

EXPLORATION LICENCE 4214 and 4215

CURTIN SPRINGS and MT. CONNOR

NORTHERN TERRITORY

FINAL REPORT

EL 4214, 4215 - SG-52-8

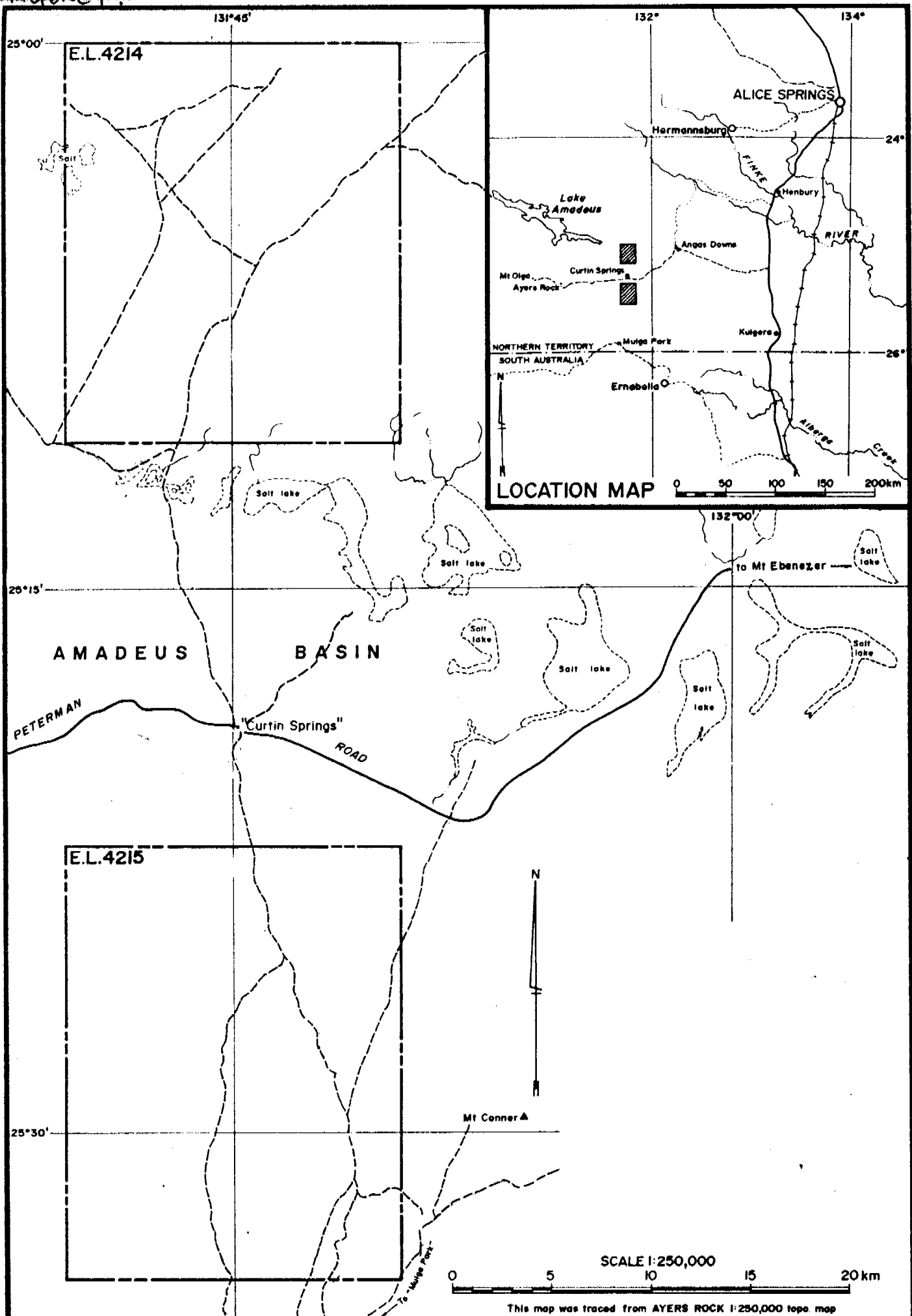
NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR84/142

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FIGURE 1



Centre
Adelaide

Date
11-10-83

THE BROKEN HILL PROPRIETARY CO. LTD.
E.L.4214,4215 AYERS ROCK AREA, N.T.
LOCATION MAP

Project No.
8-D91,92-2

Drawing No.
A4-48

EXPLORATION LICENCES 4214 and 4215
CURTIN SPRINGS and MT. CONNOR, NORTHERN TERRITORY

FINAL REPORT

1. GENERAL STATEMENT

Exploration Licences 4214 and 4215 were taken up to test the kimberlite and carbonatite potential of the area. Aeromagnetic anomalies were selected for kimberlite and carbonatite follow-up, from data that was obtained from Weeks Australia Ltd. The aeromagnetic data used in exploration by BHP Minerals Limited remains the property of Weeks Australia Ltd. and is subject to confidentiality since OP214, operated by Weeks Australia Ltd., is still current.

