205	1050	50862
1210	1050	50875
1215	1050	50899
1220	1050	50890
1225	1050	50832
1230	1050	50812
1235	1050	50841
1240	1050	50845
1245	1050	50821
1250	1050	50797
1255	1050	50796
1260	1050	50788
1265	1050	50836
1270	1050	50884
1275	1050	50766
1280	1050	50866
1285	1050	50792
1290	1050	50848
1295	1050	50906
1300	1050	50735
1305	1050	50912
1310	1050	50818
1315	1050	50841
1320	1050	50809
1325	1050	50855
1330	1050	50861
1335	1050	50833
1340	1050	50936
1345	1050	50941
1350	1050	50893
1355	1050	50931
1360	1050	50907
1365	1050	50937
1370	1050	50912
1375	1050	50947
1380	1050	50938

mNORTH	mEAST	MAGNETICS (nT)
--------	-------	----------------

1385	1050	50938
1390	1050	50929
1395	1050	50920
1400	1050	51015
1405	1050	50990
1410	1050	51015
1415	1050	51011
1420	1050	51014
1425	1050	51022
1430	1050	51029
1435	1050	51029
1440	1050	51042
1445	1050	51046
1450	1050	51067
1455	1050	51097
1460	1050	51120
1465	1050	51028
1470	1050	51067
1475	1050	51060
1480	1050	51054
1485	1050	51066
1490	1050	51124
1495	1050	51057
1500	1050	51042

600	1100	50616
605	1100	50630
610	1100	50622
615	1100	50634
620	1100	50633
625	1100	50641
630	1100	50633
635	1100	50639
640	1100	50638
645	1100	50655
650	1100	50629
655	1100	50686
660	1100	50598
665	1100	50662
670	1100	50158
675	1100	50777
680	1100	50633
685	1100	50740
690	1100	50654
695	1100	50614
700	1100	50662
705	1100	50500
710	1100	50659
715	1100	50457
720	1100	50907
725	1100	50937
730	1100	50700
735	1100	50196
740	1100	50070
745	1100	50905
750	1100	50537
755	1100	49773
760	1100	50831
765	1100	49750
770	1100	51330

mNORTH mEAST MAGNETICS (nT)

775	1100	50615
780	1100	52401
785	1100	50720
790	1100	50248
795	1100	50731
800	1100	50460
805	1100	50940
810	1100	50397
815	1100	51262
820	1100	50890
825	1100	50950
830	1100	50666
835	1100	50673
840	1100	50672
845	1100	50668
850	1100	50667
855	1100	50673
860	1100	50670
865	1100	50757
870	1100	50715
875	1100	50717
880	1100	50690
885	1100	50726
890	1100	50639
895	1100	50613
900	1100	50549
905	1100	51878
910	1100	49669
915	1100	49365
920	1100	52055
925	1100	52780
930	1100	49060
935	1100	50878
940	1100	51794
945	1100	51570
950	1100	51390
955	1100	51692
960	1100	52014
965	1100	51500
970	1100	46900
975	1100	49650
980	1100	51700
985	1100	50900
990	1100	51800
995	1100	52000
1000	1100	51300
1005	1100	51900
1010	1100	51200
1015	1100	52100
1020	1100	52000
1025	1100	52000
1030	1100	60315
1035	1100	56010
1040	1100	53763
1045	1100	52895
1050	1100	54975
1055	1100	52490
1060	1100	52574
1065	1100	50624
1070	1100	50198

mNORTH	mEAST	MAGNETICS (nT)
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1075	1100	51001
1080	1100	50947
1085	1100	50907
1090	1100	51317
1095	1100	50462
1100	1100	51636
1105	1100	50260
1110	1100	50938
1115	1100	50815
1120	1100	50990
1125	1100	50664
1130	1100	50180
1135	1100	50792
1140	1100	50655
1145	1100	49979
1150	1100	50612
1155	1100	50547
1160	1100	50346
1165	1100	50460
1170	1100	50729
1175	1100	50765
1180	1100	50571
1185	1100	50913
1190	1100	51018
1195	1100	51152
1200	1100	51689
1205	1100	51730
1210	1100	51818
1215	1100	50846
1220	1100	50822
1225	1100	50816
1230	1100	50916
1235	1100	50710
1240	1100	50767
1245	1100	50774
1250	1100	50823
1255	1100	50803
1260	1100	50796
1265	1100	50826
1270	1100	50812
1275	1100	50892
1280	1100	50662
1285	1100	51039
1290	1100	51121
1295	1100	50702
1300	1100	50996
1305	1100	50769
1310	1100	50909
1315	1100	50812
1320	1100	50892
1325	1100	50929
1330	1100	50934
1335	1100	50935
1340	1100	50682
1345	1100	51034
1350	1100	50878
1355	1100	50979
1360	1100	50909
1365	1100	47998
1370	1100	51531

mNORTH	mEAST	MAGNETICS (nT)
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1375	1100	50227
1380	1100	50092
1385	1100	49379
1390	1100	51559
1395	1100	51128
1400	1100	51060
1405	1100	50991
1410	1100	51002
1415	1100	51088
1420	1100	51174
1425	1100	50954
1430	1100	50850
1435	1100	50983
1440	1100	51018
1445	1100	51014
1450	1100	51019
1455	1100	51018
1460	1100	51010
1465	1100	51018
1470	1100	51012
1475	1100	51011
1480	1100	51020
1485	1100	51010
1490	1100	51013
1495	1100	51019
1500	1100	51033

600	1150	50640
605	1150	50639
610	1150	50595
615	1150	50907
620	1150	50814
625	1150	50722
630	1150	50711
635	1150	50622
640	1150	50590
645	1150	50656
650	1150	50685
655	1150	50717
660	1150	50561
665	1150	51025
670	1150	50595
675	1150	50713
680	1150	50665
685	1150	50705
690	1150	50802
695	1150	50390
700	1150	50466
705	1150	50654
710	1150	50639
715	1150	50690
720	1150	50743
725	1150	50606
730	1150	50636
735	1150	50638
740	1150	50645
745	1150	50620
750	1150	50570
755	1150	50825
760	1150	50566

mNORTH	mEAST	MAGNETICS (nT)
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765	1150	50629
770	1150	50601
775	1150	50500
780	1150	50619
785	1150	50642
790	1150	50651
795	1150	50647
800	1150	50650
805	1150	50654
810	1150	50664
815	1150	50659
820	1150	50663
825	1150	50674
830	1150	50669
835	1150	50673
840	1150	50658
845	1150	50700
850	1150	50683
855	1150	50665
860	1150	50684
865	1150	50668
870	1150	50692
875	1150	50660
880	1150	50660
885	1150	50652
890	1150	50700
895	1150	50964
900	1150	50690
905	1150	50755
910	1150	50740
915	1150	50438
920	1150	51233
925	1150	50166
930	1150	49865
935	1150	50925
940	1150	49909
945	1150	51527
950	1150	51820
955	1150	51365
960	1150	50957
965	1150	50501
970	1150	48602
975	1150	52300
980	1150	51995
985	1150	52200
990	1150	52400
995	1150	51330
1000	1150	49750
1005	1150	48890
1010	1150	49400
1015	1150	54096
1020	1150	52800
1025	1150	52000
1030	1150	41200
1035	1150	43700
1040	1150	48600
1045	1150	49405
1050	1150	50794
1055	1150	50266
1060	1150	50136

