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A RESISTIVITY SURVEY AT PANDURRA, NEAR PORT AUGUSTA, SOUTH AUSTRALIA, FOR PACMINEX PTY. LTD.

MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

14 Mallawa Street, Kawana Waters,
Queensland. 4557
AUSTRALIA

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REPORT No: 265 PART A - Text

A RESISTIVITY SURVEY AT

PANDURRA, PORT AUGUSTA, SOUTH AUSTRALIA,

FOR PACMINEX PTY. LTD.

By: R. B. Murdoch, B.A. (Earth Sciences),
Murdoch Geophysics (Australia) P/L,
21 Parker Street,
Maroochydore Qld. 4558.

Tel: (071) 43 3178

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Conclusions

A resistivity survey has been conducted at Pandurra, near Port Augusta, South Australia. The aim of the survey was to define a fluvial channel incised into Precambrian quartzites, volcanics and sandstones, (termed 'basement' in the report). The fluvialite sediments comprised conglomeratic sandstones and shales of a younger Precambrian age, (termed 'sediments' in the report). A secondary aim of the survey was to try to define areas within the channel, where conglomerates dominate the fluvial section, and areas where shales dominate.

The survey comprised soundings at intervals of 500 metres on the 6 traverses marked on Plate 9. The soundings could be divided into 4 major and 2 minor groups on the basis of curve shape. The grouping was largely dependent upon resistivity changes within or near the weathered layer. Such variations are very characteristic in mapping major shale/conglomerate boundaries and in defining near surface basement and 'lateritic zones'. The term 'lateritic zone' has been used to describe very resistive near-surface layers (e.g. laterites, calcrete, silicified zones etc.).

Some caution is required in using depth to basement derived for type A3-A curves because of equivalence and soundings plotted on Plate 15 because of poor basement inflections. Other possible alternative depth to basement interpretations are shown on Plate 8 by broken lines.

The interpreted channel anomaly is shown on Plate 10. It runs roughly south to north, diverging slightly to the east between lines 1 and 0. It may widen slightly at both ends. Interpreted depths to basement within the channel are in the order of 60-70 metres.

Interpreted faulting, the extent of the 'lateritic zone' and areas of thick shale are outlined on Plate 10. There appears to be a major facies change within the channel near line 0. 5 and possibly 8 drillsites have been recommended within the channel anomaly, in areas where thicker conglomerates appear to occur.

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Introduction

Murdoch Geophysics (Australia) Pty. Ltd. have undertaken a resistivity survey at "Pandurra", a property situated approximately 40 kilometres west of Port Augusta in South Australia. The survey was carried out by Mr. R. Timmins, Geophysicist, assisted by Mr. P. Harrop and C. Johnson. It commenced on the 21st February and was completed on the 12th March 1977. It was conducted in conjunction with a short 3-day survey at Mount Gunson, which is described separately in Report 266.

The basic objectives of the Pandurra survey were to map depth to quartzite or volcanic basement on the 6 lines surveyed. A particular aim was to identify the lateral position of any channels or depressions incised into the basement rock. A secondary aim was to attempt to delineate between occurrences of fluvial conglomerates and shales within the fluviatile section.

Field procedures

The resistivity survey was conducted along the 6 traverses shown on Plate 9. Each of the traverses surveyed were pre-pegged, by Pecminex personnel, at intervals of 200 metres.

The survey procedure comprised Schlumberger Array vertical electrical soundings at regular intervals of ½ kilometre. All the soundings were expanded perpendicular to the traverse line, to a logarithmic formula. An average of 21 individual readings being taken on each sounding expansion, for various half current electrode separations (r) between 5 and 250 metres. Some soundings were expanded out as far as 400 metres and others, where basement appeared shallow, were terminated at shorter separations.

A short multi-separation profile was conducted between 500W and 1000W on Line 1 to locate the position of a postulated fault. Two different r separations were used for the profiling (viz. r = 40 and 80 metres). The reading interval (d) was 50 metres and the half potential electrode separation (m) was 5 metres.

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Presentation of Results

1. Soundings graphs (Plates 11-32) - The sounding results were intially plotted on bilogarithmic graphs of apparent resistivity measured in ohm metres (vertical axis) against r in metres (horizontal axis). For the purpose of presentation in this report, the soundings have been grouped into a number of types having similar properties.

2. Pseudo-sections (Plates 1-6) - The sounding data has also been plotted in the two-dimensional pseudo-section form. The pseudo-section data has been contoured on a logarithmic scale to allow a qualitative interpretation.

3. Profiles - Profiles of the short traverse conducted on Line 1 are presented on Plate 7.

4. Interpreted Geological Sections - Interpreted geological sections for each of the lines have been plotted on Plate 8.

5. Contour Plans - Two contour plans accompany the report.

a) Plate 9 - A contour plan of apparent resistivity at r = 65 metres. This plan allows the survey area to be sub-divided into a number of different geo-electric zones.

b) Plate 10 - is a contour plan of depth to basement interpreted from the soundings, guided by existing drill data.

Sounding Interpretation

(a) Qualitative interpretation

The soundings at Pandurra are generally resolvable into either 3 or 4 layer cases. Some 2 layer cases also occur. In general the 3 layer soundings are similar to the 4 layer cases, but with either layer No. 2/layer No. 3 or layer 3/layer 4 being unresolvable.

On the basis of curve shape, the soundings can be grouped as follows:

1) The initial grouping for 4 layer curves is on the basis of whether or not, the first 3 layers form a maxima, minima, double

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ascending or double descending graph.

Type A - maxima
Type B - double ascending
Type C - minima
Type D - double descending

3 layer curves whose 3rd and 4th layers are unresolvable are grouped initially on the same basis as the 4 layer cases.

3 layer curves where layer No. 2 and layer No. 3 are unresolvable, either grouped as follows:

Type A - combined second/third layer is more resistive than first.

Type C - combined second/third layer is more conductive than first.

2) The second grouping for 4 layer curves is on the basis of whether or not the 2nd, 3rd and 4th layer form a maxima, minima or double ascending or double descending curve.

Type 1 - maxima
2 - double ascending
3 - minima
4 - double descending

The two classification groups listed above are combined to classify each curve. For example, in the case of a curve whose first 3 layers form a maxima and the last three form a minima the classification for that curve is Type A.3.

3layer cases whose second/third layers are unresolvable, are grouped depending on their fourth layer is more conductive or more resistive than their 3rd layer.

Type 1 more resistive
Type 3 more conductive

3 layer cases whose third/fourth layers are unresolvable are grouped dependent on whether or not the combined third/fourth layer is more conductive or more resistive than the second layer.

Type 1 more resistive
Type 3 more conductive

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With one exception the two layer cases are classified as type C1 as layer 2 is more resistive than layer 1. At Line 3 1000E the r expansion was insufficient to penetrate a near-surface 'lateritic layer'. This sounding has been grouped as Type A3.

(b) Quantitative Interpretation

The soundings have been quantitatively interpreted as follows:

TABLE 1 - SOUNDING INTERPRETATION

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possibly Geology
Line 1 00W	1	9	0 - 3	Surface layer
Type C2	2	1.8	3 - 13	Weathered zone
	3	3.8	13 - 32	"Shale"
	4	23	32+	Basement
500W	1	1.5	0 - 4.5	Surface layer
Type A1	2	2.6	4.5 - 11	Weathered zone
	3/4	13.3	11+	Basement
1000W	1	15	0 - 3	Surface layer
Type C2-8	2	4	3 - 9	Weathered zone
	3	7.5	9 - 116	'Conductive' basement (sediments?)
	4	37.5	116+	Basement
1500W	1	39	0 - 3	Surface layer
Type D3	2	9.5	3 - 41	"Sediments"
	3	4.75	41 - 100	'Conductive' basement
	4	40	100+	Basement
2000W	1	10	0 - 3	Surface layer
Type C1	2/3	5	3 - 63	Sediments
	4	32.5	63+	Basement
2500W	1	6	0 - 6	Surface layer
Type A3	2	12	6 - 38	Sediments
	3	lower	38 - 45	Sediments (possibly weathered basement)
	4	21	45+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 1 2750W	1	12	0 - 12	Weathered layer
Type C1	2/3	7.8	12 - 68	Sediments
	4	16	68+	Basement
3000W	1	5.7	0 - 14	Weathered layer
Type A1	2/3	8	14 - approx. 65	Sediments
	4	approx. 30	65+ approx.	Basement

Basement contrast poor (depth to basement could be as great as 90 metres).

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 1 3500W	1	4.6	0 - 2.5	Surface layer
Type C2	2	3.7	2.5 - 20	Weathered layer
	3	10.8	20 - 71	Sediments
	4	29.4	71+	Basement
4000W	1	5	0 - 4.2	Surface layer
Type B1	2	8.7	4.2 - 20	Weathered layer
	3	22.5	20 - 46	Basement?
	4	13	46+	Basement
4500W	1	7	0 - 7.5	Surface layer
Type A3	2	12	7.5 - 35	Sediments
	3	2	35 - 56	Sediments or 'conductive' basement
	4	32	56+	Basement
5000W	1	7	0 - 3	Surface layer
Type A3	2	280	3 - 7	Lateritic layer
	3	12.5	7 - 23	Sediments
	4	30 - 25	23+	Basement
Line 2 00W	1	3.2	0 - 4	Surface layer
Type C2	2	1,3	4 - 26	Weathered zone
	3	3.9	26 - 48	Sediments
	4	42	48+	Basement

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TABLE 1 - (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 2 500W	1/2	8 - 12	0 - 12	Weathered layer
Type C1	3/4	42	12+	Basement
1000W	1	13.5	0 - 4	Surface layer
Type C2	2	4.1	4 - 18	Weathered zone
	3(a)	8	18 - 30	Sediments
	3(b)	5.5	30 - 65	Conductive Basement
	4	17.5	65+	Basement
1500W	1	Very high	0 - (-5)	Surface layer
Type C2	2	approx. 1	(-5) - 20	Weathered zone
	3	8	20 - 35 approx.	Sediments
	4	21	35+ approx.	Basement
	Basement contrast poor.			
2000W	1	4	0 - 3	Surface layer
Type C2	2	2.6	3 - 20	Weathered zone
	3	4.7	20 - 50	Sediments
	4	12	50 - 74	Basement
	5	5	74+	Conductive basement
	5th layer is ignored in classifying this curve.			
2250W	1	2.5	0 - 17	Weathered zone
Type A1	2/3	6.2	17 - 47	Sediments
	4	17.6	47+	Basement
2500W	1	15	0 - 5	Surface layer
Type C1	2/3	6.7	5 - 67.5	Sediments
	4	21	67.5+	Basement
2750W	1	13	0 - 5	Surface layer
Type C2	2	5.2	5 - 20	Weathered zone
	3	12	20 - 60	Sediments
	4	22.5	60+	Basement

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TABLE 1 - (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 2 3000W	1-3	10	0 - 70	Sediments
Type C1	4	22	70+	Basement
3500W	1	16	0 - 6	Surface layer
Type A3	2(a)	40	6 - 13	Lateritic zone
	2(b)	2.6	13 - 16.5	Weathered zone
	3	11	16.5 - 65	Sediments
	4(a)	12	65 - 103	Conductive Basement
	4(b)	29	103+	Basement
4000W	1	7	0 - 6	Surface layer
Type A3	2	21	6 - 18	'Lateritic' and weathered zone
	3	5.6	18 - 36	Sediments?
	4	22.5	36+	Basement
4500W	1(a)	35	0 - (-5)	Surface layer
Type A3	1(b)	23	(-5) - 9approx.	Weathered layer
	2	113	9 - 14	Basement ?
	3/4	34	14+	Basement
5000W	1	10 assumed	0 - 4 assumed	Surface
Type A3	2	50	4 - 20	Lateritic layer
	3	4.8	20 - 26	Sediments
	4	30	26+	Basement
5500W	1	3	0 - less than 10	Sediments
Type A1	2	18.6	less than 10+	Basement
Line 3 00E	1	17.5	0 - 2	Surface layer
Type C2-B	2/3	9	2 - 50	"Conductive basement" (sandstone)
	4	33	50+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 500E	1	10	0 - 4	Surface layer
Type C2-B	2	4	4 - 9	Weathered layer
	3	10	9 - 30	"Conductive basement" (sandstone)
	4	20	30+	Basement
1000E	1	less than 8	0 - (-5)	Surface layer
Type A3	2	Very high	5+	'Lateritic layer'
	Expansion not sufficient to penetrate this layer.			
1500E	1	4	0 - 2	Surface layer
Type A3	2	160	2 - 6	'Lateritic' zone
	3	4	6 - 30	Sediments or conductive basement
	4	35	30+	Basement
2000E	1	less than 9	0 - 5	Surface layer
Type A3	2	80	5 - 8	Lateritic or silicified zone
	3/4	24	8+	Basement
2500E	1	8.5	0 - 6.5	Surface layer
Type A3	2	127	6.5 - 10	"Silicified basement"
	3	2.7	10 - 14	Weathered layer
	4	13	14+	Basement
3100E	1	9.5	0 - 6.5	Surface layer
Type C2	2	2.8	6.5 - 10	Weathered layer
	3	6.2	10 - 60	Sediments
	4	25	60+	Basement
3500E	1	7	0 - 27	Sediments
Type A1	2/3	10.5	27 - 73	Sediments
	4	40	73+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 3 3750E	1	7.5	0 - 14	Weathered layer
Type C2	2	4.9	14 - 32	Sediments
	3	12	32 - 64	Sediments
	4	20	64+	Basement
4000E	1	10.7	0 - 7	Surface
Type C1	2/3	7	7 - 55	Sediments
	4	27	55+	Basement
4250E	1	3	0 - 7	Surface
Type C2	2	1.5	7 - 15	Weathered layer
	3	8.2	15 - 52	Sediments
	4	50	52+	Basement
4400E	1	18	0 - 2	Surface
Type C2	2	0.9	2 - 15	Weathered layer
	3	8.3	15 - 49	Sediments
	4	32.5	49+	Basement
5000E	1	7.5	0 - 5	Surface
Type C2	2	1.9	5 - 44	Sediments
	3	7.5	37 - 45	Sediments
	4	25	45+	Basement
5500E	1	9	0 - 4	Surface
Type A3	2	10	4 - 15	Sediments?
	3	less than 5	15 - 63	Sediments or basement (conductive)
	4	35	63+	Basement
6000E	1	5	0 - 3	Surface
Type A3	2	85	3 - 10	'Silicified' layer
	3	7.5	10 - 126	Basement ?
	4	28	126+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 3 6500E	1-3	1.7	0 - 19	Weathered layer
Type C1	4	34	19+	Basement
7000E	1	1.5	0 - 9	Weathered layer
Type C1	2	2.8	9 - 63	Sediments
	3	40	63+	Basement
7500E	1	10	0 - 1.5	Surface
Type C2	2	1.2	1.5 - 20	Weathered layer
	3	6	20 - 82	Sediments
	4	40	82+	Basement
Line 4 00W	1	2.7	0 - 3	Surface
Type C2	2	1.1	3 - 20	Weathered layer
	3	4,2	20 - 38	Sediments
	4	36	38+	Basement
500W	1	11	0 - 3	Surface
Type C2	2	2.75	3 - 25	Weathered layer
	3	4.9	25 - 77	Sediments or conductive basement
	4	16	77+	Basement
1000W	1	10	0 - 3	Surface
Type A3	2	59	3 - 8	Lateritic layer
	3	2.1	8 - 18	Sediments
	4	12	18+	Basement
1500W	1	17	0 - 3	Surface
Type C1	2/3	3.2	3 - 52	Sediments
	4	16	52+	Basement
2000W	1	11	0 - 2.6	Surface
Type C1	2/3	2.5	2.6 - 56	Sediments
	4	36	56+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 4 2500W	1	1.9	0 - 10	Surface
Type C2	2	2.7	10 - 27	Sediments
	3	8.3	27 - 58	Sediments
	4	50	58+	Basement
	Layer 3/4 contrast poor, layer 3 resistivity assumed.			
2750W	1	5.5	0 - 26	Sediments
Type C1	2/3	6.5	26 - 55	Sediments
	4	46	55+	Basement
3000W	1	12	0 - 16	Surface
Type C1	2/3	3	16 - 64	Sediments
	4	36	64+	Basement
3250W	1	17	0 - 11	Surface
Type C1	2	2.5	11 - 57	Sediments
	3	30	57+	Basement
3500W	1	22	0 - 4	Surface
Type C2	2	2.6	4 - 33	Sediments
	3	5.6	33 - 63	Sediments
	4	9	63+	Basement
4000W	1	11	0 - 4	Surface
Type A3	2(a)	120	4 - 7	Silicified sediments
	2(b)	1.3	7 - 13	Weathered layer
	3	3.6	13 - 64	Sediments
	4	40	64+	Basement
4500W	1	?	less than 5	Surface
Type A3	2	30	to 5	'Lateritic' sediments
	3	3	5 - 37	Sediments
	4	36	37+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 4 5000W	1	11	0 - 4	Surface
Type A3	2	46	4 - 29	Basement ?
	3	17.5	29 - 83	Basement
	4	80	83+	Basement
Line 0 00W	1	13	0 - 4	Surface
Type C2	2	0.65	4 - 18	Weathered layer
	3	7.2	18 - 103	Sediments
	4	32.5	103+	Basement
500W	1/2	1.6	0 - 32	Sediments
Type C2	3	4	32 - 46	Sediments
	4	31.5	46+	Basement
1000W	1	5.2	0 - 2.6	Surface
Type C2	2	1.0	2.6 - 15	Weathered layer
	3	2.4	15 - 31	Sediments
	4	32	31+	Basement
1500W	1	7.5	0 - 3	Surface
Type C2	2	0.9	3 - 15	Weathered layer
	3	3.3	15 - 45	Sediments
	4	27	45+	Basement
2000W	1	16	0 - 3	Surface
Type C2	2	2.1	3 - 22	Weathered zone
	3	3.7	22 - 44	Sediments
	4	21	44+	Basement
2500W	1	5.8	0 - 4	Surface
Type C2	2	1.2	4 - 19	Weathered zone
	3	5.6	19 - 54	Sediments
	4	30	54+	Basement

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TABLE 1 - (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 0 3000W	1	12	0 - 3	Surface
Type C2	2	2.3	3 - 18	Weathered layer
	3	4.6	18 - 60	Sediments
	4	34	60+	Basement
3500W	1	3.2	0 - 4	Surface
Type C2	2	0.8	4 - 13	Weathered layer
	3	5	13 - 59	Sediments
	4	30	59+	Basement
4000W	1	more than 1	less than 5	Surface
Type C2	2	1	up to 20	Weathered layer
	3	8	20 - 53	Sediments
	4	15	53+	Basement
4500W	1	more than 2	less than 5	Surface
Type C2	2	2	up to 12	Weathered layer
	3	7	12 - 78	Sediments
	4	15	78+	Basement
5000W	1	9	0 - 4	Surface layer
Type C2	2	2.2	4 - 25	Weathered layer
	3	7	25 - 61 (or 88)	Sediments
	4	19	61 (or 88+)	Basement
5500W	1	12	0 - 4.5	Surface layer
Type C2	2	1.4	4.5 - 26.5	Weathered layer
	3	3 - 7	26.5 - 47	Sediments
	4	21	47+	Basement
5750W	1	3.2	0 - 5	Surface layer
Type C2	2	2.1	5 - 22	Weathered layer
	3	7 approx.	22 - 38	Sediments
	4	20	38+	Basement

Basement may be as deep as 68 metres.

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 0 6000E	1	3.6	0 - 7	Surface
Type A1	2/3	8	7 - 57	Sediments
	4	13	57+	Basement
6250E	1	7.5	0 - 9	Surface
Type C1	2/3	4.8	9 - 55	Sediments
	4	14	55+	Basement
6500E	1	34	0 - 3	Surface
Type C2	2	11	3 - 53	Sediments
	3	12	53 - 138	Basement
	4	higher	138+	Basement
7000E	1	13.5	0 - 4	Surface
Type C1	2/3	10.8	4 - 40	Sediments
	4	44	40+	Basement
7500E	1	26	0 - 2	Surface
Type C1	2/3	3.5 - 5	2 - (35 to 45)	Sediments
	4	144	(35 to 45)+	Basement
8000E	1	9	0 - 4	Surface
Type C2	2	4.5	4 - 10	Weathered layer
	3	8 - 10	10 - 55	Sediments
	4	80	55+	Basement
8500E	1	8.5	0 - 6.5	Surface
Type A3	2	14.5	6.5 - 19.5	Sediments
	3	4.3	19.5 - 35	Weathered layer
	4	57	35+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 0 9000E	1	20	0 - 3	Surface
Type C2	2	6.3	3 - 21.5	Weathered layer
	3	9.7	21.5 - 42	Sediments
	4	26	42+	Basement
9500E	1	4	0 - 7	Surface
Type A1	2/3	7	7 - 35	Sediments
	4	20	35+	Basement
10000E	1	4.4	0 - 3.5	Surface
Type C1	2/3	3.5	3.5 - 27 to 33	Sediments
	4	31	27 to 33+	Basement
10500E	1	5.5	0 - 15	Surface
Type C1	2	4.4	15 - 44	Sediments
	3	32	44+	Basement
11125E	1	9	0 - 8	Surface
Type C1	2	3.6	8 - 48	Sediments
	3	160	48+	Basement
Line 5 00E	1	5.5	0 - 11	Surface
Type C2	2	1.4	11 - 27	Weathered zone
	3	8	27 - 76	Sediments
	4	84	76+	Basement
500W	1	6	0 - 6.5	Surface
Type C1	2/3	3	6.5 - 52	Sediments
	4	32	52+	Basement
1000W	1	8	0 - 5	Surface
Type C2	2	2.4	5 - 19	Weathered zone
	3	3.6	19 - 42	Sediments
	4	38	42+	Basement

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TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Possible Geology
Line 5 1500W	1/2	2.1	0 - 28	Weathered zone
Type C1	3/4	42	28+	Basement
2000W	1	7	0 - 4	Surface
Type C1	2/3	2.8	4 - 26	Weathered zone
	4	21+	26+	Basement
500E	1-3	2.5	0 - 80	Sediments
Type C1	4	52+	80+	Basement
1000E	1	5	0 - 8	Surface
Type C2	2	2	8 - 33	Weathered zone
	3	4	33 - 75	Sediments
	4	45	75+	Basement
1500E	1-3	2.5	0 - 70	Sediments (depth of weathering 25 metres)
Type C1				
	4	32.5	70+	Basement
2000E	1	9.5	0 - 4	Surface
Type C1	2/3	2.4	4 - 42	Sediments
	4	24	42+	Basement
2400E	1/2	1.8	0 - 34	Sediments
Type C1	3/4	36	34+	Basement
3000E	1	7	0 - 5	Surface
Type C2	2	1.9	5 - 30	Weathered layer
	3	7	30 - 44	Sediments
	4	54	44+	Basement

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The numbers of soundings falling into each group are as follows:

A1 - 7
A3 - 17
B1 - 1
C1 - 27
C2 - 39
D3 - 1

The type A1 curves present are all 3 layer double ascending curves. The basement inflection occurs at the base of the second layer. In general the first layer will reflect weathered sediments.

The A3 curves all have a highly resistive second layer. We suspect this layer to be caused by near-surface laterite, calcrete or siliceous zones (loosely termed 'lateritic zone' in Table 1). There are 2 sub-groups within the A3 classification.

A3-A: The third layer is very conductive and we suspect it to be sediments (either weathered and/or fresh). The basement inflection will occur at the base of the third layer.

A3-B: The third layer has resistivities in the basement range (15 - 100 ohm metres). In these cases basement may either underlie the 'lateritic' zone or the 'lateritic zone' may reflect a near-surface silicification of the quartzite.

Only one example of group type B1 occurs, (viz. line 1 4000W). The curve shape is unlike any other at Pandurra. The first three layers form a double ascending curve and the last three a maxima. From an examination of nearby resistivities and thicknesses, one might expect layer 3 to be basement (22.5 ohm metres) and layer 4 a 'more conductive' basement. Therefore, if we ignore the fourth layer, the curve would have an A1 classification.

The most dominant groupings at Pandurra are C1 and C2. With the exception of the 2 layer curves, the second layer of both curve-types is the most conductive. With 2 layer curves, naturally the first layer is the most conductive.

There are 3 subgroups within the C1 classification.

.../19

C1-A: 2 layer curves. The layer 1/layer 2 inflection point is interpreted as basement.

C1-B: 3 layer curves, second layer is the minimum. The basement coincides with the layer 2/layer 3 inflection (one exception line 3 00E).

C1-C: 4 layer curves, the last three layers form a maxima. There is only one of these examples, (viz: line 2 4500W) which is really a variation of curve type A3-B. The extra layer is a small conductive zone above the 'lateritic or silicified' maxima layer.

The C2 curves can be seperated into two subgroups;

C2-A: Where basement coincides with the layer 3/layer 4 inflection point. Layer 2 probably reflects the depth of weathering.

C2-B: Where basement coincides with the layer 2/layer 3 inflection point.

The majority of type C2 are of the first type. Curves at line 1 1000W, line 3 00E and the C1 curve at line 1 500W, all appear to have a 'conductive' basement overlying the quartzite. All of these curves have been plotted together on Plate 17. The 'conductive basement' was only identified by comparison with drill data at boreholes 52 and 82. In borehole 52 the conductivity is believed to be due to pyrite. At hole 82 the sandstone present is probably physically similar to the fluvial conglomerates. The identifying characteristics of the curves plotted on Plate 17, are that in each case the resistivity of the 'conductive basement' layer is very uniform, whilst this is not typical of fluvial sections. This characteristic is not only observed at Pandurra, but is a feature commonly occurring in fluvial areas. 'Conductive basement' can be suspected in areas where depths to basement on one or two soundings would be much greater than normal. Examples of this are; line 1 3000W, line 2 3500W and 1000W, line 3 5500E and line 4 500W.

Only one sounding falls into class type D3 (viz: line 1 1500W). In this case the third layer is probably the same 'conductive basement' that occurs at 1000W.

.../20

The most difficult curves to interpret at Pandurra are those plotted on Plate 16. These are all C2 types curves, that could be readily mistaken for type C1 curves with a basement inflection at about 20 metres. Sounding line 3 4400E, occurs adjacent to drillhole 34, where 50 metres of shale overlie basement. The inflection point at about r = 20 metres only reflects depth of weathering within a thick shale unit. By computer modelling sounding 3/4400E we can obtain a suitable curve-match by using the geo-electric model;

Resistivity (ohm metres)	Thickness (metres)
18	2
0.9	13
8.3	34
32.5	

On this model the basement inflection point coincides with a minor change in slope at about r = 80 metres. The inflection is hard to see because layer 2 is so conductive in relation to layers 3 and 4. However, the inflection can be assumed to occur at about that point if the curve is qualitatively compared with its neighbours (see Plate 21). The layer 3 resistivity derived above, can be used to help interpret similar soundings. However, exact depth to basement for soundings having poor layer 3/layer 4 inflection contrasts must be treated with caution.

