EXPLORATION LICENCE 4362

YIYINTYI, MOUNT YOUNG, NORTHERN TERRITORY

ANNUAL REPORT TO 14th SEPTEMBER, 1984

NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR84/240

CONTENTS

SUMMARY

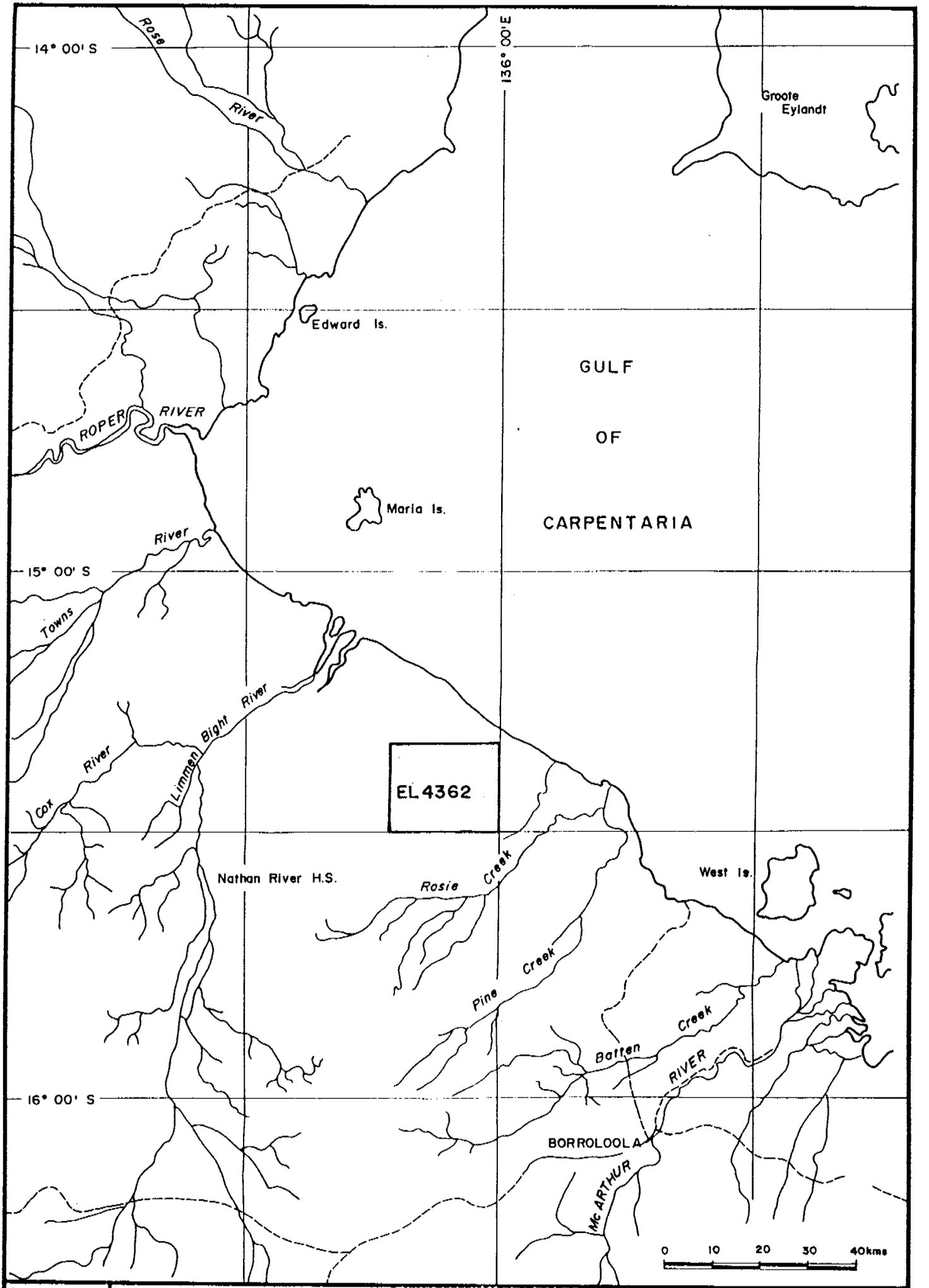
Exploration Licence 4362 was granted on the 14th August, 1983 to consolidate areas of interest held under EL's 1907, 2383, 2834 and 2966.

The exploration target is stratiform, sediment-hosted base metal sulphide deposits modelled on the HYC deposit at McArthur River.

Work carried out under Reservation from Occupation 1045 and the first year tenure of EL 4362 has consisted of:

1. a detailed aeromagnetic survey
2. six lines of gravity survey
3. EM-37 profiling and sounding traverses

Future work consists of further EM-37 profiling and sounding.



Centre Darwin	THE BROKEN HILL PROPRIETARY CO. LTD.	Project N°
Date 5 · 10 · 84	EL 4362, YIYINTYI, N.T LOCATION MAP	Drawing N°

EXPLORATION LICENCE 4362
YIYINTYI, MOUNT YOUNG, N.T.
ANNUAL REPORT TO 14th SEPTEMBER, 1984

1. INTRODUCTION

Exploration Licence 4362 was granted to BHP Minerals Limited on the 14th September, 1983 to consolidate areas of interest previously held under EL's 1907, 2383, 2834 and 2966. These licences were surrendered on the 20th May, 1983, and the area was covered by Reservation from Occupation 1045 till EL 4362 came into effect.

EL 4362 covers 130 graticule blocks (419 square kilometres) on the Mt. Young 1:250,000 sheet (Figure 1). The north-east corner of the area is located at latitude 15^{o} 20'S, longitude 136^{o} 00'E.

The exploration target in EL 4362 is a sediment-hosted, stratiform, lead-zinc massive sulphide deposit. The target is modelled on the HYC deposit at McArthur River which is hosted by pyritic, carbonaceous, dolomitic shale of the Barney Creek Formation of the Carpentarian McArthur Group.

Work carried out under Reservation from Occupation 1045 and during the first twelve months of tenure of EL 4362 consisted of:

1. aeromagnetic survey over the southern part of the area
2. gravity survey over six lines in the southern part of the area
3. one line surveyed using the Geonics EM-37 electromagnetic system

.../2

2. PREVIOUS EXPLORATION BY BHP

Exploration Licence 4362 was granted to consolidate areas of interest held under EL's 1907, 2383, 2834 and 2966. The original exploration target in the area was Groote Eylandt-type manganese deposits. Work carried out consisted of air photo interpretation, widely spaced gravity and ground magnetic traverses, and rotary drilling. Drill hole locations are shown in Figure 2.

Subsequent exploration was carried out for stratiform base-metal sulphide deposits. An INPUT survey was flown in 1981 and two stratigraphic diamond drill holes were drilled in 1982. Diamond drill hole McA2 was drilled to 323.42 metres and intersected 63 metres of Cretaceous sediments before entering the Lynott Formation. Diamond drill hole McA3 was drilled to 456.86 metres and intersected 18 metres of Cretaceous sediments before entering the Mallapunyah Formation.

3. GEOLOGY

Outcrop in EL 4362 is very poor with extensive cover of Recent sand and lacustrinal sediments. Resistant quartz sandstone of the Carpentarian Tawallah Group, the Cambrian Bukalara Sandstone and Cretaceous sandstone form prominent outcrops in the northern and western parts of the exploration licence (Figure 2). Possible Mallapunyah Formation sub-crops in the western part of the area and Mallapunyah Formation and Lynott Formation of the McArthur Group are known to occur in diamond drill holes McA2 and McA3 in the southern part of the area.

4. GEOPHYSICS

4.1 Aeromagnetic Survey

A detailed aeromagnetic survey was flown over part of EL 4362 in May 1983. The survey was flown by Geoterrex Pty. Limited using a cesium vapour magnetometer at a nominal terrain clearance of 80metres. Flight lines were north-south with

300 metres separation (Figure 3).

The area is dominated by a magnetic high in the south-eastern part of the survey area (Figure 4) which grades into a broad low along the western edge.

4.2 Gravity Survey

Six lines of gravity survey were carried out in the southern part of the exploration licence. The lines are numbered G6 to G11 to continue the numbering system used for lines surveyed under the previous title (Figure 2). The bulldozed, graded lines are one kilometre apart, and twelve kilometres long. Levelling and gravity meter reading was carried out by BHP Company Limited staff using a Wild Automatic level, and a Sharpe and a Lacoste and Romberg gravity meter. Contoured gravity data is shown in Figure 5. The contour plan incorporates gravity data collected in 1982 along lines G2 and G3.

The gravity pattern is dominated by a north-south gravity ridge centred at about 7500E. A smaller parallel high at about 10700E on lines G6 to G9 swings to the west on line G10 to intersect the major gravity ridge.

4.3 Geonics EM-37 Survey

The east-west grid line between diamond drill holes McA2 and McA3 was surveyed using the Geonics EM-37 electromagnetic system operated by Geoterrex Pty. Limited. Six transmitter loop locations numbered SY1 to SY6 were occupied for operation of the system in the sounding mode (Figure 2). Three of these transmitter loop locations (SY2, SY4 and SY6) were also used for operation of the system in the profiling mode. The vertical component (z component) of the profiling is shown in Figures 6, 7 and 8. Data from the electromagnetic soundings are collated in Appendix 1.

The EM-37 traverse profiles shown typical half-space responses with no significant anomalies. The soundings show a near surface low resistivity layer up to 15m thick underlain by a similar thickness of intermediate resistivity overlying resistive material to "infinite" depth.

5. FUTURE PROGRAMME

The southern part of EL 4362 forms the northern limit of an extensive programme of Geonics EM-37 soundings being carried out by BHP Minerals Limited over adjacent exploration licences. As part of this programme, at least one line of soundings will fall within EL 4362. Bulldozed and graded access has been prepared for this survey.

The INPUT survey flown in 1981 under previous title detected an anomaly in the northern part of the exploration licence, but no further work was done. EM-37 profiling will be used to test the anomaly.

EM-37 profiling will be carried out over the gravity high at 10700E on gravity line G2 and G6 to test for an associated conductor. The gravity high was located at the extreme ends of profiling lines surveyed in 1983 and it is possible that the signal was too weak to detect a conductor.

Diamond drilling may be used to test results of these surveys.

Anticipated expenditure for the EM-37 surveys is $10,000.

6. EXPENDITURE

The expenditure listed below is for work carried out under Reservation from Occupation 1045 which was effective from 20th May, 1983 to 14th September, 1983, as well as expenditure for the first year of tenure of EL 4362.

The aeromagnetic survey discussed in this report was flown in May 1983 and expenditure on the survey was included in the final report on EL 2383.