Ground follow-up, magnetics and gravity over selected anomalies, down-graded the kimberlite and carbonatite potential of the two licence areas. The exploration licence areas have subsequently not been renewed.

2. TITLES

Exploration Licence 4214 over an area of 120 blocks and Exploration Licence 4215 over an area of 110 blocks were granted to BHP Minerals Limited on the 17th June, 1983 for a period of six years. The two licences were not renewed on the 17th June, 1984, the end of the first year.

The location of the two areas is shown on Figure 1.

3. FIELD INVESTIGATIONS

3.1 Aeromagnetic Survey

The results of a detailed low level aeromagnetic survey were obtained from Weeks Australia Ltd. Eight aeromagnetic anomalies were originally selected for investigation, four as potential kimberlites, and four as possible carbonatites.

3.2 Carbonatite Investigation

3.2.1 Field Work

Four anomalies, An 1, 3, 4 and 8, shown on Figure 2, were selected for carbonatite investigation because of their large "bullseye" magnetic character. The aim was to test for any associated gravity anomalies. During September, 1983, ground magnetometer and barometrically levelled gravity traverses were carried out over three of these anomalies (An 1, 3, 8). The proton magnetometer was a Geometrics G816, and there was a 25 metre spacing between readings. The gravity meter was a La Coste and Romberg, number G598, used in conjunction with a Negretti and Zambra, number A334 barometer. Black and white aerial photograph-blowups were used for accurate location of stations and anomalies.

3.2.2 Results

Magnetics were read on Anomaly 8 only. The readings were not able to be duplicated, being very erratic, and it was assumed that the instrument was faulty (which subsequently proved to be the case). The locations of the gravity stations and profiles are shown on Figure 3. The original data is presented as Appendix 1; this includes the drift corrections and corrected gravity values.

Anomalies 1 and 8 show no associated gravity anomaly, whilst Anomaly 3 shows a complex profile with a possible six milligal anomaly. Anomaly 4 had low priority because of access problems and was only going to be followed up if the other results were encouraging.

3.3 Kimberlite Investigation

3.3.1 Field Work

Four anomalies, An 2, 5, 6 and 7 were selected as possible kimberlite targets. These were followed up with ground magnetics in August 1983 using aerial photographs to navigate. The ground magnetics consisted of three to five,

one kilometre long north-south lines at a 100m spacing between lines. A Scintrex MP2 proton magnetometer was used, with readings every 10m along the lines. An automatic base station was used for diurnal corrections. The locations of the grid lines over the four anomalies is shown on Figure 3.

3.3.2 Results

Anomaly 2

The aeromagnetic anomaly of 45nT was located on the ground as a 110nT feature. The anomaly appears to be due to a folded source, forming a U-shape. Drill access to this anomaly would require major access preparation. The priority is low.

Anomaly 5

Ground work delineated a weak 50nT anomaly coinciding with a 15nT aeromagnetic anomaly. Unfortunately its depth is greater than 100 metres, and no further work is warranted.

Anomaly 6

A depth of greater than 100 metres is interpreted for this anomaly. The ground anomaly of 65nT compares with the aeromagnetic strength of 35nT. No further work is warranted.

Anomaly 7

This weak aeromagnetic anomaly appears to coincide with an area of increased ground magnetic noise. While the identification of the anomaly on the ground is difficult, the ground magnetic lines are definitely in the correct position. No target is obvious, and no further work is recommended.