In summary, the depth to basement interpreted for the following curve types should be treated with some caution.

- A3-A : Because of equivalence problems with maxima/minima curves.
- C2 : Where highly conductive second layers occur (see Plate 15).
- B1 : Unique sounding type.

Depths interpreted for these curve types should at least be relative.

The possible major sources of error could be

(a) Layers interpreted as 'conductive basement' on line 1 may be sediments, although drill evidence suggests this is unlikely.

(b) Some layers interpreted as sediments could be 'conductive basement'.
Areas where this might occur have been identified on Plate 8. Drill evidence and our past experiences, mapping in fluvial areas, suggests that 'conductive' basement is very unlikely to occur outside those areas delineated on Plate 8.

Profile Interpretation

Plate 7 - The fault anomaly (profile change), is more apparent on the r = 40 metre profile than on the r = 80 metre profile. The profile change associated with the anomaly is centred at 850W. Apparent resistivities west of the fault anomaly decrease at wider separations(conductive basement). East of the fault anomaly apparent resistivities increase at wider r separations.

Pseudo-sections

The pseudo-sections provide a 2-Dimension display of the sounding data recorded on each traverse. They act as a qualitative aid to the quantitative sounding interpretation. The contouring on the pseudo-sections determines whether a feature has horizontal or vertical boundaries. If the contours tend to be horizontal the geo-electric features are likely to be fluvial and if vertical, basement contrasts.

One drawback with the pseudo-sections presented, is that at the moment our plotting programme is not directionally orientated and hence some sections go from east to west and others from west to east. Therefore some pseudo-sections are back-to-front in relation to the intersected sections plotted on Plate 8, where west is always to the left hand side of the plan.

The individual pseudo-sections are briefly discussed.

Line 1 (Plate 1) - This pseudo-section highlights the conductive basement from 1000W - 1500W and suggests that the conductive third layer at 4500W is a basement feature rather than fluvial (vertical

.../22

contours). This zone may be a wide fault zone or weathered dyke? The pseudo-section also suggests the depth to basement at 2500W may be slightly deeper than interpreted (perhaps basement hump on Plate 8 is in error?).

Line 2 (Plate 2) - A lot of the contours on this pseudo-section tend to be vertical, with horizontal deviations occurring at or about the point of basement inflection. The most conductive basement occurs at 2000W. The highest resistivities are associated with 'lateritic zones' and shallow basement at the western end of the line. The pseudo-section suggests that perhaps the interpretation at 5000W is in error and basement is shallower at this point. Very conductive, thick shale areas occur east of 500W and at 1500W.

Line 3 (Plate 3) - The pseudo-section reflects the channelling from 3000E - 5000E. High resistivities caused by shallow basement and lateritic zones occur either side. Low resistivity values at depth at 1500E coincide with either sediments below the 'lateritic zone' or conductive basement. Drillhole 83 suggests that these results are due to the former case. The sounding at 1000E did not penetrate the 'lateritic zone'. The pseudo-section also shows the extent of the 'conductive' sandstone basement known to occur at shallow depths in hole 82 and provides information on the conglomeratic sandstone-shale interface, which occurs between 4000E-4200E. Shales are also prevalent east of 6500E.

Line 4 (Plate 4) - The pseudo-section probably favours the shallowest of the two possible interpretations at 500W (see Plate 8). It tends to suggest thick shale occurs at 1500W, 2000W and 3500W. It suggests that the possible basement ridge at 2500W (see Plate 8) probably does not occur.

Line 0 (Plate 5) - The predominantly horizontal contours on Plate 5 suggest a geo-electrically more uniform basement on this line. Shales would seem to dominate the section east of 6000W. Some doubt occurs in the quantitative sounding interpretation between 4500W - 6000W. The pseudo-sections tend to suggest that the depth to basement at 5500W may be slightly deeper than interpreted.

..../23

Line 5 (Plate 6) - Because of the relatively uniform basement and fluvial section, the pseudo-section contours parallel the interpreted section on Plate 8. Shale seems to be very widespread on this line and little conglomeratic sandstone is interpreted to occur.

Contour Plans

Plate 10 - The contour plan of interpreted depth to basement suggests that a fluvial depression or channel is continuous from line 4 northwards through the survey area to line 5. Depth to basement within the channel is in the order of 60-70 metres from line 4 to line 0, deepening to 70-80 metres on line 5.

A basement ridge occurs to the east of the interpreted channel on lines 4 to 1. It appears to have been abruptly truncated between line 1 and line 0. A close inspection of soundings line 0 3000W-4000W, indicates that shallow basement is unlikely. The soundings are supported by drillhole 53 and by contouring on Plate 9.

Basement deepens very rapidly east of the ridge. However, it appears that only shales were located.

Depths to basement are relatively shallow (40 metres and less) over the western part of the survey area.

Plate 9 - Contour plan r = 65 metre apparent resistivity data. Lower values would tend to reflect thicker shales and deeper basement. Higher values shallow basement and near-surface 'laterization'. A north-south lineation from about line 2 5500W to about line 0 7500W suggests a possible fault. Another fault will probably extend from line 1850W to line 3 about 5500W. It may continue south crossing line 4 at 500W and north to line 0 (4000-4500W).

The extent of the 'lateritic zone' and the area where the sediments are thought to be predominantly shales are also outlined on Plate 9. The 'lateritic zone' is confined to the S.W. corner of the survey area. The thick shales to the northern and eastern sections and to an area between the easterly fault anomaly and the channel anomaly (possibly a remnant flood-plain anomaly).

.../24

The Channel Anomaly

The channel anomaly as defined by the 60 metre contour on Plate 10 diverges slightly to the east between line 1 and 0. This divergence may be caused by faulting. There appears to be a major facies change within the channel near line 0. Shales predominating to the north, with shale overlying a basal conglomerate to the south.

The conglomerate within the channel is probably thickest where the apparent resistivities above basement are highest. An examination of the relative plates suggests that the thickest conglomerate might occur as follows;

Line 1 (Plate 16) 2500W-3000W
Line 2 (Plate 20) 3000W
Line 3 (Plate 21) 3500E-4000E
Line 4 (Plate 22) - The apparent resistivities with the sediments on this line are lower than those above suggesting less conglomerate in the sequence.
Line 0 (Plates 24/25) 6000W - Possibly slightly off channel, depending upon correct interpretation of sounding 0/5500W. Alternative - 4500W.

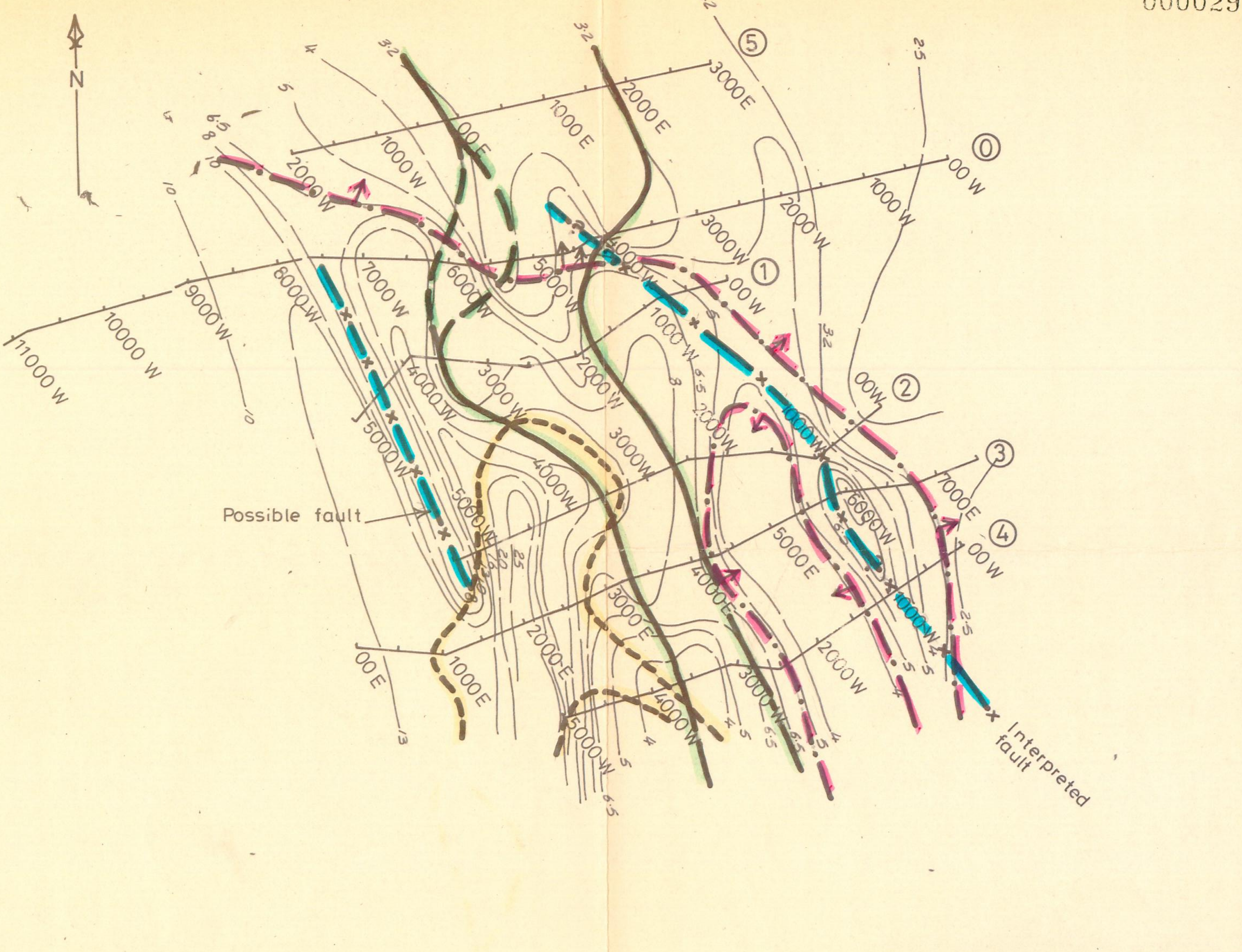
Recommendations

(a) Drilling - From the resistivity results the thickest conglomerates would appear to occur on lines 1-3. Any reasonable thickness of conglomerate would appear to terminate about line 0. We would suggest line 1 3000W, line 2 3000W, 3500W, line 3 3750E, line 0 6000W as worthwhile drillsites. Perhaps line 0 4500W, line 4 3000W and line 1 2500W could also be added.

(b) Resistivity - The method used during this survey is satisfactory for reconnaissance work. Profiling with separations of r = 25 and/or r = 65 metres would be adequate for any subsequent detailing of conglomerate/shale and channel boundaries within the survey area. The rate of progress of this type of work might be 3-4 kilometres a day if both profiles were conducted and if the station spacing was 50 metres, up to 7 kilometres a day if only one separation was used and the station spacing was 100 metres.

PANDURRA _ SOUTH AUSTRALIA

000029



Interpreted fault anomaly

Lateritic Zone

Interpreted thick shale

Channel Anomaly (likely)

" " (possible)

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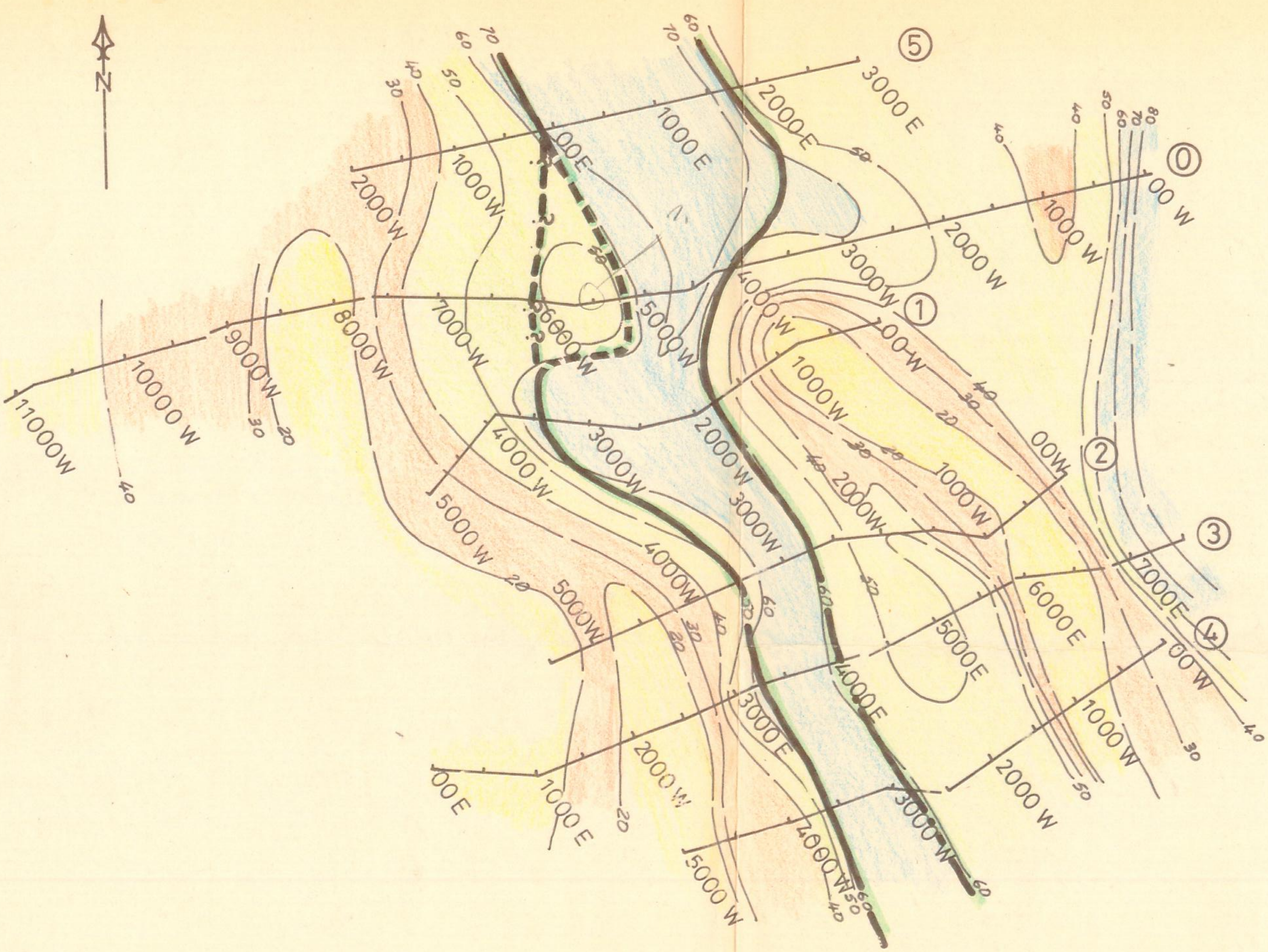
PLATE: 9 _ Report 265

Contour Plan: r = 65 metres

Apparent Resistivity Data

PANDURRA — SOUTH AUSTRALIA

000030



LEGEND

Channel Anomaly (likely)

" " (alternate paths)

20 Depth to basement contacts

SCALE: 1 cm = 500 metres

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PLATE: 10 Report 265

Contour Plan — Resistivity

Interpreted Depth to Basement

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for PACMINEX PTY. LTD.
at PANDURRA SOUTH AUSTRALIA

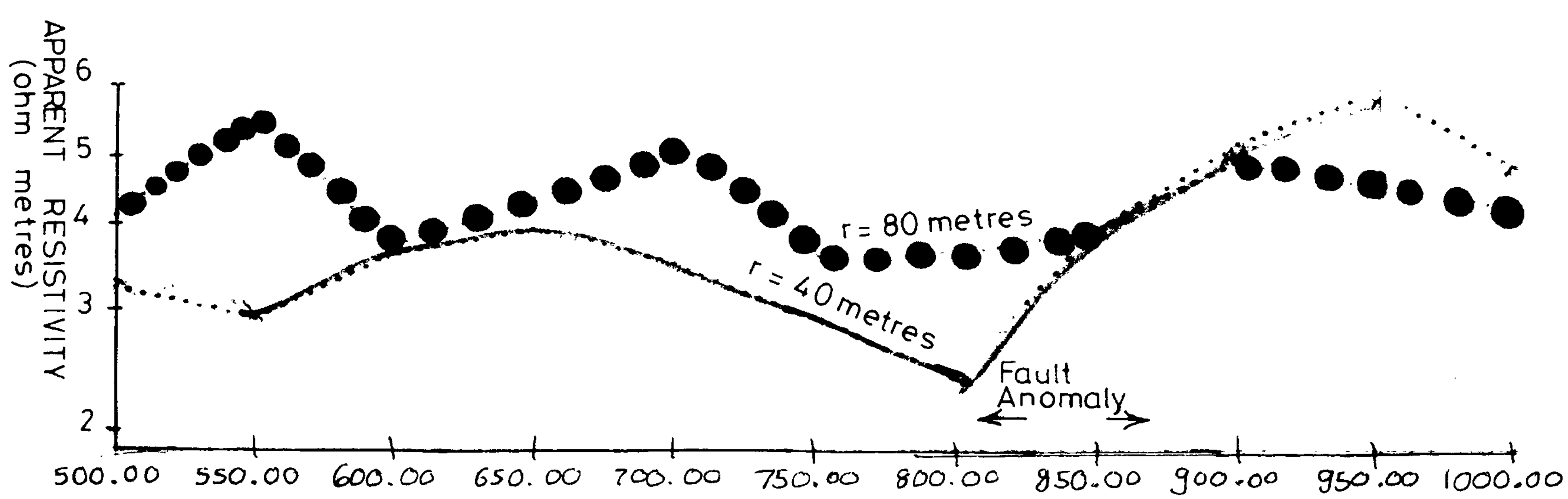
000031

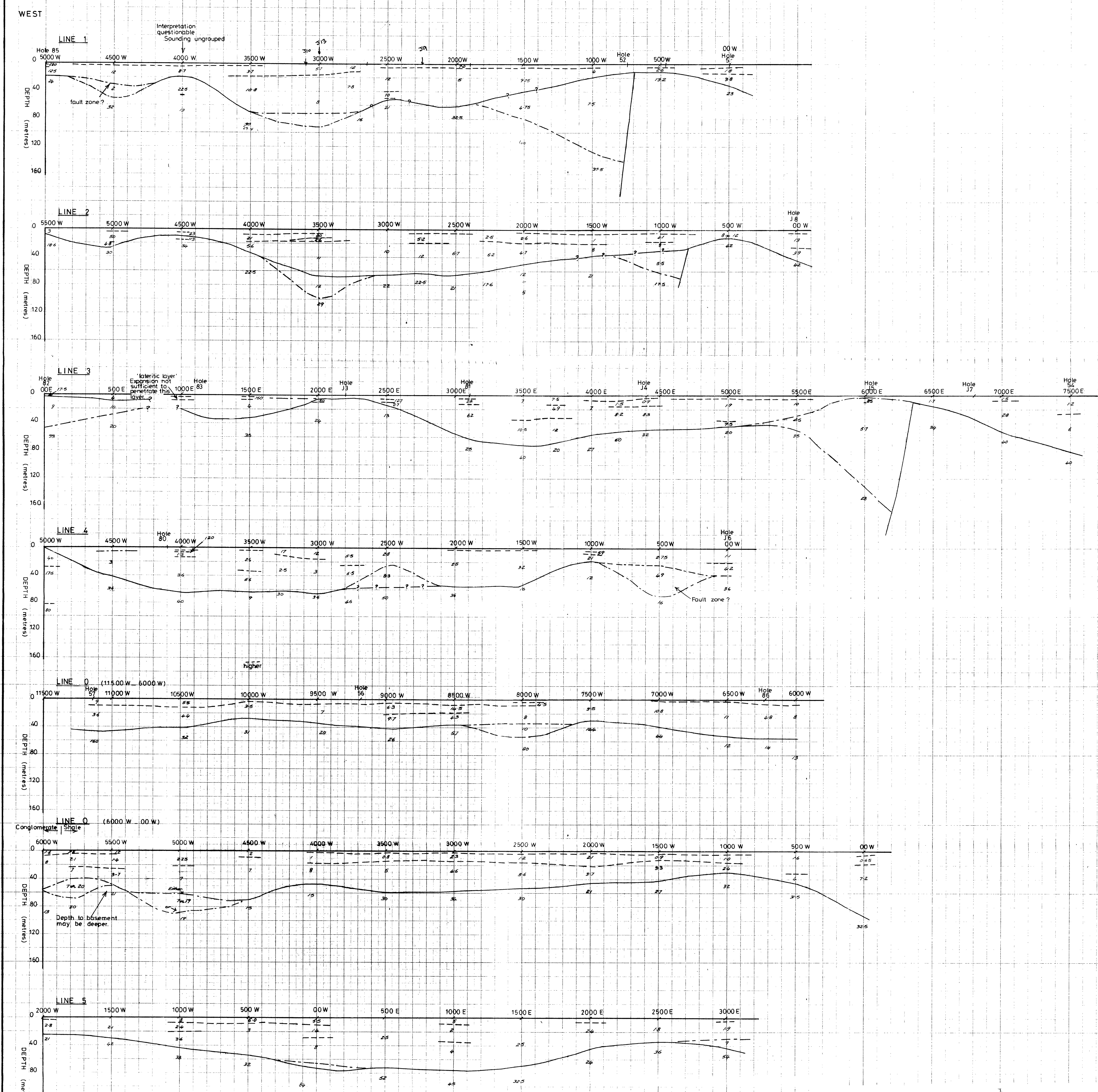
resistivity profiles
lines: 1 (500 — 1000)

scales:	vertical	horizontal
profiles	1cm = ohm metres logarithmic	1 cm = 25 metres

plate no: 7 report no: 265 date: March 77

LINE 1





MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

RESISTIVITY SURVEY
FOR PACHINEY PTY. LTD.
AT PANDURRA SOUTH AUSTRALIA

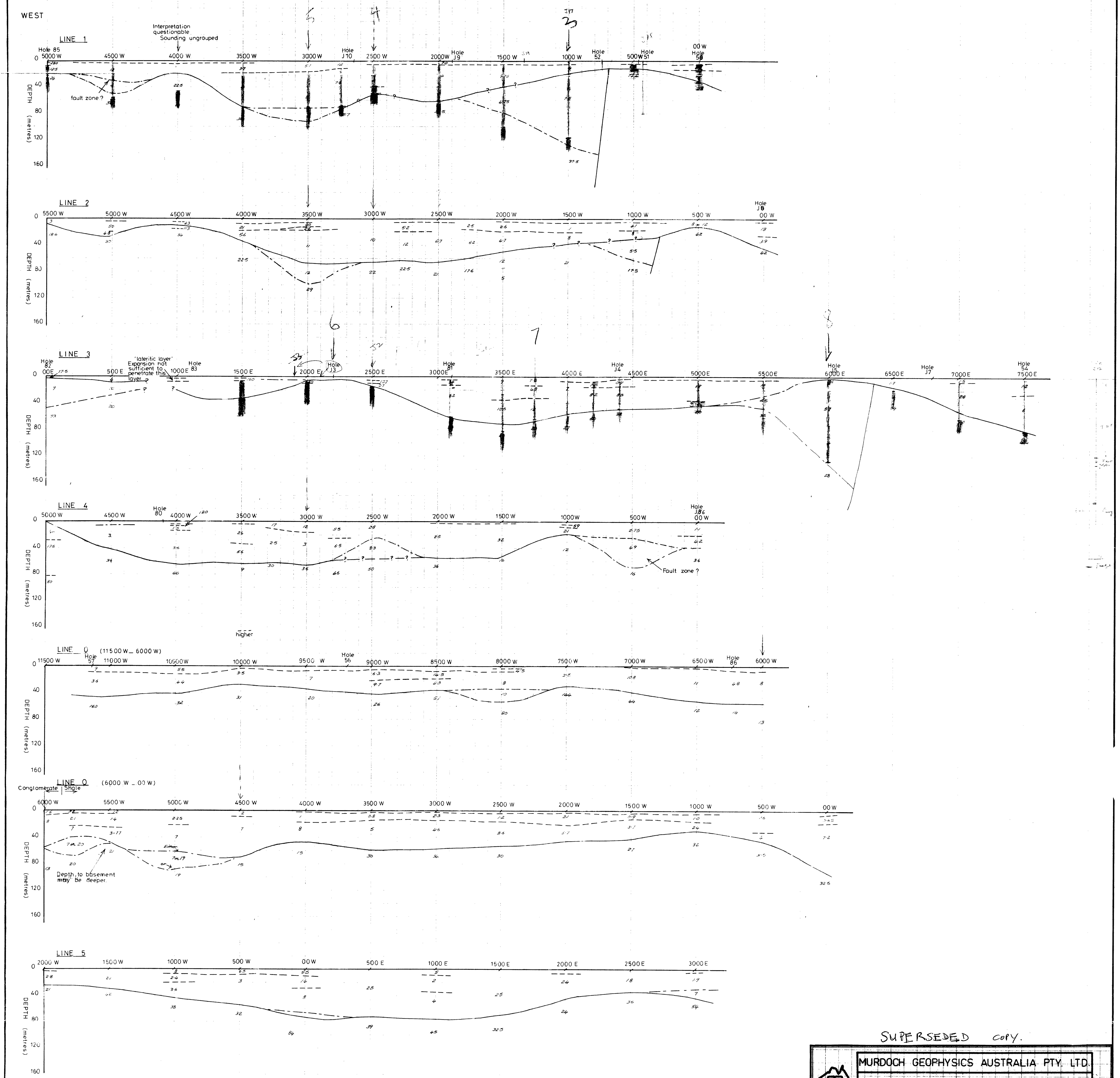
INTERPRETED SECTION
1, 2, 3, 4, 0 & 5

SCALES: Vertical 1 cm = 20 metres
Horizontal 1 cm = 100 metres

Most likely basement profile
Alternative basement profile
Geo-electric boundaries above basement

6678-1

PLATE N° 5 | REPORT N° 265 | DATE March 1977



SUPERSEDED COPY.

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

RESISTIVITY SURVEY
FOR : PACMINEX PTY LTD.
AT : PANDURRA SOUTH AUSTRALIA

INTERPRETED SECTION 1, 2, 3, 4, 0, & 5.