6. EXPENDITURE Cont.

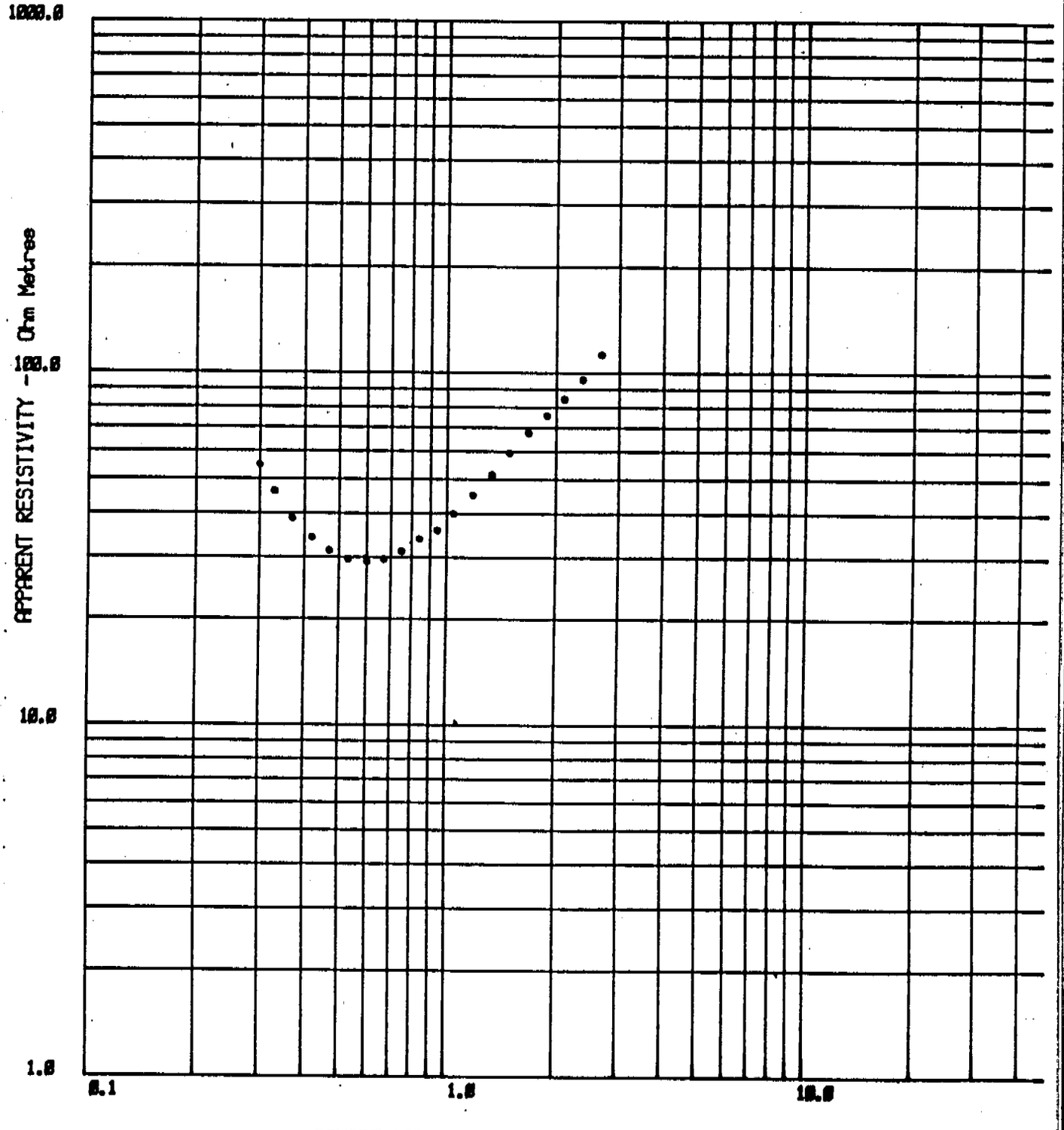
Wages and Salaries	20,953
Field Support	1,694
Vehicles	5,690
Equipment	12,352
Geochemistry	438
Geophysics	14,499
Surveys	- 5,432
Tenement fees	899
Capital items	317
Consultants	- 2,679
Sundries	1,617
Services	13,036
Administration and Overheads	6,338
	$69,722

APPENDIX 1

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	: 17675	CLIENT	: The BHP Co. Ltd.
	: 100	PROJECT	: YIYINTYI
TX LOOP SIZE	: 300 metres	AREA	: McArthur River
	: 300 metres	JOB No.	: 85-1470
TX CURRENT	: 17.8 amps	SURVEYED BY	: J.P.
TX TURNOFF	: 222 microsecs	DATE	: 4-JUN-1983
FREQUENCY	: 25 Hz	SOUNDING No.	: SY11



Sounding No.: SYI 1

Date: June 4, 1983

Component: Z

Location: Yiyintyi (near d.h. MCA 4)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 222 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	4025.3	.30	54.6
2	.109	2	3613.0	.33	46.2
3	.140	2	3018.8	.37	38.8
4	.177	2	2387.8	.42	34.2
5	.220	2	1804.8	.47	31.4
6	.280	2	1228.8	.53	29.7
7	.355	2	782.8	.60	29.2
8	.443	2	481.0	.67	29.7
9	.563	2	267.0	.75	31.3
10	.712	2/4	141.3/573.5	.84	34.0/33.7(33.9
11	.876	4	328.33	.94	35.9
12	1.087	4	171.08	1.04	40.0
13	1.400	4	79.65	1.18	45.1
14	1.772	4	37.48	1.33	51.5
15	2.210	4/9	18.48/557.85	1.49	58.2/60.5(59.4
16	2.820	9 in/9 out	257.45/263.30	1.68	68.6/67.6
17	3.570	9 in/9 out	113.03/125.28	1.89	81.2/75.8
18	4.460	9 in/9 out	52.25/62.03	2.11	94.7/84.4
19	5.667	9 in/9 out	22.35/28.58	2.38	112.8/95.8
20	7.160	9 in/9 out	8.73/12.60	2.68	143.9/112.7

Interpreted Model:

Sounding No.: SYI 1

Date: June 4, 1983

Component: X

Location: Yiyintyi (near d.h. MCA 4)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 222 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	4	1016	.30	
2	.109	4	1027	.33	
3	.140	4	920	.37	
4	.177	4	735	.42	
5	.220	4	534	.47	
6	.280	4	337	.53	
7	.355	4	195	.60	
8	.443	4	108	.67	
9	.563	4	53	.75	
10	.712	4	24	.84	
11	.876	4	13.9	.94	
12	1.087	4	6.4	1.04	
13	1.400	4	2.5	1.18	
14	1.772	4	1.0	1.33	
15	2.210	4	.2	1.49	
16	2.820	4	.1	1.68	
17	3.570	4	- .2	1.89	
18	4.460	4	- .2	2.11	
19	5.667	4	- .2	2.38	
20	7.160	4	- .2	2.68	

Interpreted Model:

Sounding No.: SYI 1

Date: June 4, 1983

Component: Y

Location: Yiyintyi (near d.h. MCA 4)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 222 micro sec.

Base Frequency = 25 Hz

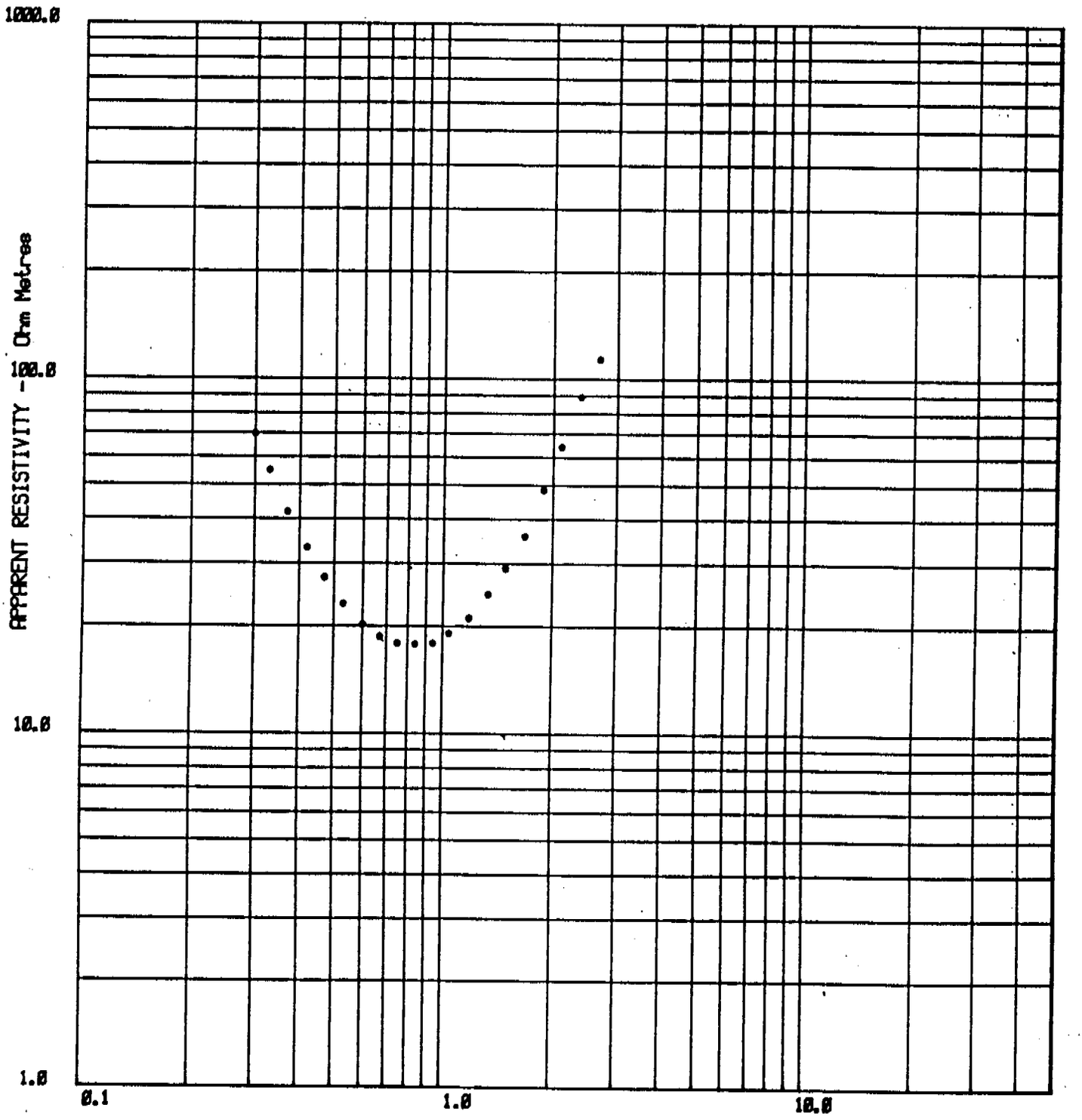
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	4	-1697	.30	
2	.109	4	-1701	.33	
3	.140	4	-1560	.37	
4	.177	4	-1301	.42	
5	.220	4	-1003	.47	
6	.280	4	- 678	.53	
7	.355	4	- 421	.60	
8	.443	4	- 243	.67	
9	.563	4	- 120	.75	
10	.712	4	- 52	.84	
11	.876	4	- 24.8	.94	
12	1.087	4	- 9.5	1.04	
13	1.400	4	- 3.0	1.18	
14	1.772	4	- 1.3	1.33	
15	2.210	4	- 0.9	1.49	
16	2.820	4	- 0.7	1.68	
17	3.570	4	- 0.5	1.89	
18	4.460	4	- 0.4	2.11	
19	5.667	4	- 0.3	2.38	
20	7.160	4	- 0.3	2.68	

Interpreted Model:

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	: 18675	CLIENT	: The BHP Co. Ltd.
	: 100	PROJECT	: YIYINTYI
TX LOOP SIZE	: 300 metres	AREA	: McArthur River
	: 300 metres	JOB No.	: 85-1470
TX CURRENT	: 17.8 amps	SURVEYED BY	: J.P.
TX TURNOFF	: 200 microsecs	DATE	: 4-JUN.1983
FREQUENCY	: 25 Hz	SOUNDING No.	: SYI2



