CRA EXPLORATION PTY LTD

OPEN FILE

RED TANK EL 4017

ARUNTA BLOCK

FINAL REPORT

6 SEPTEMBER 1983

submitted by: B.E. Harvey

Accepted by: W.H. Johnston

date: September 1983

copy to: CRAE - Canberra
N.T. Dept of Mines & Energy

Map Reference
Huckitta SF53-11
Dneiper 5952/Jinka 6052

Confidential Report No.130390

CR83/295

CONTENTS

1. SUMMARY

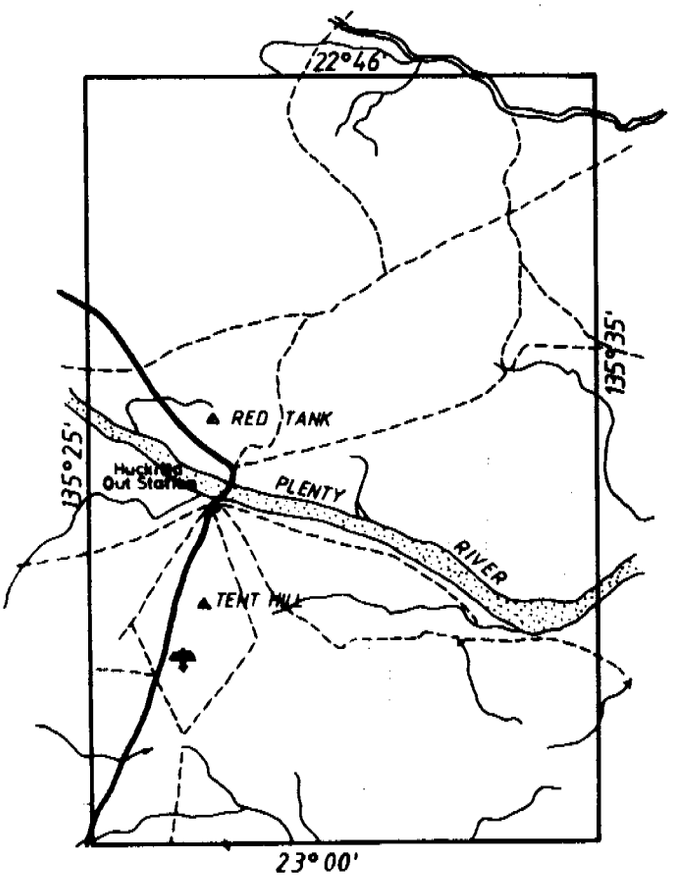
CRA Exploration Pty Limited (CRAE) carried out ground magnetometer follow up on selected aeromagnetic dipolar responses within EL 4017, Red Tank. No indications of kimberlite were apparent in the field and regional reconnaissance suggests alpine-type ultramafics are the causative bodies for dipolar magnetic responses. No further work is planned.

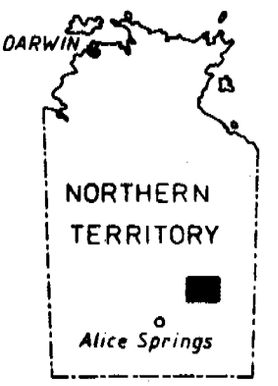
2. INTRODUCTION

EL 4017, Red Tank, was granted to CRAE on 13th December, 1982. During 1982 the N.T. Department of Mines & Energy released data from a low level airborne magnetic and radiometric survey which included the Red Tank area. This report presents results from ground magnetometer recovery of selected aeromagnetic responses.

3. CONCLUSIONS

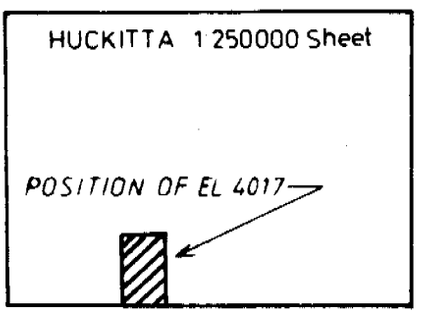
Magnetic responses identified by ground magnetometer traversing are not due to kimberlite. The magnetic responses are probably due to magnetic contrast in metamorphic rock types and, regionally, a suite of alpine-type ultramafics.

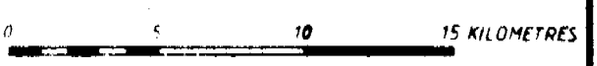




AREA:

No. of Blocks — 140 (442·12 km²)





CRA EXPLORATION PTY LIMITED

RED TANK

E.L. 4017

REFERENCE SF 53-11 HUCKITTA	
SCALE 1:250,000	DATE JULY 1982
AUTHOR WHJ	REPORT 130390
DRAWN SRJ	PLAN No NTa 642

5. FOLLOW UP ON AIRMAGNETIC FEATURES

5.1. During 1982, the N.T. Department of Mines and Energy released data from a low level airborne magnetic and radiometric survey which included the Red Tank area. North-south traverse lines were flown at 500m spacing with 100m mean terrain clearence; nominal sample interval 55m at 1.0 second intervals.

Survey data, as released by the Department of Mines and Energy, comprised contour plots at 1:100 000 and 1:250 000 scale for Magnetics and Total Count Radiometrics. Preliminery review of the data showed them to be inadequate for detailed analysis and consequently multiplots were obtained.

Initial review of data showed prominent NW-SE trending lineaments in magnetic basement which were interpreted as responses to structural features in the earths crust. A number of dipolar magnetic features associated with these lineaments were selected for further investigation.

Radiometric data was reviewed by comparing K, Th and U-channel profiles in multiplots. No anomalies were found to have significant U-channel contribution to total count.