SCALES: Vertical 1 cm = 20 metres
Horizontal 1 cm = 100 metres

——— Most likely basement profile
—·— Alternative basement profile
– – – Geo-electric boundaries above basement

6678-2

PLATE N° 8 | REPORT N° 265 | DATE March 1977

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

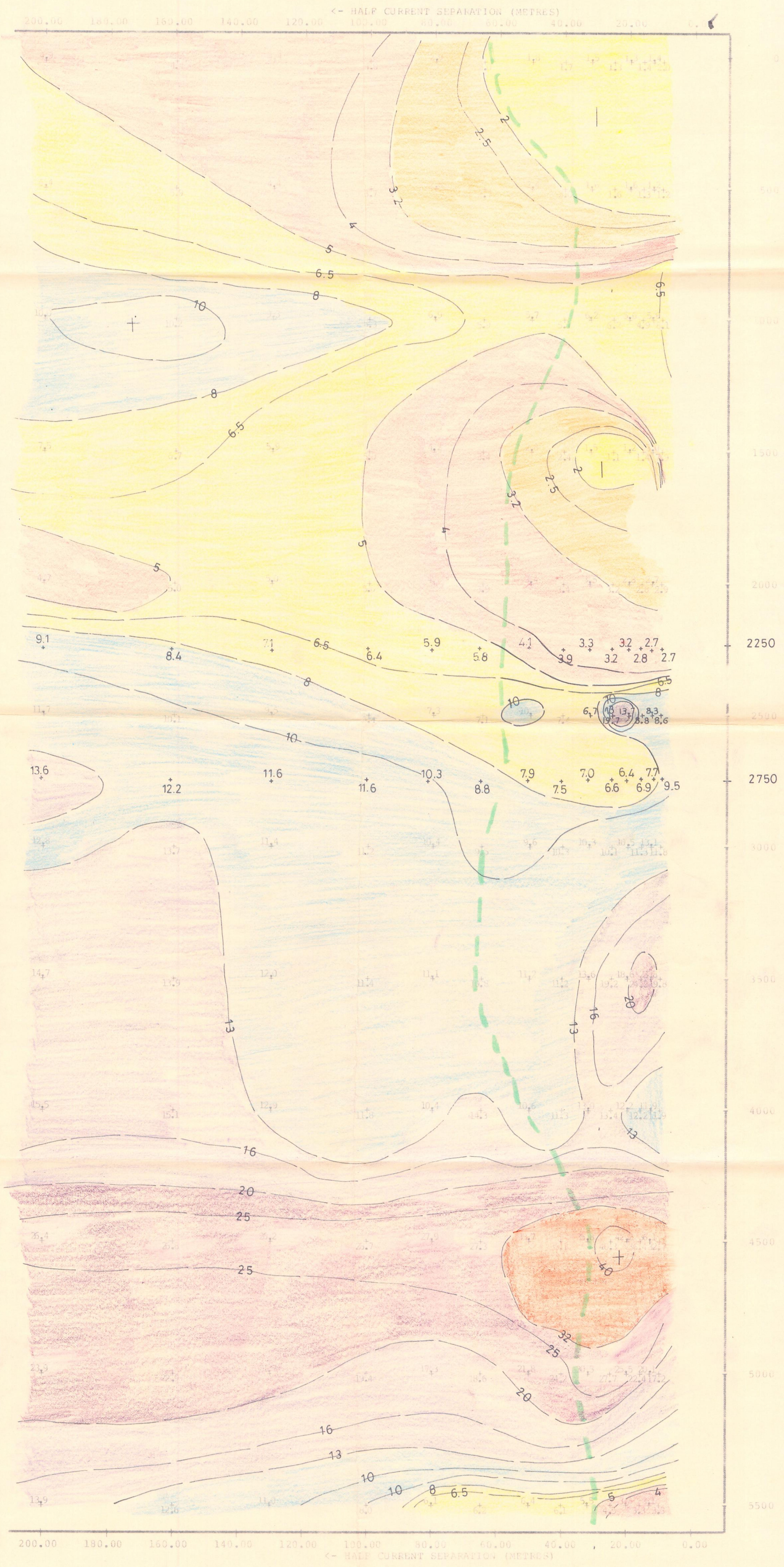
pseudo section
lines : 3

scales:	vertical	horizontal
	1cm = 8 metres of current electrode separation (r)	1cm = 100 metres

6678-3

plate no: 3 | report no: 265 | date: Mar. '77

PANDURRA LINE 2



MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

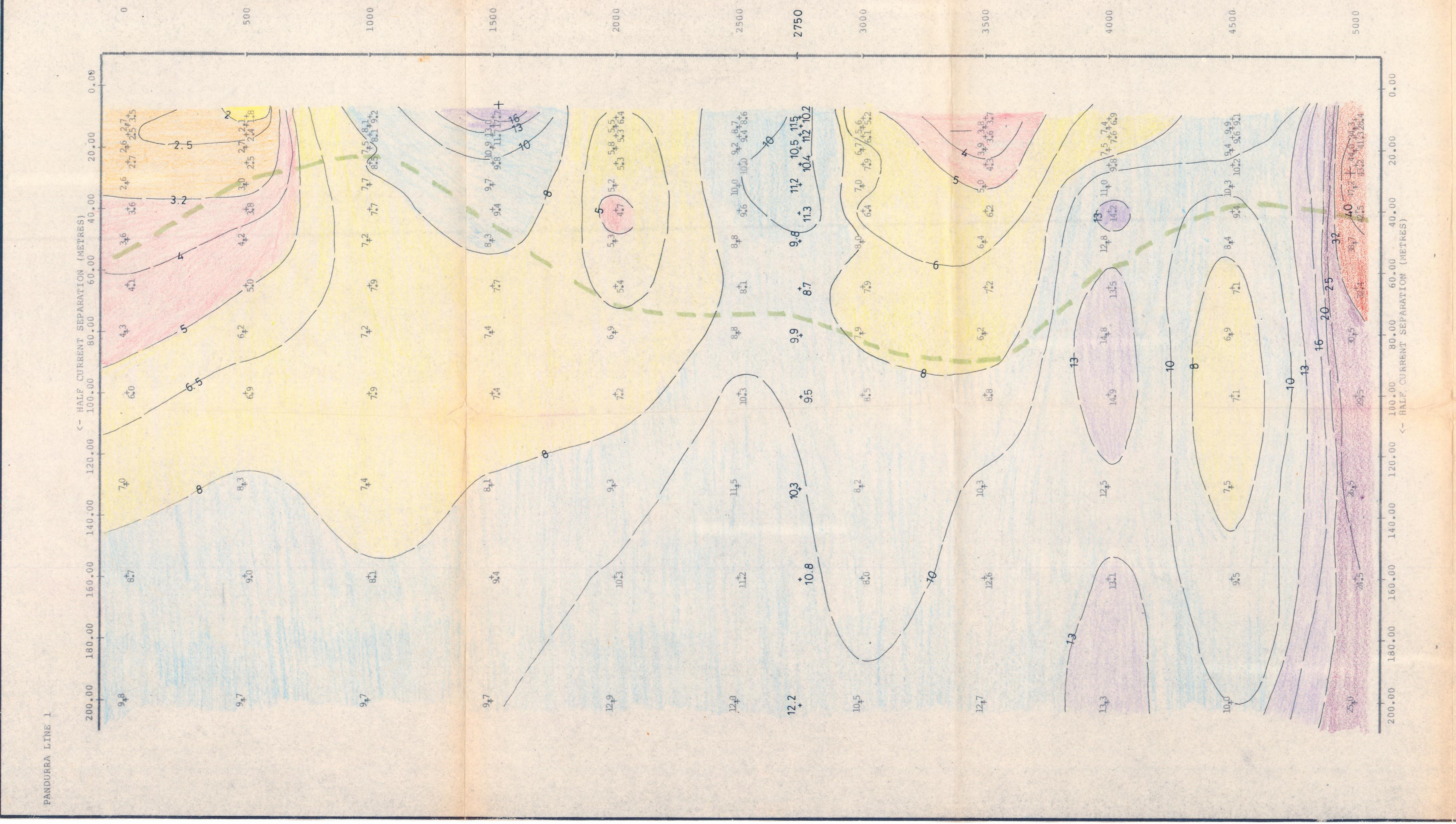
resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

pseudo section
lines: 2

scales: vertical 1cm = 8 metres of current electrode separation (r) horizontal 1cm = 100 metres

plate no: 2 report no: 265 date Mar. '77

6678-4



MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

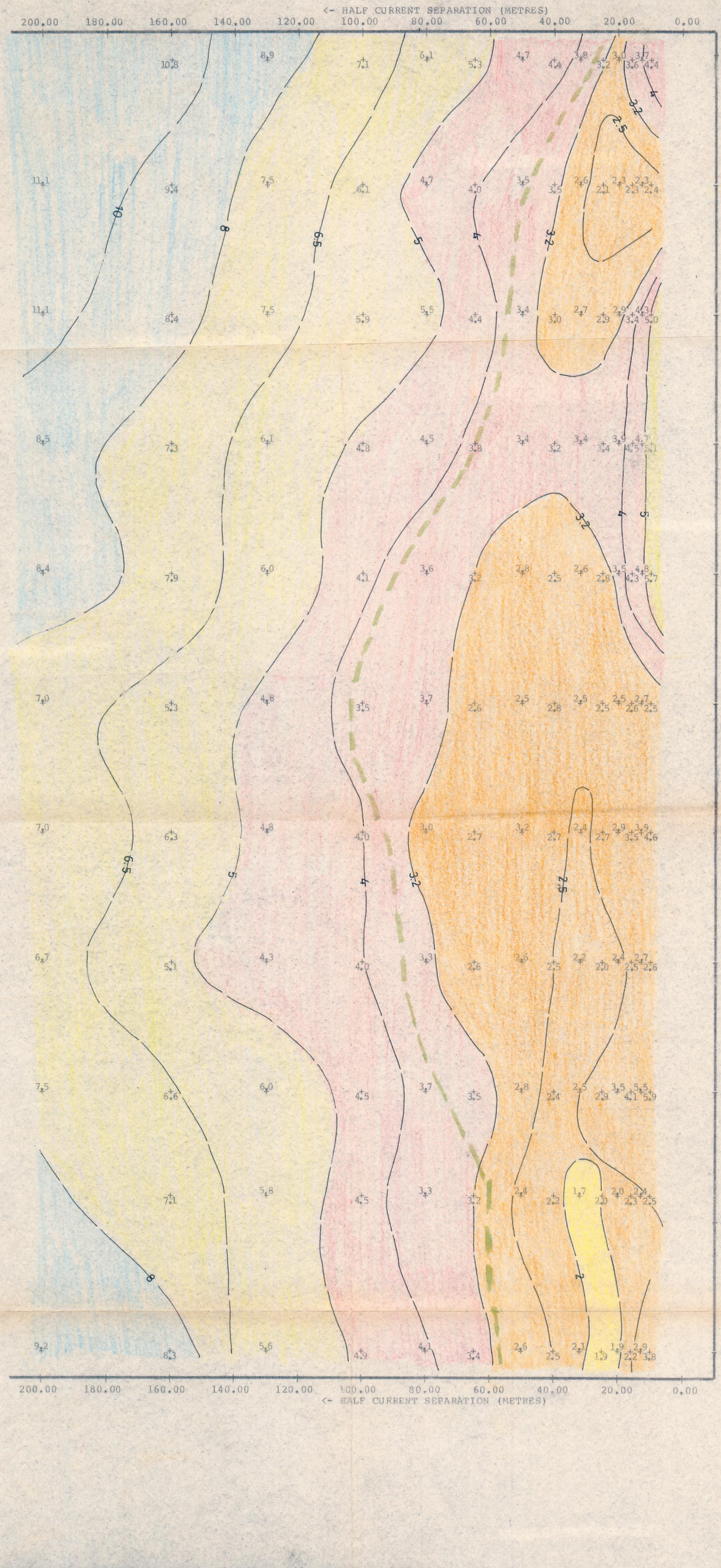
pseudo section
lines: 1

6678-5

scales:	vertical	horizontal
	1cm = 8 metres of current electrode separation (r)	1cm = 100 metres

plate no: 1 | report no: 265 | date: Mar. '77

PANDURRA LINE 5



MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

pseudo section
lines : 5

scales:	vertical	horizontal
	1cm = 8 metres of current electrode separation (r)	1cm = 100 metres

plate no: 6 | report no: 265 | date: Mar. '77

6678—6

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

pseudo section
lines: 4

6678-7

scales:	vertical	horizontal
	1cm = 8 metres of current electrode separation (r)	1cm = 100 metres

plate no: 4 | report no: 265 | date: Mar. '77

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : PANDURRA SOUTH AUSTRALIA

pseudo section
lines: 0

6678-8

scales: vertical: 1cm = 8 metres of current electrode separation (r); horizontal: 1cm = 100 metres

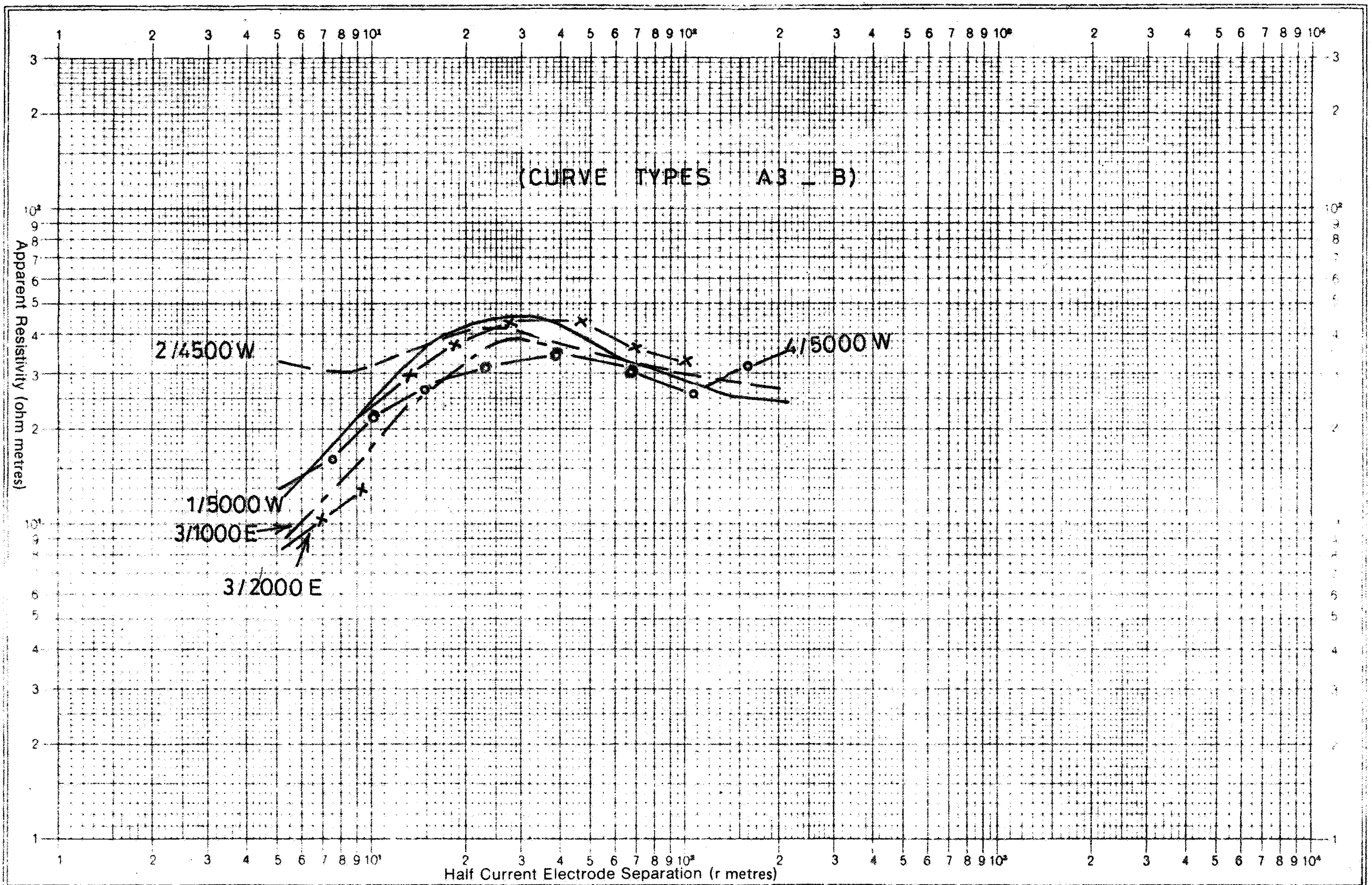
plate no: 5 | report no: 265 | date: Mar. '77

RESISTIVITY SOUNDING

Plate 11

Report 265 000032

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:



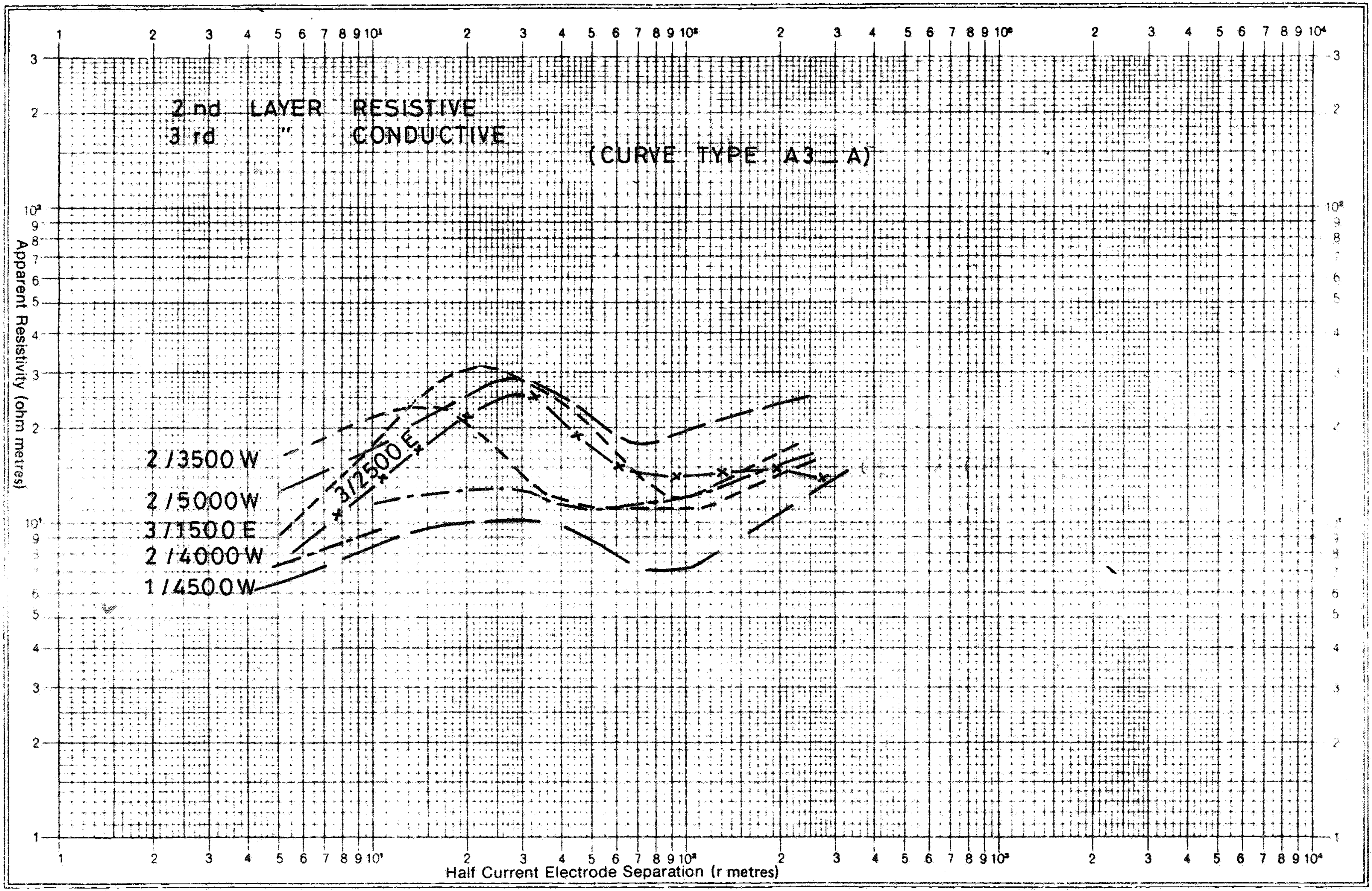
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 12

Report 265 000033

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:



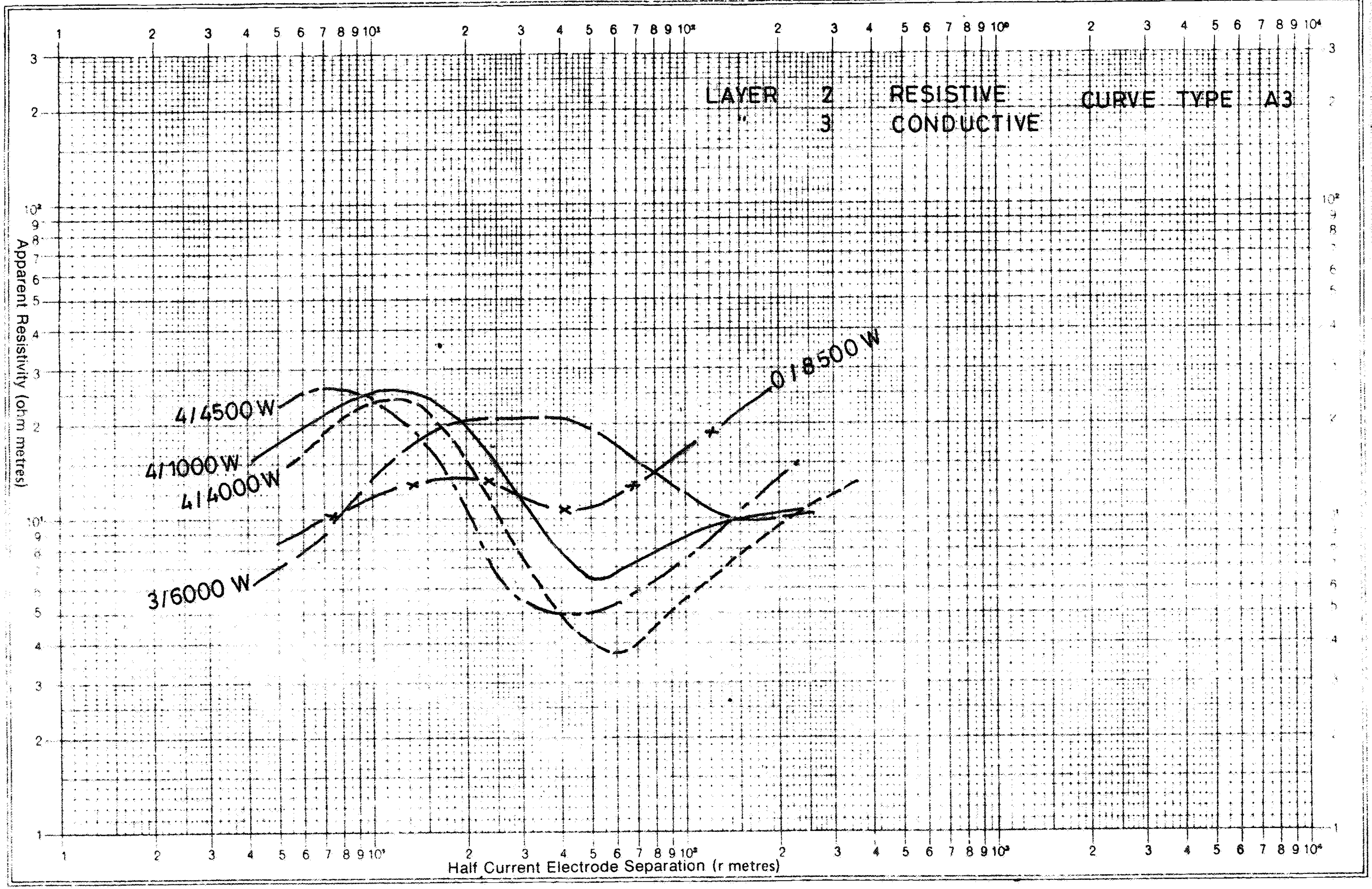
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

Plate 13

Report 265 000034

RESISTIVITY SOUNDING

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:



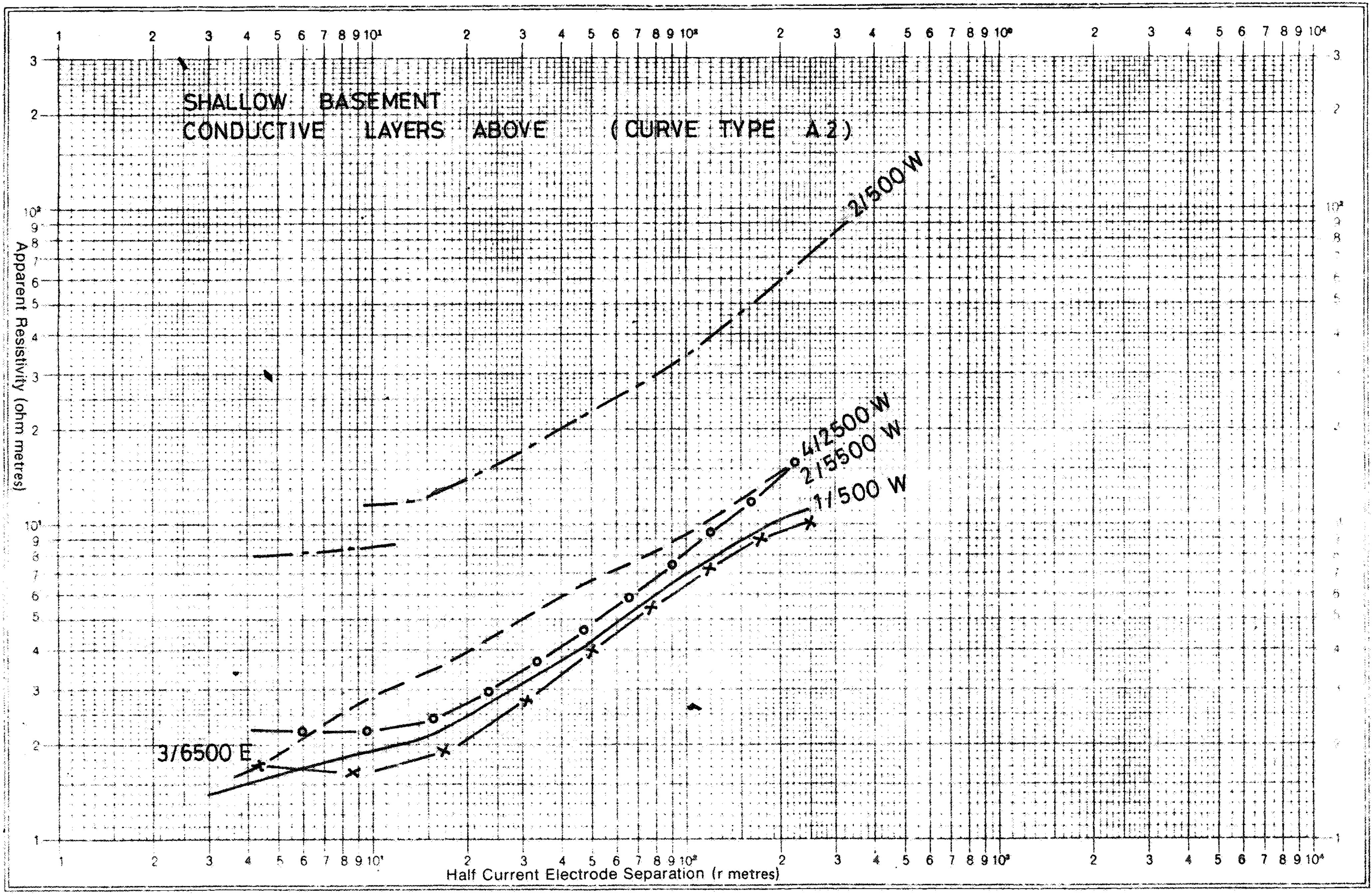
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 14

