TCR 81-1552

973001

SIX MONTHLY PROGRESS REPORT

ON FIELD INVESTIGATIONS WITHIN EL4/61

FOR PERIOD ENDED 24TH FEBRUARY 1981

AMG REFERENCE POINTS ADDED

PART 1. A Re-examination of the Specimen Reef Area

No. 8	Drillsite Locations	Line 1005 (DDH 1 and 4)
No. 9.	" "	Line 2005 (DDH 2)
No. 10.	" "	Line 3005 (DDH 3)
No. 11.	" "	Line 4005 (DDH5 and 6)

CONTENTS

973004

PLANS

No. 1.	Location - Specimen Reef Area	
No. 2.	Magnetic Survey	
No. 3.	Reef Potential Survey	
No. 4.	Geochemical Survey - Stream Sediment,	Gold
No. 5.	" " - Soil Samples,	Gold
No. 6.	" " " " ,	Arsenic
No. 7.	" " " " ,	Copper
No. 8.	" " " " ,	Lead
No. 9.	" " " " ,	Zinc
No. 10.	" " " " ,	Manganese
No. 11.	Topographic Survey - Outlining Drilling programme.	

SECTIONS

No. 1.	Self Potential Profile -	Line 00
No. 2.	" " "	Line 1005
No. 3.	" " "	Line 2005
No. 4.	" " "	Line 3005
No. 5.	" " "	Line 4005
No. 6.	" " "	Line 5005
No. 7.	" " "	Line 6005

A. ABSTRACT

This report comments upon recent surface exploration over the old Specimen Reef Gold-mining area. Geophysical and geochemical surveys, using modern techniques have outlined several areas of interest that warrant further investigation. Consequently a drilling programme has been devised to investigate the area of the "old workings" at depth and also the area to the south of the old workings, an area which contains some interesting geophysical anomalies.

B. INTRODUCTION

The Specimen Reef is situated approximately 8 kilometres north of the township of Savage River, just to the west of the Pipeline Road (see Plan No. 1).

The reef was actively mined late last century, there being no known development this century. The most recent project in the area would probably be alluvial sluicing for gold on the McPhee Creek-Davis Creek area to the south-west of the Specimen Reef, in the early 1930's.

Consequently, there is little known about any gold reserves or values of the Specimen Reef primary vein deposits. Thureau's report of 1884 does give some information regarding the structural attitude of the reef, and the layout of old underground workings. The passing of time has tended to obscure the relevance of a lot of this information. This becomes obvious when one is fronted with:

buried tunnels, eroded and overgrown mullock heaps, collapsed tunnels, large areas of scree with no outcrops, and dense forest that has overgrown tracks and water-races.

To quote from Thureau's report: "Specimen Reef yielded about 40 ounces of free gold from specimens found at or close to its outcrop in the creek..... two shoots of gold in Tunnel No. 1, measure 160 feet and 12 feet in length."

Iron, manganese, copper, carbonates, and pyrite are stated to be associated with the gold veins.

C. TOPOGRAPHY, VEGETATION, SOILS

The relief is rugged and steeply dissected, waterfalls being not uncommon. Specimen Creek slopes down quickly into Hall Creek, which flows into the Savage River just downstream from the magnetite deposits.

The tree types in the Specimen Reef area are typically tallow-woods, leatherwood, celery top pine, myrtle and horizontal scrub. Generally, vegetation is either a tall-tree "Schlerophyll" type rainforest environment on the slopes and in the valleys; or horizontal scrub on the flatter scree-covered areas.

The soils are either orange or green-blue clays from the schists or quartz-scree cover; or of the brown organic type. The orange colouring may be due to iron-pyrite leaching out of the schists.

Rock outcrops are very sparse apart from the creek beds themselves.

D. GENERAL GEOLOGY

The Specimen Reef lies off the eastern edge of a magnetic high associated with magnetite bearing chloritic schists (see Plan No. 2.).

In the vicinity of the "Reef" itself, the two pre-Cambrian rock types of Arquhart (1966) have been observed, namely, psammitic-quartz-sericite schists and pelitic-chlorite schists. The strikes generally trend slightly east of north, although there is a strong east-west trend coincident with the chlorite schists of the magnetic high in the south western extremity of the area surveyed. The dip of strata are generally steep and to the west.

The geophysical surveys suggest the presence of two major faults within the Specimen Reef Area. The Self Potential and Induced Potential Surveys indicate a grid east-north-east-west-south-west trending dislocation crossing line 3005 at about 100E (See Plan No. 3 and Scintres Report). The Magnetic survey and Self Potential Surveys appear to indicate a grid west-north-west, east-south-east dislocation, crossing the baseline at about 40255 (See Plans No. 2 and No. 3).