5.2. Magnetic Feature H13

See Appendix II for ground magnetic profile.
Outcrop in the area is good with an upstanding hill of E-W striking, vertically standing, Arunta schists. Minor talcose schist crops out as narrow (1-2m) concordant horizon(s) over several hundred metres.

No ultramafic rocktypes were observed but talc occurrence and ground magnetic profile suggest an intrusive at shallow depths.

5.3. Magnetic Feature H14

See Appendix II for ground magnetic profile.

The area comprises shallow to moderate depth active alluvium in a swail drainage channel. No basement is exposed. Metasedimentary Arunta felsic schists with E-W strike are present 500m west. Ground magnetic profile suggests discrete intrusive causative bodies and air magnetometer contouring shows a zone of magnetic disturbance trending through H13, H14 and further NE.

5.4. Magnetic Feature H15

See Appendix II for ground magnetic profile.

The area comprises shallow alluvium between drainage channels. No basement is exposed. Ground magnetic profile is suggestive of contrasting magnetics in metamorphic lithotypes.

5.5. Magnetic Feature H16

See Appendix II for ground magnetic profile.

The response occurs over deep alluvium adjacent to a major river channel. No basement is exposed. Response is very suggestive of discrete magnetic intrusive into non-magnetic countryrock.

5.6. Magnetic Feature H17

See Appendix II for ground magnetic profile.

The ground magnetometer profile indicates a very subtle feature similar to H16. Deep to moderate depth alluvium is present over the causative body.

5.7. Magnetic Feature H18

See Appendix II for ground magnetic profile.

Air and ground magnetics indicate H18 is probably a response to contrasting metamorphic lithotypes rather than an intrusive body. Exposure in the area is nonexistent, basement being covered by deep alluvium adjacent to a major river channel. Heavy mineral sample 821202 collected from drainage off the area reported five chromites but otherwise negative for kimberlitic indicators.

5.8. Magnetic Feature H19

See Appendix II for ground magnetometer profile.

Moderate depth to shallow alluvium covers the area 1km west of a Tertiary silcrete-capped escarpment. Deeply weathered kaolinised Arunta schists are exposed beneath the 20-30m thick flat-lying Tertiary sequence. Ground magnetic profile is somewhat ambiguous but probably related to an intrusive body.

5.9. Magnetic Feature H20

See Appendix II for ground magnetometer profile.

Response H20 occurs in an area of Tertiary silcrete-capped plateau and drainage break-away. No basement is exposed although the Tertiary sequence is known to be only 20-30m thick. Ground magnetics suggest response is due to contrast in metamorphic lithotypes. Heavy mineral sample 970148 collected from escarpment drainage, reported negative for kimberlitic indicators.

5.10. Some of the magnetic responses investigated are unambiguously due to magnetic intrusive bodies (i.e. H13, H14, H16). The occurrance of talc at H13 and similar regional occurrences of serpentinite, vermiculite, chrysoprase and asbestos (see CRAE Reports

130388, 130389, 130391, 130392), suggests they are part of a regional suite of ultramafic intrusives. The suite of surface exposures lie along SE trends and range from concordant sill-like bodies to elongate dykes and stocks. Mineralogy, rock association and structure resemble alpine-type ultramafics of Phaneozoic age. Two reconnaissance gravel samples were processed and observed for kimberlite indicators with negative results. Sample 827202 reported five chromites confirming the presence of chromite-shedding ultramafic within the area. The ultramafic bodies with associated magnetic dipolar responses are non-kimberlitic and no further work is planned.

BRUCE HARVEY

7. REFERENCES

Barraclough, D.	1978	Hammer Hill Nickeliferous Laterite Prospect. N.T. Geological Survey Report GS78/9.
Harvey, B.E.	1983	EL 2789, MacDonald Downs N.T. Arunta Block, Final Report. CRAE Report No.130388.
Harvey, B.E.	1983	EL 2788, Frazer Creek, N.T. Arunta Block, Final Report. CRAE Report No.130389.
Harvey, B.E.	1983	Huckitta Creek, EL 4074, N.T. Arunta Block, Final Report. CRAE Report No.130391.
Harvey, B.E.	1983	Atula Bore EL 4018, N.T. Arunta Block, Final Report. CRAE Report No.130392.
N.T. Dept. of Mines & Energy	1981	Dneiper 1:100 000 sheet, Jinka 1:100 000 sheet. Airborne Geophysical Survey Series. Magnetic Intensity Contours, Total Count Contours, May-Sept.1981.

8. KEYWORDS

Geophys-mag-rad, H-M study, nickel, Proterozoic, Tertiary, ultramafic.

9. LIST OF PLANS

Plan No.	Title	scale
NTd 3130	Red Tank EL 4017 Location	1:100 000
NTd 3218	Red Tank EL 4017 Airborne Magnetics	1:100 000

HEAVY MINERAL LEDGERS

KIMBERLITIC INDICATORS

CRA REPORT: BELMONT

DPO	COST CODE	AREA	SAMPLE NO	TYPE	--WEIGHTS-- RECD	OBSVD	RESULTS
21619	36.791/4255F	HUCKITTA	821202	G	27.4	0.036	*Chromite 5 x + 0.5 wear: Fresh worn worn shape: subhedral surface: pitted lustre: mottle texture: granular streak: brown fragments: granular
21619	36.791/4015F	HUCKITTA	821211	G	28.0	0.065	Negative
21403	36.791/4015F	ILLOGWA CK	970148	G	23.1	0.051	Negative