mNORTH	mEAST	MAGNETICS (nT)
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1065	1150	50823
1070	1150	51871
1075	1150	51812
1080	1150	52800
1085	1150	51750
1090	1150	51454
1095	1150	54048
1100	1150	51823
1105	1150	48520
1110	1150	48918
1115	1150	53477
1120	1150	52498
1125	1150	50800
1130	1150	44000
1135	1150	53000
1140	1150	52700
1145	1150	52500
1150	1150	52300
1155	1150	53600
1160	1150	51200
1165	1150	51781
1170	1150	52524
1175	1150	50901
1180	1150	50879
1185	1150	50991
1190	1150	50454
1195	1150	50654
1200	1150	50893
1205	1150	50951
1210	1150	51080
1215	1150	50961
1220	1150	50836
1225	1150	50615
1230	1150	50084
1235	1150	50231
1240	1150	51099
1245	1150	50988
1250	1150	50868
1255	1150	50840
1260	1150	50774
1265	1150	50819
1270	1150	50664
1275	1150	50787
1280	1150	50677
1285	1150	50718
1290	1150	50713
1295	1150	51207
1300	1150	51513
1305	1150	51076
1310	1150	51091
1315	1150	51072
1320	1150	51323
1325	1150	50830
1330	1150	51433
1335	1150	50236
1340	1150	53574
1345	1150	50875
1350	1150	50834
1355	1150	51440
1360	1150	50986

mNORTH	mEAST	MAGNETICS (nT)
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1365	1150	49431
1370	1150	51251
1375	1150	50824
1380	1150	50679
1385	1150	51331
1390	1150	50409
1395	1150	51018
1400	1150	51601
1405	1150	51805
1410	1150	51841
1415	1150	51899
1420	1150	51161
1425	1150	51081
1430	1150	50850
1435	1150	51001
1440	1150	50971
1445	1150	50930
1450	1150	50973
1455	1150	50953
1460	1150	50975
1465	1150	50966
1470	1150	50987
1475	1150	50989
1480	1150	50990
1485	1150	50973
1490	1150	50980
1495	1150	50961
1500	1150	50960

600	1200	50655
605	1200	50648
610	1200	50643
615	1200	50642
620	1200	50621
625	1200	50652
630	1200	50646
635	1200	50645
640	1200	50630
645	1200	50664
650	1200	50641
655	1200	50636
660	1200	50610
665	1200	50677
670	1200	50657
675	1200	50655
680	1200	50605
685	1200	50699
690	1200	50645
695	1200	50632
700	1200	50653
705	1200	50645
710	1200	50645
715	1200	50638
720	1200	50648
725	1200	50643
730	1200	50655
735	1200	50669
740	1200	50636
745	1200	50647
750	1200	50637

mNORTH	mEAST	MAGNETICS (nT)
755	1200	50653
760	1200	50642
765	1200	50589
770	1200	50720
775	1200	50608
780	1200	50598
785	1200	50582
790	1200	50595
795	1200	50585
800	1200	50615
805	1200	50594
810	1200	50550
815	1200	50510
820	1200	50771
825	1200	50636
830	1200	50600
835	1200	50587
840	1200	50592
845	1200	50568
850	1200	50571
855	1200	50564
860	1200	50561
865	1200	50560
870	1200	50568
875	1200	50584
880	1200	50549
885	1200	50505
890	1200	50520
895	1200	50214
900	1200	50215
905	1200	48435
910	1200	50501
915	1200	50135
920	1200	50945
925	1200	50101
930	1200	50180
935	1200	49404
940	1200	52286
945	1200	49335
950	1200	50579
955	1200	50910
960	1200	48590
965	1200	50798
970	1200	50470
975	1200	49134
980	1200	48143
985	1200	50803
990	1200	49385
995	1200	50300
1000	1200	50028
1005	1200	51075
1010	1200	51460
1015	1200	49294
1020	1200	47775
1025	1200	42076
1030	1200	52000
1035	1200	52800
1040	1200	52000
1045	1200	52000
1050	1200	52800

mNORTH	mEAST	MAGNETICS (nT)
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1055	1200	53600
1060	1200	51800
1065	1200	50749
1070	1200	53900
1075	1200	50529
1080	1200	52160
1085	1200	48851
1090	1200	55300
1095	1200	53500
1100	1200	55470
1105	1200	52700
1110	1200	52500
1115	1200	48400
1120	1200	47500
1125	1200	48950
1130	1200	48940
1135	1200	51700
1140	1200	59000
1145	1200	52050
1150	1200	46850
1155	1200	42500
1160	1200	53230
1165	1200	54270
1170	1200	51840
1175	1200	52617
1180	1200	49120
1185	1200	50220
1190	1200	49995
1195	1200	51490
1200	1200	51841
1205	1200	53564
1210	1200	50579
1215	1200	50746
1220	1200	50699
1225	1200	50768
1230	1200	50750
1235	1200	50753
1240	1200	50731
1245	1200	50767
1250	1200	50761
1255	1200	50810
1260	1200	50844
1265	1200	50807
1270	1200	50696
1275	1200	50454
1280	1200	50335
1285	1200	51133
1290	1200	53177
1295	1200	53538
1300	1200	51600
1305	1200	50870
1310	1200	50458
1315	1200	52800
1320	1200	50230
1325	1200	52230
1330	1200	53341
1335	1200	53148
1340	1200	48650
1345	1200	53163
1350	1200	50918