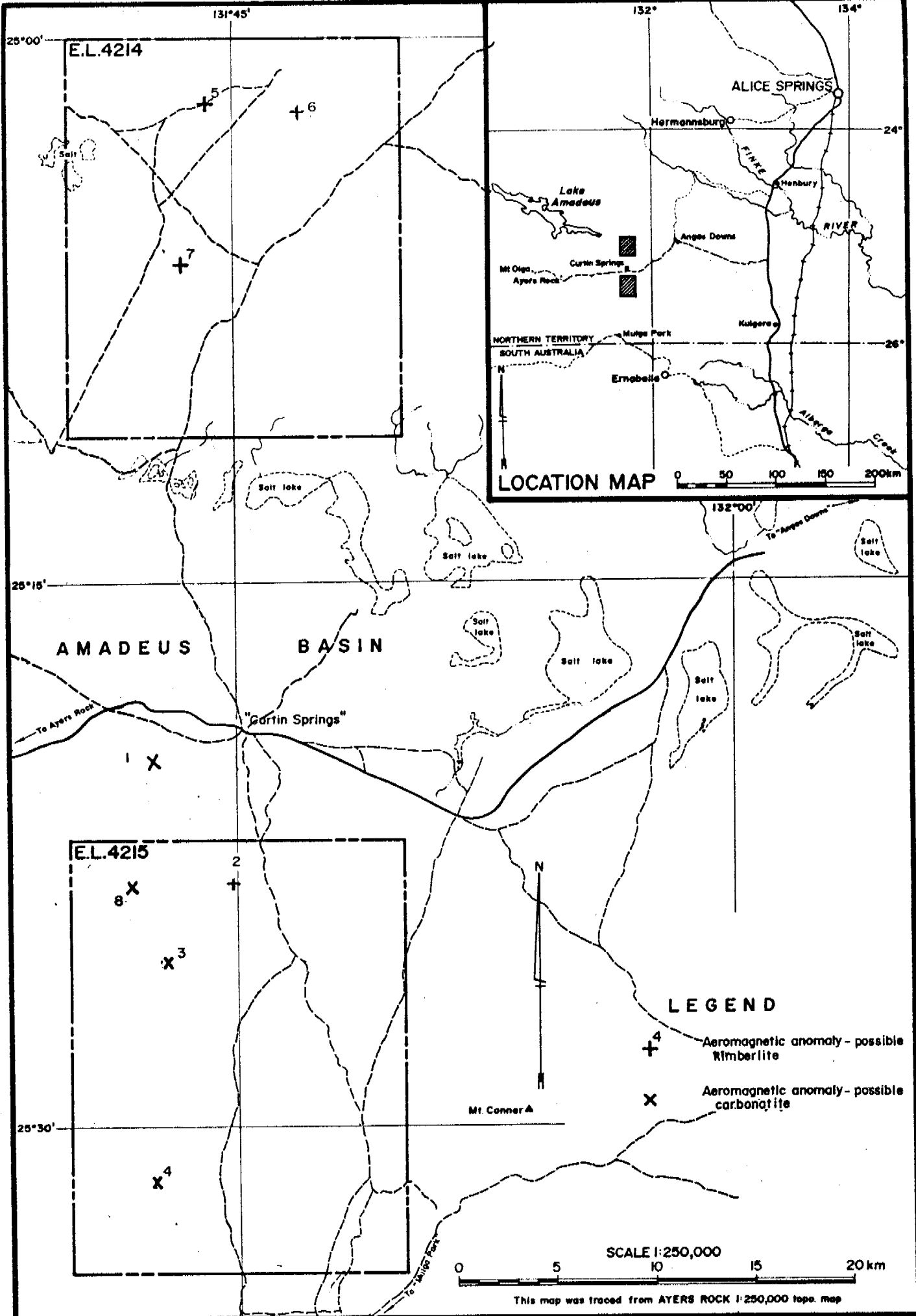
4. CONCLUSIONS

The ground magnetic work on Exploration Licences 4214 and 4215 have not delineated any shallow kimberlite targets. No drill testing was carried out. In the carbonatite investigations, only Anomaly 3 fits the exploration criteria. However major access preparation, involving sand dunes, and the fact that this is the only target, tends to downgrade the prospect, and no further test work was undertaken.

5. EXPENDITURE

Expenditure debited to Exploration Licences 4214 Curtin Springs and 4215 Mt. Connors was:

	<u>E.L. 4214</u>	<u>E.L. 4215</u>
Wages and Salaries	2,781	5,158
Field Support	1,232	1,610
Vehicles	820	855
Equipment	206	155
Air Charter	1,190	1,190
Geochemistry	91	91
Geophysics	5,498	21,407
Tenement fees	-	600
Sundries	129	111
Consultants	477	282
Services	3,400	2,100
Administration & Overheads	1,582	3,355
	<u>\$17,406</u>	<u>\$36,914</u>



Centre
Adelaide

Date
11-10-83

THE BROKEN HILL PROPRIETARY CO. LTD.
E.L. 4214, 4215 AYERS ROCK AREA, N.T.
LOCATION OF AEROMAGNETIC ANOMALIES

Project No.
8-D91,92-2

Drawing No.
A4-50

APPENDIX 1

Presented herein are:

Field data sheets for barometrically
levelled gravity traverses

The following calibration factors were used:

<u>Counter Reading</u>	<u>Value(mgals)</u>	<u>Factors for Interval</u>
2300	2364.15	1.02979
2400	2467.13	1.02994