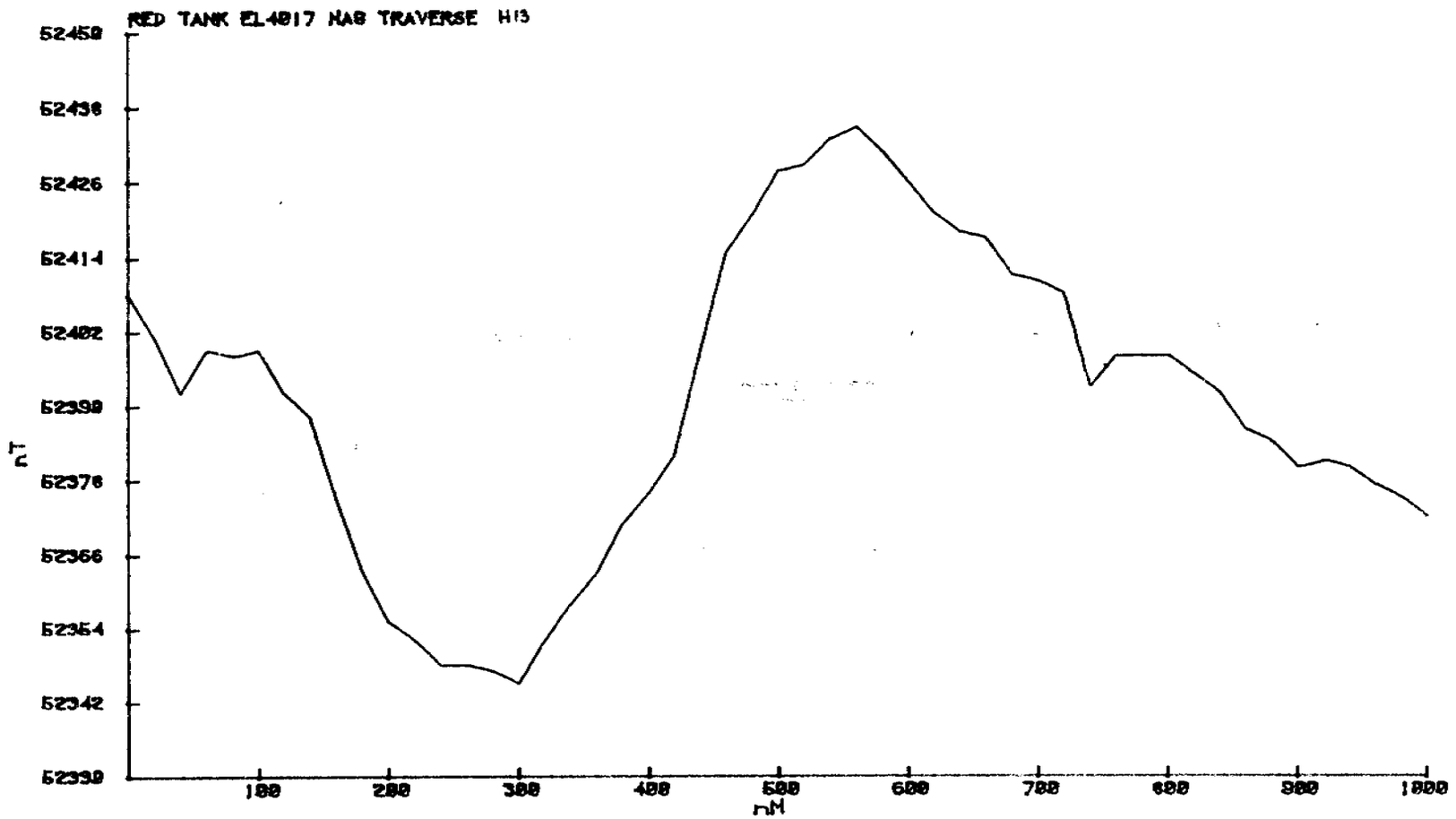
OTHER MINERALS

CRA REPORT: BELMONT

DPO	COST CODE	AREA	SAMPLE NO.	TYPE	RESULTS			
21619	36.791/4015F	HUCKITTA	821211	G	P:AMPHIBOLITE	O:APATITE	F:BIOTITE	R:DIOPSIDE
					S:EPIDOTE	A:GARNET	O:ILMENITE	R:KYANITE
					F:LIMONITE	F:MONAZITE	T:RUTILE	S:SILLIMANITE
					O:SPHENE	F:STAUROLITE	O:TOURMALINE	F:ZIRCON
21619	36.791/4255F	HUCKITTA	821202	G	O:AMPHIBOLITE	R:BARITE	F:EPIDOTE	A:GARNET
					F:ILMENITE	F:KYANITE	P:LIMONITE	F:MONAZITE
					F:RUTILE	F:SILLIMANITE	F:TOURMALINE	R:ZIRCON
21403	36.791/4015F	ILLOGWA CK	970148	G	S:AMPHIBOLE	F:EPODOTE	P:GARNET	F:ILMENITE
					F:KYANITE	F:LEUCOXENE	S:LIMONITE	F:ARTHO-PYROXE
					F:QUARTZ	F:RUTILE	F:SILLIMANITE	F:STAUROLITE
					F.TOURMALINE	F:ZIRCON		