Report 265 000035

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:



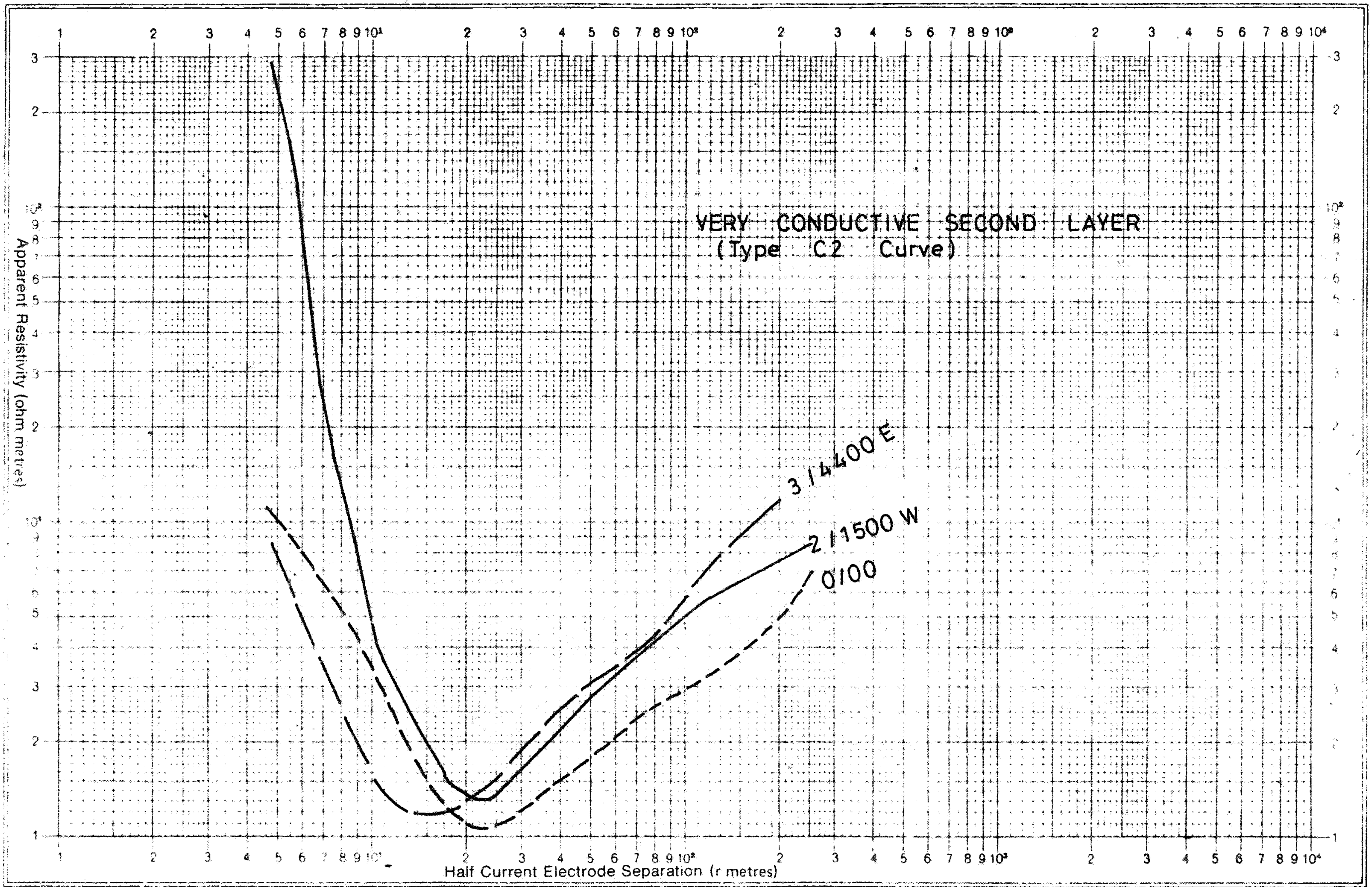
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 15

Report 265 000036

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:



MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

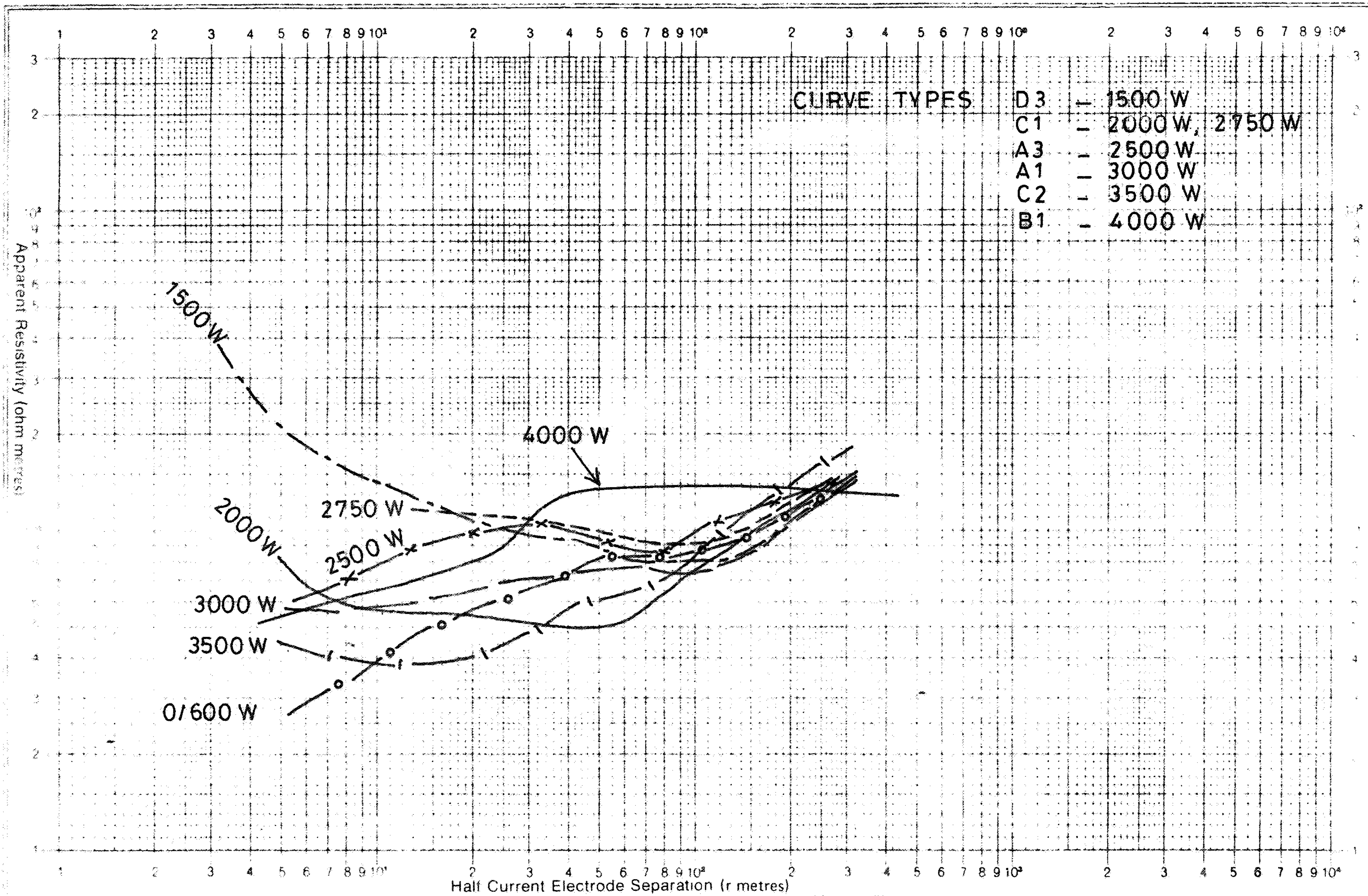
RESISTIVITY SOUNDING

Plate 16

Report 265

000037

CLIENT: PACMINEX AREA: PANDURRA LINE: 1 STATION: 1500W-4000W

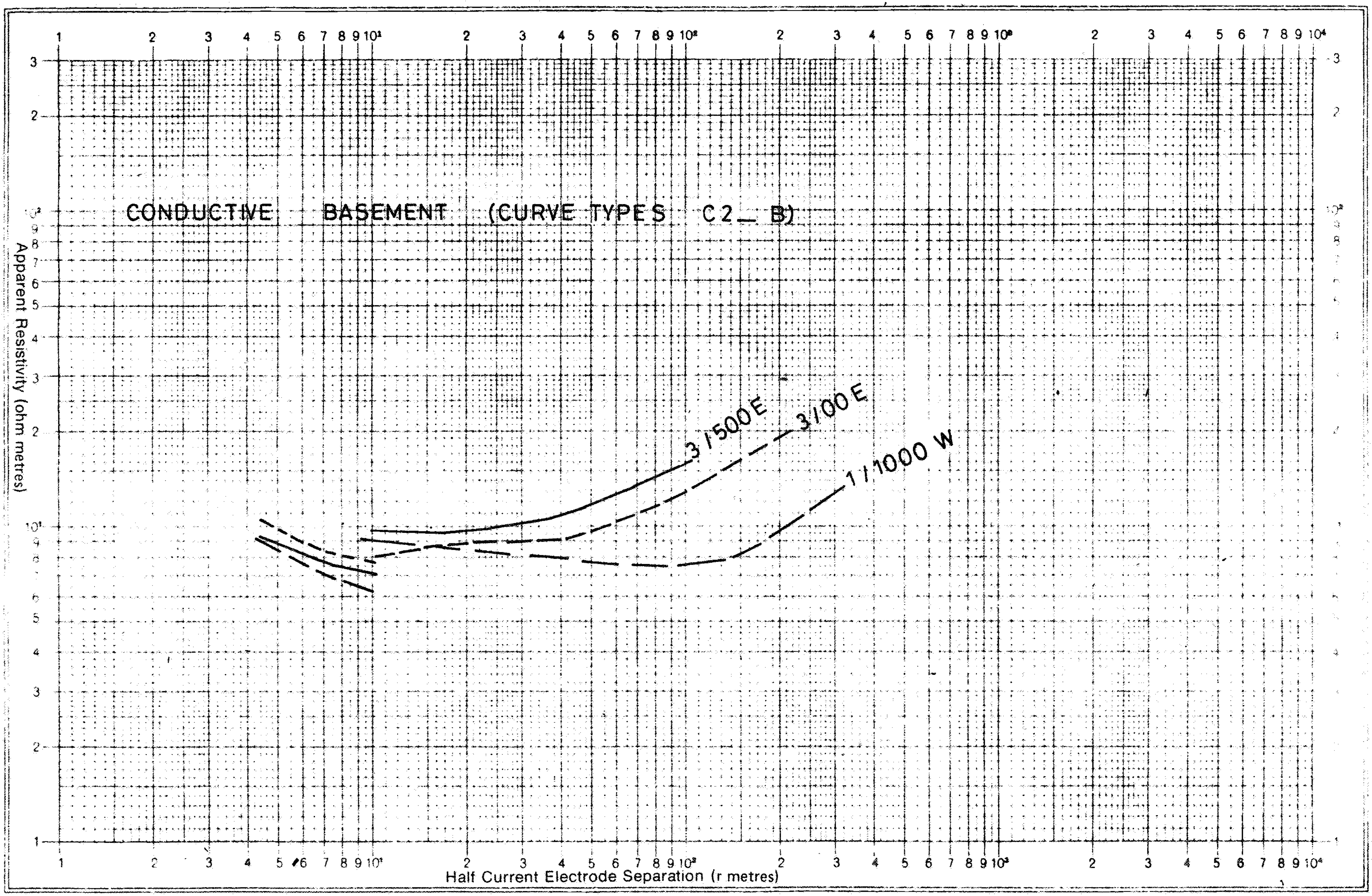


MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 17

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION: Report 265 000038



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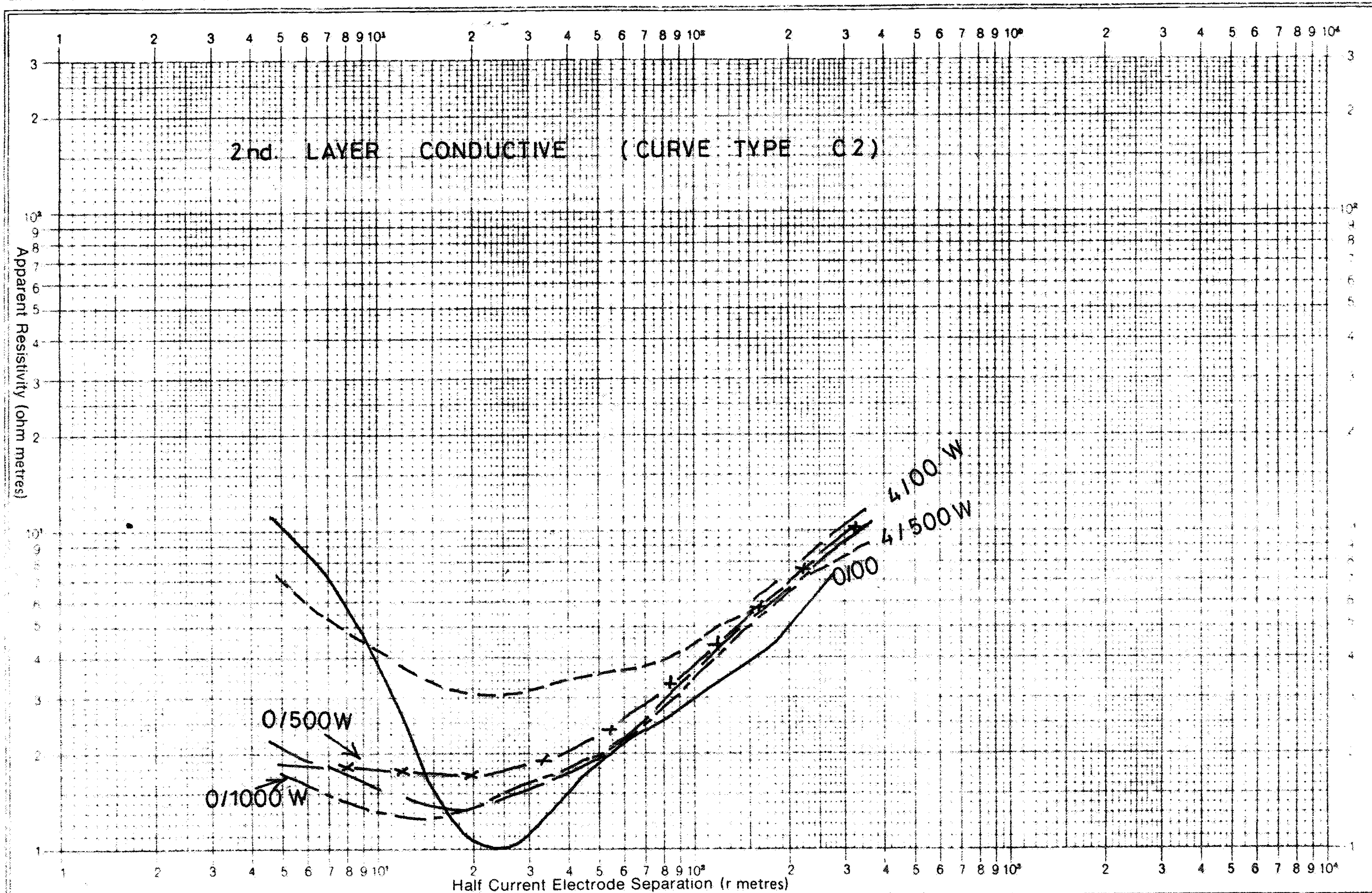
RESISTIVITY SOUNDING

CLIENT: PACMINEX AREA: PANDURRA LINE: 4 / 0 STATION: 00W-500W / 100W-1000W

Plate 18
Report 265

000039



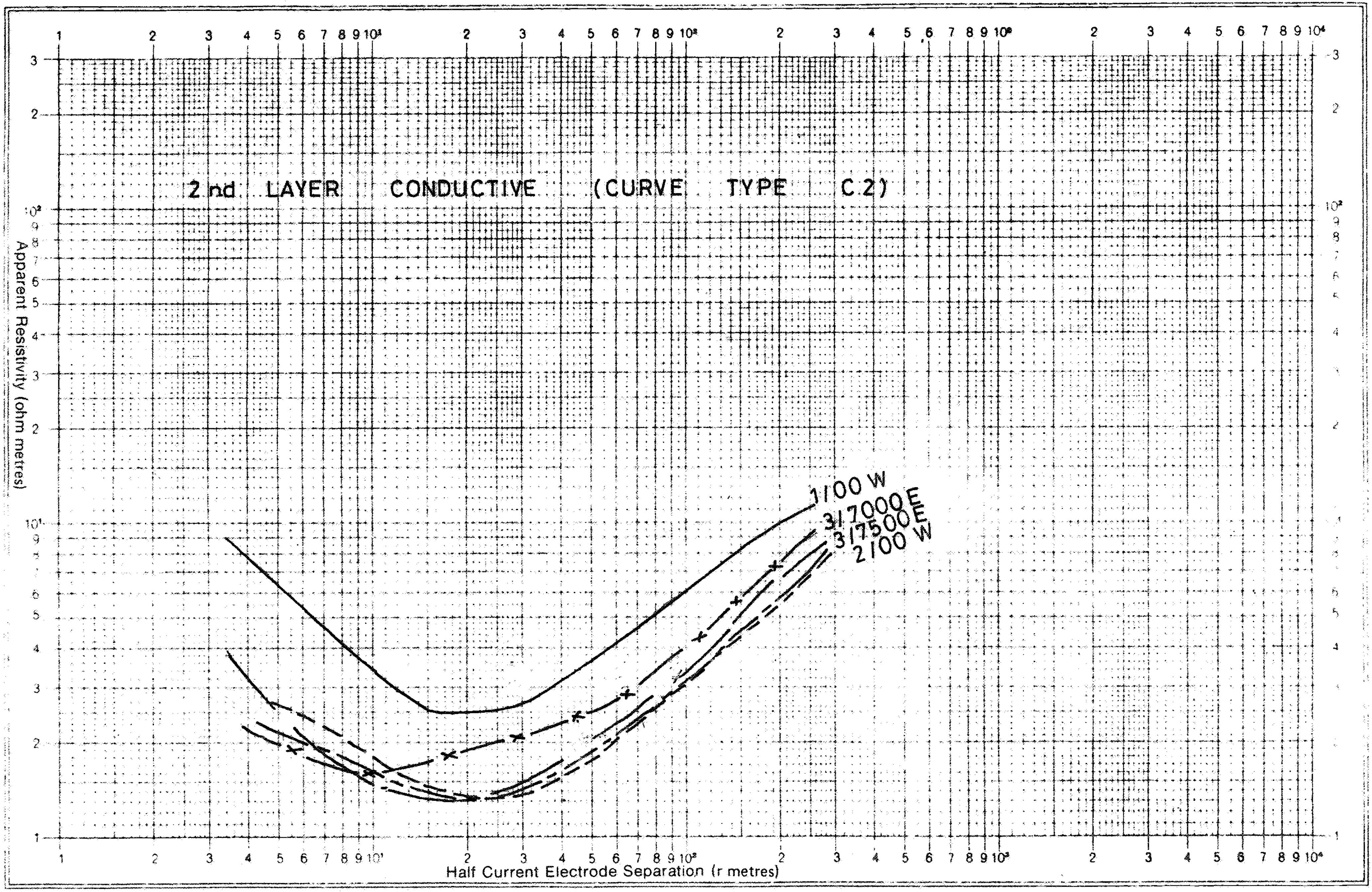
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 19

Report 265 000040

CLIENT: PACMINEX AREA: PANDURRA LINE: STATION:

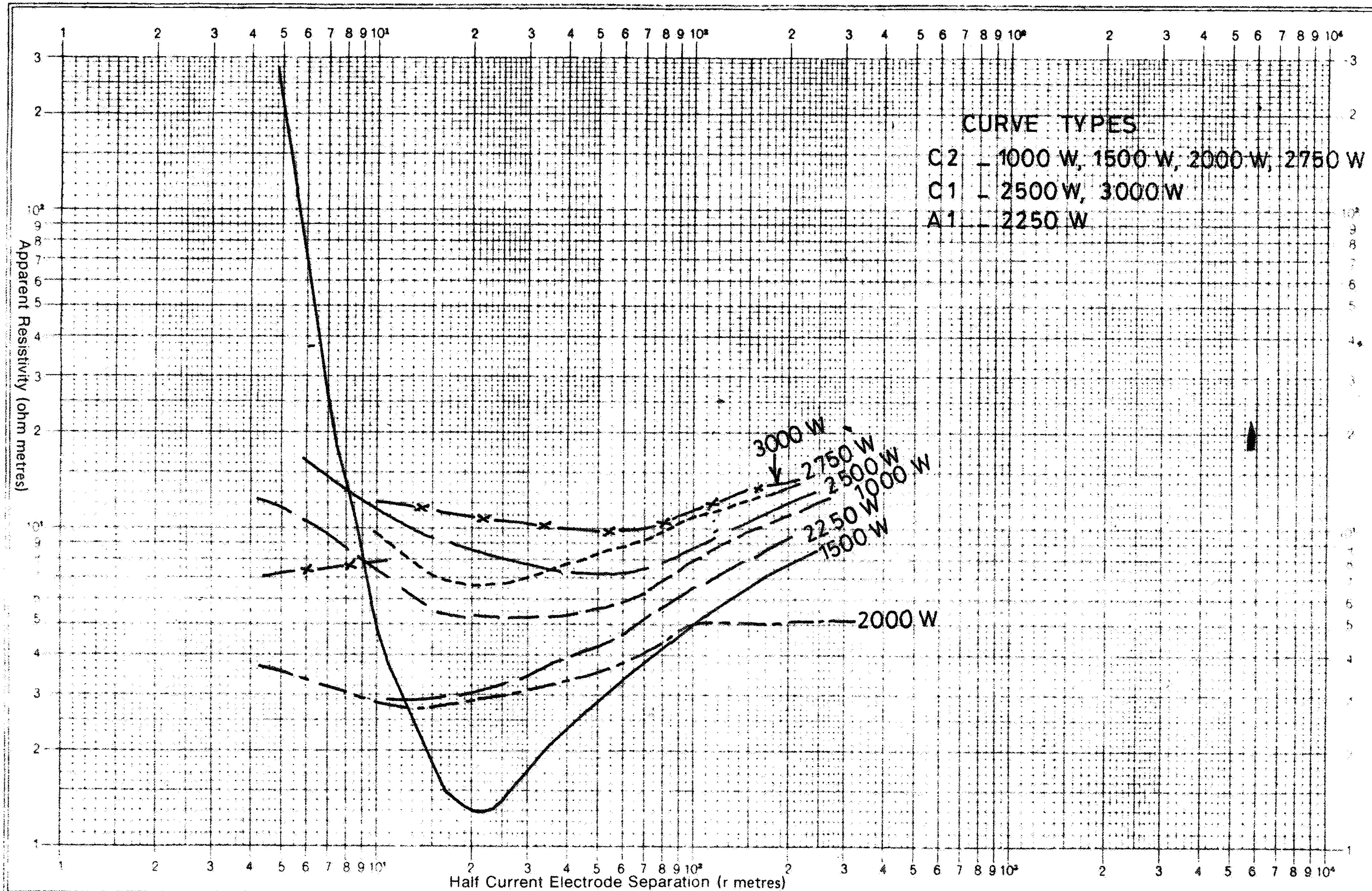


MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 20

CLIENT: PACMINEX AREA: PANDURRA LINE: 2 STATION: 1000W_3000 W Report 265 000041



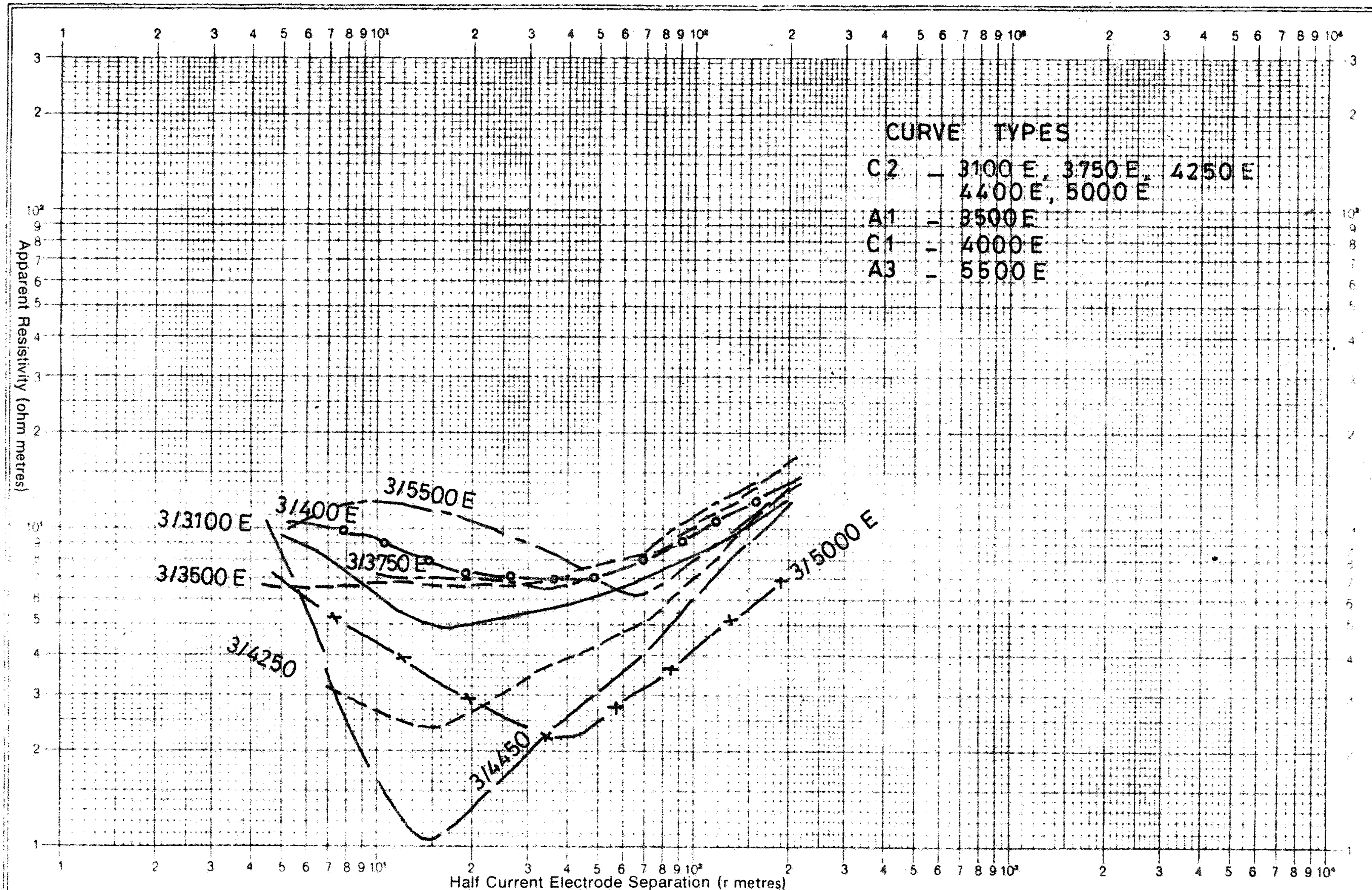
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 21