The approximate latitude of the grid was $25^{\circ}20'$

GRAVITY

DATE 7/9/83

PROJECT.....
 Prospect..... OBS.....
 1:250 000 SHT..... CAL.....
 TRAVERSE ANOMALY 3..... FIELD SHT NO 1 OF 3

4-124

STATION REF. NUMBER	TIME	DIAL READING	DRIFT	BAROMETER	DRIFT CORRECTED BAROMETER	STATION HEIGHT	TEMP (°C)		COMBINED ELEVATION & BOUGUER CORRECTION	BOUGUER ANOMALY WITHOUT TERRAIN CORRECTION	CORRECTED ANOMALY	REMARKS
							WET	DRY				
BASE	12:34	2325.28		950.31	950.31		16.0	31.5				
500S	12:50	2324.43		949.52	949.84		16.0	31.5				
1000S	1:03	2324.77		949.64	950.22		16.5	31.5				
1500S	1:15	2324.37		949.41	950.24		16.5	31.5				
2000S	1:28	2322.07		949.00	950.09		16.0	31.5				
2500S	1:38	2319.02		948.71	950.00		16.0	32.0				
3000S	1:51	2318.18		948.04	950.80		17.0	33.5				
3500S	2:00	2318.06		948.08	949.81		16.5	32.5				
4000S	2:08	2318.33		947.77	949.67		16.5	32.0				
BASE	2:35	2325.30		947.87	950.31		16.5	32.5				
BASE	2:53	2325.40		947.64	947.64		16.5	33.0				
5000S	3:37	2317.54		945.66	945.75		16.0	32.0				
6000S	3:55	2322.55		946.02	946.15		16.0	32.0				
7000S	4:10	2322.82		945.93	946.09		16.0	31.5				
8000S	4:24	2324.06		945.82	946.01		16.0	31.5				
9000S	4:38	2323.53		945.75	945.97		16.0	31.5				
BASE	5:27	2325.49		947.32	947.64		15.5	30.0				
BASE	9:16	2325.27		958.51	958.51		11.5	19.1				
500N	9:34	2325.30		960.37	960.18		12.0	20.6				
1000N	9:45	2323.57		959.83	959.52		12.0	20.4				
1500N	10:03	2323.99		960.26	959.77		12.7	21.9				
2000N	10:18	2323.10		960.79	960.14		12.9	22.0				
2500N	10:29	2323.89		960.83	960.06		13.2	22.6				
3000N												
3500N	10:55	2325.39		961.10	960.06		14.8	23.8				
BASE	11:29	2325.49		959.91	958.51		14.1	25.4				

GRAVITY

PROJECT Mt Connors DATE 8.19.83
 Prospect OBS N. RIST, M. DAVES
 1:250 000 SHT AYERS ROCK CAL
 TRAVERSE ANOMALY 8 FIELD SHT NO. 2 OF 3

4-124

STATION REF. NUMBER	TIME	DIAL READING	DRIFT	BAROMETER	DRIFT CORRECTED BAROMETER	DIFF MGS	STATION HEIGHT	TEMP		COMBINED ELEVATION & BOUGUER CORRECTION	BOUGUER ANOMALY WITHOUT TERRAIN CORRECTION	CORRECTED ANOMALY	REMARKS	
								WET	DRY					
								°C						
Base	1:12	2325.37		959.19	959.19			13.5	26.5					
500S	1:25	2325.84		958.89	959.07			14.4	26.9					
1000S	1:36	2325.67		958.75	959.08			13.6	25.6					
1500S	1:48	2324.95		958.64	959.14			13.8	26.8					
2000S	1:59	2325.87		958.85	959.00			14.0	26.1					
2500S	2:10	2324.97		958.18	958.99			14.2	28.3					
3500S	2:27	2324.29		957.56	958.60			14.1	27.2					
4500S	2:39	2323.94		957.35	958.56			14.5	28.4					
BASE	3:17	2325.37		957.45	959.19			14.1	28.0					
BASE	3:31	2325.49		957.40	957.40			13.2	26.5					
500N	3:41	2325.88		957.20	957.18			14.4	28.0					
1000N	3:49	2325.91		957.07	957.03			13.0	26.5					
1500N	3:58	2327.11		957.53	957.47			14.5	27.8					
2000N	4:07	2327.54		957.51	957.43			14.5	27.5					
2500N	4:16	2327.47		957.61	957.52			16.0	27.0					
3000N	4:23	2328.94		957.74	957.63			17.5	26.5					
3500N	4:31	2328.82		957.31	957.18			20.0	27.0					
4000N	4:42	2329.33		957.62	957.47			24.0	27.5					
4500N	4:55	2329.62		957.71	957.53			12.5	27.0					
BASE	5:26	2325.61		957.64	957.40			12.7	26.0					
BASE	9:12	2325.30		965.60	965.60			9.6	16.1					
6000N	10:03	2329.88		966.19	966.40			11.5	18.6					
7000N	10:19	2331.73		966.36	966.64			11.9	19.5					
8000N	10:32	2332.41		966.41	966.74			11.1	19.1					
9000N	10:43	2333.70		966.21	966.59			11.3	19.3					
BASE	11:36	2325.30		965.00	965.60			11.9	21.6					