E. SPECIMEN REEF AREA SURVEY

(I) Grid Layout

An offside of 40° magnetic was chosen for the grid baseline as Thureau (1884) mentions that the strike of the lode average 38° magnetic in the main adit, which is referred to in this report at Tunnel No. 2.

For the first 300 metres, the grid covers the extent of all the old workings. The grid was exhausted some 375 metres to the south for the following reasons:

i) Initial reconnaissance of the area during early October 1980, located mineralized chloritic schists.

ii) because of the north-south trend of the Precambrian rocks this is the best area to explore the extent of the reef and any associated zones of mineralization, as well as any limiting structural relationships.

(II) Geophysical Surveys

a) General

None of the goephysical techniques used appear to have responded to the line of the lode itself as outlined in the old workings. The most significant geophysical anomalies occur to the south of Traverse 3005, beyond the known limits of the "reef"

This lack of response north of 3005 may be due to:

i) that the surface scree cover is exceptionally thick and thus provides an insulating or masking effect. I doubt that this is the case.

ii) The reef does not carry enough base mineralization or pyrite to respond to these techniques.

iii) Sloping along the veins in the old workings has removed the near surface mineralization that may have given us a response.

b) MAGNETIC SURVEY (Plan No. 2)

The interesting magnetic anomaly trends east-west, cutting across traverses 4005 and 5005. This anomaly is due to chlorite schists carrying magnetite.

This anomaly is notable for its abrupt ending of its eastern extremity. This suggests the presence of a north-westerly trending fault, terminating the chlorite schists.

The highest reading on the survey was 66,615 gammas at 6005/175W. All readings were diurnally adjusted.

c) SELF POTENTIAL SURVEY (Plan No. 3, Sections 1 to 7)

The Self-Potential Survey outlines a major anomaly cutting across line 4005, with a high of -98 millivolts

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at 75 East. The profile for line 4005 (Section No. 5) illustrates the maximum range for the survey, varying from +133 millivolts to - 98 millivolts over 150 metres.

Minor anomalies on lines 00, 1005 and 2005 (Sections 2, 3 and 4) are not large enough to be convincingly informative. Follow up work to the south-east may show that both anomalies on line 4005 are related.

d) INDUCED POTENTIAL SURVEY (SCINTREX REPORT)

The Induced Potential Survey undertaken by Scintrex P/L has outlined a number of distinct anomalies which indicate sources of maximum depths between 25 and 50 metres. These sources are thought to be either disseminated or, if massive, electrically discontinuous.

There is often a relationship between induced and moderate self-potential anomalism. The distinct I.P. anomalies at 4005/37.5E may be related to the S.P. anomaly at 4005/00 to 400/75E.

(III) Geochemical Surveys

a) GENERAL

Soil samples were collected at 25 metre intervals throughout the grid and analysed for gold, arsenic, copper, lead, zinc and manganese.

3/

Stream sediments were collected from the creek that cuts across the expected line of the reef, between traverses 2005 and 6005, and analysed for gold.

b) RESULTS (Plans No. 4 to No. 10)

Very few gold values were obtained. Only fine colours were observed on panning of stream sediments.

The major anomalous value obtained was 95 ppm lead (Pb) at 4005/75E.

This correlates with the Self Potential high.

There is a copper-arsenic anomaly on the baseline, south of traverse 6005. Follow up soil sampling is recommended around this area, and further to the south, to outline fully the limits and range of this anomaly.

I'm sure that the anomalous base metal and gold results at 3005/100W are explained by man's influence, since this station is situated at or below the embankment of a track which is directly linked to the No. 2 Tunnel level. This could be checked by resampling.

The high base metal values out near the Pipeline Road may also be explained by man's contamination, e.g. lead traces from exhaust fumes. The zinc anomaly at 4005/350E of 160 ppm is of low rank, and not considered of importance.

F. CONCLUSIONS

The Specimen Reef area may be split into five distinct sections, separated by a gold east-north-east west-south-west trending fault, crossing traverse 3005 at about 100E.

The section north of this faultline covers the "old Specimen Reef Mine workings. This section showed little response to the geophysical and geochemical surveys.

The section south of the faultline contains several major IP anomalies, an interesting SP anomaly and an anomalous geochemical lead (Pb) zone which appears to be related to both the SP and an IP anomaly.

Six drillholes have been proposed to investigate the Specimen Reef area more fully. Three of these bores are within the zone of the "old workings". Three are based entirely on geophysical and geochemical information.

Details of these drillholes are as follows :

(Plan II, Sections 8 to 11)

LENGTH: 120 metres

BEARING: East along traverse

This bore will be drilled below the old workings of No. 1 Tunnel, and also beneath the secondary IP anomaly at 100S/37.5E.