Report 265 000042

CLIENT: PACMINEX AREA: PANDURRA LINE: 3 STATION: 3100E_5500E



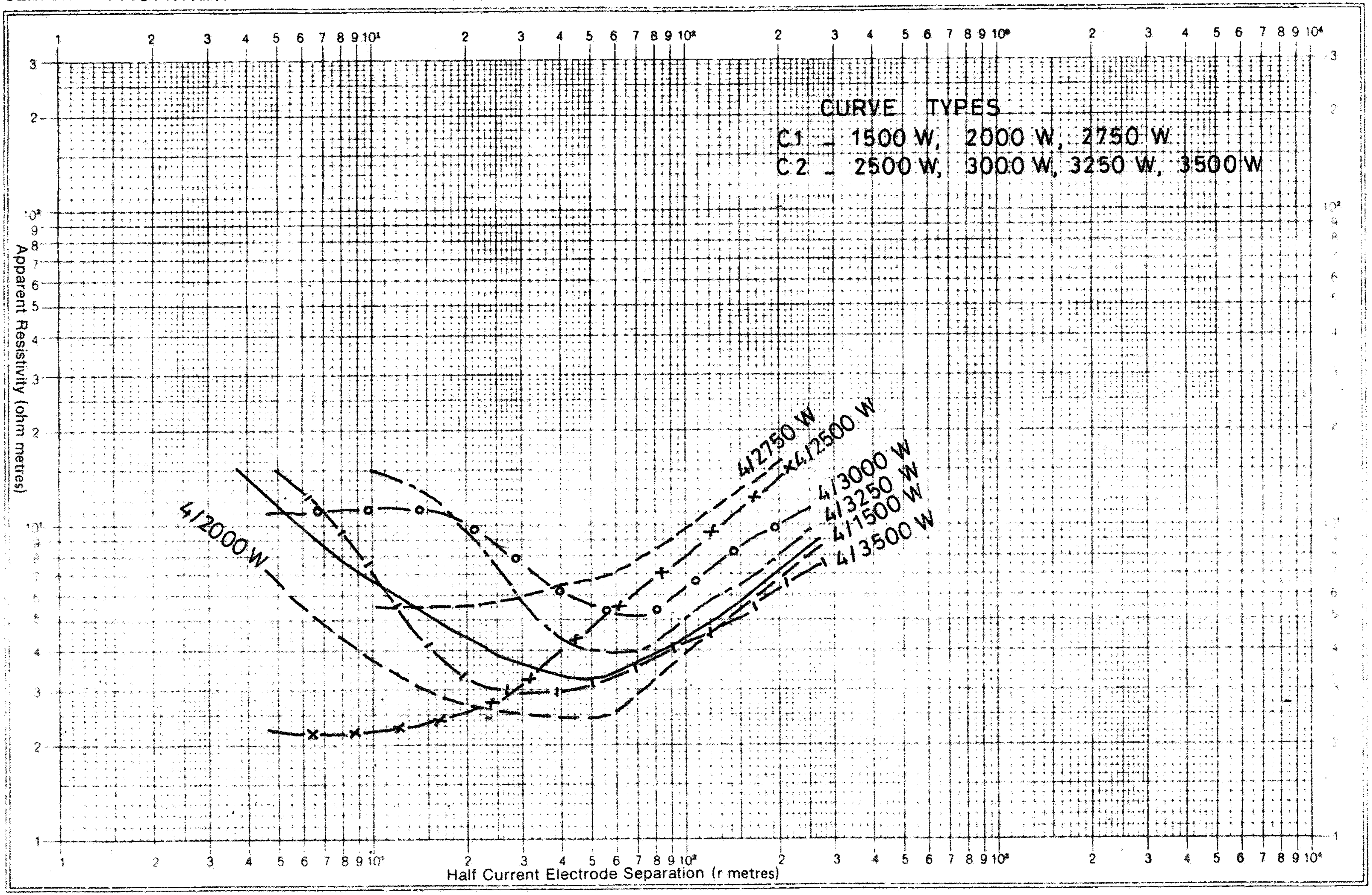
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 22

Report 265 000043

CLIENT: PACMINEX AREA: PANDURRA LINE: 4 STATION: 1500W_3250W



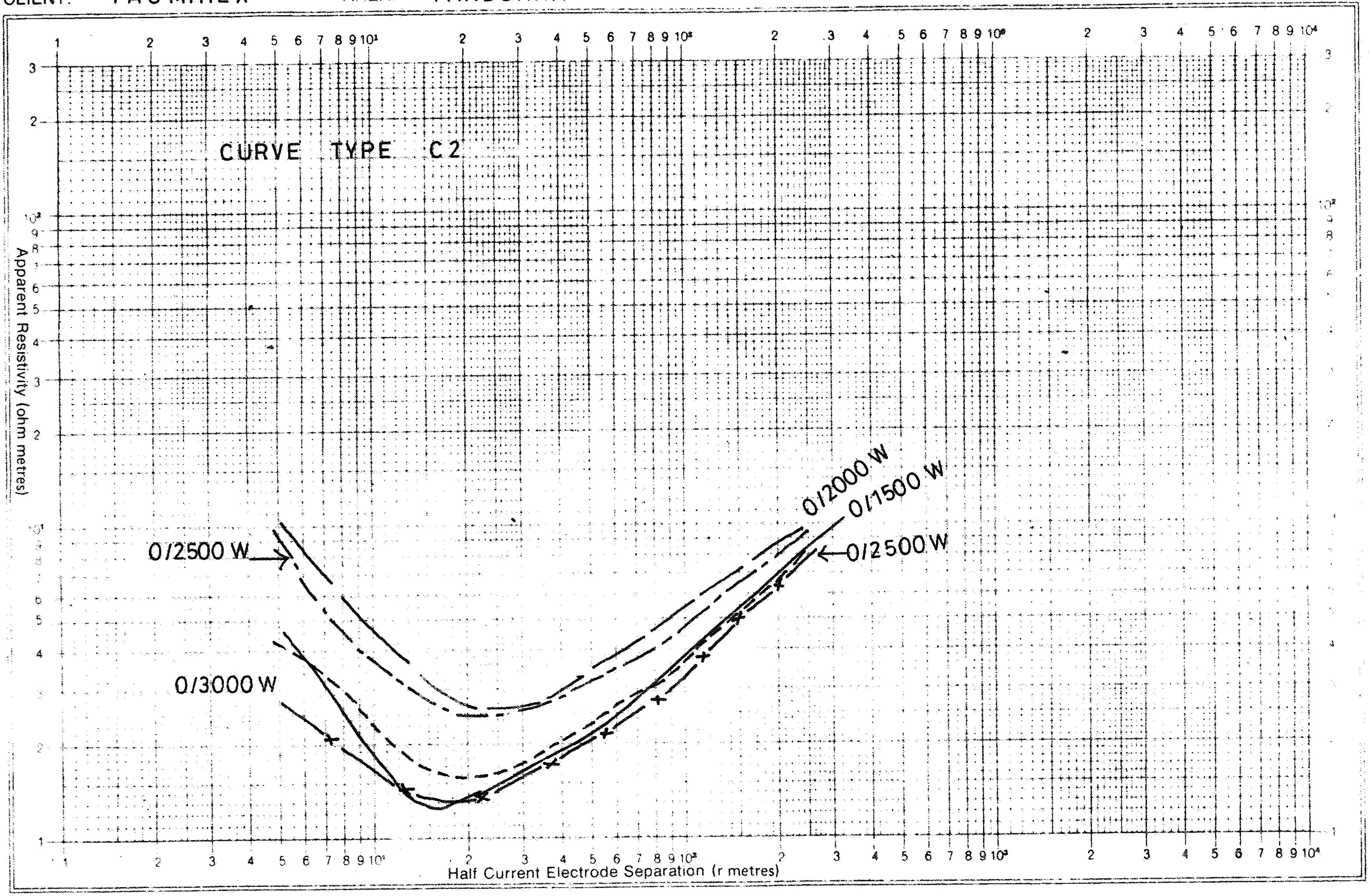
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

Plate 23 000044

Report 265

RESISTIVITY SOUNDING

CLIENT: PACMINEX AREA: PANDURRA LINE: 0 STATION: 1500W-3000W



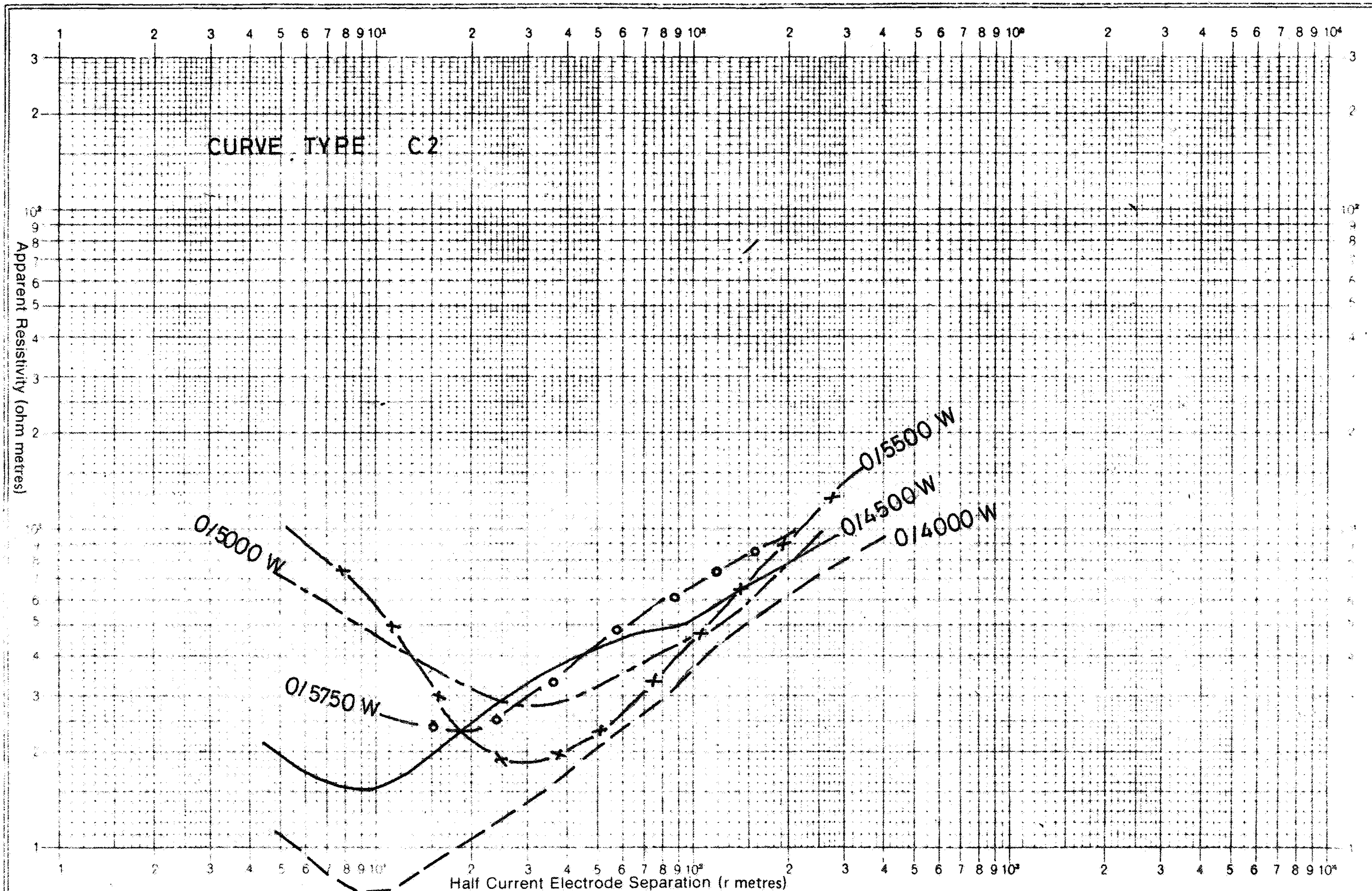
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 24

Report 265 000045

CLIENT: PACMINEX AREA: PANDURRA LINE: 0 STATION: 4000W_5750W



MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

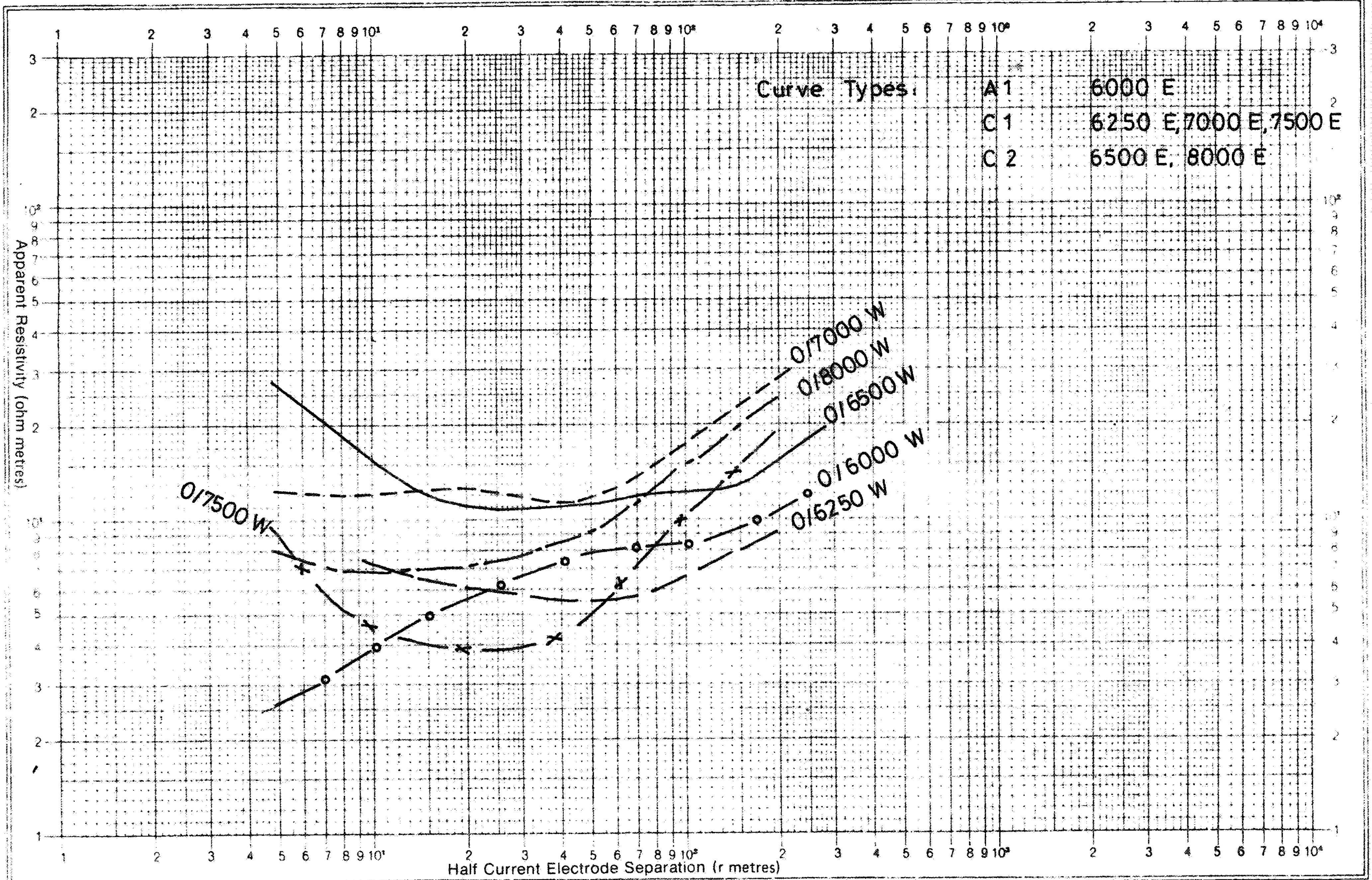
RESISTIVITY SOUNDING

Plate 25

Report 265

000046

CLIENT: PACMINEX   AREA: PANDURRA   LINE: 0   STATION: 6000W_8000W

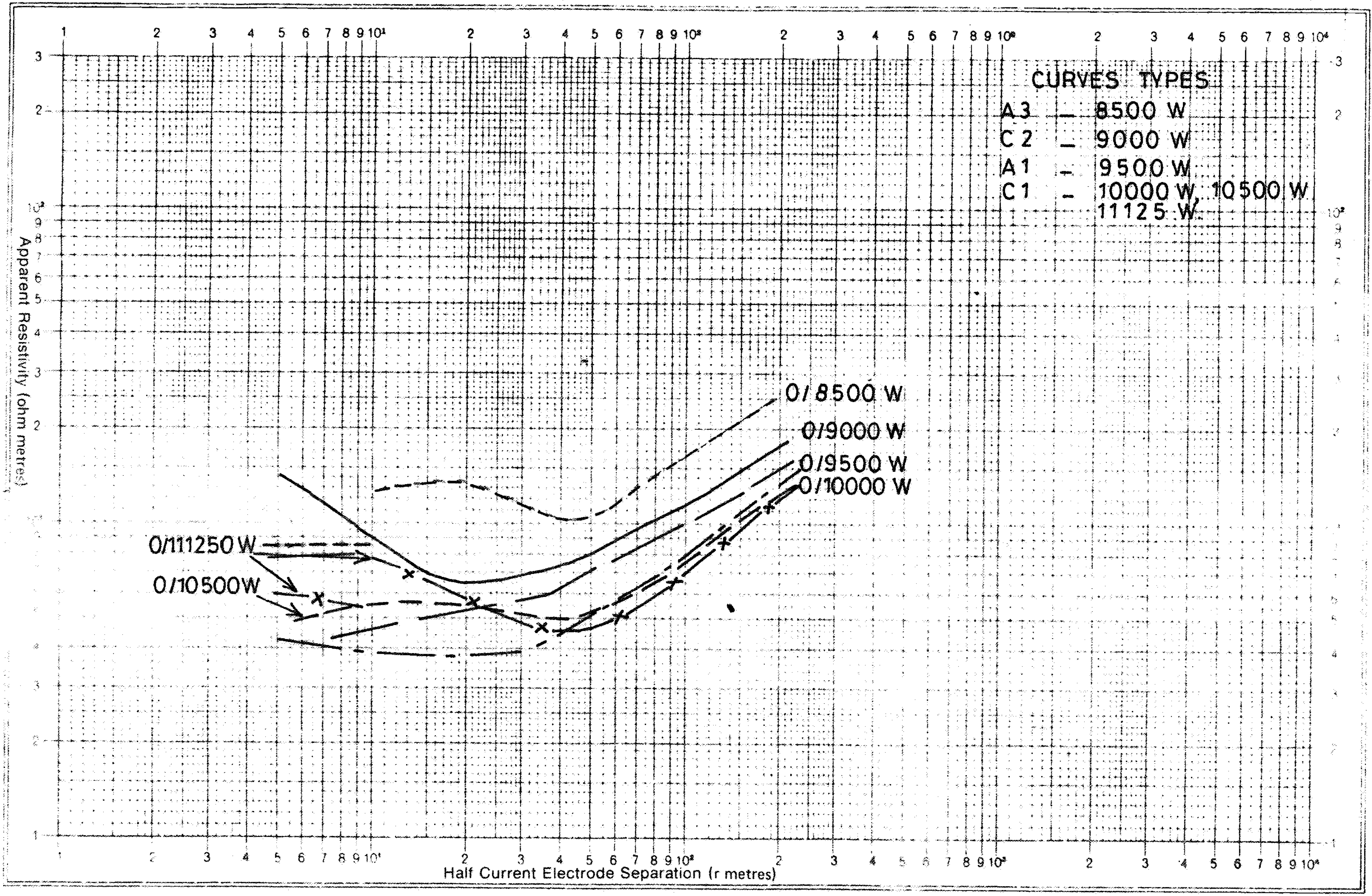


MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 26

CLIENT: PACMINEX AREA: PANDURRA LINE: 0 STATION: 8500W-11125W Report 265 000047

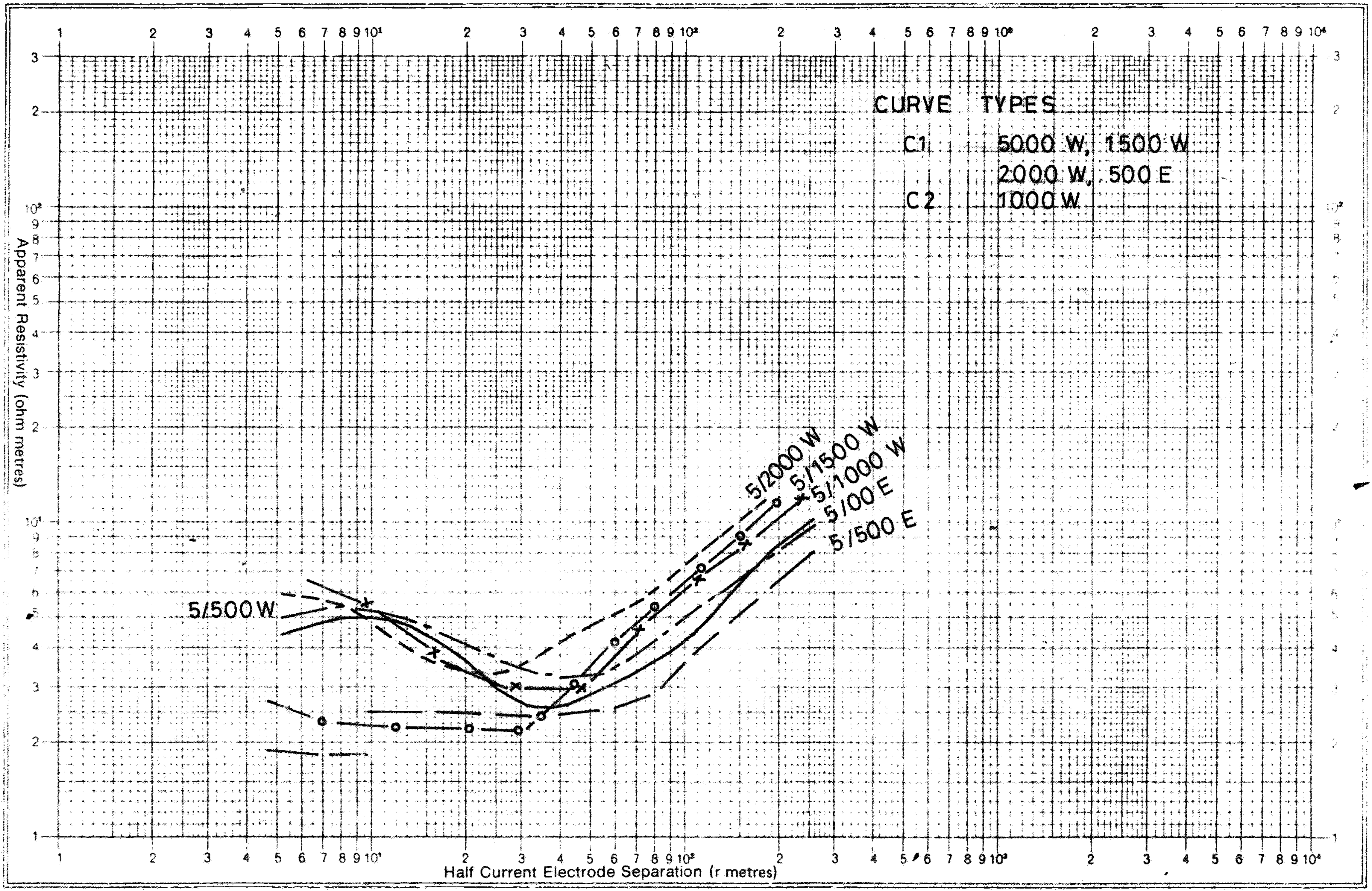


MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 27

CLIENT: PACMINEX AREA: PANDURRA LINE: 5 STATION: 2000W_500 E Report 265 000048



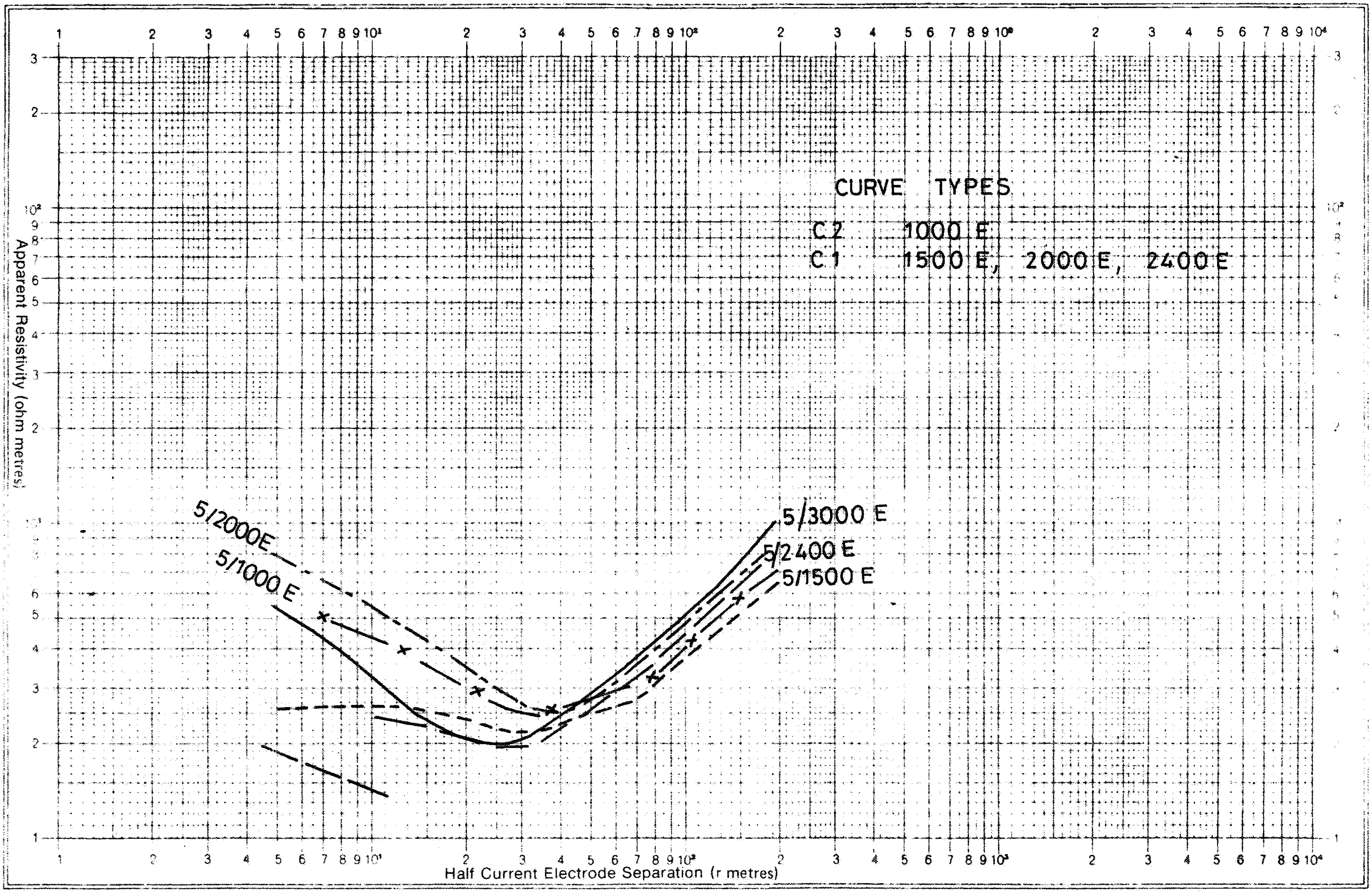
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

Plate 28

Report 265 000049

RESISTIVITY SOUNDING

CLIENT: PACMINEX AREA: PANDURRA LINE: 5 STATION: 1000E_3000E



MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

A RESISTIVITY SURVEY AT

MT. GUNSON, SOUTH AUSTRALIA,

FOR PACMINEX PTY. LTD.