APPENDIX II

GROUND MAGNETIC PROFILES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52438
52426
52414
52402
52390
52378
52366
52354
52342
52330
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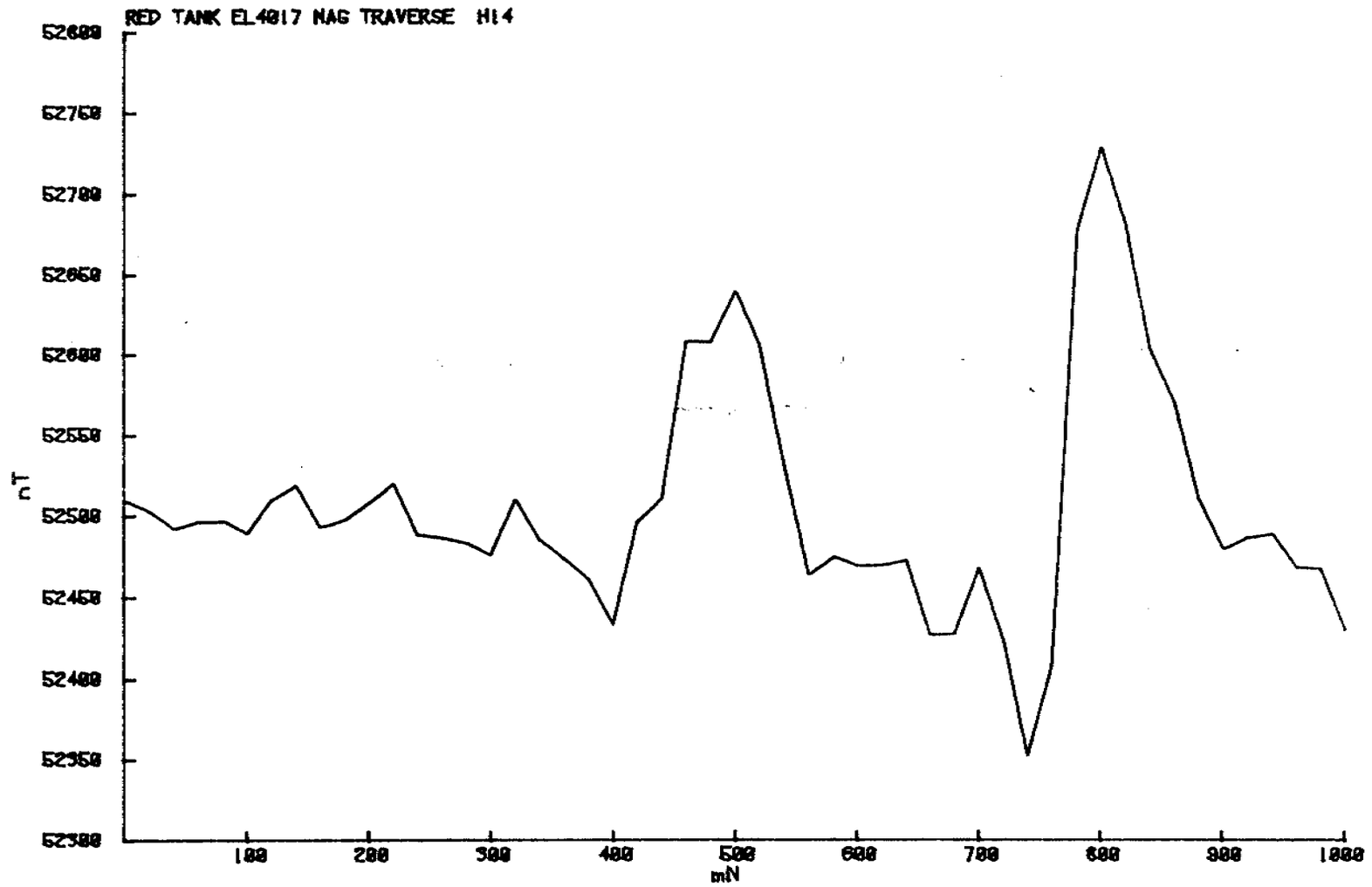
100
200
300
400
500
600
700
800
900
1000
nM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52700
52650
52600
52550
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52450