DDH No. 2	LOCATION:	2005/50W
	INCLINATION:	45°
	LENGTH:	180 metres
	BEARING:	East along traverse

y

This bore will be drilled below the "old workings" of No. 4 Tunnel and the secondary IP anomaly at 2005/62.5E.

(iii)	DDH No. 3	LOCATION:	3005/25W
		INCLINATION:	45°
		LENGTH:	110 Metres
		BEARING:	East along traverse

This bore will be drilled below the old workings of No. 3 Tunnel.

(iv)	DDH No. 4	LOCATION:	1005/60E
		INCLINATION:	45°
		LENGTH:	50 Metres
		BEARING:	East along traverse

This bore will be drilled beneath major IP anomaly at 1005/87.5E, outside the area of the "old workings".

(v)	DDH No. 5	LOCATION:	4005/00
		INCLINATION:	60°
		LENGTH:	100 Metres
		BEARING:	East along traverse

This bore will be drilled beneath the major IP anomaly at 4005/0 to 4005/75E and the anomalous geochemical Pb (Lead) reaching 95 ppm at 4005/75E).

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(vi) DDH No 6

LOCATION:	4005/210E
INCLINATION:	55^{o}
LENGTH:	50 Metres
NEARING:	East along traverse

This bore will be drilled beneath a major IP anomaly centred at 4005/225E.

Thus a total of some 640 metres of drilling has been outlined. A contract for 450 metres of drilling has already been agreed to with associated Diamond Drillers P/L, drilling to commence in late March 1981.

The sequence of these six drill holes is only of a provisional nature, initial results   future drillhole specifications and locations.

REFERENCES:

1. South (1987) "Report on Mineral Districts between Corinda and Waratah" Rep. Sec. Mines Tas. 1896-97.

2. Thureau (1884) "Report on the Specimen Reef" Parliamentary Paper No. 104.

3. Arquharf (1966) "Magnetite Deposits of the Savage River Rocky River Region" Geol. Survey Bulletin No. 48.

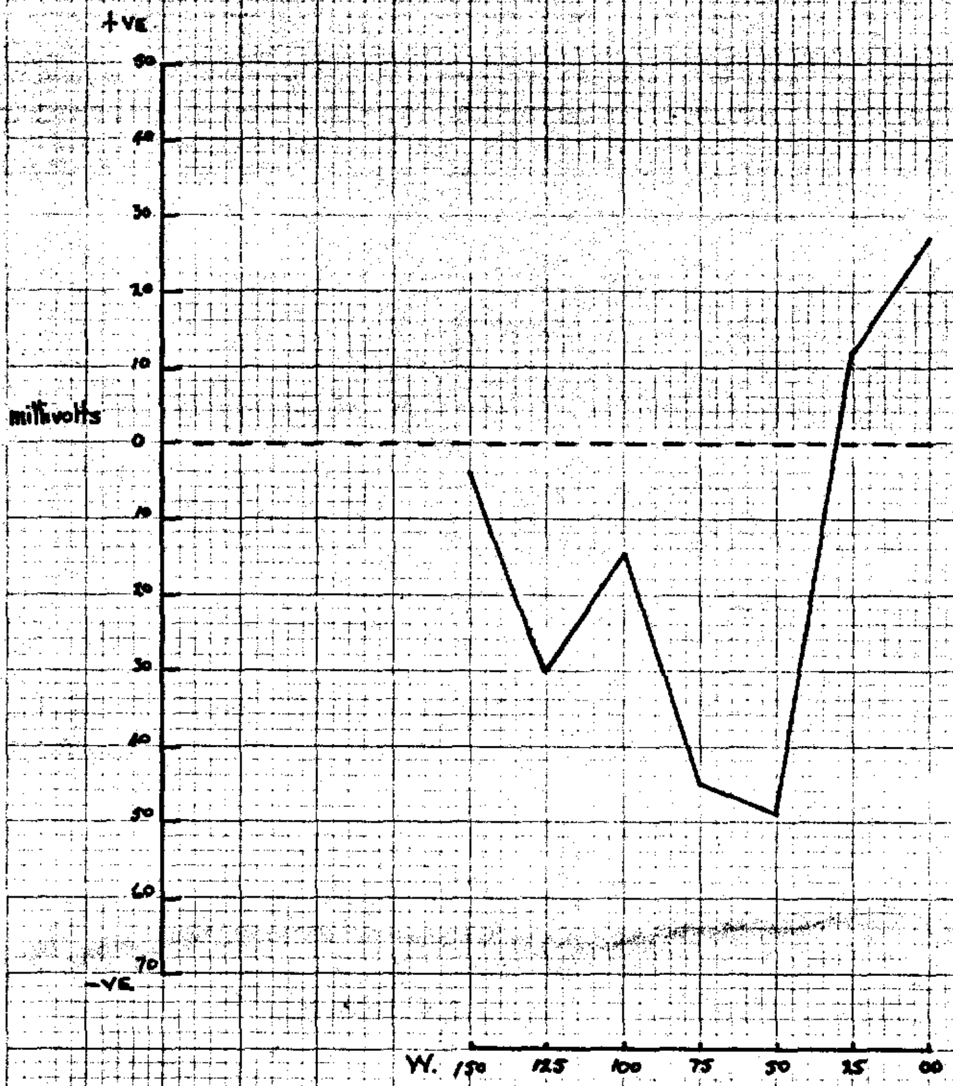
4. J. Wall "Report to M. 19th Feb. 1981.