GRAVITY

PROJECT.....
 Prospect..... OBS.....
 1:250000 SHT..... CAL.....
 TRAVERSE... ANOMALY 1..... FIELD SHT NO. 3 OF 3

DATE 9/9/82

4-124

STATION REF. NUMBER	TIME	DIAL READING	DRIFT	BAROMETER	DRIFT CORRECTED BAROMETER	DIFF MGS	STATION HEIGHT	TEMP (°C)		COMBINED ELEVATION & BOUGUER CORRECTION	BOUGUER ANOMALY WITHOUT TERRAIN CORRECTION	CORRECTED ANOMALY	REMARKS
								WET	DRY				
BASE	1:33	2331.21		962.76	962.76			12.5	24.0				
500S	1:44	2330.14		962.17	962.36			13.0	24.5				
1000S	1:53	2330.04		962.34	962.68			13.5	25.0				
1500S	2:04	2329.24		962.03	962.56			13.0	24.5				
2000S	2:14	2328.97		961.70	962.41			13.0	25.0				
3000S	2:28	2328.96		961.42	962.37			14.0	26.0				
4000S	2:41	2328.00		961.18	962.35			13.0	25.0				
BASE	3:07	231.23		961.14	962.76			12.5	24.5				
BASE	3:18	2331.21		961.07	961.07			12.0	23.4				
1750N	3:58	2332.87		961.08	961.09			12.4	24.7				
3700N	4:30	2333.67		961.02	961.04			12.5	25.9				
5700N	4:47	2336.78		961.16	961.18			12.5	24.4				
935N	5:21	2331.67		960.70	960.73			12.1	24.5				
BASE	5:34	2331.37		961.04	961.07			11.5	23.6				

DATE 9/9/83 METER NO. LR G# 598 AREA Mt CONNOR

READERS N RIST METER CONSTANT _____ Anomaly 1

Coordinates	Reading	Time	Drift Correction	LATITUDE	Elevation	Corrected Value S.G. = 2.4	Corrected Value S.G. =	Remarks
Δ	2331.21	13:33	9800 10.00	25° 19' 39"	100.00	38.69		
500 S	30.14	13:44	8.90	25° 19' 57"	103.62	37.99		
1000 S	30.04	13:53	8.79	25° 20' 14"	100.72	36.95		
1500 S	29.24	14:04	7.96	25° 20' 29"	101.80	36.06		
2000 S	28.97	14:14	7.68	25° 20' 42"	103.17	35.69		
3000 S	28.96	14:28	7.67	25° 21' 12"	103.55	35.18		
4000 S	28.00	14:41	6.68	25° 21' 51"	103.72	33.59		
Δ	2331.23	15:07		25° 19' 39"	100.00			
Δ	2331.21	15:18	10	25° 19' 39"	100.00			
1750 N	2332.87	15:58	11.66	25° 18' 41"	99.82	41.43		
3700 N	2333.67	16:30	12.45	25° 17' 36"	100.27	43.57		
5700 N	2336.78	16:47	15.63	25° 16' 21"	99.00	47.82		
9250 N	2331.67	17:21	10.32	25° 19' 10"	103.08	40.21		
Δ	2331.37	17:34	10	25° 19' 39"	100.00			

DATE 7/9/83 METER NO. LIR 0#598 AREA MT CONNER N.T.

READERS M. CAVIES METER CONSTANT Anomaly 3

Coordinates	Reading	Time	Drift Correction	LATITUDE	Elevation	Corrected Value S.G. = 2.4	Corrected Value S.G. =	Remarks
Δ	2325.28	12.34	10.00	25° 25' 18"	100.00	32.12		
500 S	24.43	12.50	9.12	25° 25' 32"	104.41	31.89		
1000 S	24.77	13.03	9.47	25° 25' 52"	100.84	31.11		
1500 S	24.37	13.15	9.06	25° 26' 09"	100.66	30.33		
2000 S	22.07	13.28	6.69	25° 26' 25"	102.06	27.94		
2500 S	19.02	13.38	3.54	25° 26' 40"	102.91	24.68		
3000 S	18.18	13.51	2.68	25° 26' 55"	95.38	21.96		
3500 S	18.06	14.00	2.55	25° 27' 11"	104.71	23.46		
4000 S	18.33	14.08	2.83	25° 27' 28"	106.01	23.68		
Δ	2325.30	14.36	10.00	25° 25' 18"	100.00			
Δ	2325.40	14.53	10.00	25° 25' 18"	100.00			
5000 S	17.54	15.37	1.88	25° 27' 57"	117.82	24.63		
6000 S	22.55	15.55	7.03	25° 28' 29"	114.05	28.37		
7000 S	22.82	16.10	7.30	25° 29' 12"	114.59	27.92		
8000 S	24.06	16.24	8.57	25° 29' 40"	115.34	28.80		
9000 S	23.53	16.38	8.01	25° 30' 06"	115.72	27.81		
Δ	2325.49	17.27	10.00	25° 25' 18"	100.00			