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52300
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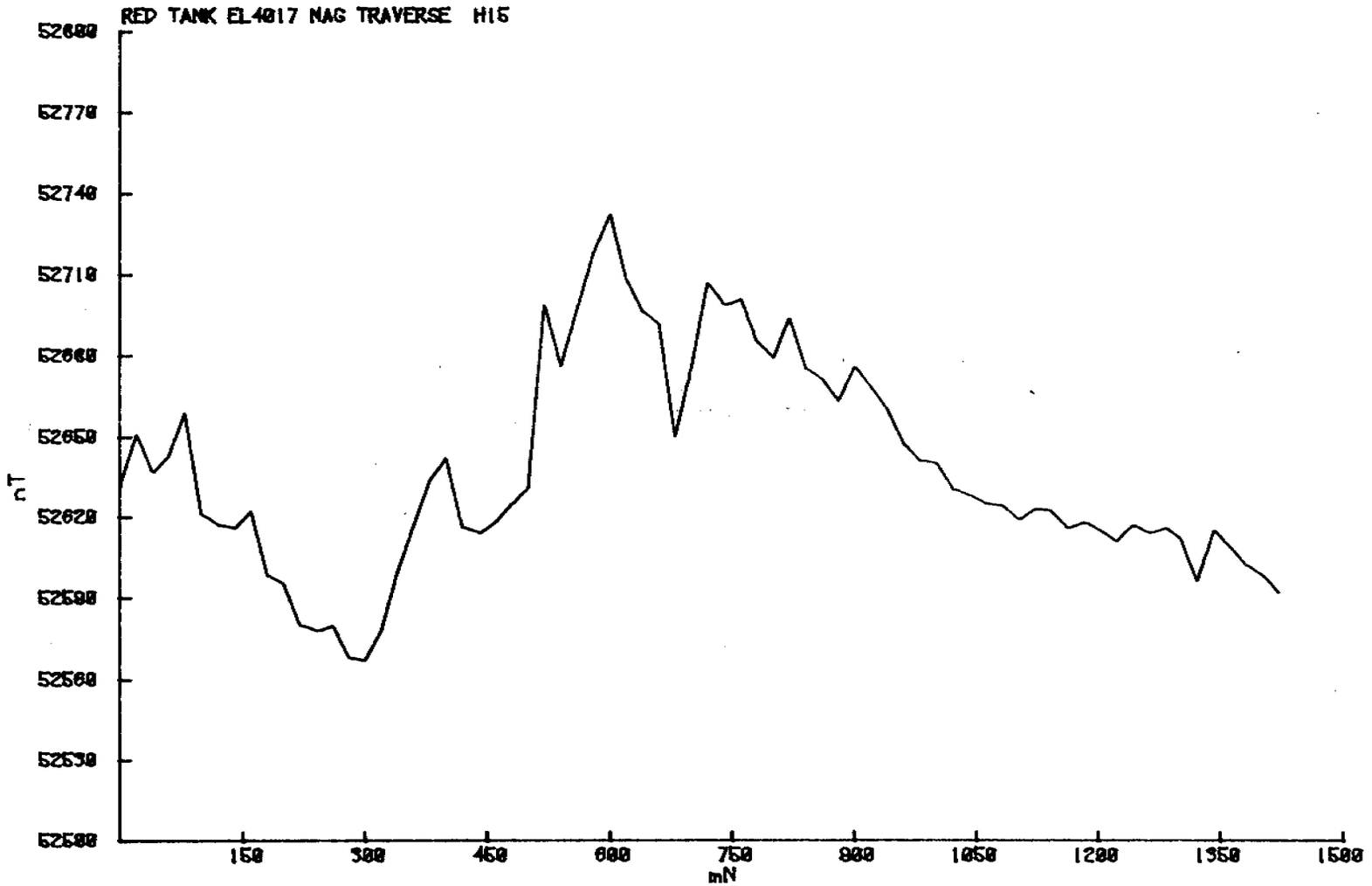
300
400
500
600
700
800
900
1000
mN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750
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1050
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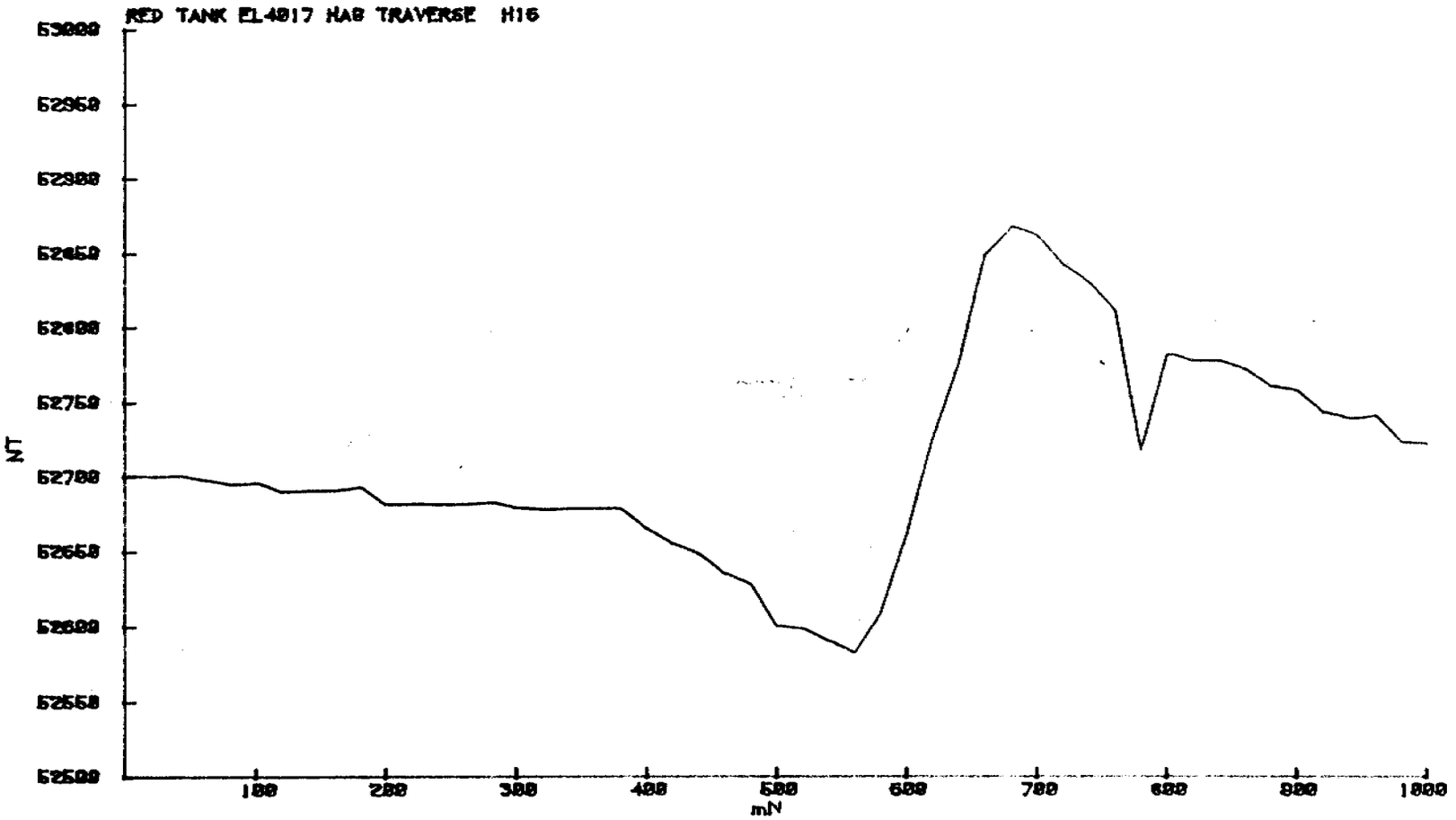
1350
1500
mN