mNORTH	mEAST	MAGNETICS (nT)
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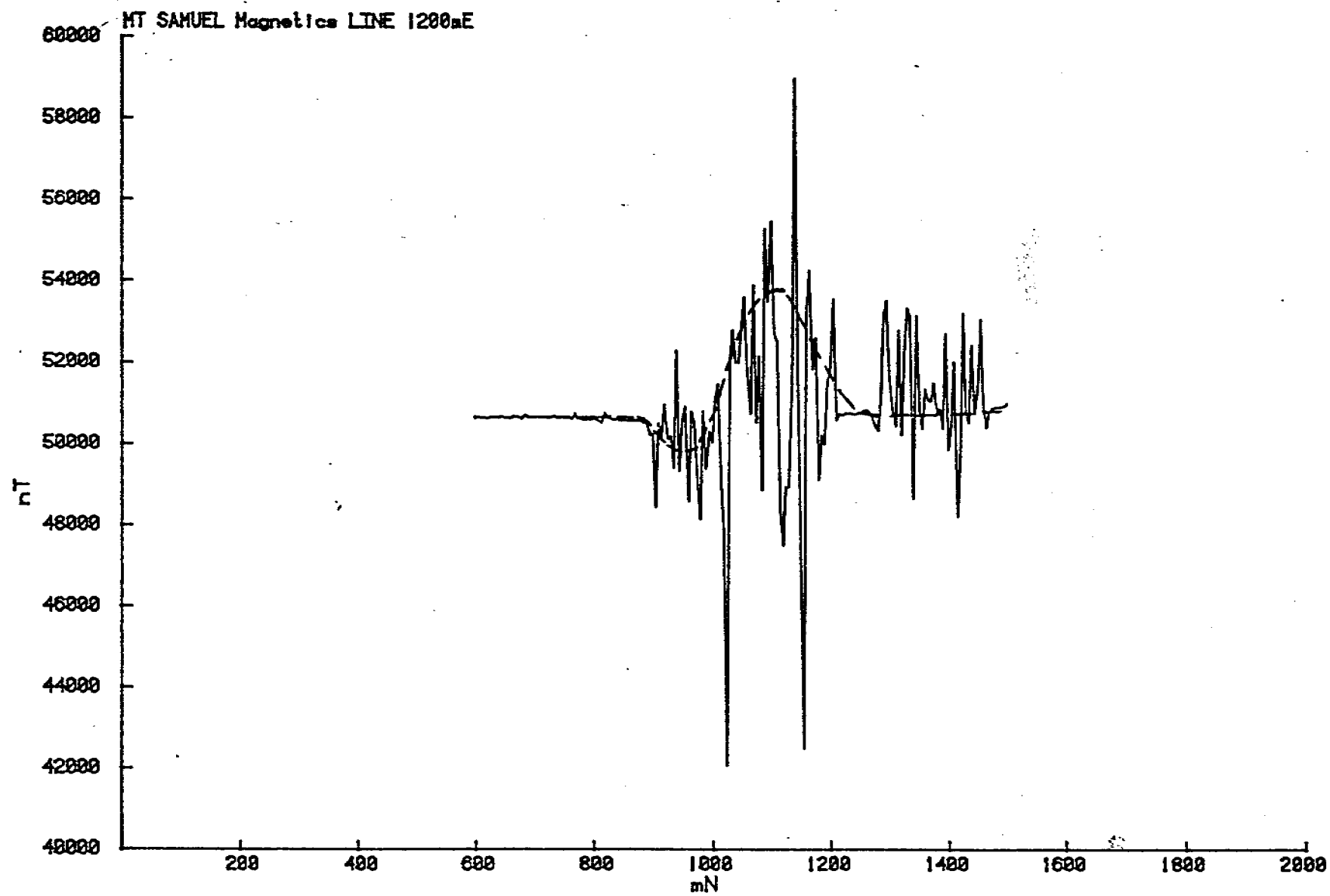
1355	1200	50372
1360	1200	51375
1365	1200	51093
1370	1200	51059
1375	1200	51508
1380	1200	50723
1385	1200	50849
1390	1200	50390
1395	1200	52730
1400	1200	49869
1405	1200	50431
1410	1200	52022
1415	1200	48222
1420	1200	49690
1425	1200	53220
1430	1200	50756
1435	1200	50518
1440	1200	52458
1445	1200	50750
1450	1200	51392
1455	1200	53074
1460	1200	50865
1465	1200	50412
1470	1200	50825
1475	1200	50898
1480	1200	50915
1485	1200	50930
1490	1200	50931
1495	1200	50939
1500	1200	51001

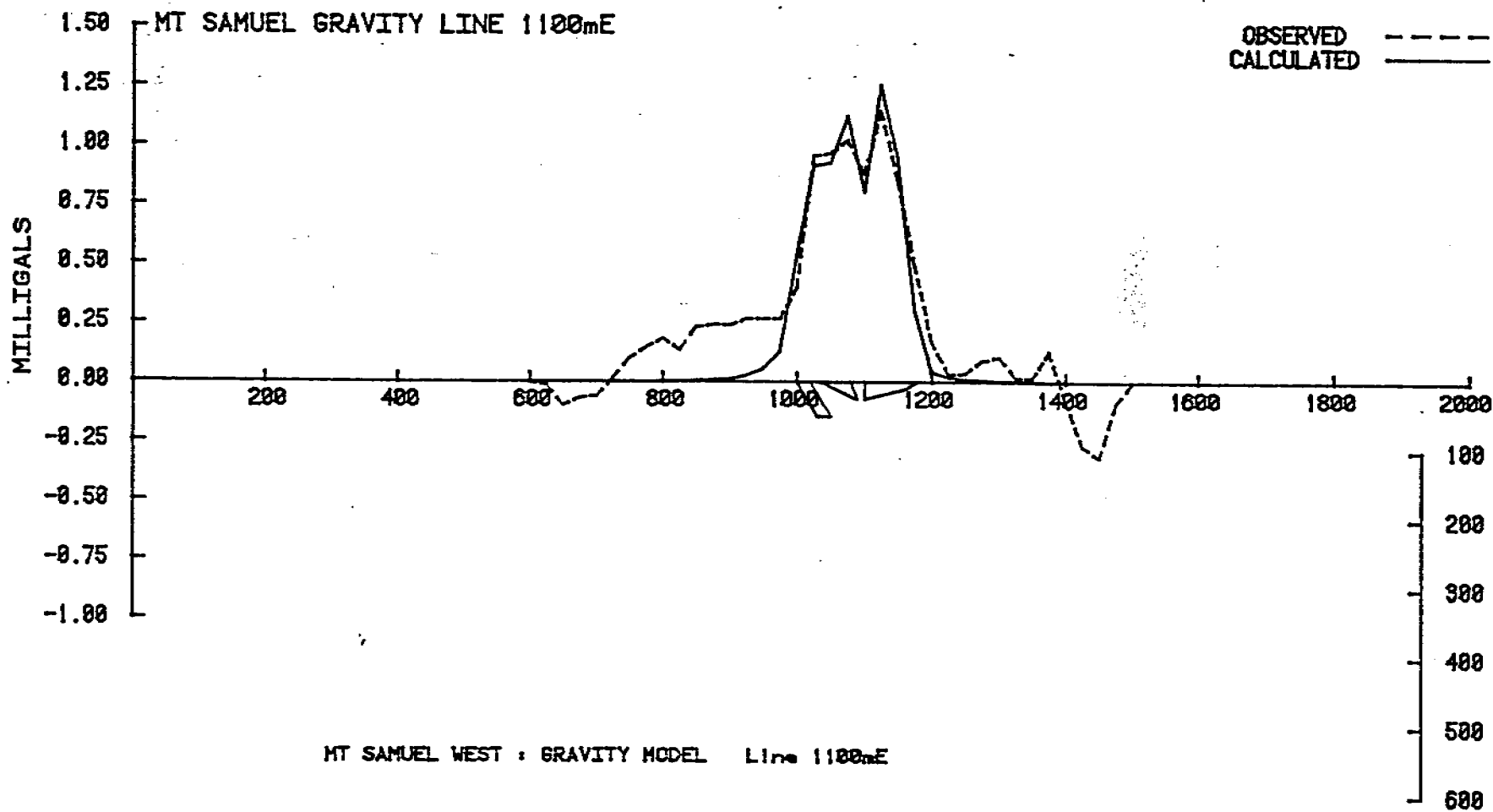
mNORTH	mEAST	MAGNETICS (nT)
1000	1000	50508
1000	1005	50511
1000	1010	50515
1000	1015	50418
1000	1020	50269
1000	1025	50440
1000	1030	50373
1000	1035	50471
1000	1040	50090
1000	1045	50006
1000	1050	49986
1000	1055	49676
1000	1060	50050
1000	1065	49320
1000	1070	45270
1000	1075	44800
1000	1080	49078
1000	1085	53200
1000	1090	55900
1000	1095	52000
1000	1100	52000
1000	1105	52700
1000	1110	52000
1000	1115	51500
1000	1120	51500
1000	1125	50000
1000	1130	51900
1000	1135	52500
1000	1140	52200
1000	1145	52000
1000	1150	51150
1000	1155	49600
1000	1160	47890
1000	1165	51265
1000	1170	51054
1000	1175	53160
1000	1180	52150
1000	1185	50959
1000	1190	48975
1000	1195	49121
1000	1200	49714
1000	1205	51250
1000	1210	50030
1000	1215	50750
1000	1220	53500
1000	1225	50500
1000	1230	50350
1000	1235	50861
1000	1240	50772
1000	1245	51580
1000	1250	50180
1000	1255	51082
1000	1260	50231
1000	1265	50246
1000	1270	50924
1000	1275	50815
1000	1280	51100
1000	1285	49358
1000	1290	50500