Sounding No.: SYI 2

Date: June 4, 1983

Component: Z

Location: Yiyintyi (centred @ 18675E, on L001N)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 200 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	TIME$^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	3056.3	.30	69.3
2	.109	2	3023.3	.33	54.9
3	.140	2	2897.8	.37	41.9
4	.177	2	2665.8	.42	33.2
5	.220	2	2342.0	.47	27.4
6	.280	2	1889.5	.53	23.1
7	.355	2	1418.0	.60	20.2
8	.443	2	1003.0	.67	18.7
9	.563	2	639.8	.75	17.9
10	.712	2	384.0	.84	17.8
11	.876	2	238.40	.94	17.9
12	1.087	2	132.38	1.04	19.1
13	1.400	2	63.35	1.18	21.1
14	1.772	2/6	29.05/459.70	1.33	24.5/24.6 (24.6
15	2.210	6	212.05	1.49	29.0
16	2.820	6	86.18	1.68	35.8
17	3.570	6/9	31.55/243.88	1.89	47.8/48.9 (48.
18	4.460	9	94.15	2.11	64.2
19	5.667	9	32.10	2.38	88.9
20	7.160	9 in/9 out	10.55/12.50	2.68	127.2/113.6

Interpreted Model:

Sounding No.: SYI 2

Date: June 4, 1983

Component: X

Location: Yiyintyi (centred @ 18675E, on L001N)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 200 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	6	- 533	.30	
2	.109	6	891	.33	
3	.140	6	2461	.37	
4	.177	6	3588	.42	
5	.220	6	4059	.47	
6	.280	6	3858	.53	
7	.355	6	3115	.60	
8	.443	6	2225	.67	
9	.563	6	1367	.75	
10	.712	6	759	.84	
11	.876	6	428.3	.94	
12	1.087	6	204.6	1.04	
13	1.400	6	76.1	1.18	
14	1.772	6	23.4	1.33	
15	2.210	6	5.7	1.49	
16	2.820	6	0.2	1.68	
17	3.570	6	- 0.8	1.89	
18	4.460	6	- 0.6	2.11	
19	5.667	6	- 0.4	2.38	
20	7.160	6	- 0.3	2.68	

Interpreted Model:

Sounding No.: SYI 2

Date: June 4, 1983

Component: Y

Location: Yiyintyi (centred @ 18675E, L001N)

A = 300 metres

B = 300 metres

I = 17.8 Amps

T/o = 200 micro sec.

Base Frequency = 25 Hz

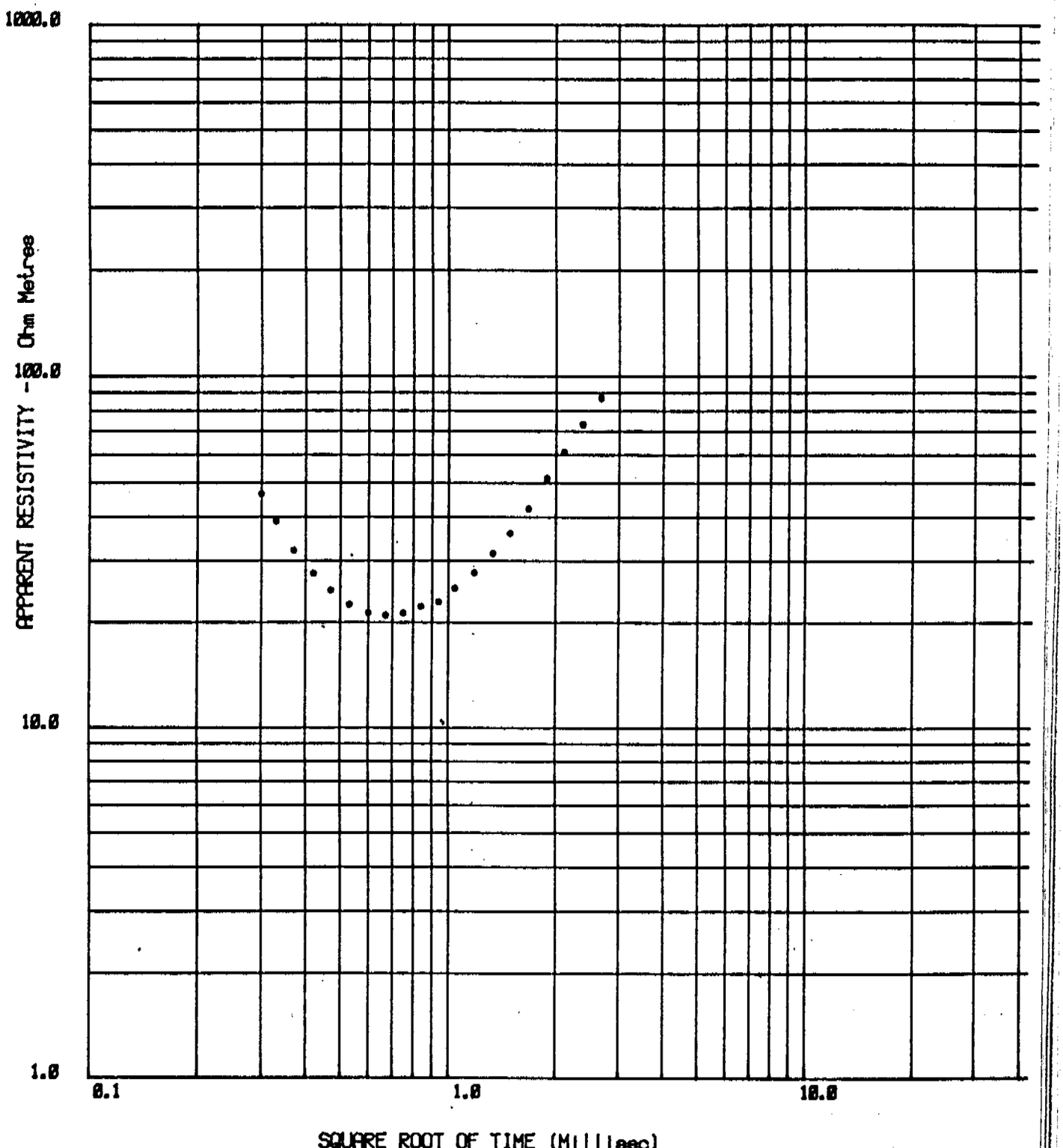
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	6	1399	.30	
2	.109	6	1253	.33	
3	.140	6	1012	.37	
4	.177	6	716	.42	
5	.220	6	409	.47	
6	.280	6	126	.53	
7	.355	6	- 36	.60	
8	.443	6	- 79	.67	
9	.563	6	- 55	.75	
10	.712	6	- 13	.84	
11	.876	6	8.9	.94	
12	1.087	6	17.8	1.04	
13	1.400	6	13.8	1.18	
14	1.772	6	6.2	1.33	
15	2.210	6	1.2	1.49	
16	2.820	6	- 1.1	1.68	
17	3.570	6	- 0.8	1.89	
18	4.460	6	- 0.9	2.11	
19	5.667	6	- 0.5	2.38	
20	7.160	6	- 0.3	2.68	

Interpreted Model:

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	19850	CLIENT	The BHP Co. Ltd.
	100	PROJECT	YIYINTYI
TX LOOP SIZE	250 metres	AREA	McArthur River
	250 metres	JOB No.	85-1470
TX CURRENT	17.5 amps	SURVEYED BY	J.P.
TX TURNOFF	212 microsecs	DATE	6-JUN,1983
FREQUENCY	25 Hz	SOUNDING No.	SYI3



Sounding No.: SYI 3

Date: June 6, 1983

Component: Z

Location: Yiyintyi (centred @ 19850E on L001N)

A = 250 metres

B = 250 metres

I = 17.5 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	3633.5	.30	46.4
2	.109	2	3305.5	.33	38.9
3	.140	2	2832.5	.37	32.1
4	.177	2	2315.3	.42	27.6
5	.220	2	1813.3	.47	24.7
6	.280	2	1297.3	.53	22.5
7	.355	2	872.0	.60	21.3
8	.443	2	562.5	.67	21.0
9	.563	2	330.0	.75	21.3
10	.712	2	185.5	.84	22.2
11	.876	2	111.0	.94	22.9
12	1.087	2/5	59.95/477.45	1.04	24.9/25.0 (25.0)
13	1.400	5	227.8	1.18	27.7
14	1.772	5	107.65	1.33	31.5
15	2.210	5	52.40	1.49	35.9
16	2.820	5/9	23.38/359.88	1.68	41.6/42.7 (42.2)
17	3.570	9	153.18	1.89	51.5
18	4.460	9	68.93	2.11	61.1
19	5.667	9 in/9 out	28.70/29.30	2.38	74.1/73.1
20	7.160	9 in/ 9 out	11.55/12.78	2.68	92.7/86.7

Interpreted Model:

Sounding No.: SYI 3

Date: June 6, 1983

Component: X

Location: Yiyintyi (centred @ 19850E on L001N)

A = 250 metres

B = 250 metres

I = 17.5 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	2961	.30	
2	.109	5	2609	.33	
3	.140	5	2055	.37	
4	.177	5	1471	.42	
5	.220	5	974	.47	
6	.280	5	555	.53	
7	.355	5	288	.60	
8	.443	5	138	.67	
9	.563	5	57	.75	
10	.712	5	20	.84	
11	.876	5	13.8	.94	
12	1.087	5	7.1	1.04	
13	1.400	5	4.2	1.18	
14	1.772	5	3.3	1.33	
15	2.210	5	2.4	1.49	
16	2.820	5	1.6	1.68	
17	3.570	5	1.0	1.89	
18	4.460	5	0.6	2.11	
19	5.667	5	0.2	2.38	
20	7.160	5	- 0.1	2.68	

Interpreted Model:

Sounding No.: SYI 3

Date: June 6, 1983

Component: Y

Location: Yiyintyi (centred @ 19850E on L001N)