RED TANK EL4017 HAB TRAVERSE H16
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52900
52850
52800
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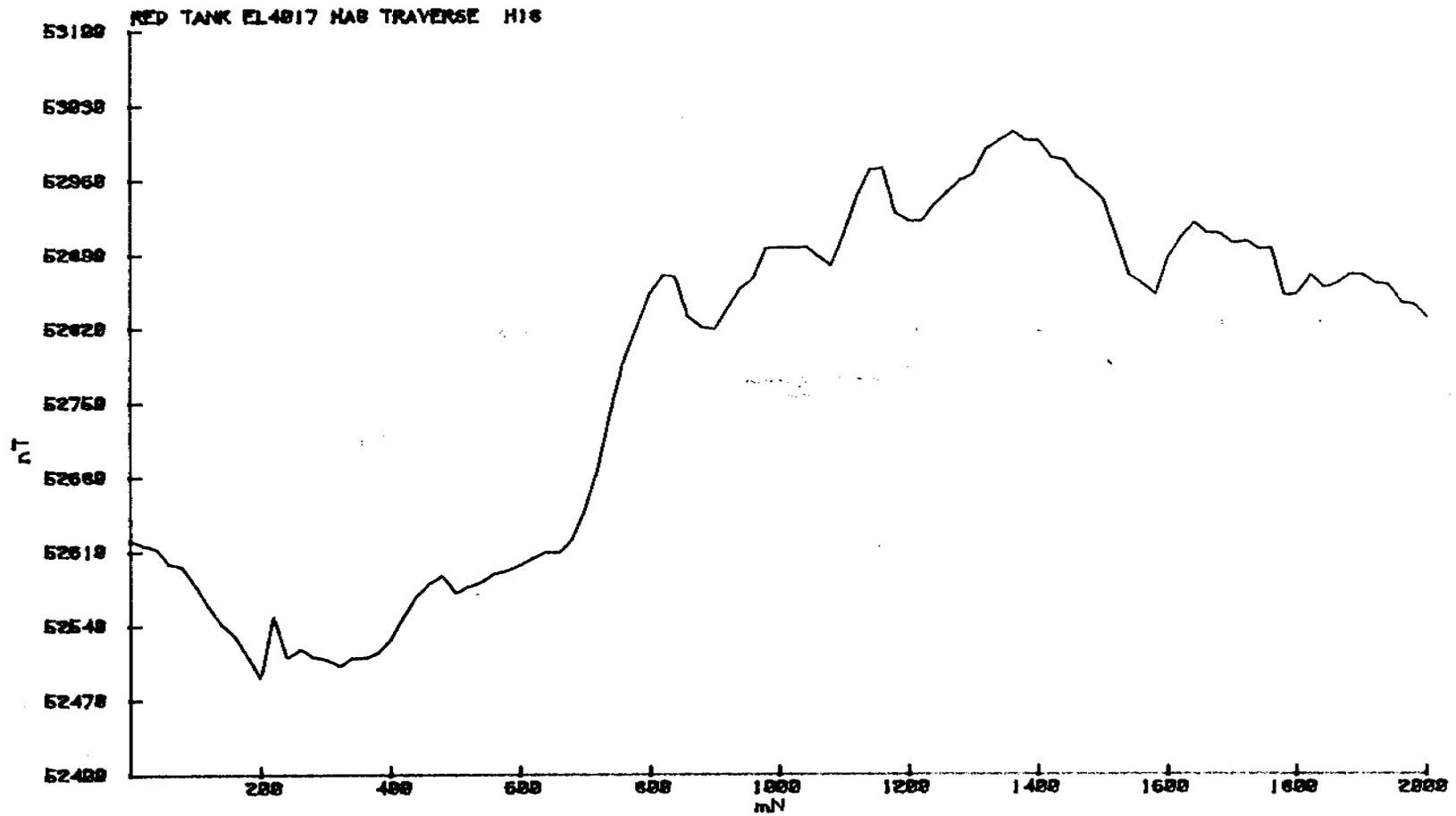
RED TANK EL4017 NAB TRAVERSE H16
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52820
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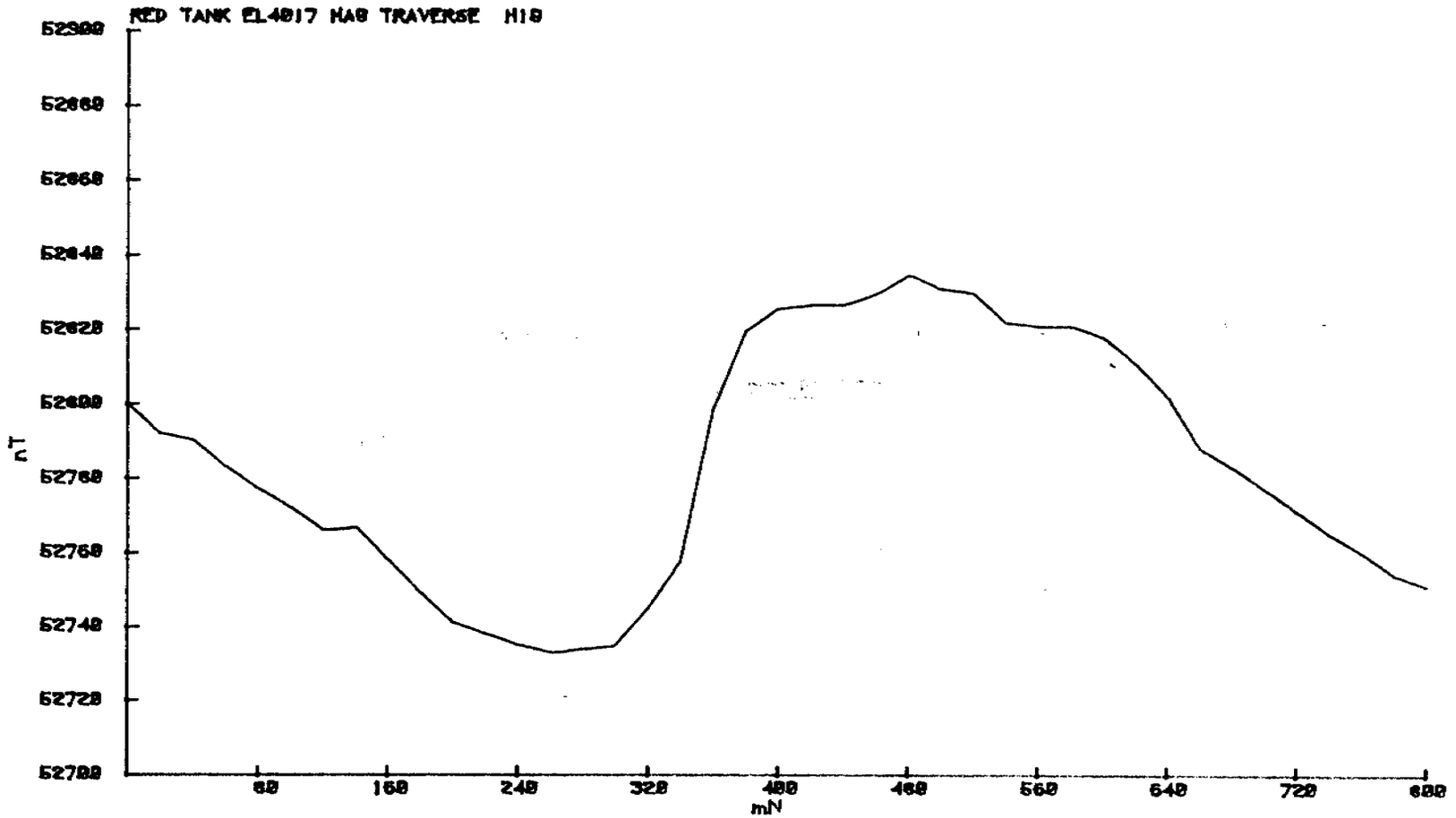