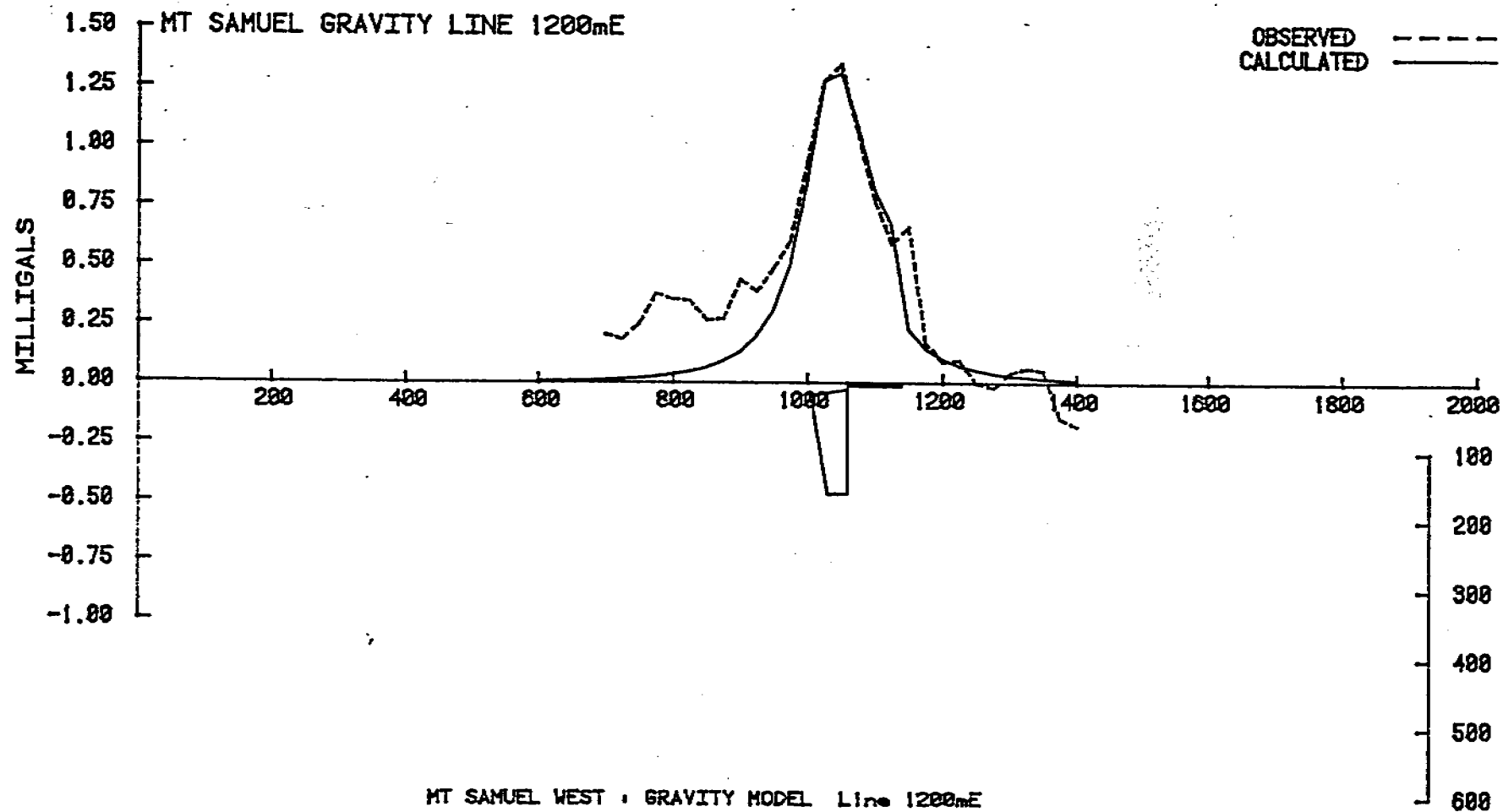
mNORTH	mEAST	MAGNETICS (nT)
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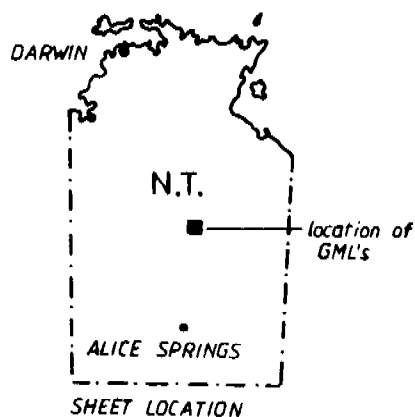
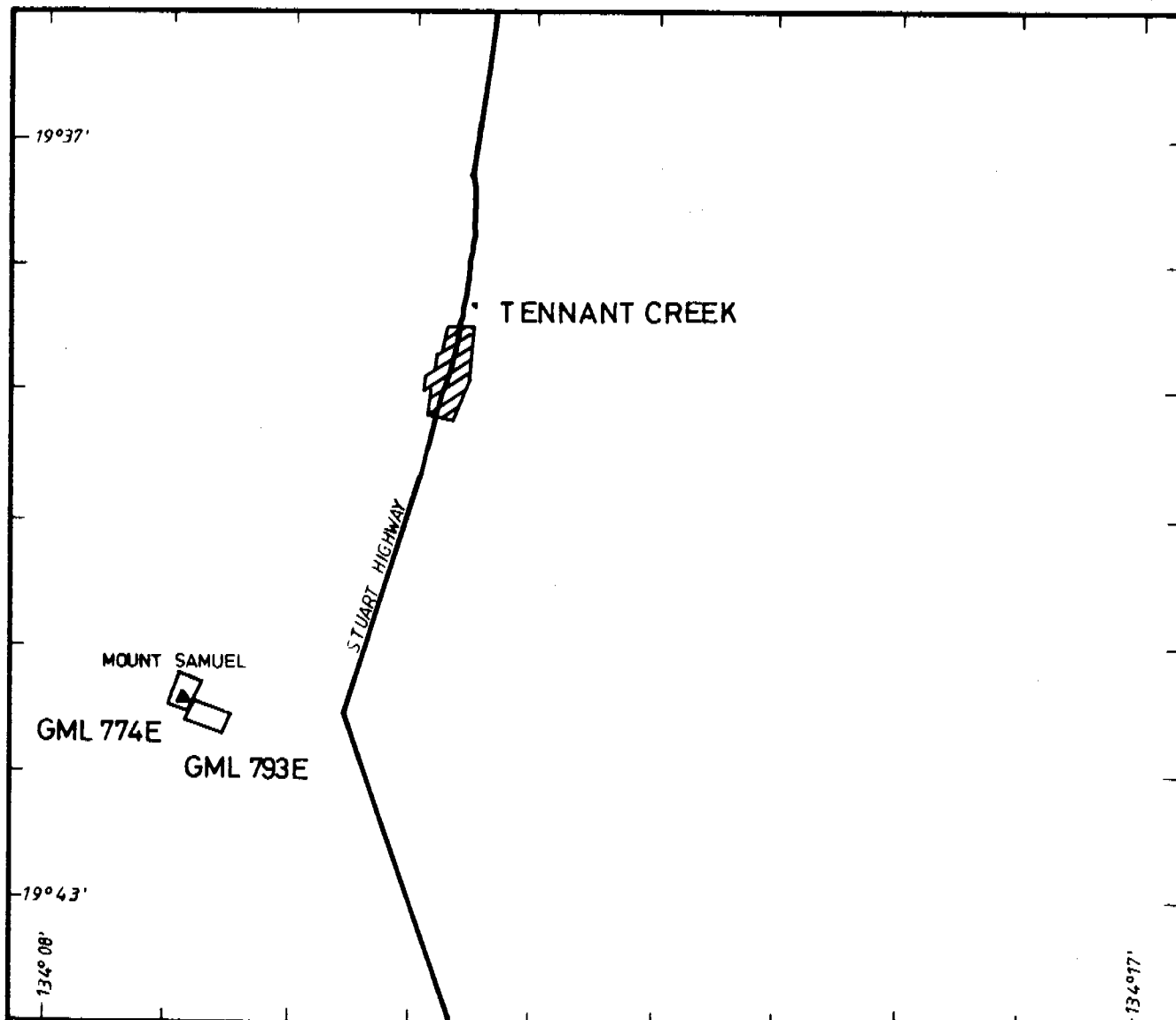
1000	1295	51500
1000	1300	50699
1000	1305	49960
1000	1310	50245
1000	1315	50491
1000	1320	50564
1000	1325	50637
1000	1330	50629
1000	1335	50653
1000	1340	50658
1000	1345	50670
1000	1350	50674
1000	1355	50666
1000	1360	50953
1000	1365	50692
1000	1370	50735
1000	1375	50765
1000	1380	50670
1000	1385	50782
1000	1390	50811
1000	1395	50367
1000	1400	50717
1000	1405	50689
1000	1410	50681
1000	1415	50941
1000	1420	51051
1000	1425	50764
1000	1430	50801
1000	1435	50798
1000	1440	50888
1000	1445	50788
1000	1450	50771
1000	1455	50807
1000	1460	50818
1000	1465	50812
1000	1470	50829
1000	1475	50847
1000	1480	50839
1000	1485	50842
1000	1490	50872
1000	1495	50831
1000	1500	50818
1000	1505	50839
1000	1510	50862
1000	1515	50880
1000	1520	50866
1000	1525	50856
1000	1530	50869
1000	1535	50848
1000	1540	50870
1000	1545	50875
1000	1550	50866
1000	1555	50868
1000	1560	50862
1000	1565	50871
1000	1570	50877
1000	1575	50894
1000	1580	50880
1000	1585	50860
1000	1590	50813