A = 250 metres

B = 250 metres

I = 17.5 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

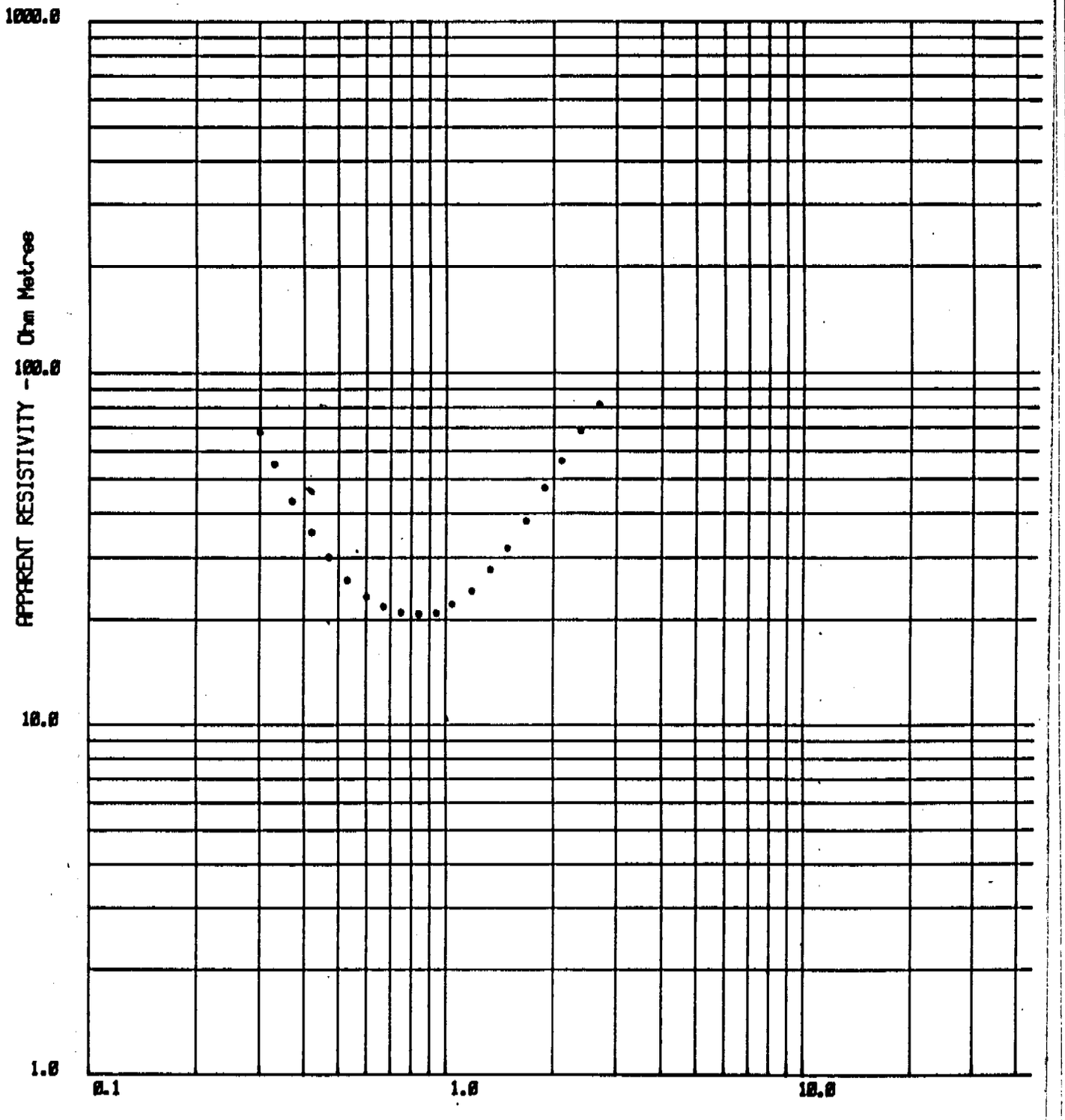
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	-54	.30	
2	.109	5	- 7	.33	
3	.140	5	44	.37	
4	.177	5	88	.42	
5	.220	5	104	.47	
6	.280	5	98	.53	
7	.355	5	80	.60	
8	.443	5	58	.67	
9	.563	5	38	.75	
10	.712	5	23	.84	
11	.876	5	16.0	.94	
12	1.087	5	9.6	1.04	
13	1.400	5	5.0	1.18	
14	1.772	5	2.2	1.33	
15	2.210	5	0.8	1.49	
16	2.820	5	0.1	1.68	
17	3.570	5	- 0.2	1.89	
18	4.460	5	0.1	2.11	
19	5.667	5	0.1	2.38	
20	7.160	5	- 0.3	2.68	

Interpreted Model:

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	: 20925	CLIENT	: The BHP Co. Ltd.
	: 100	PROJECT	: YIYINTYI
TX LOOP SIZE	: 300 metres	AREA	: McArthur River
	: 300 metres	JOB No.	: 85-1470
TX CURRENT	: 16.8 amps	SURVEYED BY	: J.P.
TX TURNOFF	: 212 microsecs	DATE	: 4-JUN,1983
FREQUENCY	: 25 Hz	SOUNDING No.	: SYI4



Sounding No.: SYI 4

Date: June 4, 1983

Component: Z

Location: Yiyintyi (centred @ 20925E, on L001N)

A = 300 metres

B = 300 metres

I = 16.8 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	2839.8	.30	67.9
2	.109	2	2718.0	.33	55.1
3	.140	2	2499.3	.37	43.3
4	.177	2	2205.5	.42	35.4
5	.220	2	1863.5	.47	30.1
6	.280	2	1452.5	.53	25.9
7	.355	2	1063.0	.60	23.2
8	.443	2	738.5	.67	21.8
9	.563	2	467.8	.75	21.0
10	.712	2	281.8	.84	20.8
11	.876	2	176.33	.94	20.9
12	1.087	2	99.05	1.04	22.1
13	1.400	2	48.33	1.18	24.1
14	1.772	2/6	22.75/361.40	1.33	27.6/27.7 (27.7)
15	2.210	6	173.20	1.49	31.9
16	2.820	6/9	75.55/583.53	1.68	37.5/38.4 (38.0)
17	3.570	9	242.20	1.89	47.1
18	4.460	9	107.80	2.11	56.3
19	5.667	9	44.65	2.38	68.5
20	7.160	9 in/9 out	17.53/19.38	2.68	87.1/81.5

Interpreted Model:

Sounding No.: SYI 4

Date: June 4, 1983

Component: X

Location: Yiyintyi (centred @ 20925E, on L001N)

A = 300 metres

B = 300 metres

I = 16.8 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	6	-1897	.30	
2	.109	6	-2266	.33	
3	.140	6	-2555	.37	
4	.177	6	-2577	.42	
5	.220	6	-2328	.47	
6	.280	6	-1838	.53	
7	.355	6	-1289	.60	
8	.443	6	- 814	.67	
9	.563	6	- 433	.75	
10	.712	6	- 200	.84	
11	.876	6	- 89.8	.94	
12	1.087	6	- 24.4	1.04	
13	1.400	6	5.1	1.18	
14	1.772	6	11.5	1.33	
15	2.210	6	9.5	1.49	
16	2.820	6	5.5	1.68	
17	3.570	7	2.0	1.89	
18	4.460	6	0.7	2.11	
19	5.667	6	- 0.1	2.38	
20	7.160	6	- 0.2	2.68	

Interpreted Model:

Sounding No.: SYI 4

Date: June 4, 1983

Component: Y

Location: Yiyintyi (centred @ 20925E, on L001N)

A = 300 metres

B = 300 metres

I = 16.8 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

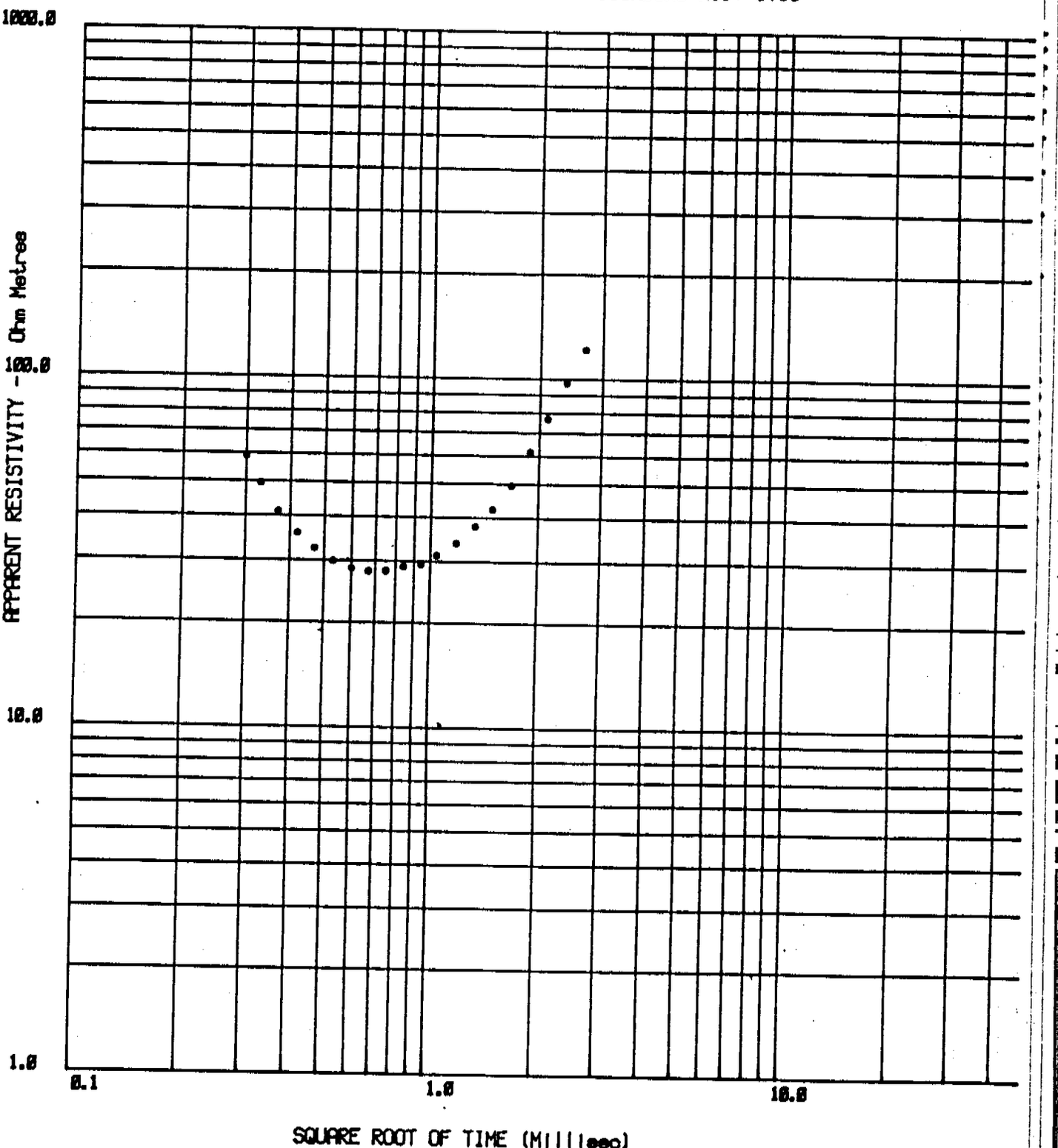
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	6	- 801	.30	
2	.109	6	- 656	.33	
3	.140	6	- 434	.37	
4	.177	6	- 211	.42	
5	.220	6	- 24	.47	
6	.280	6	96	.53	
7	.355	6	136	.60	
8	.443	6	120	.67	
9	.563	6	88	.75	
10	.712	6	55	.84	
11	.876	6	37.2	.94	
12	1.087	6	25.7	1.04	
13	1.400	6	17.0	1.18	
14	1.772	6	11.2	1.33	
15	2.210	6	6.7	1.49	
16	2.820	6	3.3	1.68	
17	3.570	6	1.4	1.89	
18	4.460	6	0.3	2.11	
19	5.667	6	- 0.1	2.38	
20	7.160	6	- 0.3	2.68	

Interpreted Model:

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	: 21825	CLIENT	: The BHP Co. Ltd.
	: 100	PROJECT	: YIYINTYI
TX LOOP SIZE	: 300 metres	AREA	: McArthur River
	: 300 metres	JOB No.	: 85-1470
TX CURRENT	: 16.3 amps	SURVEYED BY	: J.P.
TX TURNOFF	: 212 microsecs	DATE	: 6-JUN,1983
FREQUENCY	: 25 Hz	SOUNDING No.	: SYI5



Sounding No.: SYI 5

Date: June 6, 1983

Component: Z

Location: Yiyintyi (centred @ 21825E on L001N)

A = 300 metres

B = 300 metres

I = 16.3 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	3430.0	.30	58.7
2	.109	2	3095.3	.33	49.5
3	.140	2	2611.3	.37	41.2
4	.177	2	2097.0	.42	35.8
5	.220	2	1618.3	.47	32.4
6	.280	2	1138.5	.53	29.9
7	.355	2	758.8	.60	28.5
8	.443	2	492.0	.67	28.0
9	.563	2	292.0	.75	28.1
10	.712	2	167.5	.84	28.9
11	.876	2	102.80	.94	29.4
12	1.087	2/5	57.28/458.73	1.04	31.2/31.2 (31.2
13	1.400	5	226.53	1.18	33.8
14	1.772	5	110.53	1.33	37.7
15	2.210	5	55.13	1.49	42.2
16	2.820	5/9	24.83/378.93	1.68	48.6/50.2 (49.4
17	3.570	9	156.88	1.89	61.7
18	4.460	9	65.80	2.11	76.7
19	5.667	9 in/9 out	24.50/25.55	2.38	101.5/97.4
20	7.160	9 in/9 out	7.93/10.33	2.68	144.9/121.5