By: R.B. Murdoch, B.A. (Earth Sciences),
Murdoch Geophysics (Australia) Pty. Ltd.,
21 Parker Street,
Maroochydore Qld. 4558.

Tel: (071) 43 3178

Report No. 266

March, 1977.

Conclusions

A short resistivity survey has been carried out at Mt. Gunson to determine whether the method can detect relatively deep channels.

The field work involved soundings at intervals of 500 metres on a 7 kilometre long east-west traverse.

The soundings are of basically 4 layers. The first layer reflects dry near-surface Recent deposits. The second layer, probably the depth of weathering or shale and rubble deposition (see Table 1). The third layer sediments and the fourth layer basement.

A potential source of error occurs in areas where the layer 3/layer 4 inflection is difficult to see (e.g. 1500W, 3500W, 4500W and 5000W). At three of these locations, drilling data has helped us determine typical resistivities for layer 3. These values can then be used to help interpret difficult soundings of similar shape (grouping) away from the drillholes, thus minimizing any potential error.

However, the pseudo-sections are very useful in smoothing the sounding interpretation in areas of doubt (e.g. 3500W).

Resistivity could be reliably used to map, at worst the lateral position of channel anomalies and rough depth to basement details. At best, it would provide depth to basement estimates to within ± 20% (in more than 80% of cases) and some overall details of the intra-basinal section.

....../2

Introduction

Murdoch Geophysics (Australia) Pty. Ltd. have undertaken a single resistivity traverse west of Mount Gunson Mine, which is situated approximately 140 kilometres north of Port Augusta in South Australia. The survey was carried out by Mr. R. Timmins assisted by Mr. P. Harrop and C. Johnson from the 7th to the 9th March 1977.

The basic objective of this survey was to determine whether resistivity could be used to map deep channelling in the Mount Gunson area.

Field procedures

The resistivity survey was confined to a single east-west traverse. The field procedure involved a detailed sounding every 500 metres. The soundings were expanded to a logarithmic formula with an average of 21 individual readings being taken on each sounding, for various half current electrode separations (r) between 5 and 250 metres. Some soundings were expanded further and some were terminated before this depth, depending upon anticipated results.

Presentation of results

1. Each sounding curve result is presented as a bilogarithmic graph of apparent resistivity measured in ohm metres (vertical axis) against r in metres (horizontal axis). The soundings have been grouped together on Plates 3 to 5.

2. A pseudo-section has been constructed using all the sounding results (Plate 1). The results have been logarithmically contoured to allow qualitative interpretation.

3. An interpreted geological section for the traverse line has been plotted on Plate 2.

Sounding Interpretation

(a) Qualitative Interpretation -

The soundings at Mt. Gunson are of 4 layers. The soundings vary from each other mainly in the second layer. They can be sub-divided into three groups dependent upon the resistivity and thickness

.../3

of this layer.

Group A (00W)	Layers 1, 2 & 3 form a maxima Layers 2, 3 & 4 form a minima
Group B (500W-2500W)	Layers 1, 2 & 3 form a minima Layers 2, 3 & 4 form a double ascending curve. The layer 2/3 inflection point occurs at r seperations of less than 25 metres.
Group C (3000W-7500W)	The layers are similar to group B, but the layer 2/3 inflection occurs at much wider r seperations.

Drilling correlation and experience at Pandurra, suggest that basement will occur at the layer 3/layer 4 inflection. This inflection point is not easy to identify on some soundings. In such cases depth to basement interpretation must rely heavily on surrounding resistivity values and on the pseudo-section contours.

(b) Quantitative Interpretation -

The soundings have been interpreted as follows:

TABLE 1 - SOUNDING INTERPRETATION

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Expected Geology
00W Model	1	13	0 - 3	Surface
	2	22.5	3 - 52	Sediments (sandstone)
	3	8.4	52 - 80	Sediments
	4	26	80+	Basement
	Small conductor may occur in layer 3.			
500W	1	28	0 - 3.4	Surface
	2	7	3.4 - 17.2	Weathered zone
	3	16	17.2 - 52	Sediments (sandstone)
	4	32.5	52+	Basement

.../4

TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Expected Geology
1000W	1	13	0 - 3	Surface
	2	5	3 - 12	Weathered layer
	3	16	12 - 52	Sediments (sandstone)
	4	22 (assumed)	52+	Basement

Resistivity of Layer 4 assumed - sounding not expanded out far enough.

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Expected Geology
1500W	1	4.6	0 - 7	Surface
	2/3	11.5	7 - 39	Sediments
	4	18	39+	Basement
2000W	1	19	0 - 3	Surface
	2	2.9	3 - 17	Weathered layer
	3	10.2	17 - 56	Sediments
	4	26	56+	Basement
2500W	1	40	0 - 4	Surface
	2	3.9	4 - 22	Weathered layer
	3	8.3	22 - 91	Sediments
	4	15	91+	Basement
3000W	1	20	0 - 5	Surface
	2	3.6	5 - 43	Weathered layer & shale
	3	9.5	43 - 150	Sediments
	4	18	150+	Basement
3500W	1	65	0 - 5.5	Surface
	2	2.3	5.5 - 40	Weathered layer & shale
	3	10	40 - 126(?)	Sediments
	4	30	126+(?)	Basement

Exact basement inflection difficult to determine accurately.

.../5

000055

TABLE 1 (CONTINUED)

	Layer	Resistivity (ohm metres)	Depth Interval (metres)	Expected Geology
4000W	1	70	0 - 5	Surface
	2	3.5	5 - 45	Weathered zone and shale
	3	10	45 - 114	Sediments
	4	18	114+	Basement
4500W	1	40	0 - 4	Surface
	2	4	4 - 48	Weathered layer and shale
	3	10	48 - 95	Sediments
	4	24	95+	Basement
5000W	1	11	0 - 3	Surface
	2	3.3	3 - 25	Weathered zone
	3	6.8	25 - 63	Sandstone and shale
	4	17.5	63+	Quartzite
5500W	1	8.5	0 - 6.7	Surface
	2/3	4.2	6.7 - 74	Sediments
	4	13.2	74+	Quartzite
6000W	1	5	0 - 6	Surface
	2/3	3.8	6 - 106	Sediments
	4	12.9	106+	Quartzite
6500W	1	10.5	0 - 8	Surface
	2	4.2	8 - 80	Sediments
	3	more than 5	80+	Basement
	Basement resistivity not determined, as sounding not expandedout sufficiently far.			
7000W	1	70	0 - 6	Surface
	2	2.8	6 - 96	Sediments
	3	12	96+	Basement
	Poor sounding.			

.../6

Drilling suggests that the variations that occur in the resistivity and thickness of layer 2, are largely dependent upon the thickness of shale (and rubble?) present. In the Type A soundings these formations are absent. In Type C soundings the shale reaches maximum thickness.

The lower shale unit intersected in hole WB3 cannot be differentiated from the sandstones above. The effect of the presence of the shale, only lowers the resistivity of layer 3.

The potential source of error in the above interpretation lies in correctly identifying the exact position of the layer 3/layer 4 inflection. In this regard the more difficult soundings to interpret are 1500W, 3500W, 4500W and 5000W. 1500W, 3500W and 4500W all occur close to drillholes, which provide depth control. In the above cases, we have matched the field curve to a computer derived curve using resistivities typical of layer 3 and 4, as determined at drillsites and in places where the inflection is easier to see. Soundings at 1000W and 6500W must also be treated with caution as they were not expanded out far enough to confidently confirm the position of the basement inflection.

Pseudo-sections

The pseudo-section at Mt. Gunson is very useful in interpreting the final basement profile. With the exception of the area west of 6000W, the pseudo-section contours parallel to the basement profile, reflecting the fairly uniform layer 3/layer 4 geo-electric section. The basement appears to be slightly more conductive west of 6000W.

The pseudo-section shape is used to provide a possible depth to basement interpretation at 3500W where the layer 3/layer 4 inflection is very difficult to see.

Interpreted Section

The predominant feature of the interpreted section is the deep depression between 3000W and 3500W. Depth to basement in the depression could be in the order of 150 metres. A small depression,

.../7

one sounding wide, can be postulated at 6000W, but we do not recommend the testing of such anomalies. At least two soundings are required to confirm a channel anomaly.

The resistivity of the sedimentary section is highest at the eastern end of the line. West of 1000W, its resistivity falls from 16, to about 10 ohm metres over the channel anomaly, and down to about 4 ohm metres at the western end of the line. The higher resistivities at the eastern end of the line coincide with geological unit Whs and the low resistivities at the western end, with geological unit Wh. The resistivity of Unit Whs over the channel anomaly, would be lowered by the presence of shales. The basement resistivity averages 20.4 ohm metres east of 5500W and 12.7 ohm metres to the west.

Recommendations

Resistivity could be reasonably used to map deep channels in the Mt. Gunson area. The only problem envisaged from this survey, is possible error from the poor layer 3/layer 4 contrast that can occur. The possibility of error can be minimized in a number of ways :-

(a) Interpretation - Grouping of sounding curves; comparison of quantitative interpretation with that for surrounding soundings; qualitative interpretation of pseudo-sections.

(b) Field Procedures - (i) Use higher wattage converters in very sandy areas to minimize noise.
(ii) Concentrate readings on rising curve segments.

(c) Parallel relatively closely spaced traverse lines (e.g. Pandurra) - Allows the shape of features interpreted to be studied.

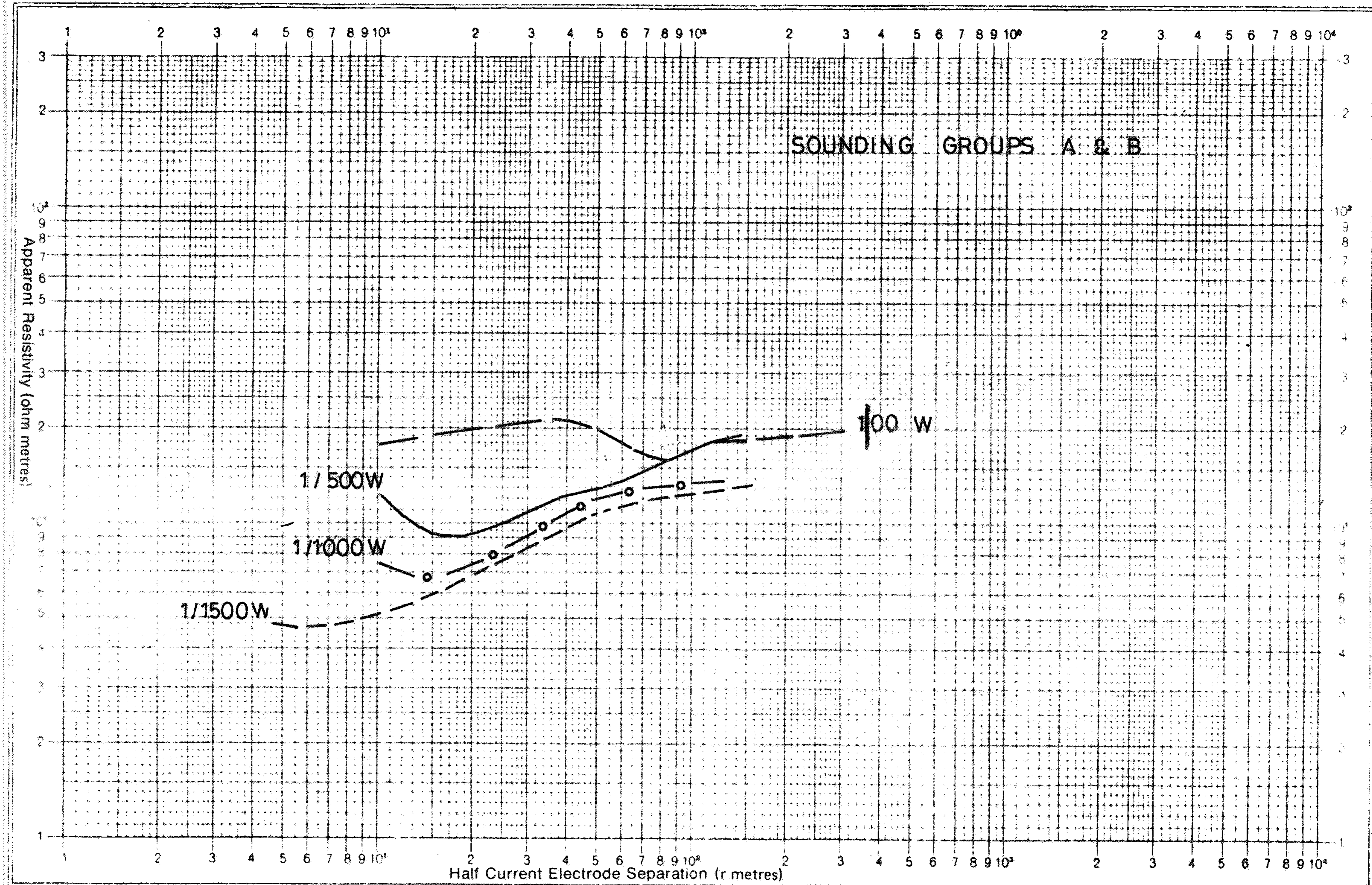
By observing the above conditions, resistivity should at worst locate the lateral position of channel anomalies and provide basic depth to basement information. At best it should also provide information on depth to basement (to within 20% in over 80% of cases) and some controls on the overall intra-basinal section.

RESISTIVITY SOUNDING

Plate 3

Report 266 000058

CLIENT: PACMINEX AREA: MT. GUNSON LINE: 1 STATION: 00 W_1500W



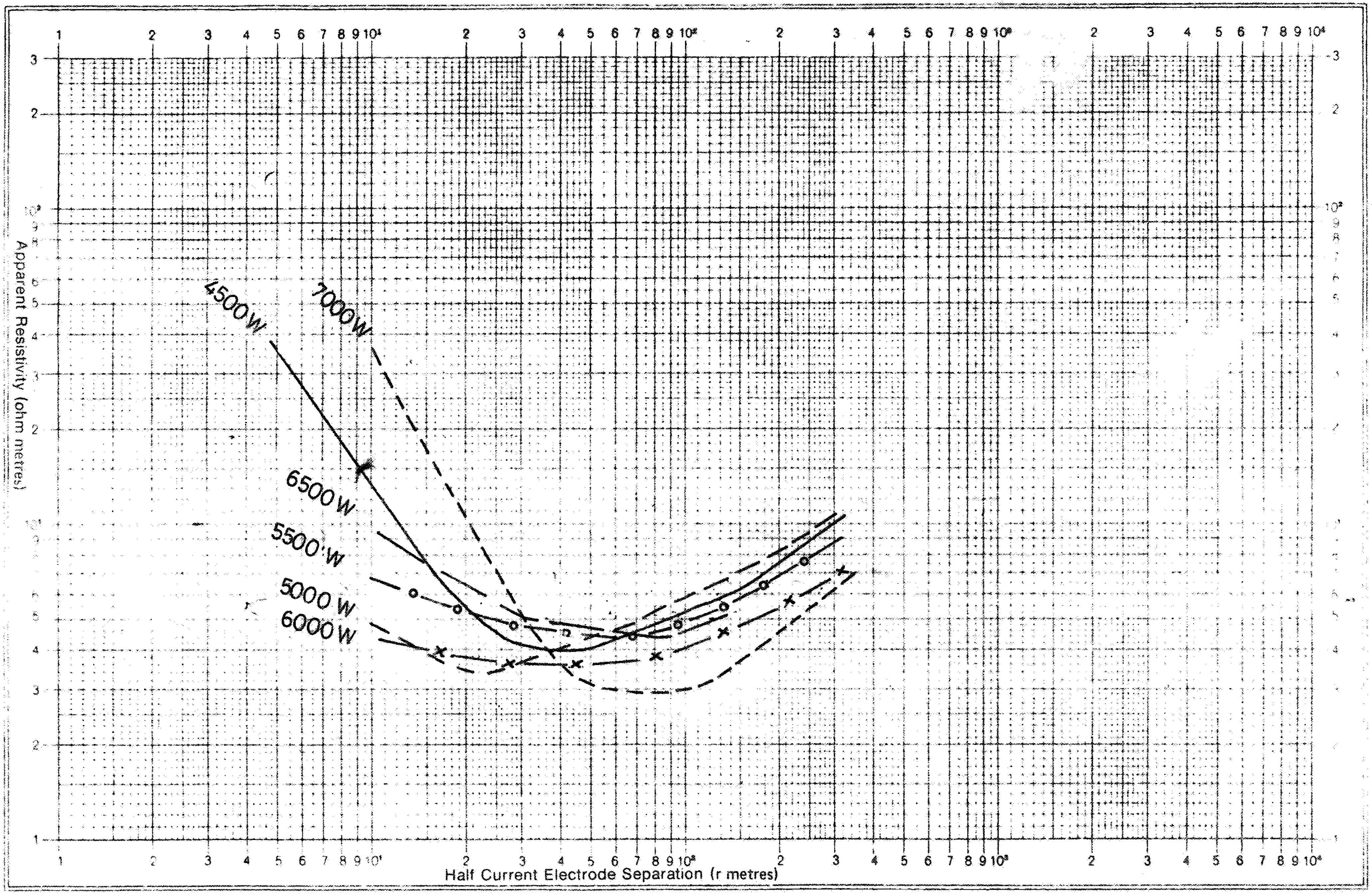
MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 4

Report 266 000059

CLIENT: PACMINEX AREA: MT. GUNSON LINE: 1 STATION: 4500W-7000W

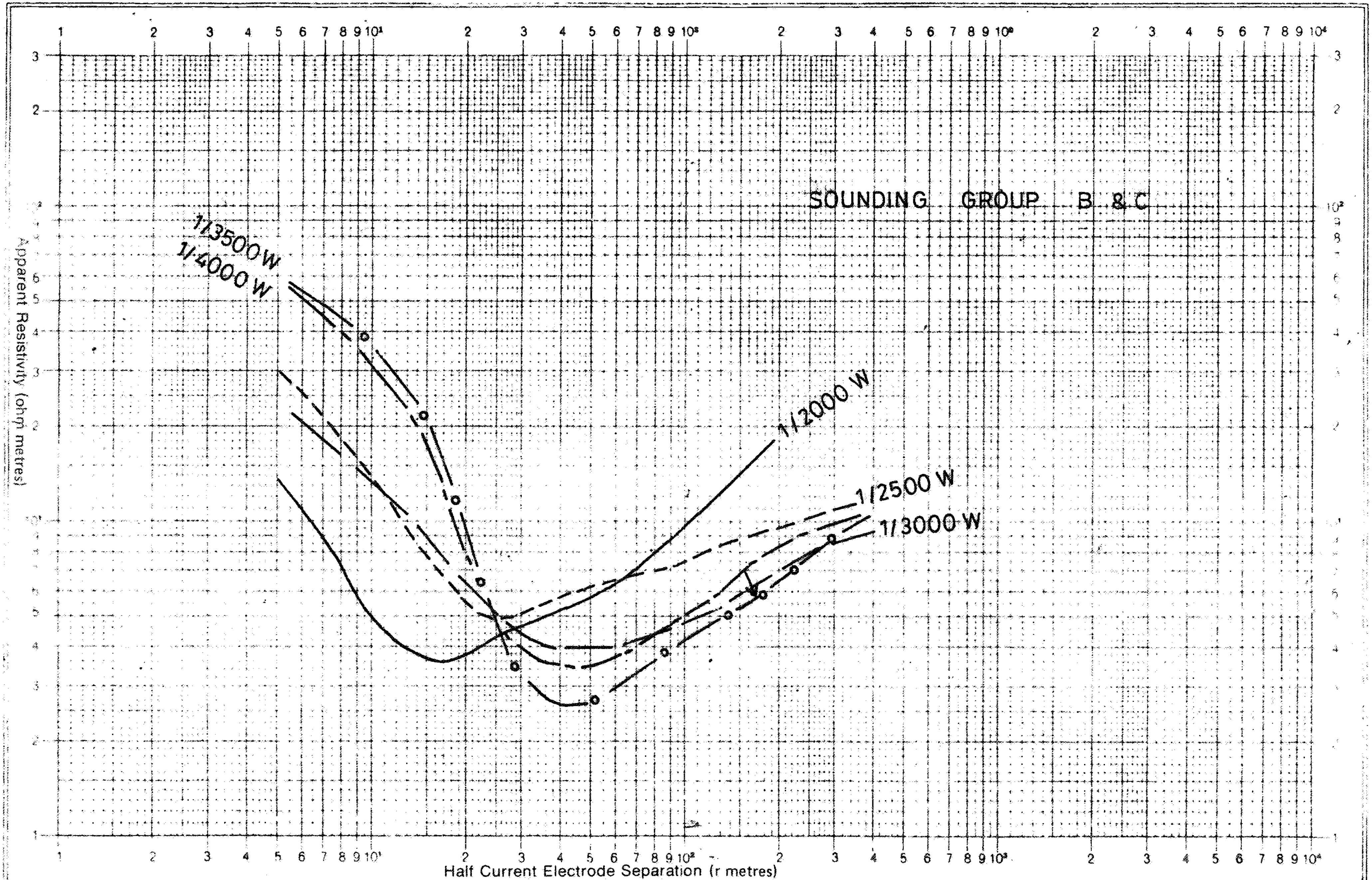


MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

RESISTIVITY SOUNDING

Plate 5

CLIENT: PACMINEX AREA: MT. GUNSON LINE: 1 STATION: 2000W_4000W Report 266 000060



MURDOCH GEOPHYSICS (AUSTRALIA) PTY. LTD.

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

resistivity survey
for : PACMINEX PTY. LTD.
at : MT. GUNSON SOUTH AUSTRALIA

pseudo section
lines: 1

scales:	vertical	horizontal
	1cm = 8 metres of current electrode separation (r)	1cm = 100 metres

6678-9

plate no: 1 | report no: 266 | date: Mar. '77

MURDOCH GEOPHYSICS AUSTRALIA PTY. LTD.

RESISTIVITY SURVEY
FOR PACMINEX PTY. LTD.
AT MT. GUNSON SOUTH AUSTRALIA

INTERPRETED SECTION – LINE 1

SCALES. Vertical 1 cm = 20 metres
Horizontal 1 cm = 100 metres.

6678-10

PLATE N° 9 | REPORT N° 266 | DATE March 1977

Prospect 401

000061

PACMINEX PTY. LIMITED

EVALUATION OF A RESISTIVITY SURVEY AT MOUNT GUNSON

JUNE, 1976

PMR 173/76

SYDNEY
September, 1976

D.G. Tonkin

COPY NO.

000062

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CONTENTS

LIST OF ILLUSTRATIONS

KEYWORDS

SOUTH AUSTRALIA
RESISTIVITY
EVALUATION
8SH 43-16
9E L 199
SURVEY
1976

1. INTRODUCTION

Murdoch Geophysics conducted a trial resistivity survey at Mt. Gunson in June, 1976. PMR 142/76 reported the results. The purpose of the survey was to test the ability of resistivity to reveal subsurface geology and to gauge the potential of the resistivity method as a low cost substitute for or adjunct to stratigraphic drilling.

This report evaluates the interpreted results of the resistivity survey against the geology as known from stratigraphic drill holes. Further geophysical work is recommended.