DATE 9/9/93 METER NO. LXR G#598 AREA MT CONNER
 READERS _____ METER CONSTANT _____ ANOMALY 8

Coordinates	Reading	Time	Drift Correction	LATITUDE	Elevation	Corrected Value S.G. = 2.4	Corrected Value S.G. =	Remarks
Δ (metres)	2325.37	13:12	10:00	25° 23' 12"	100.00	34.57		weather clear, cloudless
500 S	2325.84	13:25	10:48	25 23 28	101.10	34.97		
1000 S	2325.67	13:36	10:31	25 23 43	101.00	34.48		
1500 S	2324.95	13:48	9:57	25 24 00	100.46	33.30		
2000 S	2325.87	13:59	10:51	25 24 17	101.73	34.18		
2500 S	2324.97	14:10	9:59	25 24 34	101.84	32.95		
3500 S	2324.29	14:27	8:89	25 25 06	105.41	32.37		
4500 S	2323.94	14:39	8:53	25 25 39	105.80	31.45		
Δ	2325.37	15:17			100.00			
Δ	2325.49	15:31	10:00	25° 23' 12"	100.00			
500 N	2325.88	15:41	10:39	25° 22' 57"	102.02	35.67		
1000 N	2325.91	15:49	10:41	25 22 45"	103.39	36.21		
1500 N	2327.11	15:58	11:64	25 22 28"	99.36	36.93		
2000 N	2327.54	16:07	12:07	25 22 09"	99.72	37.80		
2500 N	2327.97	16:16	12:51	25 21 49"	98.90	38.46		
3000 N	2328.94	16:23	13:50	25 21 36"	97.89	39.49		
3500 N	23 28 82	16:31	13:36	25 21 19"	102.02	40.54		
4000 N	23 29 33	16:42	13:88	25 21 1"	99.36	40.85		
4500 N	2329.62	16:55	14:16	25 20 18"	98.81	41.85		
Δ	2325.61	17:26	10:00		100.00			

DATE 9/9/83 METER NO. 412 9#598 AREA Mt. CONNOR
 READERS D. RIST METER CONSTANT 1.02979 Anomaly 8

Coordinates	Reading	Time	Drift Correction	LATITUDE	Elevation	Corrected Value S.G. = 24	Corrected Value S.G. =	Remarks
Δ	2325.30	9.12	9800.1000		100.00			
6000 N	29.88	10.03	14.72	25° 19' 59"	92.93	41.55		
7000 N	31.73	10.19	16.62	25° 19' 26"	90.78	43.64		
8000 N	32.41	10.32	17.32	25° 18' 56"	89.91	44.74		
9000 N	33.70	10.43	18.65	25° 18' 27"	91.23	46.91		
Δ	23 25 30	11.36	9888 80.00		100.00			

*see over for Explanatory Notes

REPORT TITLE EXPLORATION LICENCE 4214 and 4215 CURTIN SPRINGS,
AND MT. CONNOR, NORTHERN TERRITORY.