mN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720
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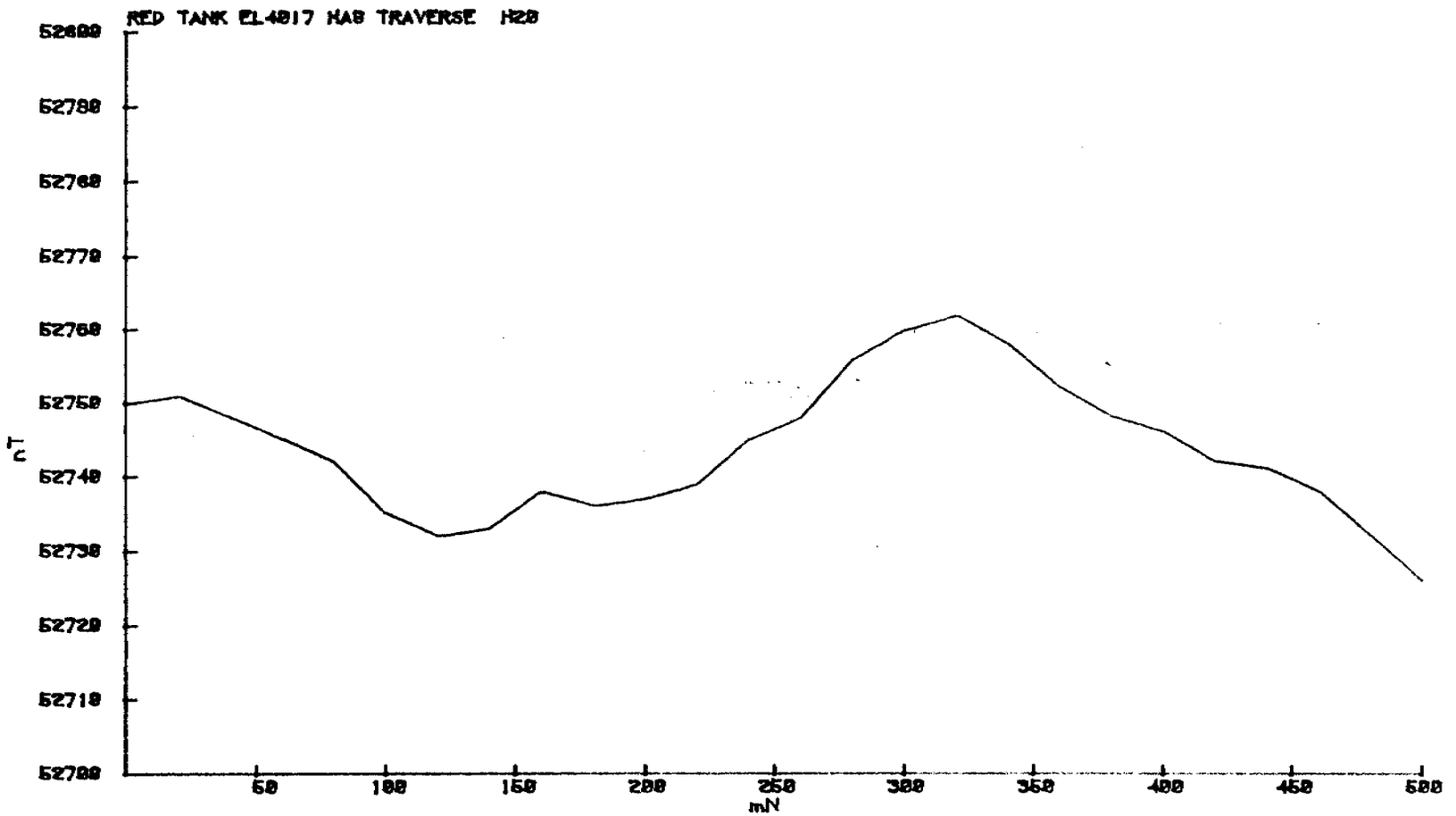
mN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52800
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52780
52770
52760
52750
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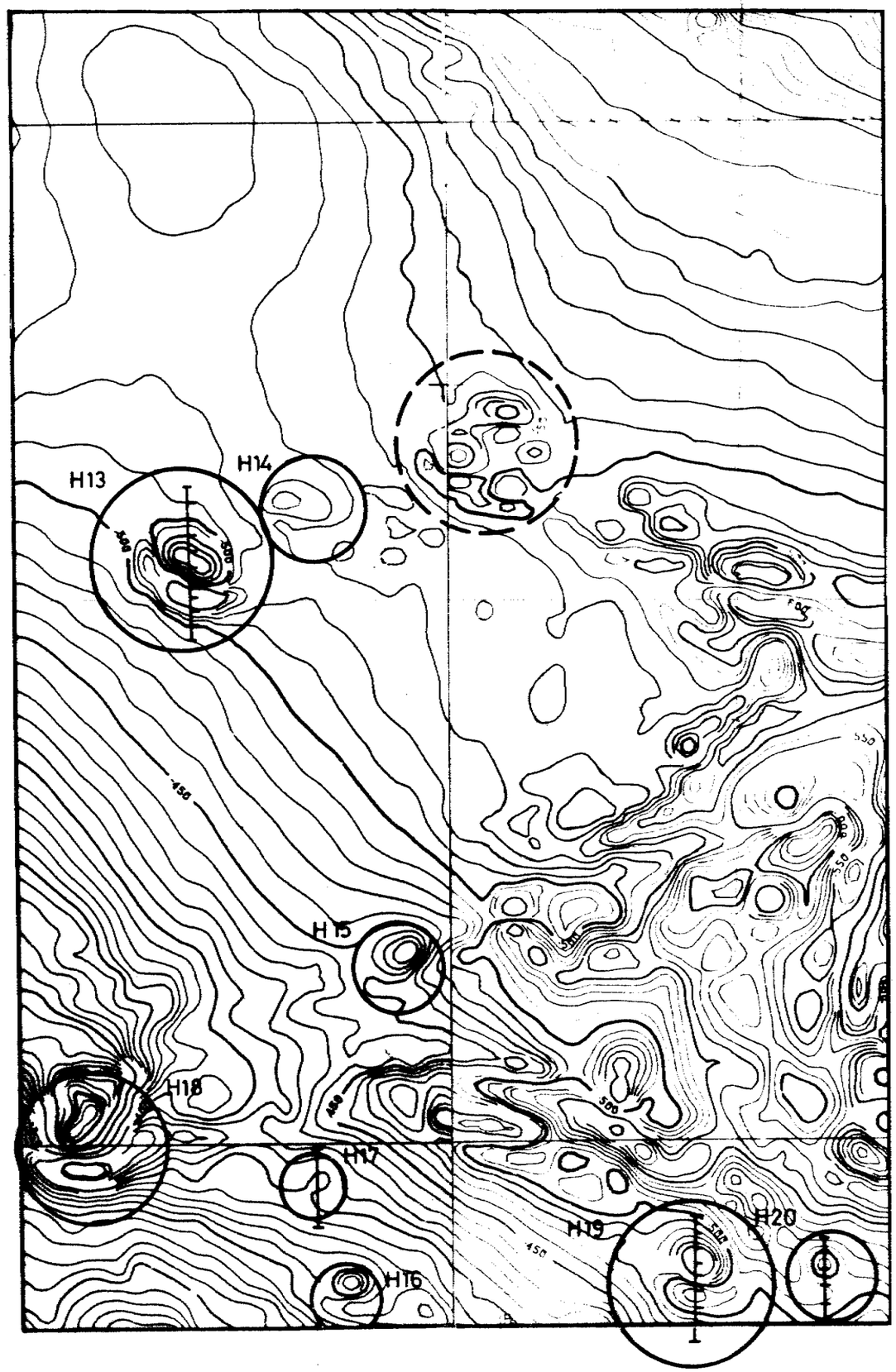