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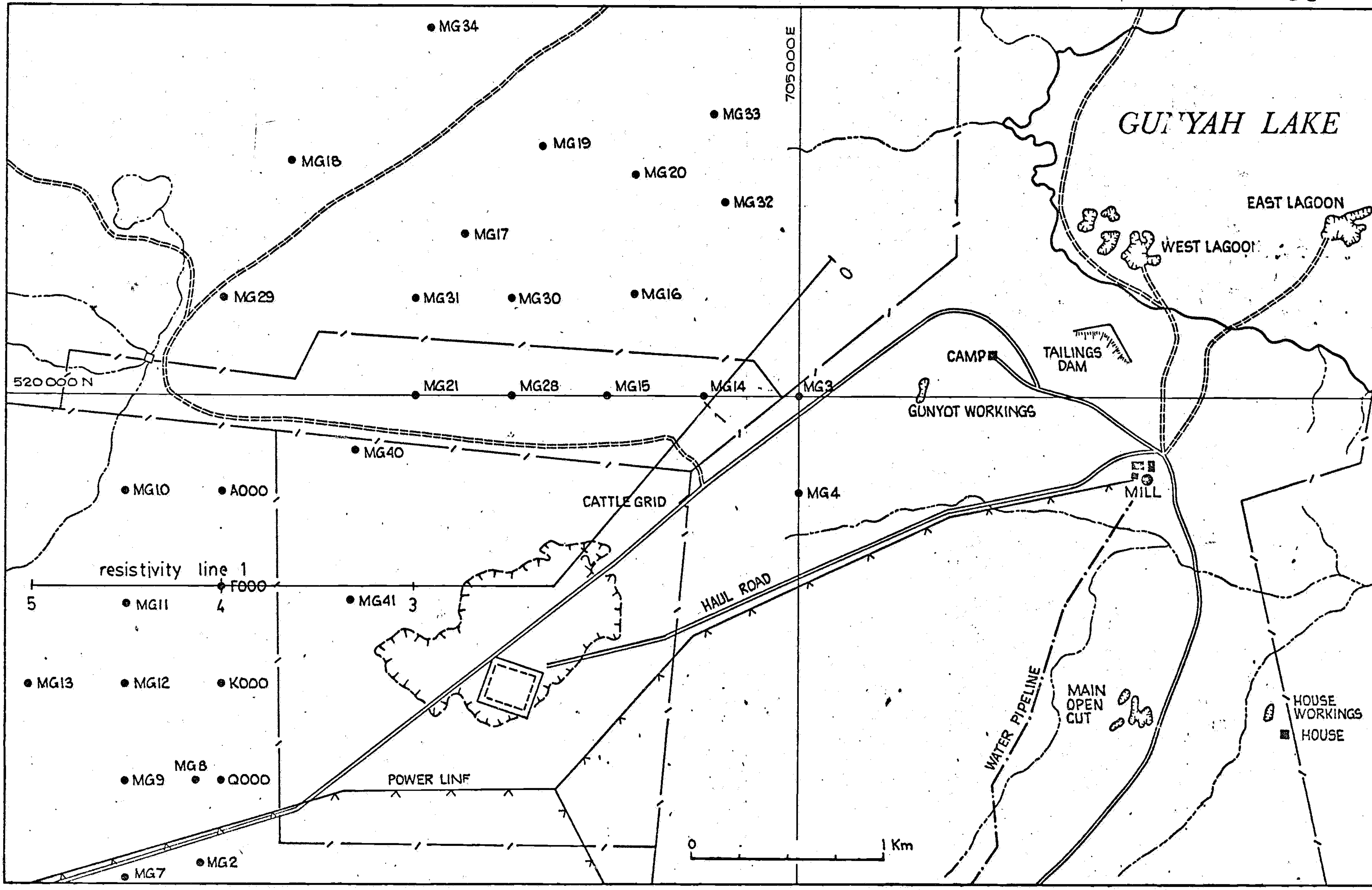


Figure 1. LOCALITY MAP - . GUNSON AREA

January 1975

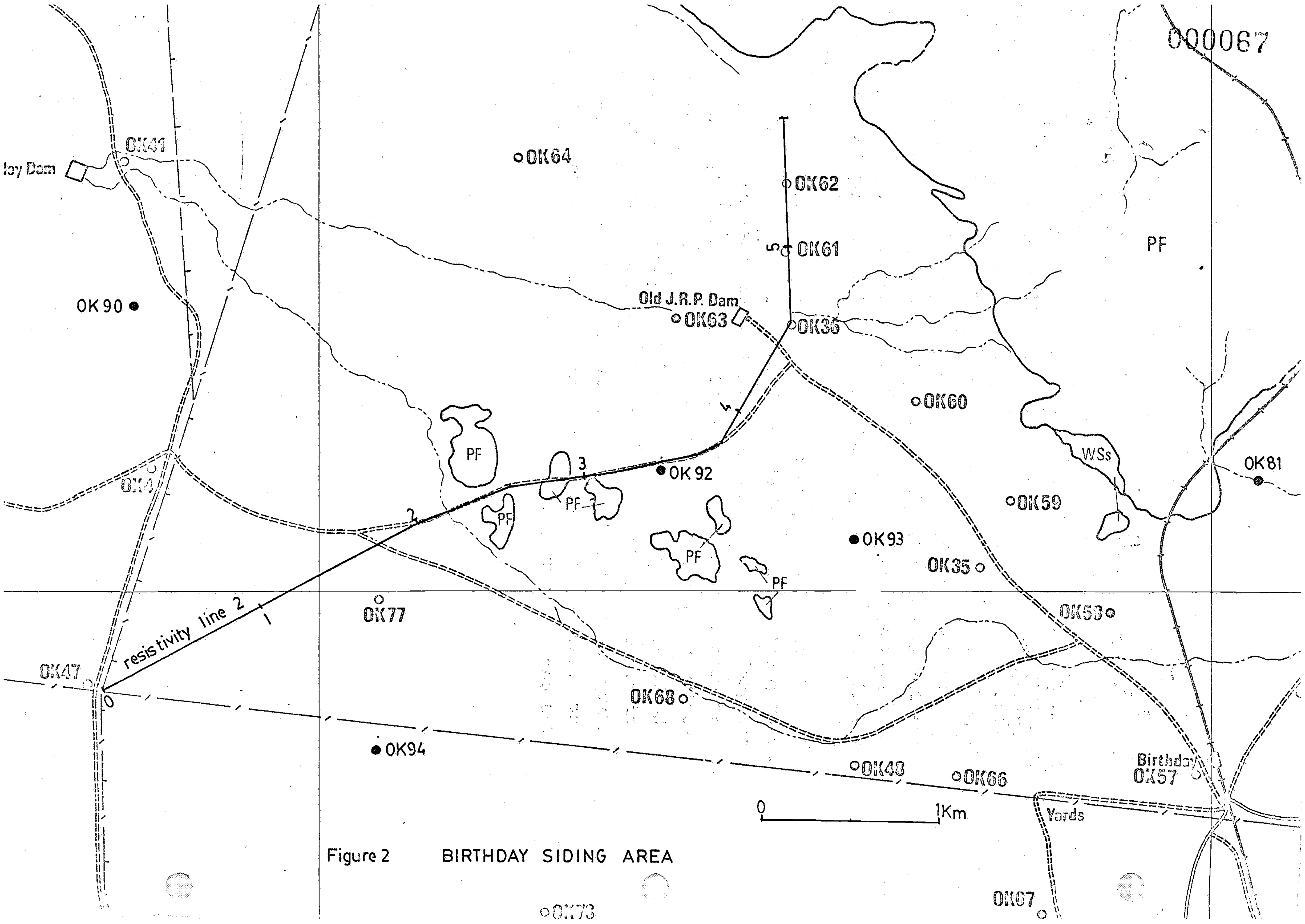


Figure 2 BIRTHDAY SIDING AREA

2. EVALUATION OF RESULTS

From the resistivity data, R.B. Murdoch interpreted geological sections differentiating 18 lithological units, (Plate 1, PMR 142/76). The complexity of the interpretations makes comparison with the relatively simple stratigraphy, difficult.

Resistivity did give a reasonable picture of the Pandurra Formation 'basement' profile in many places. For general exploration purposes, it did not differentiate sufficiently between the various other stratigraphic layers.

On the accompanying drawings, the top of the Pandurra Formation profiles, as predicted by resistivity, are compared with the geological cross sections constructed using drill hole data. Success rates for the resistivity method were computed by measuring the percentage of the survey traverse length over which the basement profile as predicted by resistivity is within ± 10 m of the drill interpreted basement profile. On line 1, resistivity was 'successful' over 3,000 out of 4,500 m, or 67% of the traverse length. One line 2, the method was successful for 2,700 out of 5,500 m, or 4~~5~~9% of the traverse length.

3. CONCLUSIONS

3.1 The success rate of resistivity in predicting the basement profile was estimated to range from 49% to 67%, given an order of accuracy of ± 10 m to a maximum depth of 55 m.

3.2 The resolution with resistivity is probably not sufficient to identify depressions of Cattle Grid dimensions.

3.3 Younger sediments overlying Pandurra Formation probably cannot be differentiated by resistivity.

3.4 Tregolana Shale with a basal dolomite band prevented detection of underlying Pandurra Formation basement at MG 11 and OK 47.

3.5 The effectiveness of resistivity in profiling basement at depths greater than 55 m is untested.

4. RECOMMENDATIONS

4.1 A resistivity survey should be undertaken, designed to test the effectiveness of the method in detecting larger depressions at greater depth than those investigated in the June, 1976, survey. A traverse from Cattle Grid to the highway is recommended.

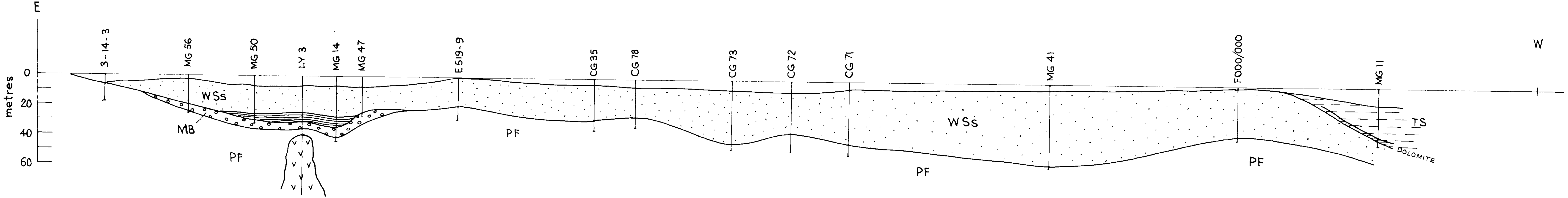
4.2 Resistivity should be tried as a means of outlining macro relief on the Pandurra Formation basement. Subtle relief should then be interpreted by palaeo-geographic reconstruction.

4.3 Attempts should be made to determine whether accuracy of prediction of Pandurra Formation basement depth could be improved by modification of technique or interpretation.

4.4 Resistivity could be used to provide inexpensive infill data between stratigraphic drill holes. In practice, it should be recognised that the order of accuracy of resistivity depth estimates is usually only about ± 20% (Griffiths, D.H., King, R.F., 1965, Applied Geophysics for Engineers and Geologists, p. 134). This means that at a depth of 100 m, phantom depressions with up to 40 m relief could appear.

4.5 Seismic refraction techniques could also be considered, as an alternative to resistivity. According to Griffiths and King (op. cit., p. 134) the greater accuracy (± 10%) of the seismic method might more than pay for its greater cost.

DGT/SS
21/9/76



DRILL-INTERPRETED GEOLOGICAL SECTION

TO ACCOMPANY PMR 173/76

PACMINEX PTY. LIMITED

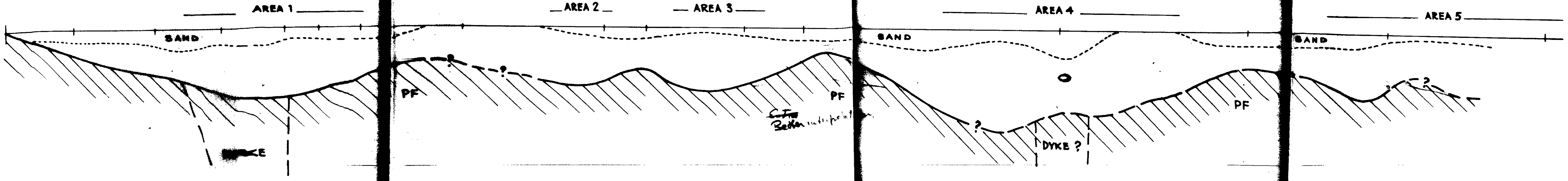
LINE 1

MG 14-CATTLE GRID TRAVERSE

COMPARISON BETWEEN DRILL HOLE AND RESISTIVITY INTERPRETATIONS

SCALE HORIZ. 1:10000 — VERT. 1:2000	DRG. No.
DRAWN	H 5316-3
DATE SEPT '76	SHEET 1 (OF 2)
REVISED	

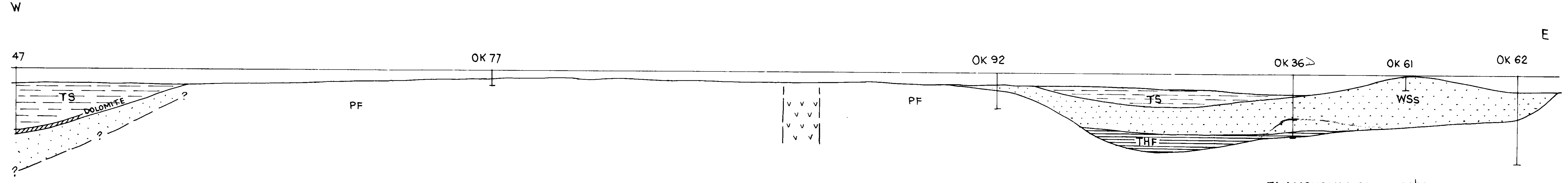
6678-11



RESISTIVITY SECTION

H 5316 - 3
SHEET 2 (OF 2)

66T 8-12



DRILL-INTERPRETED GEOLOGICAL SECTION

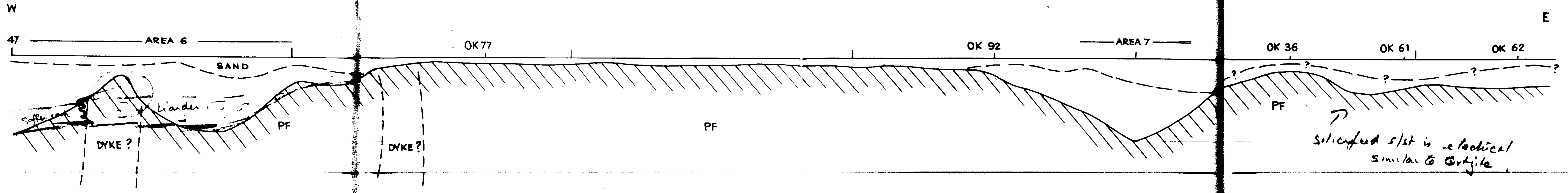
TO ACCOMPANY PMR 173/76

PACMINEX PTY. LIMITED

LINE 2
BIRTHDAY SIDING TRAVERSE
COMPARISON BETWEEN DRILL HOLE AND RESISTIVITY INTERPRETATIONS

SCALE HORIZ. 1:10000 — VERT. 1:2000	DRG. No H5316-4
DRAWN	SHEET 1 (OF 2)
DATE SEPT '76	
REVISED	

6678—13



RESISTIVITY SECTION

H5316-4
SHEET 2 (OF 2)

6578-14

AMR 133/73
Spare

000071

P A C M I N E X   P T Y.   L T D.

GEOPHYSICAL SURVEY AT CATTLE GRID (S.A.)

July, 1973.

Mission 73-501-30

C.G.G.

349B Montague Road, WEST END, 4101, Brisbane

A B S T R A C T

In July, 1973 C.G.G. carried out a one week resistivity and I.P. orientation survey at Mount Gunson (S.A.) for PACMINEX PTY. LTD. At Mount Gunson, copper sulphides are located in a nearly horizontal sandstone horizon.

The I.P. and resistivity tests included Electrical Soundings and I.P. Expanders, saturation tests, a mise-a-la-masse survey near drillhole CG78, and pole-dipole profiles.

Results showed that known mineralisations give rise to strong, well defined I.P. anomalies. It seems that mineralisations are overlain by a thicker, more conductive upper layer and are located within more resistive sandstones.

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LIST OF FIGURES

INTRODUCTION

In July, 1973 C.G.G. carried out Resistivity and Induced Polarisation tests at Mount Gunson, (S.A.) for PACMINEX PTY. LTD.

A copper sulphide mineralisation lies within a nearly horizontal layer about 3 metres thick. The footwall consists of the Pandurra Quartzite, the hanging wall of the Whyalla sandstone. The mineralised horizon is about 35 metres deep.

In an endeavour to establish the most effective geophysical method it was decided to use the C.G.G. PP721 recording unit with a 7.5 KVA transmitter. The study of the influence of all parameters (pulse duration, decay voltage at any time after cut off ...) can be studied with the C.G.G. PP721 recording unit. Because clayey conductive overburdens are known in the Mount Gunson region it was considered safer to use a 7.5 KVA transmitter for the tests.

1. FIELD AND GEOPHYSICAL CONDITIONS

1-1 Location-Access-Terrain Conditions

The Mount Gunson Mine is situated between Port Augusta and Pimba,north of the Transcontinental Railway (see Figure 1 - Location sketch). The crew and equipment travelled from Kalgoorlie to Pimba by rail. The distance between Pimba and the Mount Gunson Mine is 30 miles. Part of the road is sealed and access is easy for any type of vehicle.

The surveyed area is undulating and covered by open woods.

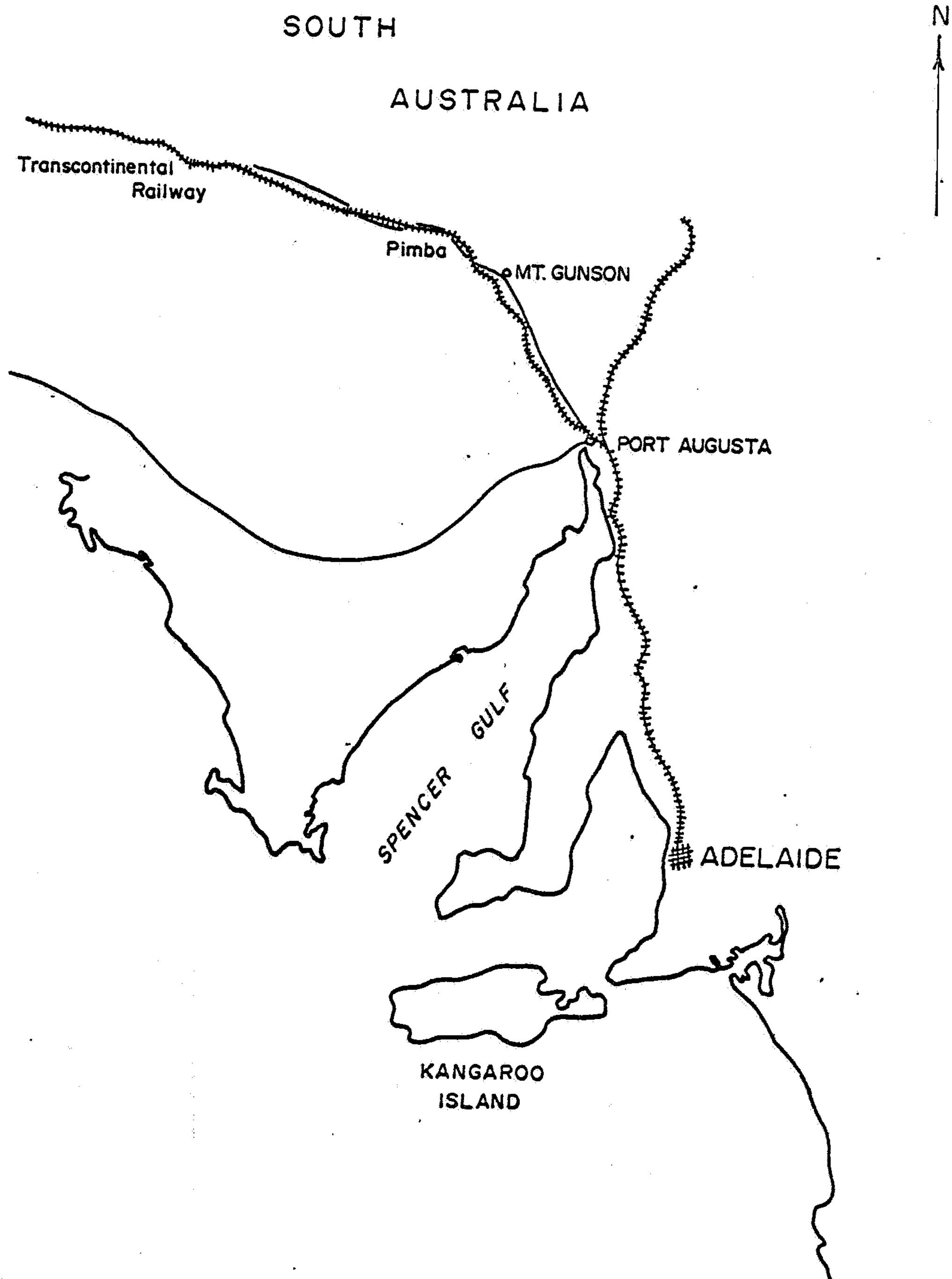
1-2 Geophysical Conditions

Surface conditions are generally good for electrical methods. Current lines were as long as 1500 metres but their resistances were kept between 100 and 120 ohms, (the resistance of 1500 m of cable is 15 ohms). Current electrodes were watered with fresh water. The maximum current was 4.50 amp; the minimum current was 0.50 amp. Potential dipoles of 20, 30 and 60 metres were used. Pulse voltages were higher than 10 mV and lower than 400 mV except for 9 Electrical Sounding measurements which were within the 2.8-20 mV range.

The quality of records was good; elongations corresponding to the decay voltage at one second after cut off were generally longer than 5 mm (see Figure 7). Ground electromagnetic coupling was observed on Line 1900N

FIGURE I.

LOCATION SKETCH
MT. GUNSON



2. FIELD OPERATIONS AND STATISTICS

2-1 Field Operations

The crew left Kalgoorlie on the 18th of July, 1973 by train and arrived in Pimba on the 19th. Electrical Sounding 1 was started in the afternoon of the 19th. A second Electrical Sounding and I.P. Expander was completed on the 20th. Saturation tests were carried out on the same day.

An applied potential survey was carried out on hole CG78 on the 21st. Pole-dipole profiling started on the 22nd.

On the 23rd W. TSCHAIKOWSKY, Manager of Ground Geophysics for GEOTERREX PTY. LTD. joined the crew.

2-2 Statistics

2-2-1 Composition of the Crew

Personnel

- Observer/Party Chief: D. PARKINSON
- Three Field Assistants from PACMINEX PTY. LTD.

Equipment

- one C.G.G. PP721 recording unit set up in a cabin on a TOYOTA Landcruiser truck.
- a 1000 foot logging cable
- one 7.5 KVA modified HUNTEC IP transmitter with an engine generator powered by a two cylinder ONAN four stroke engine on a trailer.
- three IW TOKAI transceivers.

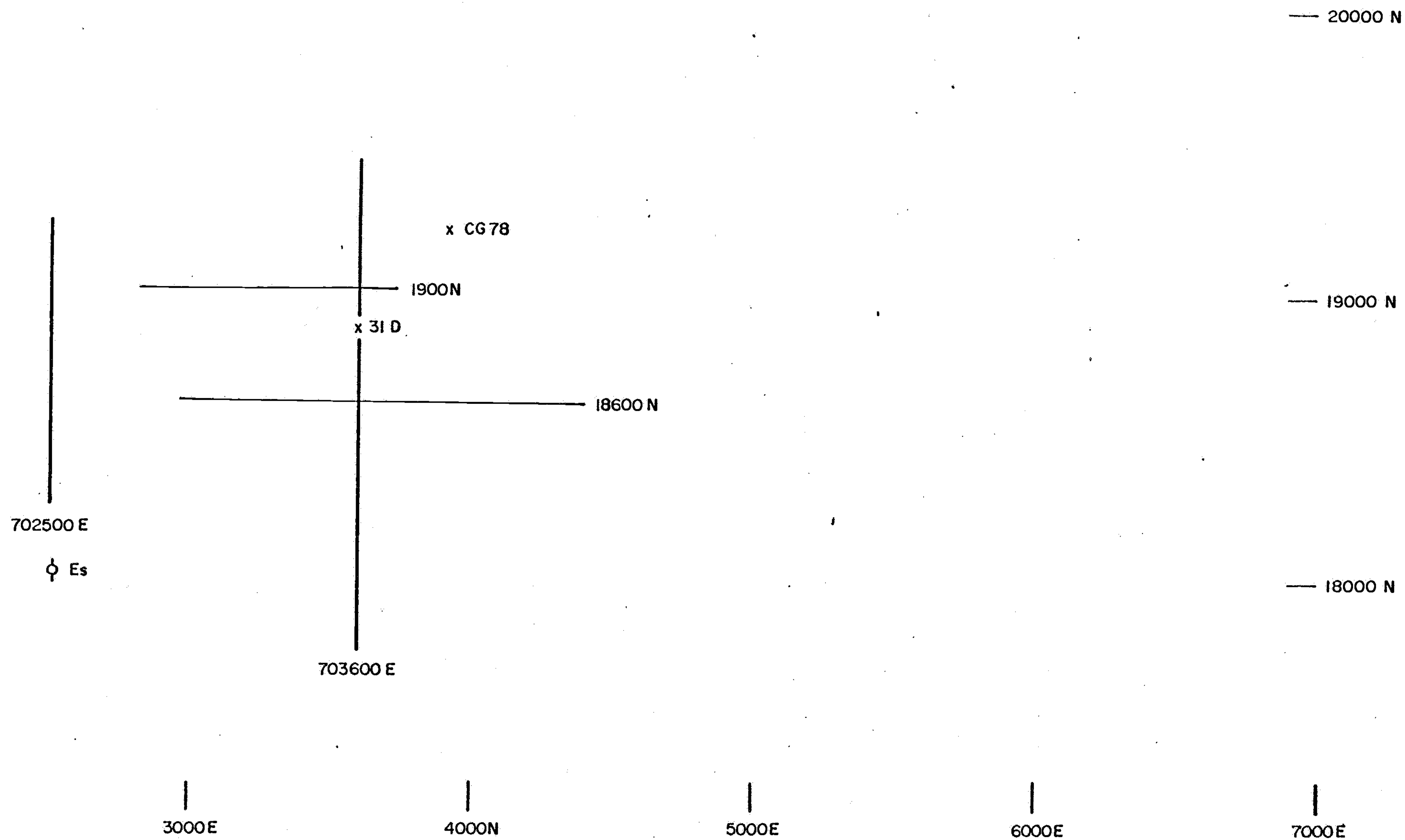


FIGURE 2
GRID MAP

000080

2-2-2 Production

Field work started on the 19th and ended on the 26th of July, 1973. Measurements included,

- 2 Electrical Soundings and I.P. Expanders
- 3 Saturation tests
- 123 applied potential (IP and D.C.) stations
- total length of applied potential profiles: 2.25 km
- total length of pole-dipole profiles: 5.75 km
- number of pole-dipole measurements: 230
- total number of working days: 7.5

3. TESTS

3-1 Electrical Soundings and I.P. Expanders

ES2 on mineralised drillhole 31D (Figure 3)

The apparent resistivity curve shows that a conductive overburden underlies a thin resistive upper layer, probably sandy clay. The resistivity of the conductive overburden does not exceed 3 ohm-m; its longitudinal conductance* is 10 mhos. For a resistivity of 2.5 ohm-m the corresponding thickness of the conductive overburden is 25 metres.
The resistivity of the resistive bedrock exceeds 100 ohm-m.
The apparent polarisability curve reaches a maximum for AB/2 = 150 m. The shape of the I.P. Expander corresponds to the effect of a horizontal polarisable layer. The top of the layer is about 25 metres deep.

* The longitudinal conductance of a stratum is equal to its thickness divided by its resistivity.

FIGURE 3 E.S.2

ELECTRICAL SOUNDING AND I.P.