Interpreted Model:

Sounding No.: SYI 5

Date: June 6, 1983

Component: X

Location: Yiyintyi (centred @ 21825E, on L001N)

A = 300 metres

B = 300 metres

I = 16.3 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	300	.30	
2	.109	5	70	.33	
3	.140	5	-106	.37	
4	.177	5	-177	.42	
5	.220	5	-181	.47	
6	.280	5	-152	.53	
7	.355	5	-125	.60	
8	.443	5	-108	.67	
9	.563	5	- 93	.75	
10	.712	5	- 79	.84	
11	.876	5	- 57.6	.94	
12	1.087	5	- 40.8	1.04	
13	1.400	5	- 24.5	1.18	
14	1.772	5	- 13.3	1.33	
15	2.210	5	- 7.1	1.49	
16	2.820	5	- 3.1	1.68	
17	3.570	5	- 1.5	1.89	
18	4.460	5	- 0.8	2.11	
19	5.667	5	- 0.4	2.38	
20	7.160	5	- 0.3	2.68	

Interpreted Model:

Sounding No.: SHI 5

Date: June 6, 1983

Component: Y

Location: Yiyintyi (centred @ 21825E on L001N)

A = 300 metres

B = 300 metres

I = 16.3 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

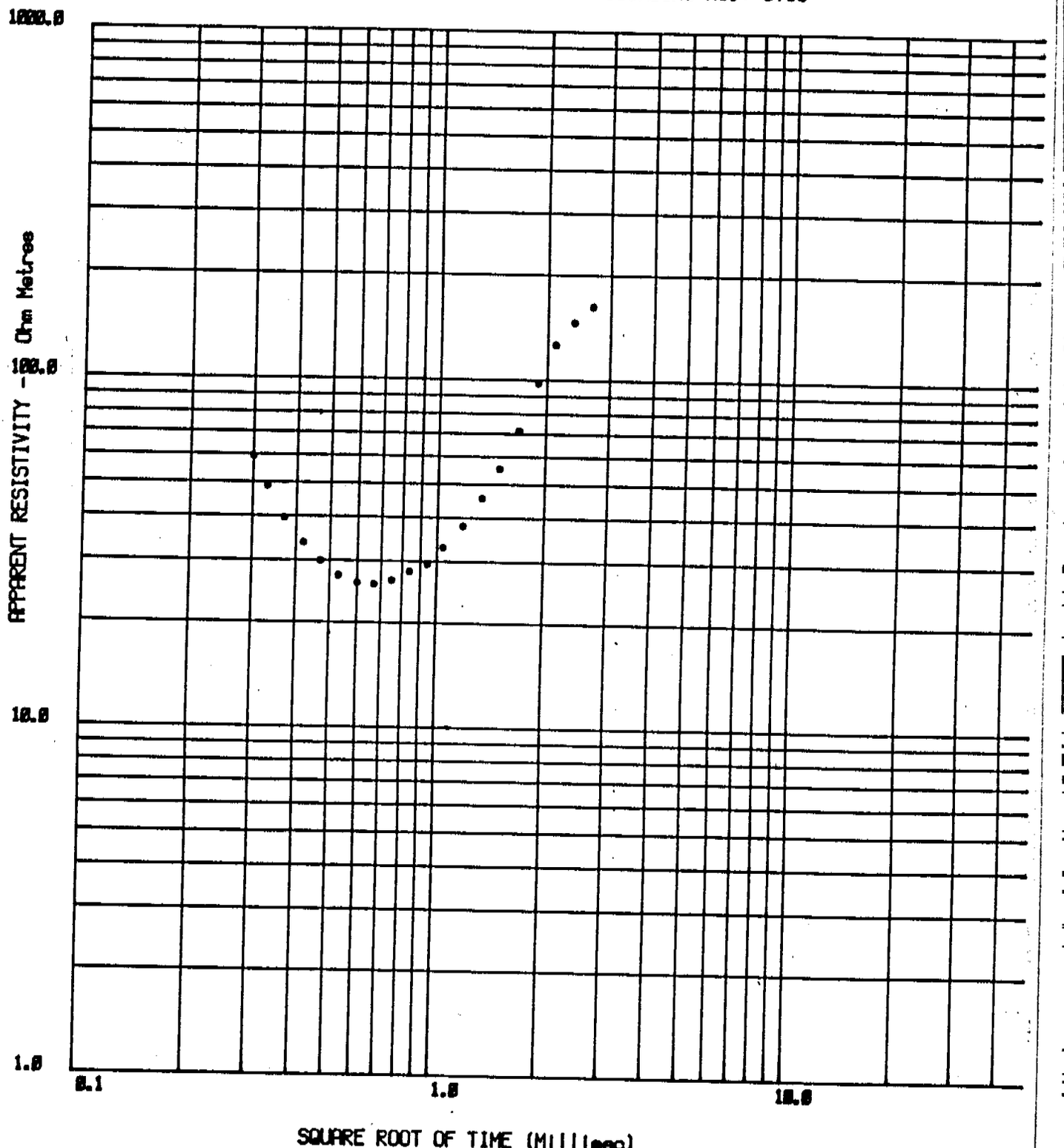
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	1698	.30	
2	.109	5	1700	.33	
3	.140	5	1556	.37	
4	.177	5	1294	.42	
5	.220	5	1004	.47	
6	.280	5	690	.53	
7	.355	5	440	.60	
8	.443	5	264	.67	
9	.563	5	138	.75	
10	.712	5	65	.84	
11	.876	5	31.0	.94	
12	1.087	5	10.2	1.04	
13	1.400	5	0.1	1.18	
14	1.772	5	- 2.6	1.33	
15	2.210	5	- 3.0	1.49	
16	2.820	5	- 2.0	1.68	
17	3.570	5	- 1.3	1.89	
18	4.460	5	- 0.8	2.11	
19	5.667	5	- 0.4	2.38	
20	7.160	5	- 0.3	2.68	

Interpreted Model:

EM-37 SOUNDING

VERTICAL COMPONENT B (Z)

TX LOOP CENTRE	: 22625	CLIENT	: The BHP Co. Ltd.
	: 100	PROJECT	: YIYINTYI
TX LOOP SIZE	: 300 metres	AREA	: McArthur River
	: 300 metres	JOB No.	: 85-1470
TX CURRENT	: 17.3 amps	SURVEYED BY	: J.P.
TX TURNOFF	: 212 microsecs	DATE	: 5-JUN,1983
FREQUENCY	: 25 Hz	SOUNDING No.	: SY16



Sounding No.: SYI 6

Date: June 5, 1983

Component: Z

Location: Yiyintyi (centred @ 22625E, on L001N)

A = 300 metres

B = 300 metres

I = 17.3 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	2	3709.8	.30	59.3
2	.109	2	3461.3	.33	48.8
3	.140	2	3038.0	.37	39.6
4	.177	2	2524.0	.42	33.6
5	.220	2	1987.8	.47	29.9
6	.280	2	1421.3	.53	27.2
7	.355	2	948.0	.60	25.9
8	.443	2	601.5	.67	25.7
9	.563	2	345.8	.75	26.4
10	.712	2	188.8	.84	28.0
11	.876	2	109.95	.94	29.4
12	1.087	2/5	57.05/455.55	1.04	32.8/32.8 (32.8)
13	1.400	5	204.55	1.18	37.8
14	1.772	5	88.88	1.33	45.5
15	2.210	5	39.05	1.49	55.4
16	2.820	5/9	15.03/234.63	1.68	70.8/72.0 (71.4)
17	3.570	9	83.48	1.89	97.9
18	4.460	9 in/9 out	31.45/33.25	2.11	130.7/126.0
19	5.667	9 in/9 out	11.00/14.85	2.38	178.1/145.8
20	7.160	9 in/9 out	3.98/7.13	2.68	238.9/162.0

Interpreted Model:

Sounding No.: SYI 6

Date: June 5, 1983

Component: X

Location: Yiyintyi (centred @ 22625E on L001N)

A = 300 metres

B = 300 metres

I = 17.3 Amps

T/o = 212 micro sec.

Base Frequency = 25 Hz

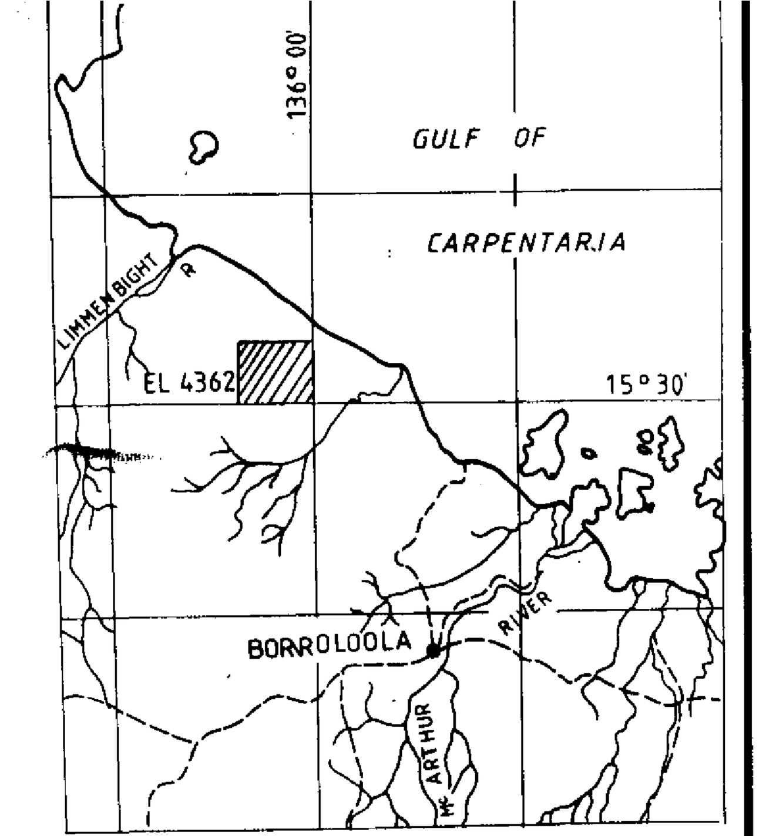
CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	620	.30	
2	.109	5	598	.33	
3	.140	5	533	.37	
4	.177	5	410	.42	
5	.220	5	260	.47	
6	.280	5	107	.53	
7	.355	5	0	.60	
8	.443	5	- 47	.67	
9	.563	5	- 53	.75	
10	.712	5	- 40	.84	
11	.876	5	- 26.6	.94	
12	1.087	5	- 15.0	1.04	
13	1.400	5	- 6.8	1.18	
14	1.772	5	- 3.2	1.33	
15	2.210	5	- 1.4	1.49	
16	2.820	5	- 0.7	1.68	
17	3.570	5	- 0.4	1.89	
18	4.460	5	- 0.3	2.11	
19	5.667	5	- 0.2	2.38	
20	7.160	5	- 0.2	2.68	