GRAVITY AND MAGNETICS MODELS



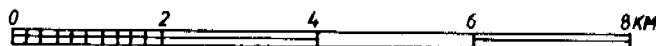






NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR 85 / 028



CRA EXPLORATION PTY LIMITED

GML's 774E , 793E
MT SAMUEL LOCATION PLAN

REFERENCE SE 53-14 TENNANT CREEK

SCALE 1 100,000

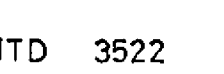
DATE DECEMBER 1984

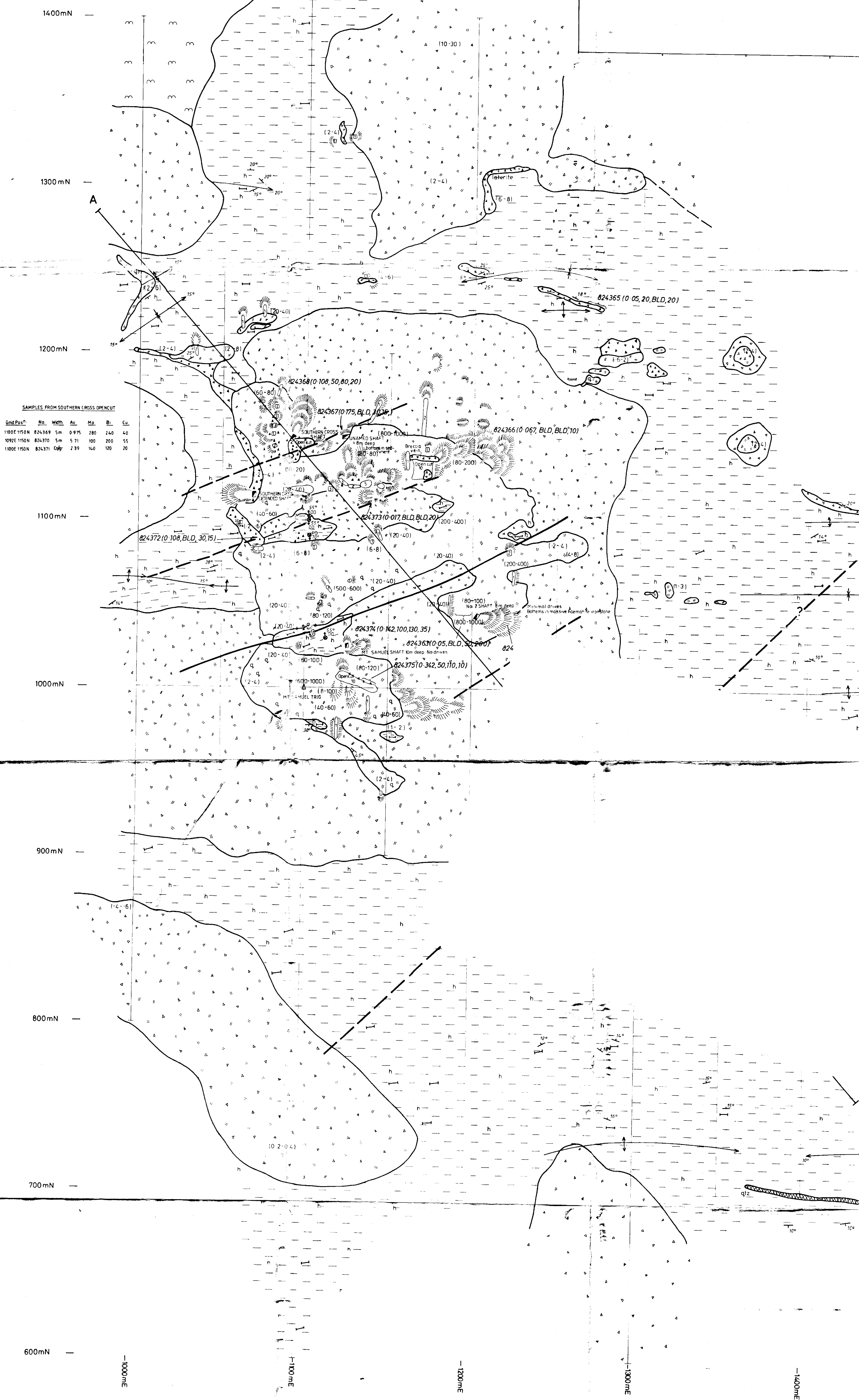
AUTHOR BEH

REPORT 13011

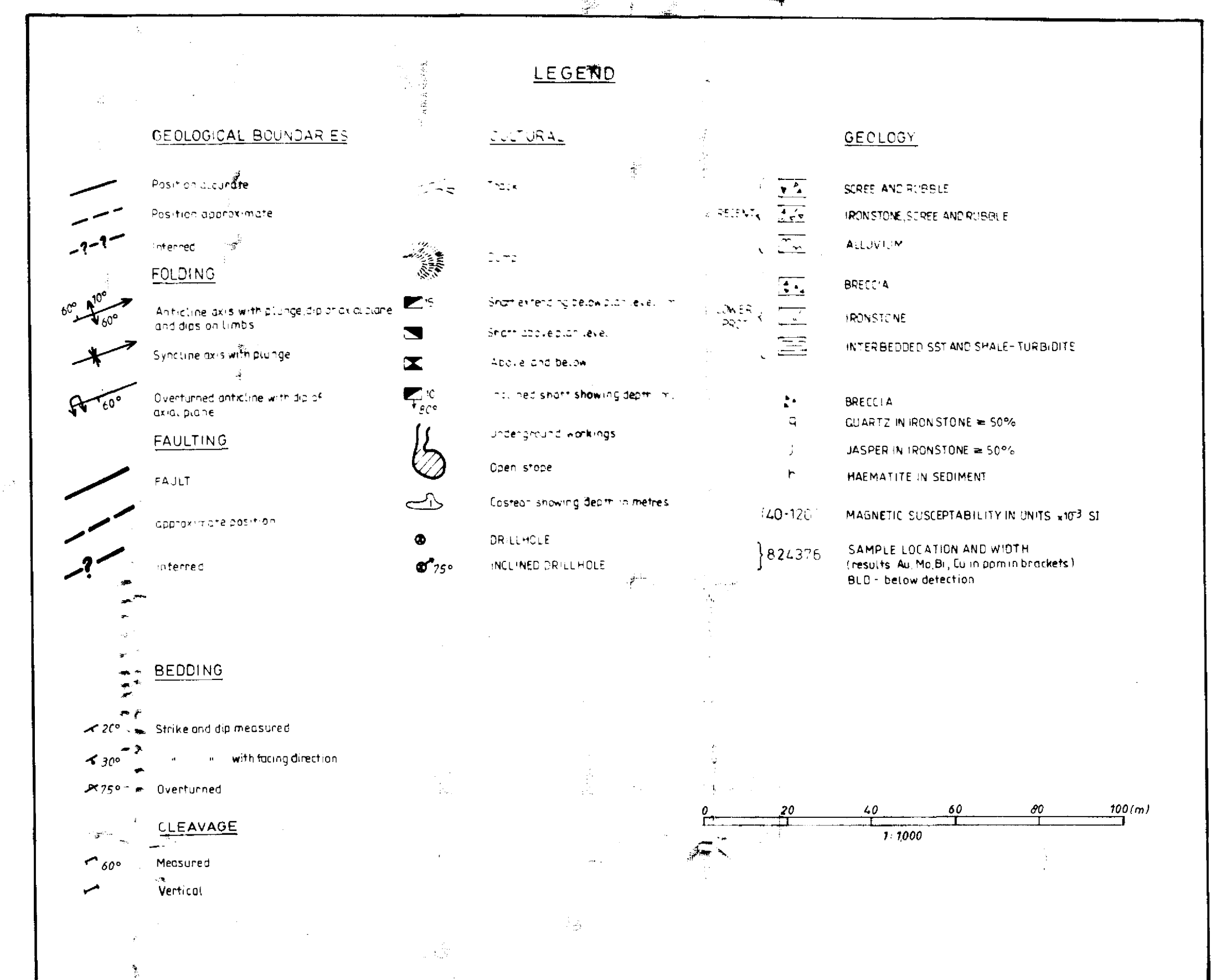
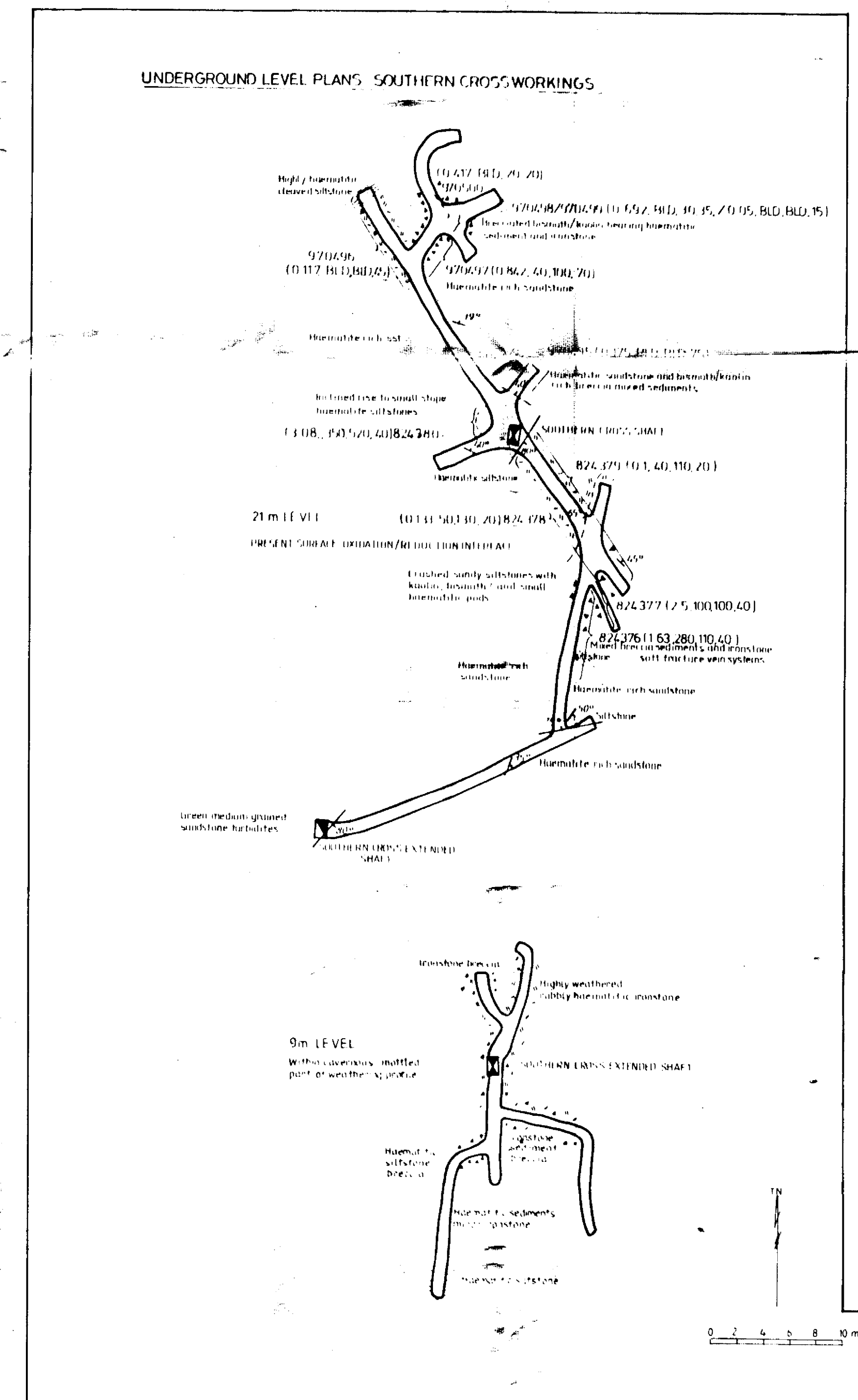