FINAL REPORT

AUTHOR(S) BHP MINERALS LIMITED

PUBLISHER BHP MINERALS LIMITED

PLACE OF PUB'N MELBOURNE DATE OF PUB'N _____

PAGES OF TEXT 4 NO. AND PAGES OF APPENDICES 1 / 8

NO. S OF (1) PHOTOS _____ (2) DIAGRAMS _____ (3) TABLES _____

ACCOMPANIMENTS (4) PLANS 3 (5) GRAPHS _____ (6) LOGS _____

LICENCE NO. (S) EL 4214 & 4215 PROJECT YEAR(S) ONE

LICENSEE (S) BHP MINERALS LIMITED

JOINT VENTURE(S) _____

OPERATOR(S) _____

1:1 000 000 map name(s) and No(s) _____

1: 250 000 map name(s) and No(s) AYERS ROCK SG-52-8

1: 100 000 map name(s) and No(s) _____

1: 50 000 map name(s) and No(s) _____

PROSPECT NAME CURTIN SPRINGS AND MT. CONNOR

** SITE LOCATION LAT: _____ LONG: _____

EAST: _____ NORTH: _____

*** TECTONIC UNIT AMADEUS BASIN

MAJOR TERM METALS NONMETALS PETROLEUM _____ OTHER _____

****MINOR TERMS

DRILLING AERIAL/GRND GEOPHYSICS GEOCHEMISTRY GENERAL

DIAMOND MAGNETIC DRAINAGE TESTING GEOL MAPPING

PERCUSSION RADIOACTIVITY DRILL CORE ANALYSIS PHOTOGEOLOGY

AUGER E.M. SURVEY ASSAYING GRIDGING

ROTARY IP SURVEY GEOCHEMICAL ANOM METHODS

COMMODITIES SEISMIC SAMPLING REGIONAL GEO

U Au Ag RESISTIVITY STREAM SEDIMENT LOCAL GEOLOGY

Cu Pb Zn GRAVITY SOIL STRATIGRAPHY

Sn W Dmd GEOPHYSICAL ANOM ROCK CHIP RECONNAISSANCE

Other _____ WATER LOGGING

OTHER TERMS: KIMBERLITE CARBONATITE

NOTES _____

ABSTRACT ATTACHED _____

DEPARTMENTAL USE ONLY

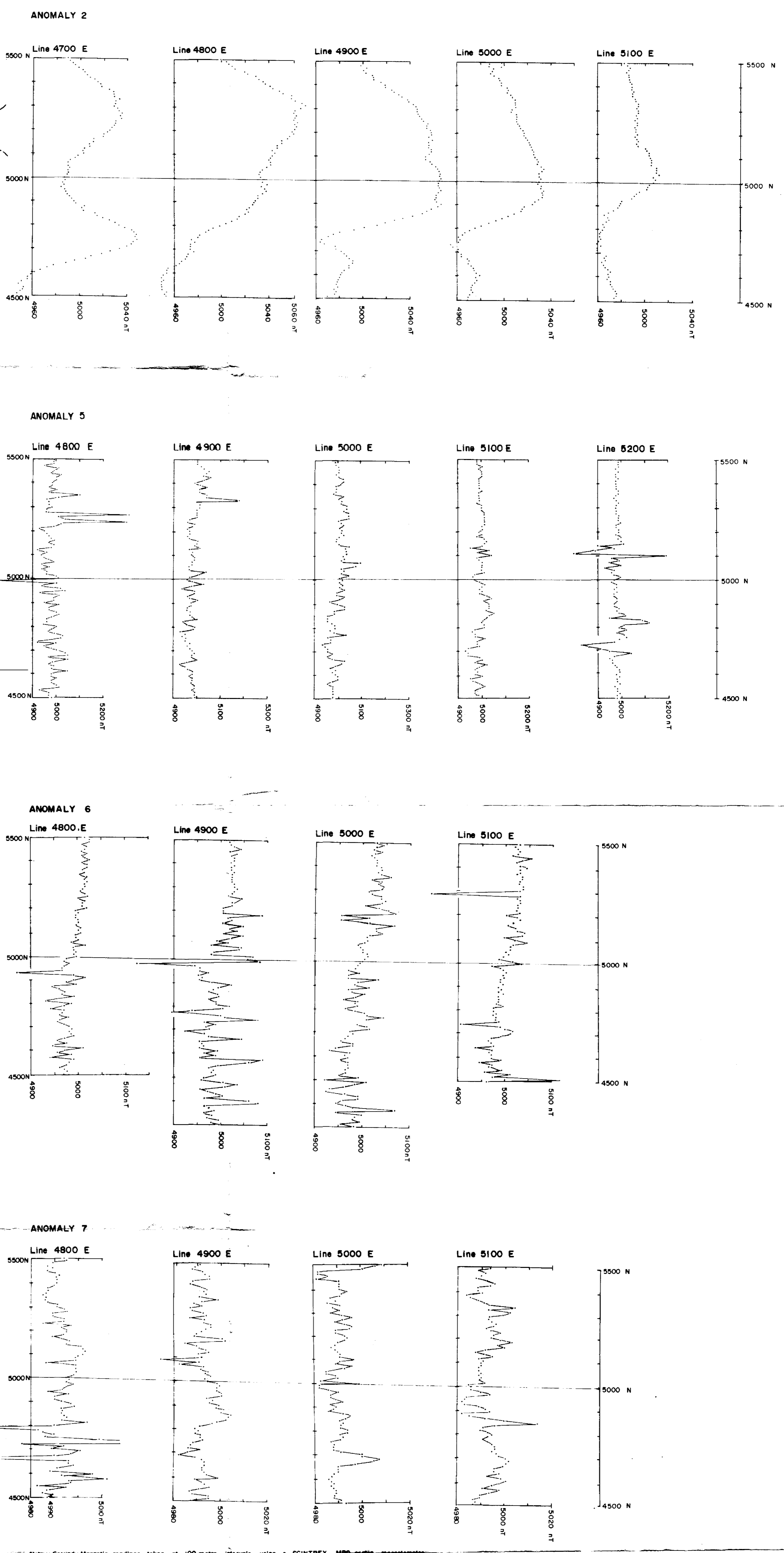
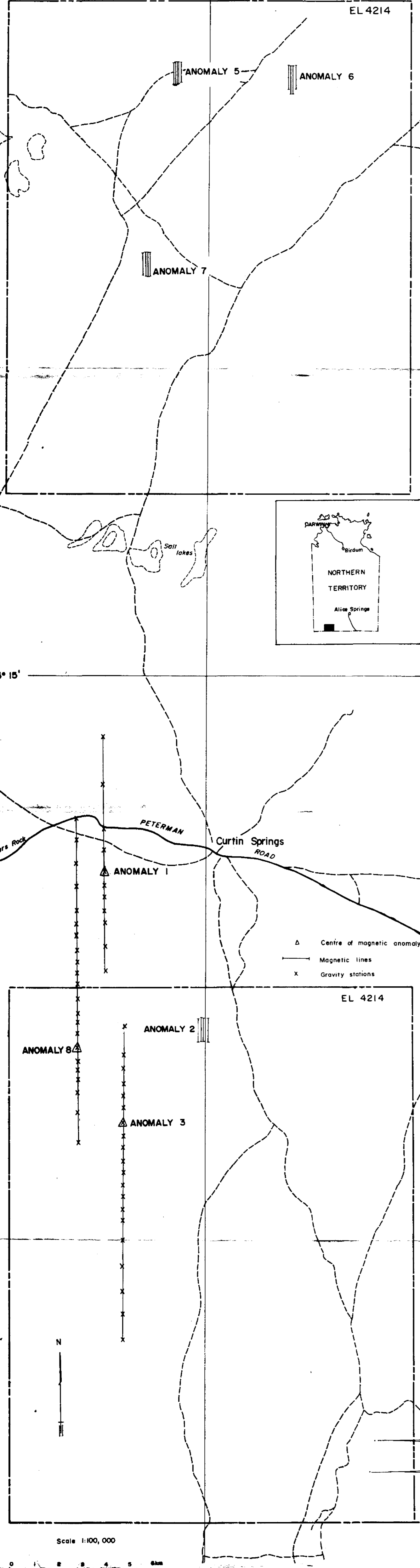
REPORT NO _____ SECURITY _____