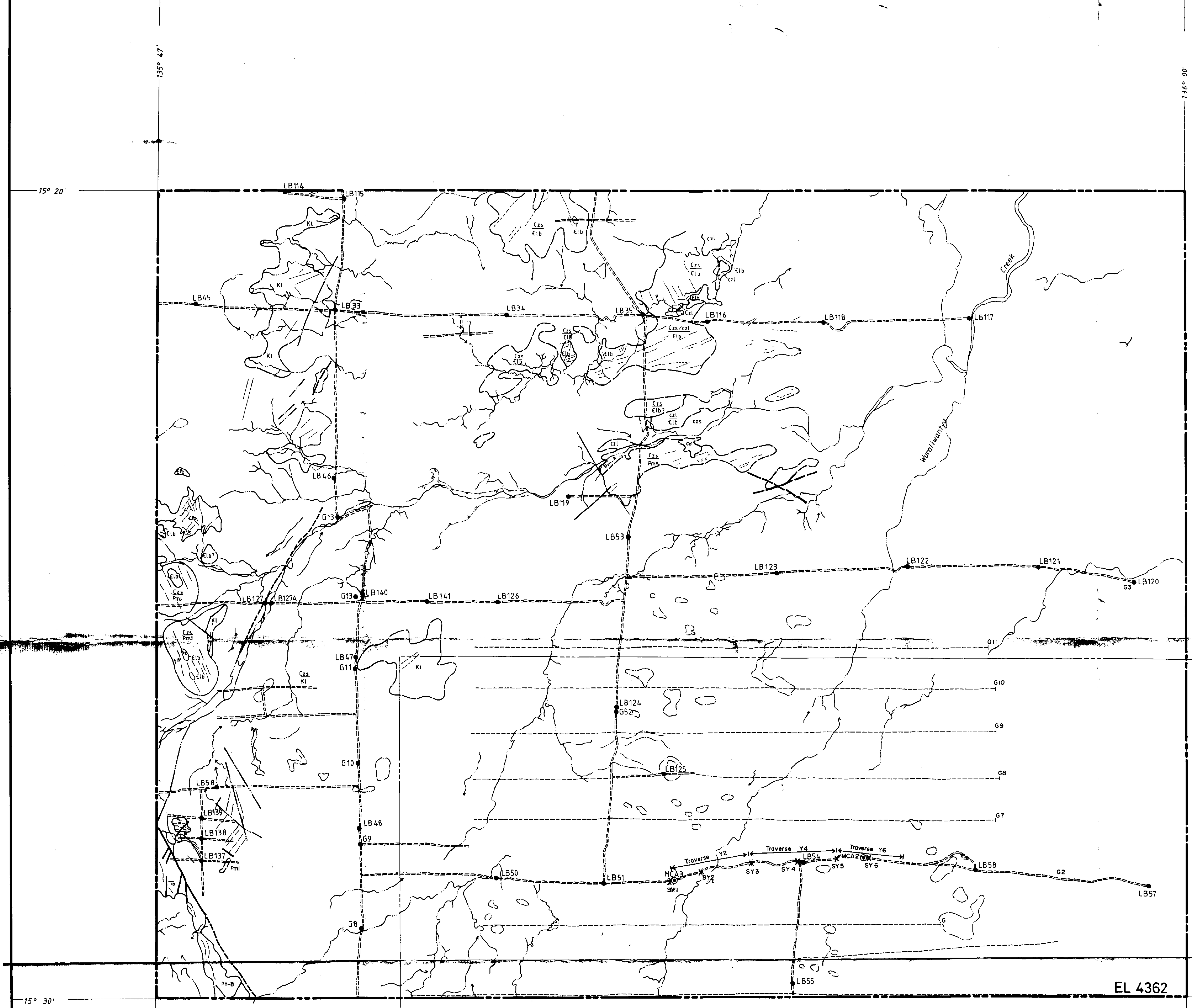
Interpreted Model:

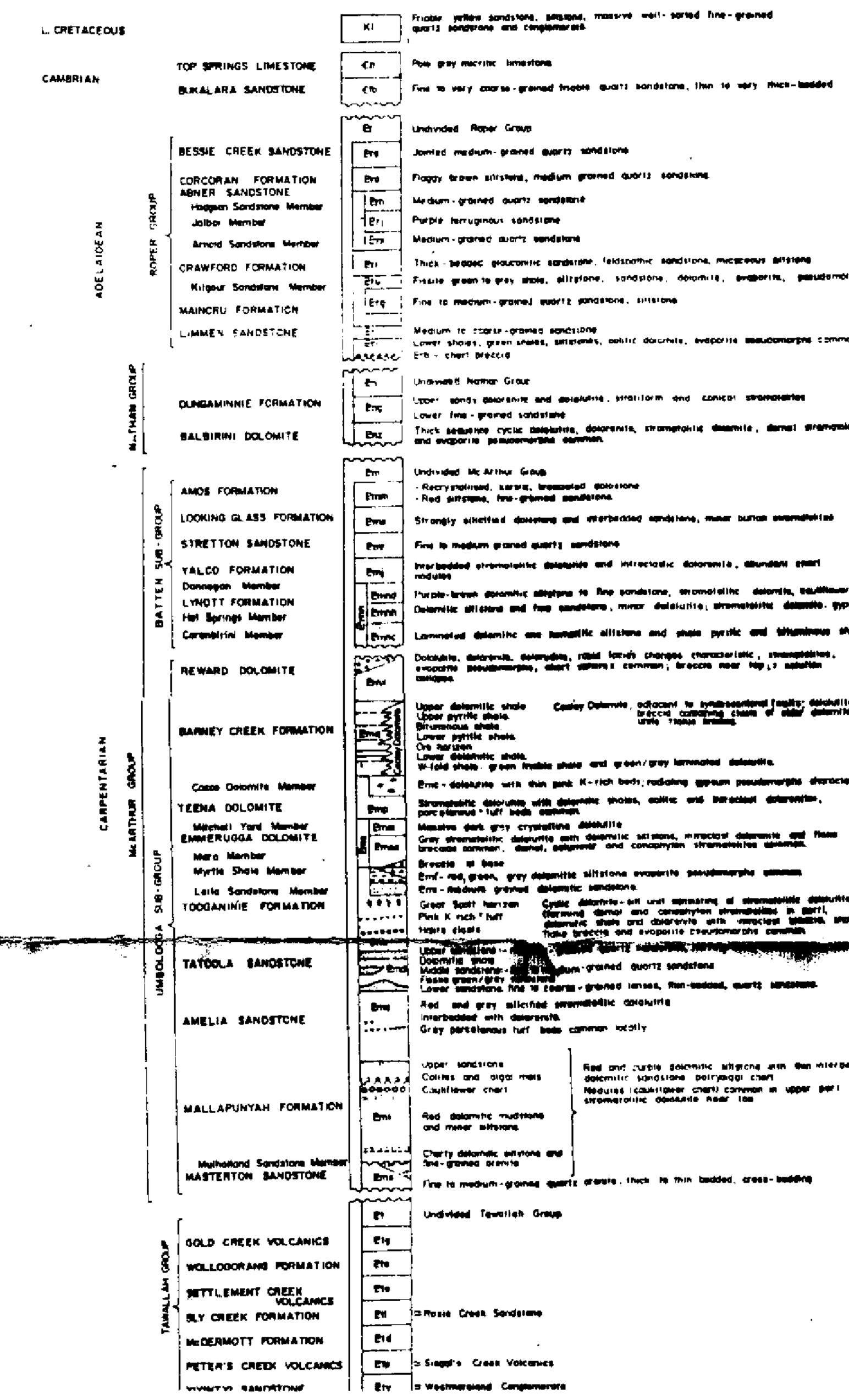
Sounding No.:	SYI 6	A	=	300	metres
Date:	June 5, 1983	B	=	300	metres
Component:	Y	I	=	17.3	Amps
Location:	Yiyintyi (centred @ 22625E, on L001N)	T/o	=	212	micro sec.
		Base Frequency	=	25 Hz	

CHANNEL	TIME (msec)	GAIN	VALUE	$TIME^{\frac{1}{2}}$	Apparent Resistivity
1	.0885	5	671	.30	
2	.109	5	338	.33	
3	.140	5	- 54	.37	
4	.177	5	-352	.42	
5	.220	5	-532	.47	
6	.280	5	-581	.53	
7	.355	5	-528	.60	
8	.443	5	-414	.67	
9	.563	5	-286	.75	
10	.712	5	-185	.84	
11	.876	5	-123.6	.94	
12	1.087	5	- 74.7	1.04	
13	1.400	5	- 41.3	1.18	
14	1.772	5	- 22.4	1.33	
15	2.210	5	- 11.7	1.49	
16	2.820	5	- 5.2	1.68	
17	3.570	5	- 2.0	1.89	
18	4.460	5	- 0.8	2.11	
19	5.667	5	- 0.3	2.38	
20	7.160	5	- 0.2	2.68	

Interpreted Model:







Geological boundary	● LB54 1980 - 81 Rotary drill hole.
Bedding trend	◎ MCA 2 1982 Diamond drill hole
Fracture	G6 Gravity Survey line
Fault	x SY1 EM-37 Sounding loop location
Photogeological lineament	traverse Y2 EM-37 profiling traverse location
Dip and strike	1983 Aeromagnetic survey
Photogeological interpreted dip less than 10°	
" " " 10 - 35°	
" " " more than 35°	
Edge of gentle escarpment.	
Synclinal fold axis	
Anticlinal fold axis	
Creek	
Swamp	