EXPANDER ON MINERALISED

DRILLHOLE 31 D

Bearing of current line N/S

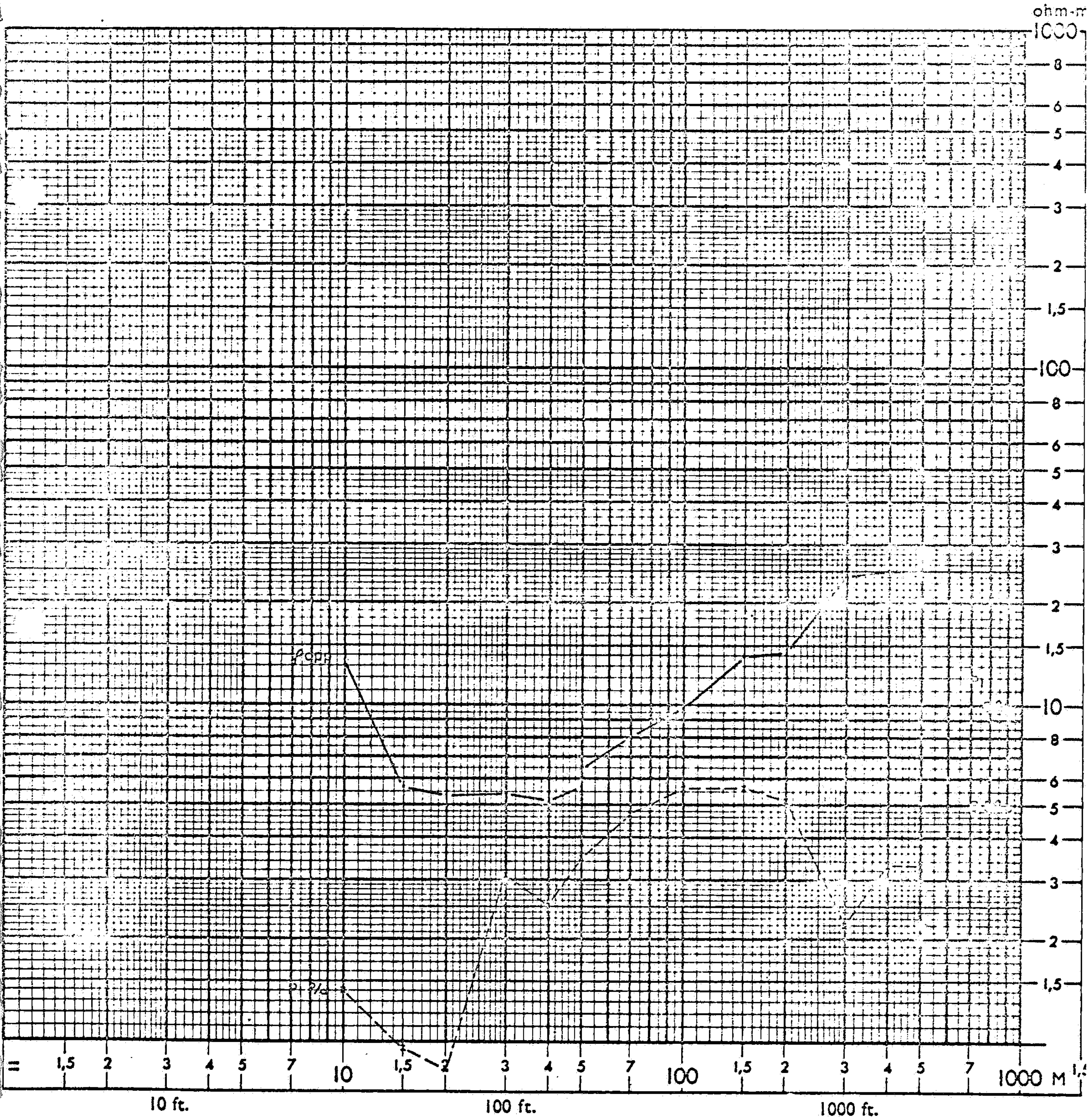
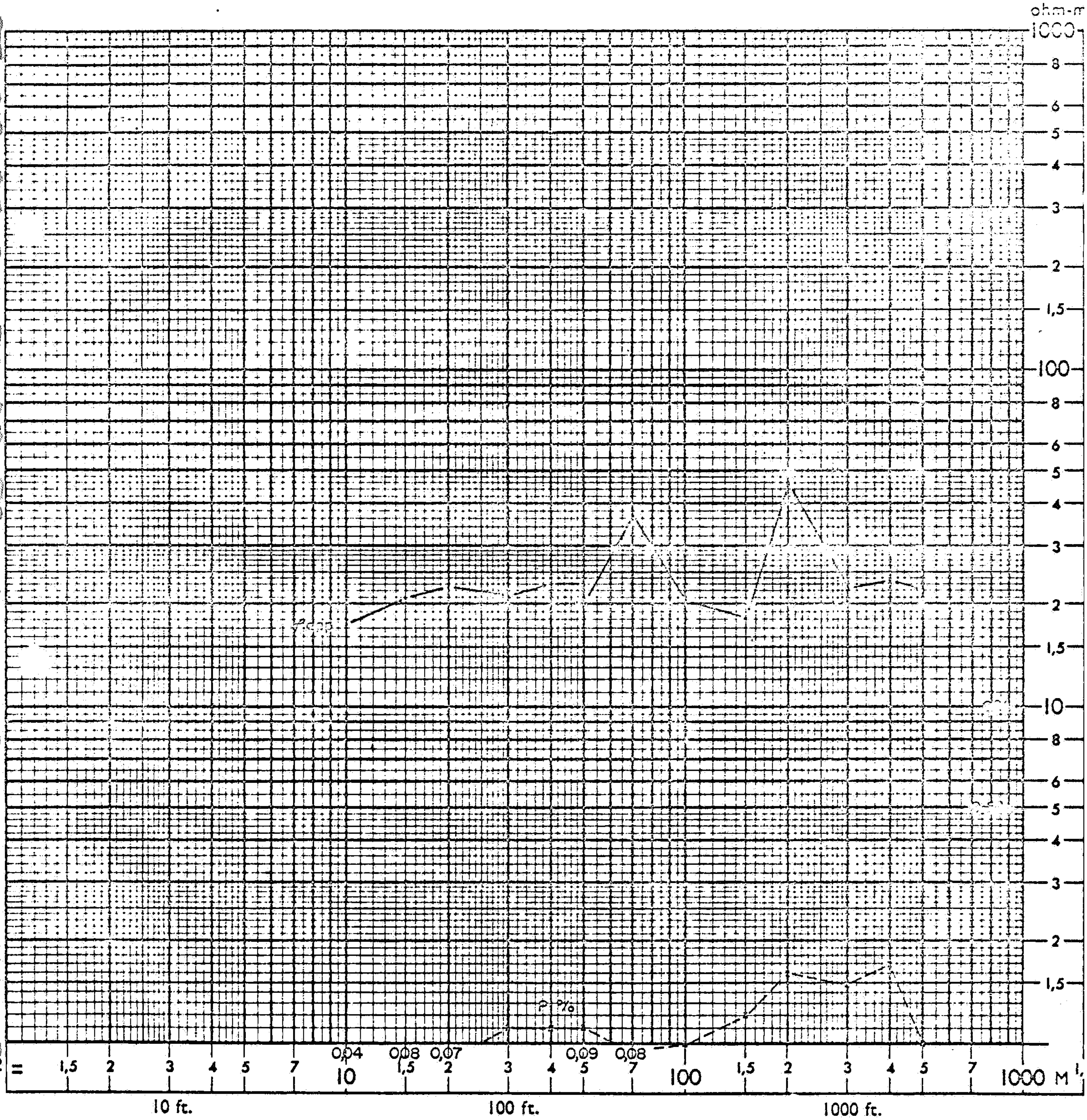


FIGURE 4 E.S.I.

ELECTRICAL SOUNDING AND I.P.

EXPANDER ON A BARREN DRILLHOLE AT

702 500E / 651 8000 N



ES1 on barren drillhole 702500E/6518000N (Figure 4)

At ES1 the resistivity of the overburden is higher than at ES2 - its resistivity is about 15 ohm-m and its thickness does not exceed 10 metres. On the other hand the resistivity of the bedrock is much lower at ES1; it does not exceed 30 ohm-m. The apparent polarisability curve confirms that there is no polarisable material at shallow depth. The apparent polarisability remains below 0.15% for AB/2 < 200 m. The slight increase of apparent polarisabilities for AB/2 = 200, 300 and 400 metres is most probably due to a lateral effect and not to a deep marker. It is interesting to observe that the mineralised bedrock is more resistive than the barren bedrock. Because there are only two Electrical Soundings and I.P. Expanders this could be merely a coincidence; nevertheless it is a fact frequently observed that stratiform sulphide mineralisations in limestones or sandstones are associated with resistive horizons. In "On the genesis of the lead ores of the eastern border of the Caledonides in Scandinavia"* Erland GRIP mentions that there is "a striking correspondence between the purest quartz sandstone "argillaceous sandstone and the richest lead concentrations", "argillaceous sandstone being less and less favourable with increasing content of clay and sericite in the matrix".

* Economic Geology - Monograph 3 1967

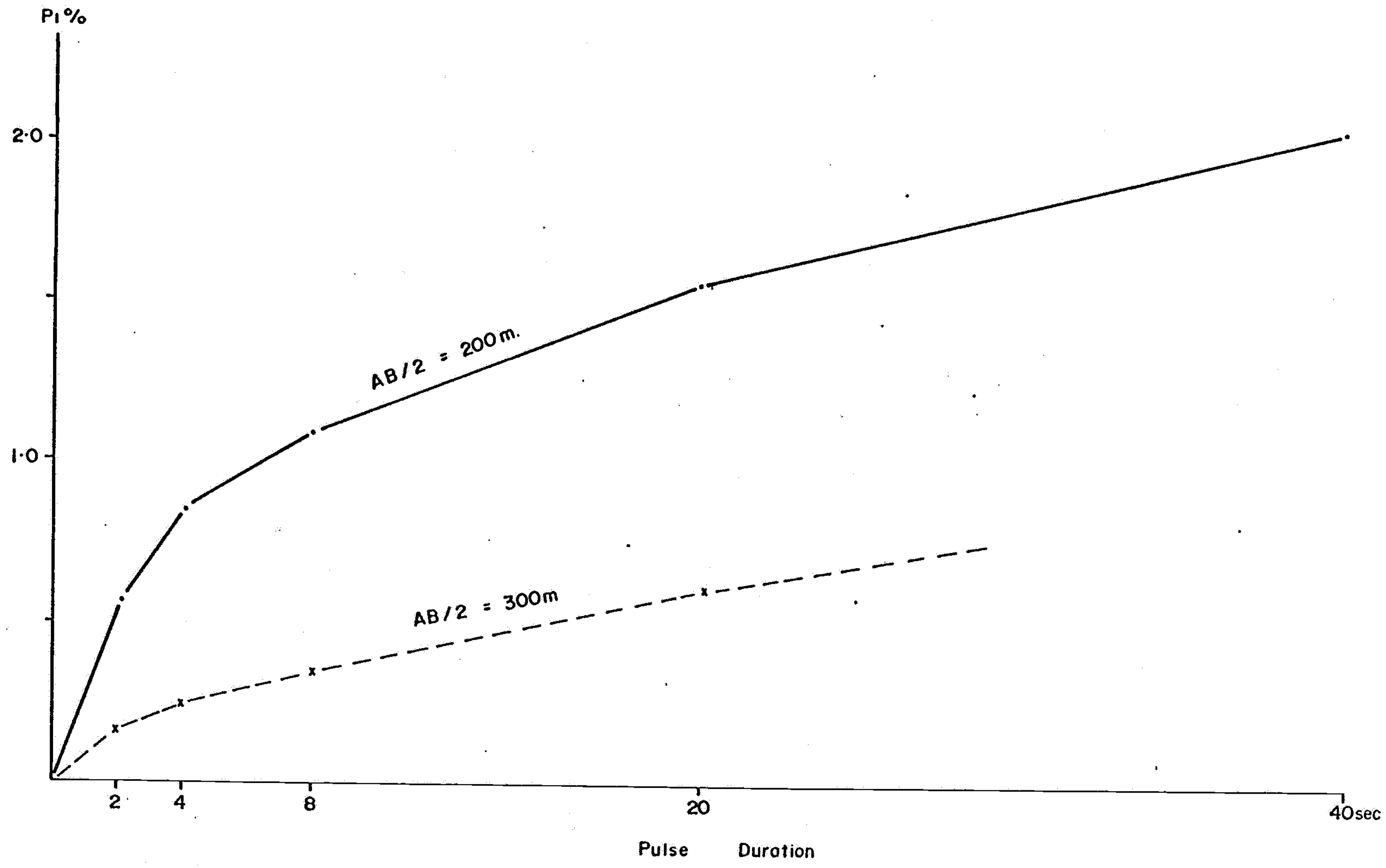


FIGURE 5
SATURATION TESTS ON DRILLHOLE 31 D
(Mineralised Drillhole)

K.C. DUNHAM in "Veins, flats and pipes in the carboniferous limestone of the English Pennines"* mentions that "the Lower Carboniferous facies in the basins is, for the most part, decidedly more argillaceous than in the mineralised blocks". Clayey sandstones are more conductive than pure quartz sandstones.

3-2 Saturation Curves

The saturation curves plotted on Figure 5 were obtained over a mineralised drillhole. They are normal saturation curves. The saturation curve obtained over the barren drillhole (see Figure 6) is much flatter. This is in agreement with a general observation that saturation occurs more slowly where sulphides are present.

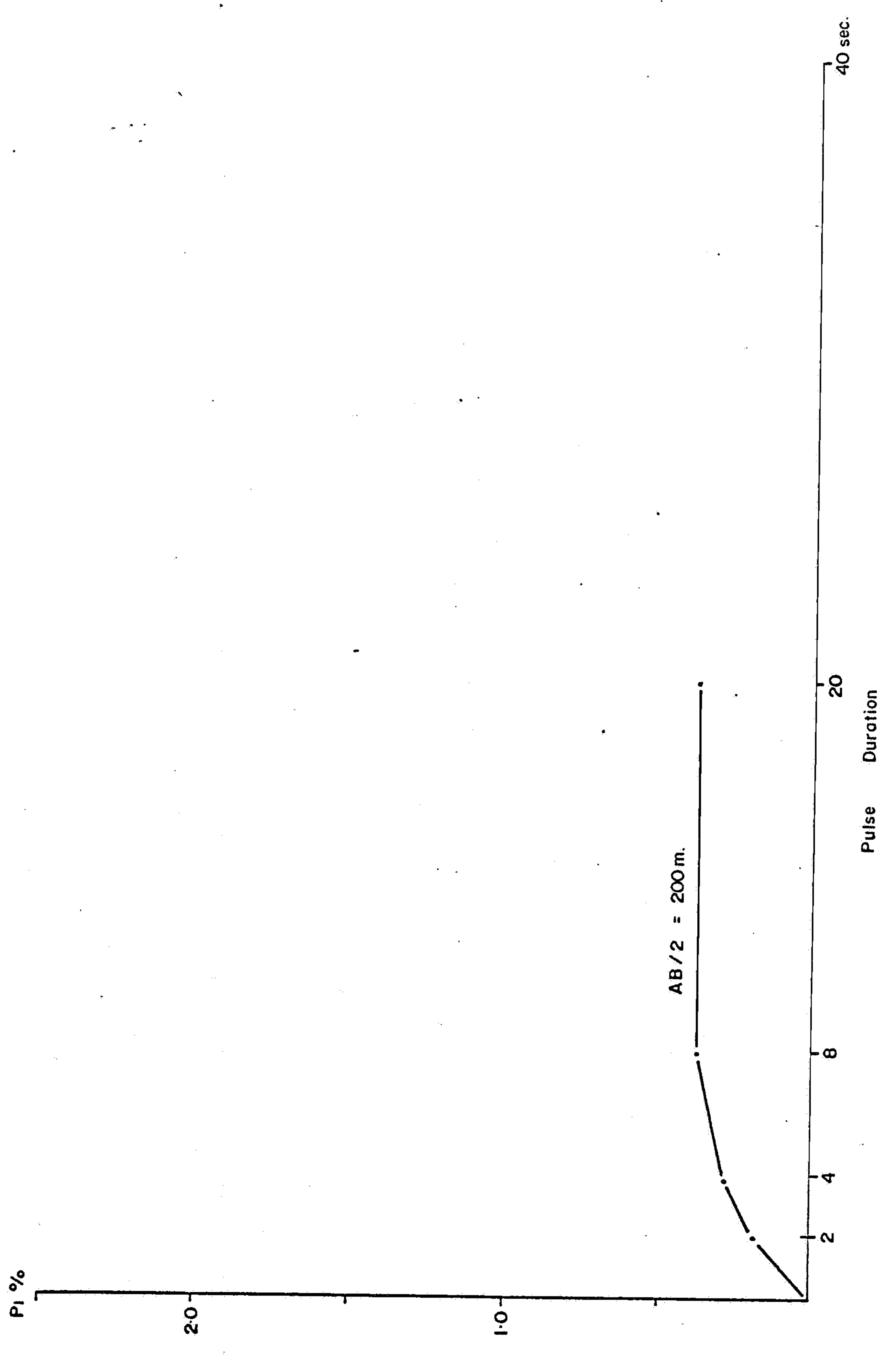
The curve AB/2 = 200 m on Figure 5, shows that for an 8 second pulse duration the apparent polarisability is equal to twice the apparent polarisability obtained with a 2 second pulse duration. Between 8 and 20 seconds the increase is only 35%. An 8 second pulse duration was selected for the applied potential and the pole-dipole survey.

FIGURE 6

SATURATION TESTS ON

DRILLHOLE 702500E / 651 8000 N

(Barren Drillhole)



4. APPLIED POTENTIAL

4-1 D.C. Potential (see Plate 1)

As could be expected over a resistive disseminated mineralisation, the D.C. equipotential curves do not show any evident trend. They are not exactly circular but the small deformations can be explained by variations of the overburden conductance.

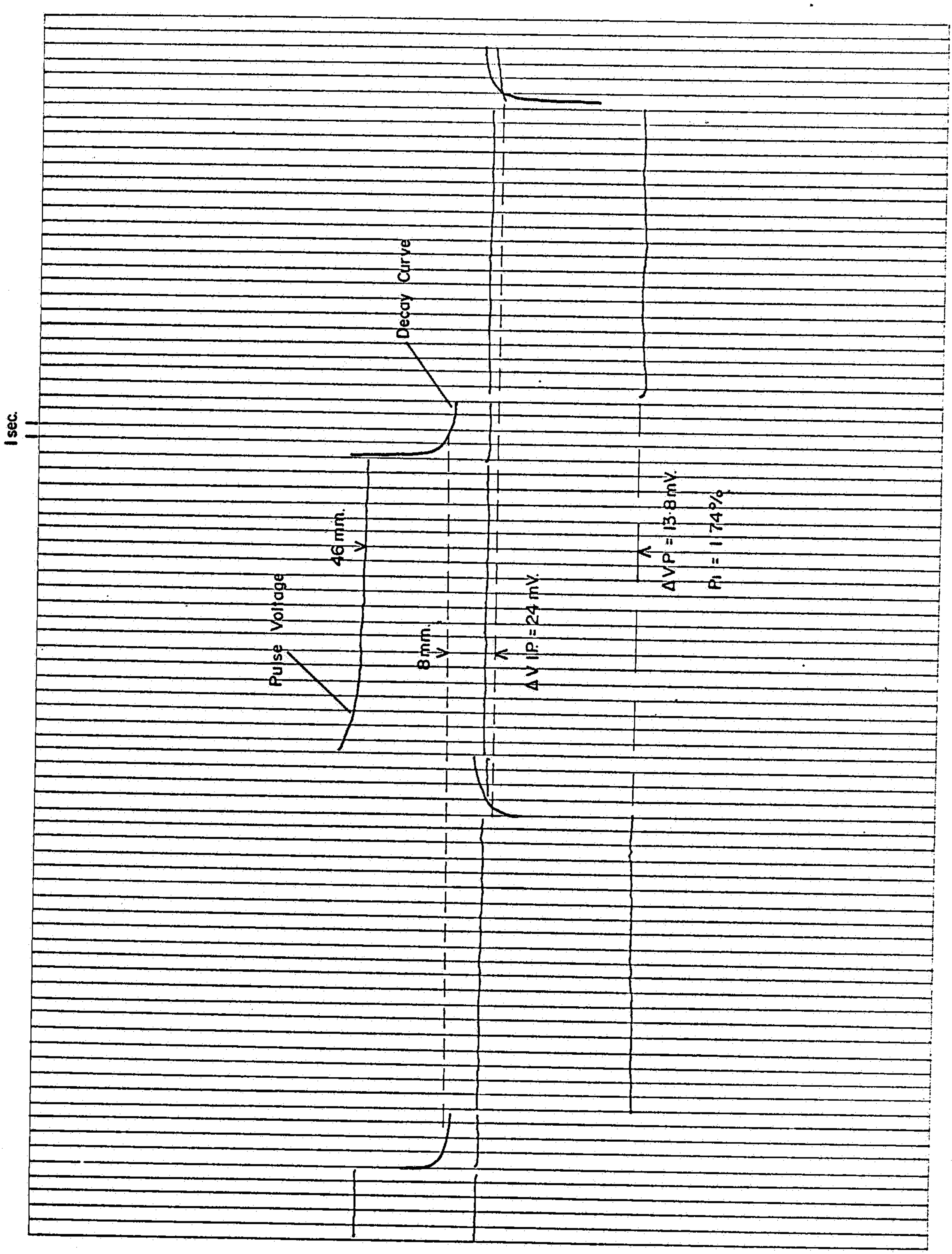
4-2 I.P. Potential (see Plate 1)

The I.P. potential was obtained by adding the decay voltages at one second after cut off, starting from the top of drillhole CG78 which was taken as the origin of potentials.
The equipotentials show a NW/SE trend and a north-eastward apparent dip. The approximate limits of the polarisable body are indicated on Plate 1.

FIGURE 7

EXAMPLE OF RECORD TESTS ON

DRILLHOLE 31D



5. POLE-DIPOLE TRAVERSES

5-1 Apparent Resistivity

The apparent resistivity pseudo-sections show mainly variations of the total conductance of the overburden. This is particularly evident on Line 703600E where the iso-apparent resistivity curves are almost horizontal and show a regular increase of the apparent resistivity from the top to the bottom of the pseudo-section (see Plate 3).

The lowest apparent resistivities occur in the central part of 703600E. This confirms the Electrical Sounding carried out on 31D. It is interesting to note that the E.S. curve gives an indication of the order of magnitude of the bedrock resistivity and that the pseudo-section does not give any other indication than the conductance variation.

5-2 Apparent Polarisability

The extent of I.P. anomalies is indicated on plates 2 and 3. Apparent polarisability contrasts are strong. The main anomalies are located in the 31D area. Correlations between profiles would be hazardous because there are few profiles and distances between profiles are larger here. The location of the main anomalies on 18600N and 703600E seems to confirm the existence of a NW/SE trend observed on the I.P. potential map at CG78.

It seems that higher apparent polarisabilities are associated with lower apparent resistivities or larger conductances of the overburden. This is particularly evident on line 703600E and line 18600N. The few electrical soundings show a similar association of a thicker and more conductive overburden with higher apparent polarisabilities. As a rule a thicker, more conductive overburden reduces the amplitude of I.P. anomalies. Therefore in the present case the association of lower apparent resistivities and higher apparent polarisabilities suggests that there is a geological correlation between mineralisations and a clayey overburden or a clayey layer overlying the mineralised horizon. Moreover the Electrical Soundings and I.P. Expanders suggest that the mineralised sandstone is more resistive than the barren sandstone. Mineralisations are perhaps located within small basins or buried channels, or "synclines" of resistive sandstone, and the central point of each basin is possibly filled with conductive clayey sediments. This is strictly a geological hypothesis based on a few geophysical observations.

CONCLUSIONS AND RECOMMENDATIONS

Resistivity and I.P. tests carried out at Mount Gunson lasted one week and showed that known mineralisations give rise to strong, well defined I.P. anomalies when a pole-dipole array is used. Most probably a dipole-dipole array would give comparable results and even a better resolution; but for reconnaissance purposes a pole-dipole array is less expensive. It seems that mineralisations are associated with a thicker and more conductive upper layer and are located within more resistive sandstones. This suggests that mineralisations are possibly associated with geological structures, perhaps basins, synclines or layers of resistive sandstones overlain by clayey conductive sediments. A general NW/SE trend possibly exists. We recommend using the pole-dipole array with a 60 metre potential dipole and two spacings (n = 1,2) for reconnaissance profiles. We recommend carrying out Electrical Soundings and I.P. Expanders along these profiles with a 100 metre spacing between Electrical Soundings at least over the area where holes have been drilled, because it seems most important to understand the geological structures associated with the mineralisations.

This report was prepared by Geoterrex Pty. Limited on behalf of G. Omnes, Chief Geophysicist for C.G.G.

W. J. Tschaikowsky,
<u>Geophysicist</u>.

Approximate limit of polarisable body.

Apparent dip of polarisable body.

PACMINEX PL.1

GEOPHYSICAL SURVEY AT CATTLE GRID (S.A.)

DH. CG78

MISE A LA MASSE

Time on : 4 seconds Time off : 4 seconds

SCALE 1/1500

LEGEND

- Plotting point
- Value of potential in mV
- Contour of equal value of potential
- D.C. potential contour interval : 30mV
- I.P. potential contour interval : 0.2 mV
- Hole CG78 , Current electrode 28m down hole
- Readings corrected to constant current of 5·5 amps
- Reference Pot at top of CG78

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PACMINEX

PL. 2

GEOPHYSICAL SURVEY AT CATTLE GRID (S.A.)

APPARENT RESISTIVITY AND APPARENT POLARIZABILITY PSEUDO-SECTIONS

LINES 18600 N AND 19000 N

POLE - DIPOLE ARRAY

Time on : 8 seconds Time off : 4 seconds

SCALE 1/1500

LEGEND

- Plotting point
- Value of Apparent Resistivity in ohm-m
- Value of Apparent Polarizability in %
- 30.0 — Contour of equal value of Apparent Resistivity
- 0.5 — Contour of equal value of Apparent Polarizability
- Apparent Resistivity contour interval : 10.0 ohm-m
- Apparent Polarizability contour interval : 0.1 %
- I.P. Anomaly

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PACMINEX

PL 3

GEOPHYSICAL SURVEY AT CATTLE GRID (S.A.)

APPARENT RESISTIVITY AND APPARENT POLARIZABILITY PSEUDO-SECTIONS

LINES 702500E AND 703600E

POLE - DIPOLE ARRAY

Time on : 8 seconds Time off : 4 seconds

SCALE 1/1500

LEGEND

- · Plotting point
- Value of Apparent Resistivity in ohm-m
- Value of Apparent Polarizability in %
- —30.0— Contour of equal value of Apparent Resistivity
- —0.5— Contour of equal value of Apparent Polarizability
- Apparent Resistivity contour interval : 10.0 ohm-m
- Apparent Polarizability contour interval 0.1 %
- |——| I P Anomaly

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