TEXT LOCATION _____ ENTRY NO. _____

INDEXED BY/DATE _____ CHECKED BY/DATE _____

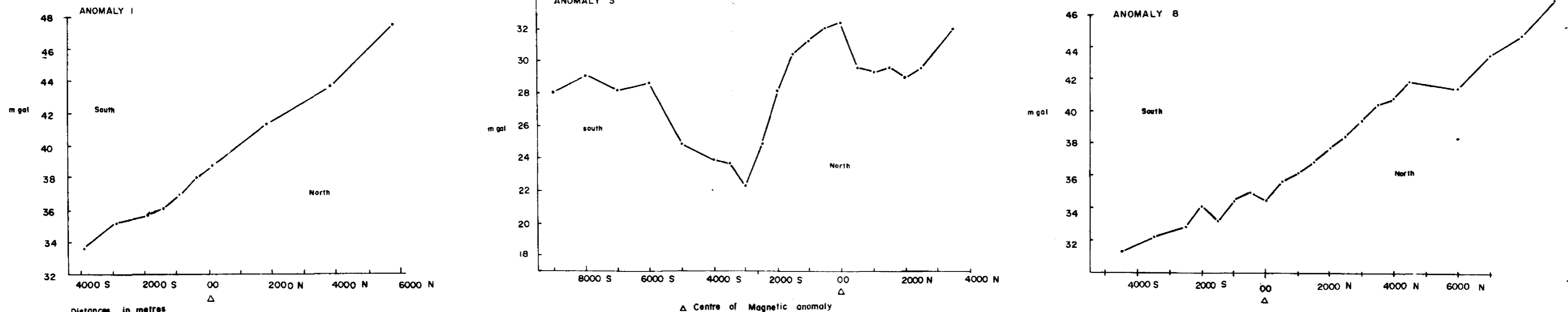
134° 45'

GROUND MAGNETIC PROFILES



Notes: Ground Magnetic readings taken at 100-metre intervals using a SCINTREX-MPE proton magnetometer. An automatic base station was used for diurnal corrections.

GRAVITY PROFILES N-S lines with readings at 0.5 or 1.0 km spacing. Horizontal scale 1cm = 1km, 1:100,000, Density 2.4



Revisions:

Drawn: J. L. ...	Checked: ...
Trace:
Date: 27. 8. 61	...
Project No:
Centre: Darwin	...
Scale: 1:100,000	...

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 4214, CURTIN SPRINGS AND EL 4215, MT CONNOR
SUMMARY OF EXPLORATION

AI-113