NORTHERN TERRITORY
GEOLOGICAL SURVEY

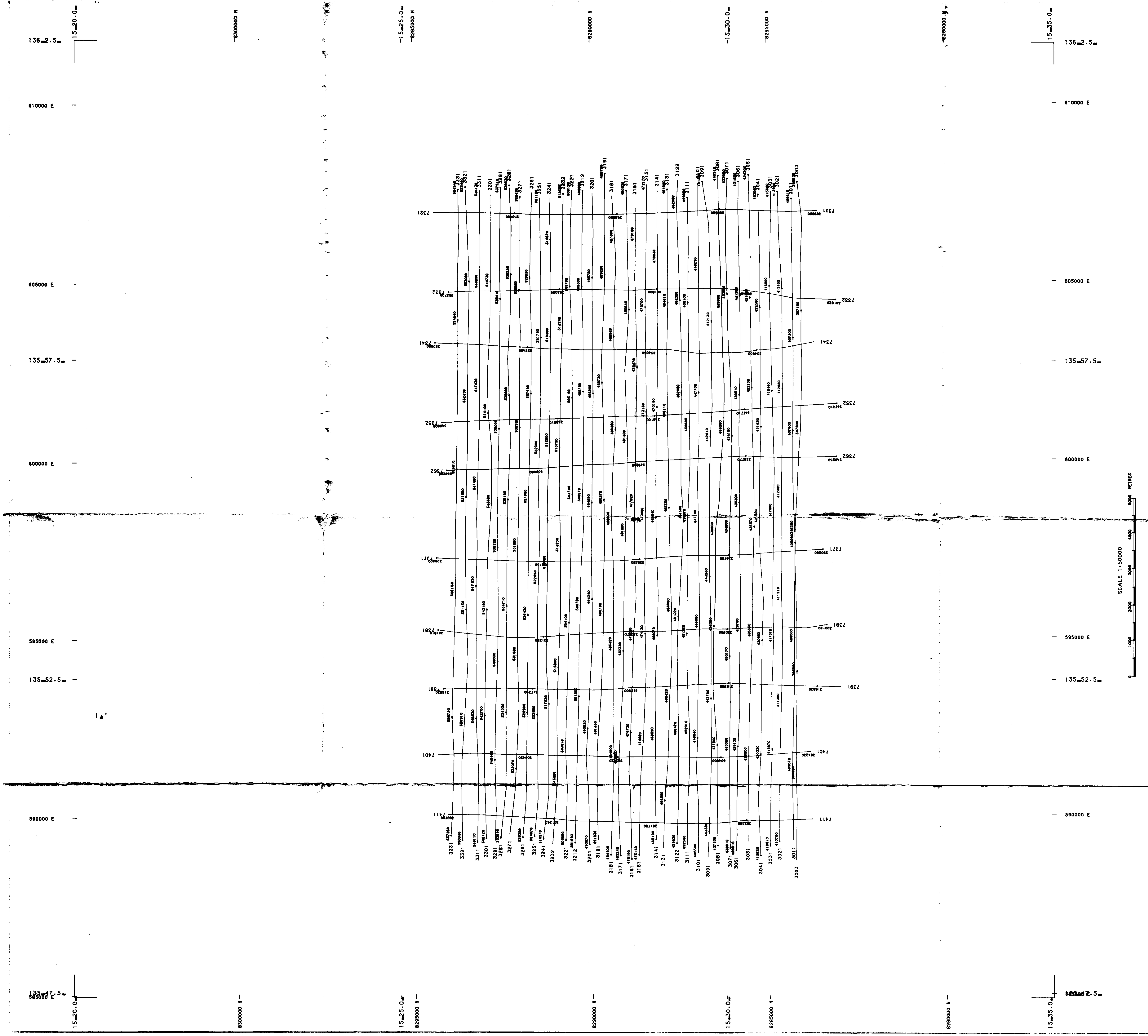
SCALE 1:50,000

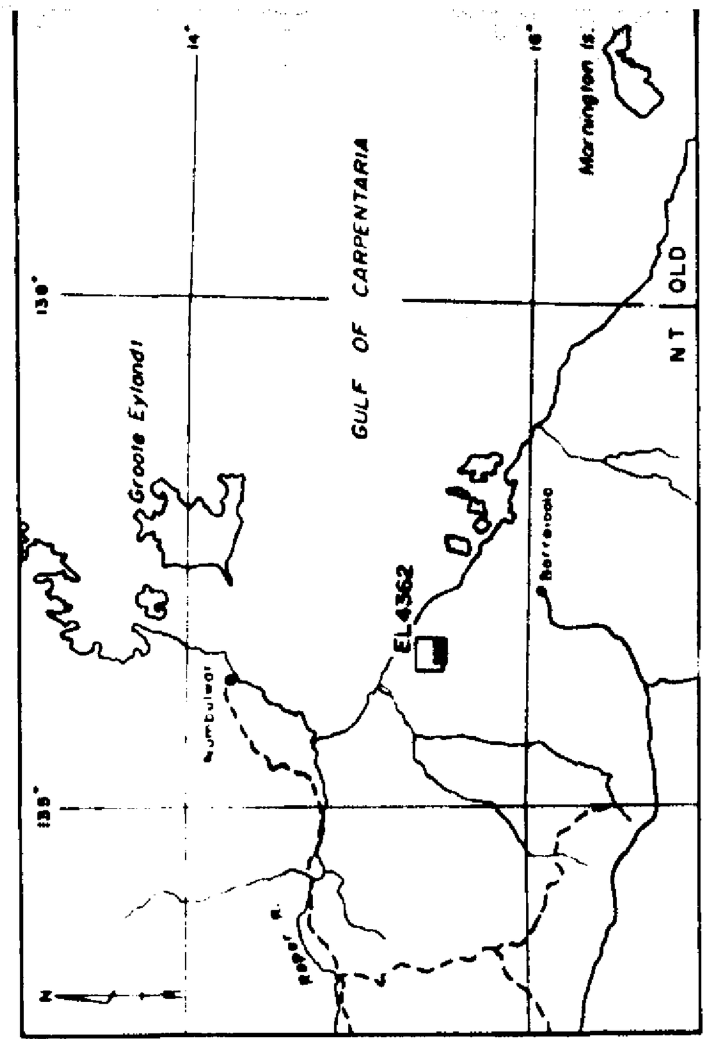
0 1 2 3 4km

CR84/240

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL 4362 YIYINTYI MT YOUNG N.T.		
GEOLOGY		
Drawn:	Date: 27·9·83	Centre: Darwin
Traced: Hilary	Project No: B64	Drawing No: A1-121
Checked:		

Revisions: 10·10·84





DETAILS OF SURVEY

FLOWN BY : GEOTERREX
DATE : MAY 1983
1:250.000 SHEET : MT YOUNG SD53-15
TENEMENT : EL 2383
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : CESIUM VAPOUR

COMPTON SCATTERING RATIO ALPHA : 0.29
COMPTON SCATTERING RATIO BETA : 0.43
COMPTON SCATTERING RATIO GAMMA : 0.72

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION : CAMBERWELL

: DIURNAL CORRECTION - BASE VALUE IS 49068 GAMMAS	30-Sep-83
IGRF REMOVED	30-Sep-83
: ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	30-Sep-83
: 2ND ORDER LEVELLED - LINEARLY SMOOTHING OUT MISCLOSURES	"
5000 nT ADDED TO DATA	30-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	30-Nov-83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL : 1.0 nT
GRIDDING PARAMETERS:
MESH SIZE 100m x 100m
SCAN DISTANCE 700 m
NO EXTRAPOLATION USED

NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR84/240

THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

E.L.4362 SOUTH YIYINTYI N.T.

FLIGHT LINES

DRAWN: D.G.Price	DATE: 7-12-83	CENTRE: ADELAIDE
TRACED: A.R.Veale	PROJECT NO: 8-818-7	DRAWING NO: A1-672
CHECKED:		

E.L.4362

135°47'.5 E 590000 E 135°52.5 E 595000 E 600000 E 135°57.5 E 605000 E 610000 E 136°2.5 E

15°20.0'

8300000 N

15°25.0'

8295000 N

8290000 N

15°30.0'

8285000 N

8280000 N

15°35.0'

SCALE 1:50000

0 1000 2000 3000 4000 5000 METRES

THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

E.L.4362 SOUTH YIVINTYI N.T.

TOTAL MAGNETIC INTENSITY CONTOURS

1

NORTHERN TERRITORY
GEOLOGICAL SURVEY

N

CR84/240

DRAWN: D.G. Price | DATE: 7-12-83 | CENTRE: ADELAIDE
TRACED: A.R. Vedie | PROJECT NO: 8-818-6 | DRAWING NO: A1-671
CHECKED:

DETAILS OF SURVEY

FLOWN BY : GEOTERREX
DATE : MAY 1983
1:250,000 SHEET : MT YOUNG SD53-15
TENEMENT : EL 2383
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : CESIUM VAPOUR

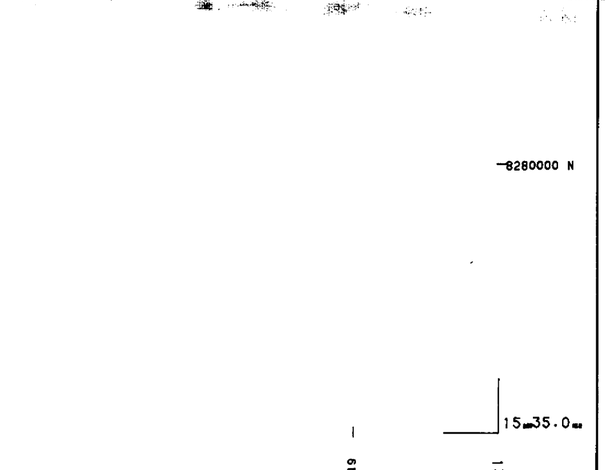
COMPTON SCATTERING RATIO ALPHA : 0.29
COMPTON SCATTERING RATIO BETA : 0.43
COMPTON SCATTERING RATIO GAMMA : 0.72

DETAILS OF PROCESSING

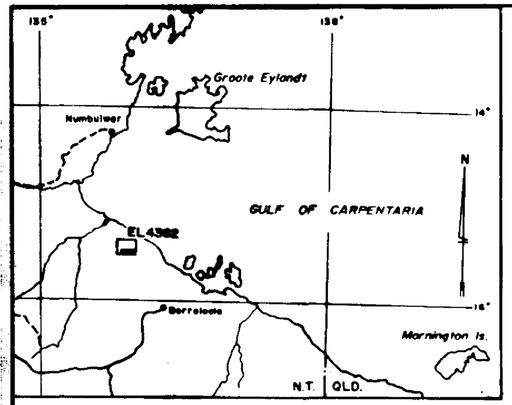
PROCESSED BY BHP EXPLORATION : CAMBERWELL

: DIURNAL CORRECTION - BASE VALUE IS 49068 GAMMAS	30-Sep-83
IGRF REMOVED	30-Sep-83
: ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	30-Sep-83
: 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES	"
5000 nT ADDED TO DATA	30-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	30-Nov-83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 1.0 nT
GRIDDING PARAMETERS:
MESH SIZE 100m x 100m
SCAN DISTANCE 700 m
NO EXTRAPOLATION USED



LOCATION MAP



LOCATION MAP

0 100 200 300km

LEGEND

- 1 milligal contour
- 2 milligal contour
- Gravity high
- Gravity low
- Traverse
- Track

NOTES

Readings taken every 100 metres using a Lacoste & Romberg and a Sharpe gravitimeter.

Optically levelled

Drift corrected

Bouguer corrected, $\rho = 2{\cdot}2$

Tied to BMR Australia grid

Tie-in accurate to ± 1 milligal

Traverses G1, G2 and G3 were surveyed in 1981.

Traverses G6 to G11 were surveyed in 1983.

135°50' 90 95 135°55' 00 05 136°00'

15°25'

15°30'

8285000mN

G1 G2 G3 G6 G7 G8 G9 G10 G11

E.L.4362

N

135°50' 990000mE 95 135°55' 00 05 136°00'