TN

LEGEND

H 19 — *SELECTED DIPOLAR MAGNETIC RESPONSES*

AIRBORNE SURVEY DATA

LINE SPACING	*500 m*
LINE DIRECTION	*000/180 DEGREES*
NOMINAL TERRAIN CLEARANCE	*100m*
NOMINAL SAMPLING INTERVAL	*55m*
AQUISITION INTERVAL	*1·0 sec.*
CONTOUR INTERVAL	*10 NANA TESLA*

REGIONAL MAGNETIC FIELD REMOVED

0 1 2 3 4 5 6 7 KILOMETRES

CR83/295

C R A EXPLORATION PTY LIMITED

RED TANK EL 4017
AIRBORNE MAGNETICS

DATA SOURCE - N.T. MINES AND ENERGY DEPT.

REFERENCE *HUCKITTA SF 53-11*	
SCALE *1:100,000*	DATE *OCTOBER 1983*
AUTHOR *BEH*	REPORT *130390*
DRAWN *SRJ*	PLAN No *NTd 3218*

22° 46'

135° 25'

135° 35'

23° 00'

TN

Abandoned (Mica)

Abandoned (Mica)

H14

H13

RED TANK

"HUCKITTA"

PLENTY

Yd

PLENTY HIGHWAY

RIVER

TENT HILL

B21211 Negative

H15

L/G

B21202 CHROMITE 5x +0·5

H18

Paddock Dam

H17

H16

H19

970148 Negative

H20

LEGEND

HEAVY MINERAL DRAINAGE SAMPLE

H16 MAGNETIC DIPOLAR FEATURE

0 1 2 3 4 5 6 7 KILOMETRES

CR83/295

C R A EXPLORATION PTY LIMITED

RED TANK EL 4017
SAMPLE LOCATION

REFERENCE HUCKITTA SF 53 - 11	
SCALE 1: 100,000	DATE JUNE 1983
AUTHOR BEH	REPORT 130390
DRAWN SRJ	PLAN No NTd 3130