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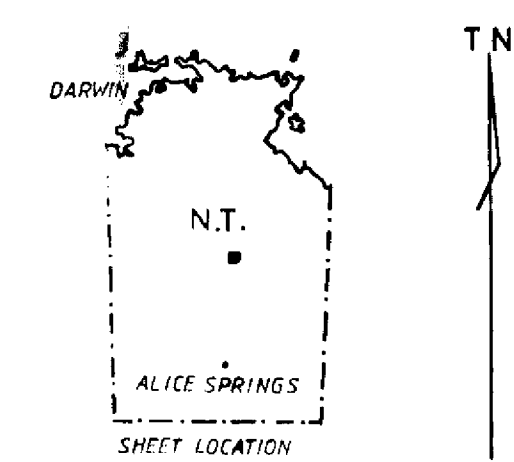
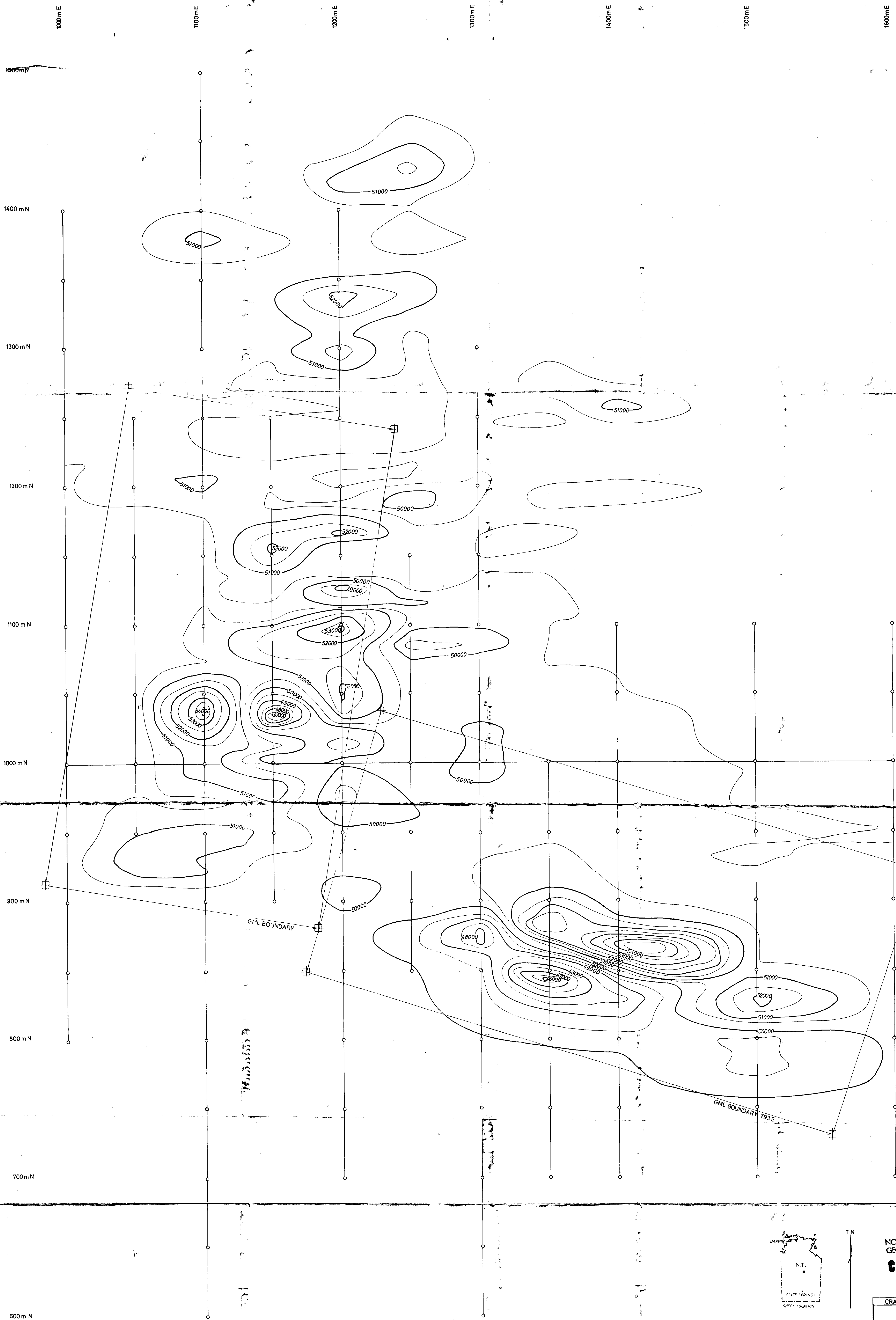
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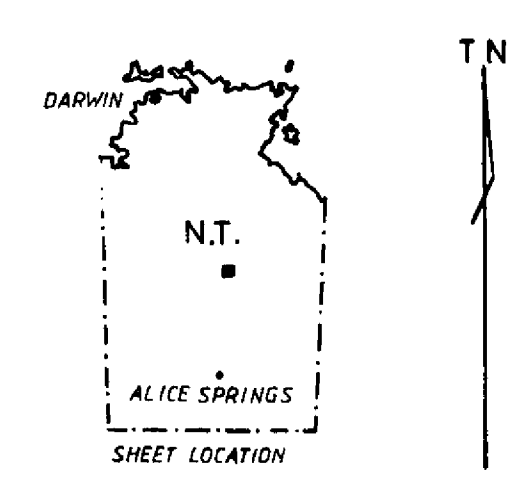
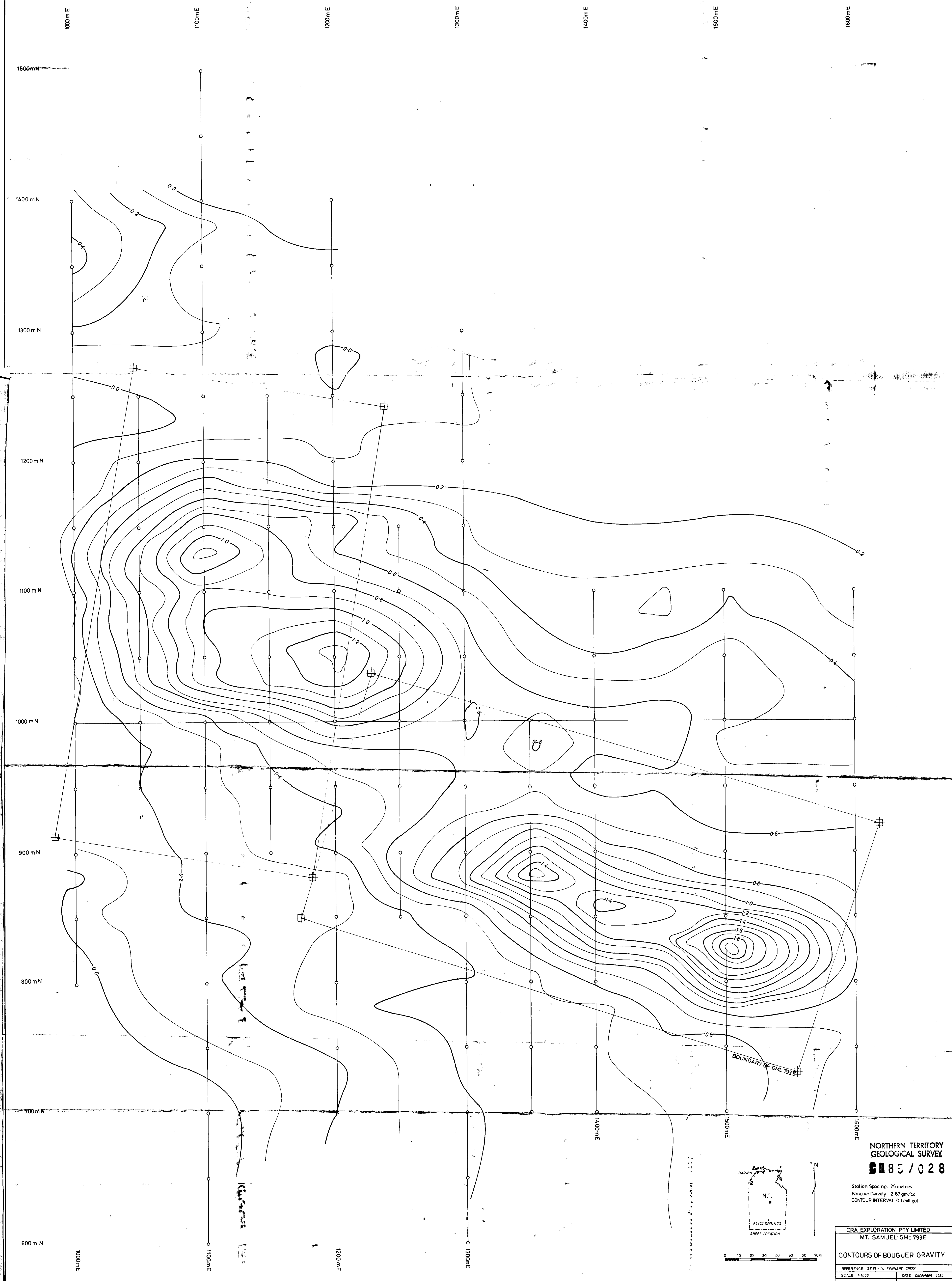
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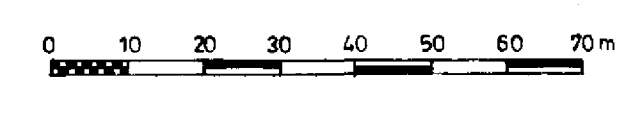
NORTHERN TERRITORY
GEOLOGICAL SURVEY
CR85/028

CRA EXPLORATION PTY LIMITED	
MT. SAMUEL GML793E	
GROUND MAGNETIC CONTOURS	
REFERENCE SE 53-14 TENNANT CREEK	
SCALE 1:1000	DATE DECEMBER 1984
AUTHOR B.E.H.	REPORT 10011
DRAWN S.R.J.	P.L.N. No. NTS 28



NORTHERN TERRITORY
GEOLOGICAL SURVEY
CR 85/028

Station Spacing: 25 metres
Bouguer Density: 2.67 gm/cc
CONTOUR INTERVAL: 0.1 milligal



CRA EXPLORATION PTY LIMITED			
MT. SAMUEL GML 793E			
CONTOURS OF BOUGUER GRAVITY			
REFERENCE SE 59-14 TENNANT CREEK			
SCALE 1:1000	DATE DECEMBER 1984		
AUTHOR B.E.H.	REPORT 12011		
DRAWN S.R.J.	PLAN No. 100 3831		