Scale 1:50,000

0 1 2 3 4 5 kilometres

NORTHERN TERRITORY GEOLOGICAL SURVEY

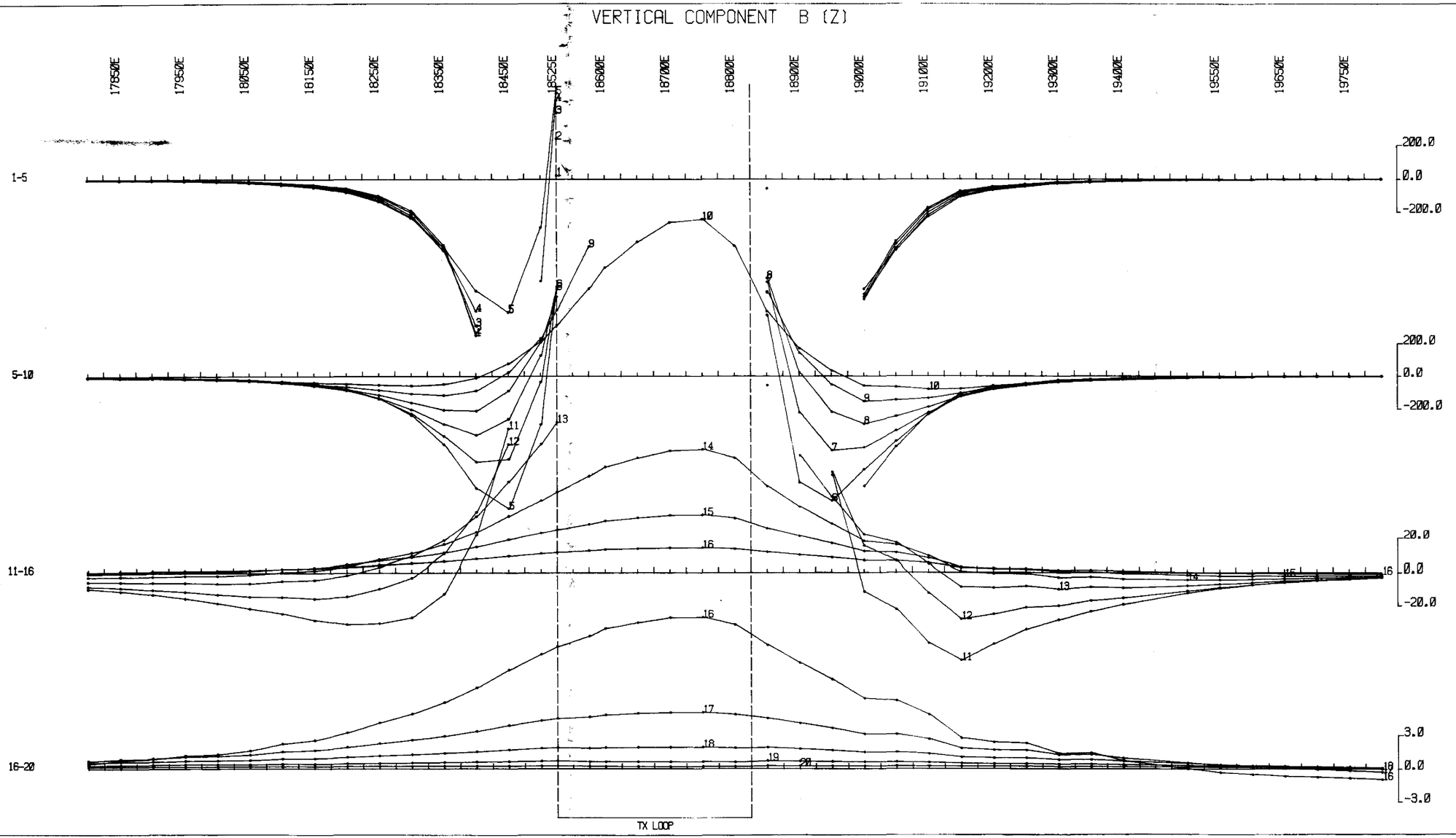
CR84/240

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.4362 YIYINTYI, N.T.

CONTOURED GRAVITY TRAVERSES

Revisions			
Drawn: K.A. Forward	Date: 8-2-84	Centre: ADELAIDE	
Traced: A.R. Veale	Project No: 18-10	Drawing No: A2-407	
Checked:			



EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

NORTHERN TERRITORY GEOLOGICAL SURVEY

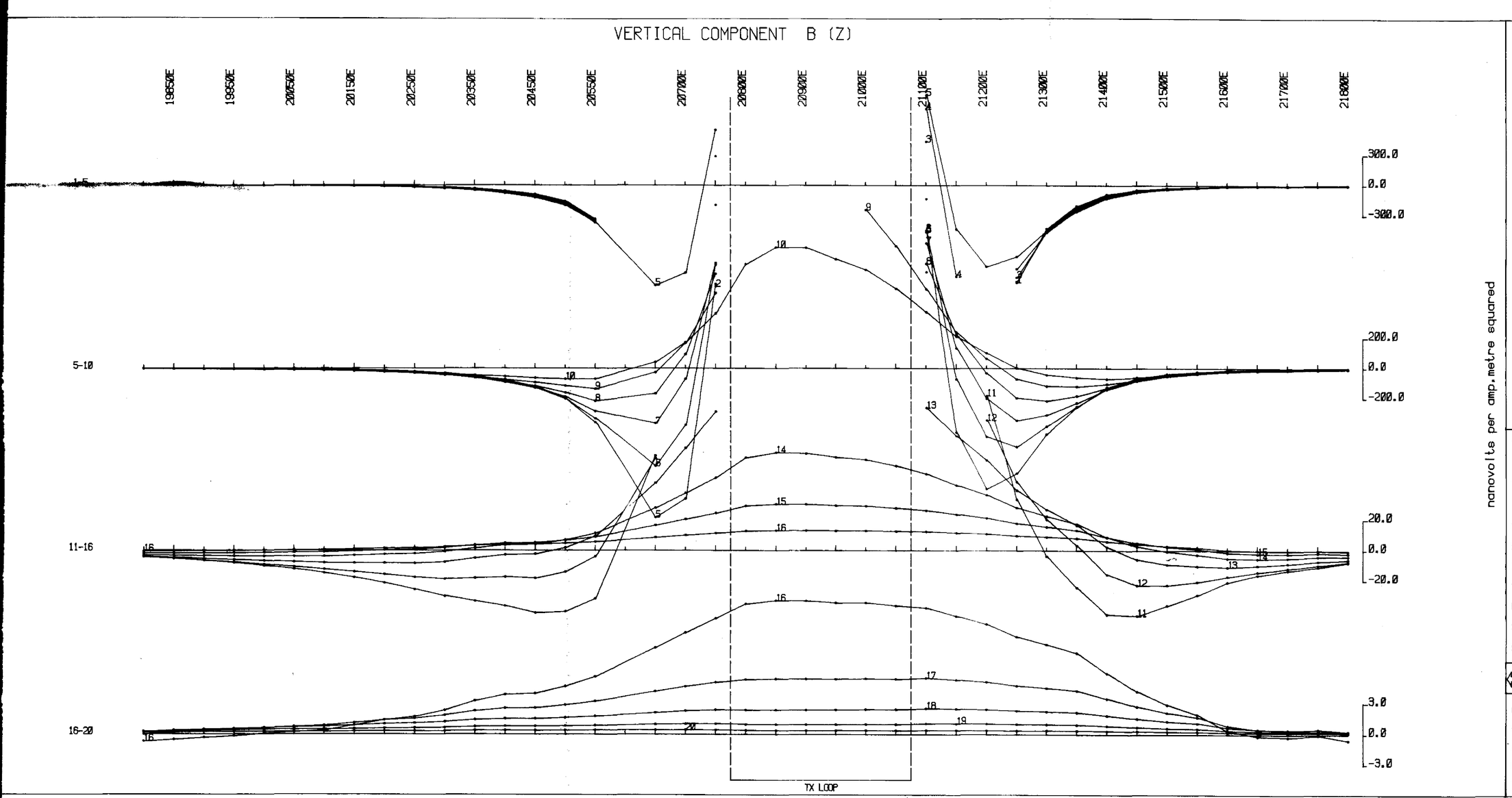
CR84/240

TX LOOP SIDES	: 250S	18525
	: 50N	18875
TX LOOP SIZE	: 300m X 300m	
TX TURN OFF TIME	: 200 microsecs	
CURRENT	: 17.8 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P.	
DATE	: 04-JUN-1988	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1470

CLIENT	: The BHP Co. Ltd.	
PROJECT	: YIYINTYI	
AREA	: McArthur River	
LINE	: 1N	Z
TX LOOP	: Y2	



EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR84/240

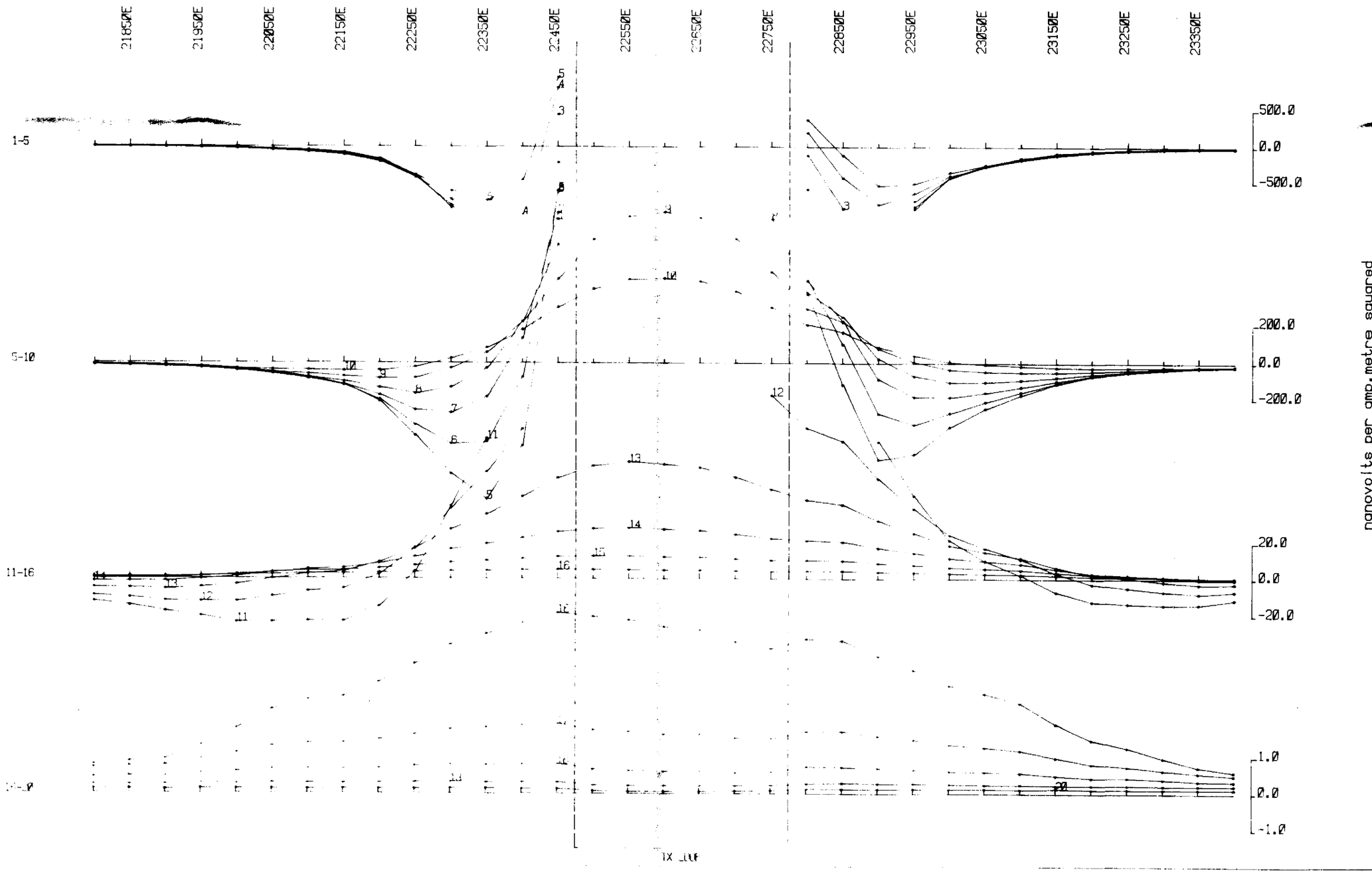
TX LOOP SIDES	:	250S 20775E
	:	50N 21075E
TX LOOP SIZE	:	300m X 300m
TX TURN OFF TIME	:	212 microsecs
CURRENT	:	16.8 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1:5000
SURVEYED BY	:	J.P.
DATE	:	05-JUN-1983

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1478

CLIENT	:	The BHP Co. Ltd.
PROJECT	:	YIYINTYI
AREA	:	McArthur River
LINE	:	1N
TX LOOP	:	Y4

VERTICAL COMPONENT B (Z)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

NORTHERN TERRITORY GEOLOGICAL SURVEY

CR84/240

TX LOOP SIDES	:	250S 22475E
	:	50N 22775E
TX LOOP SIZE	:	300m X 300m
TX TURN OFF TIME	:	212 microsecs
CURRENT	:	17.3 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1:5000
SURVEYED BY	:	J.P.
DATE	:	05-JUN-1983

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1470

CLIENT	:	The BHP Co. Ltd.
PROJECT	:	YIYINTYI
AREA	:	McArthur River
LINE	:	1N Z
TX LOOP	:	Y6