973019

SECTIONS - SPECIMEN REEF AREA

SECTION Nº 1.

SPECIMEN REEF AREA.
SELF POTENTIAL SURVEY.
PROFILE: LINE 00.

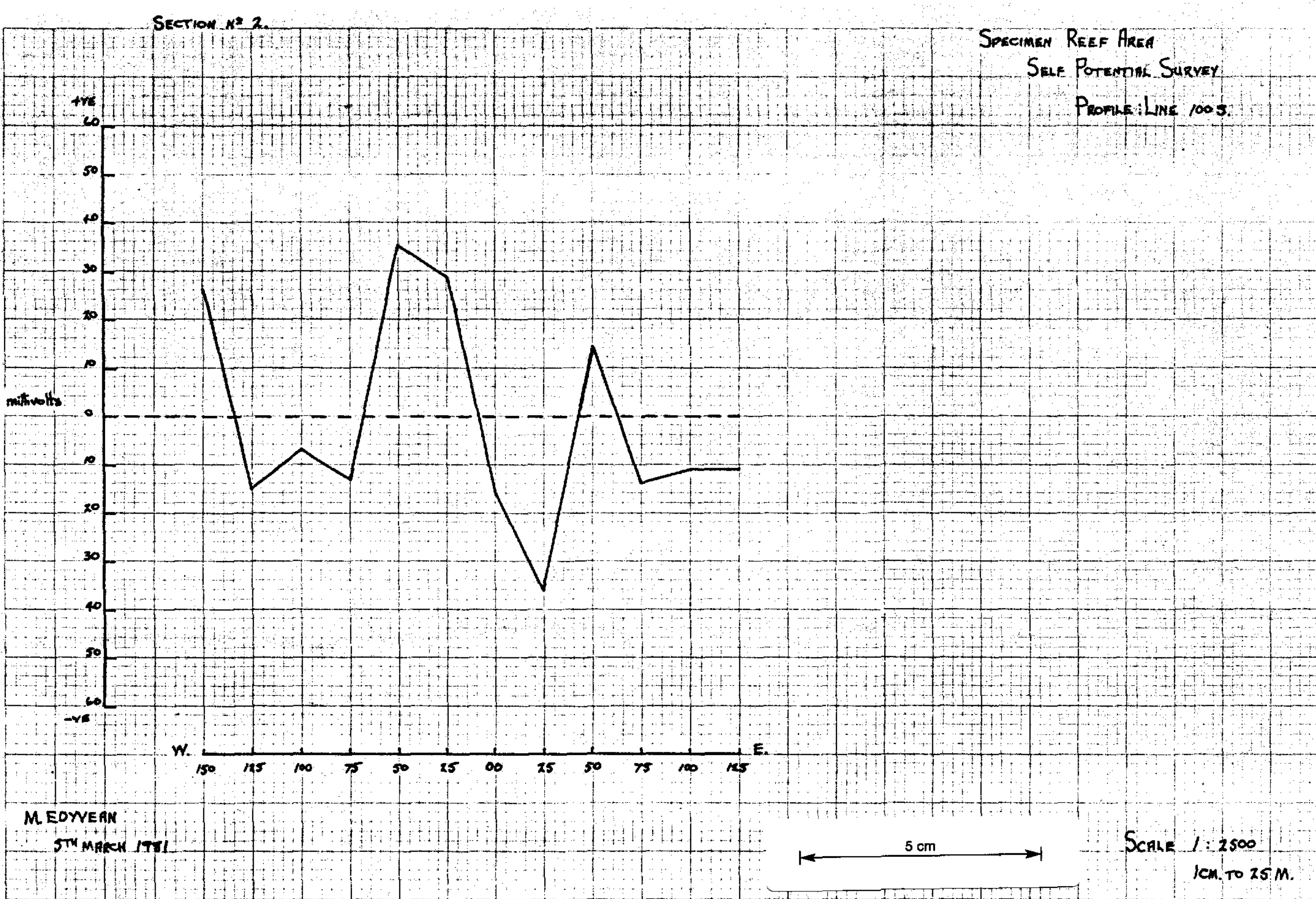


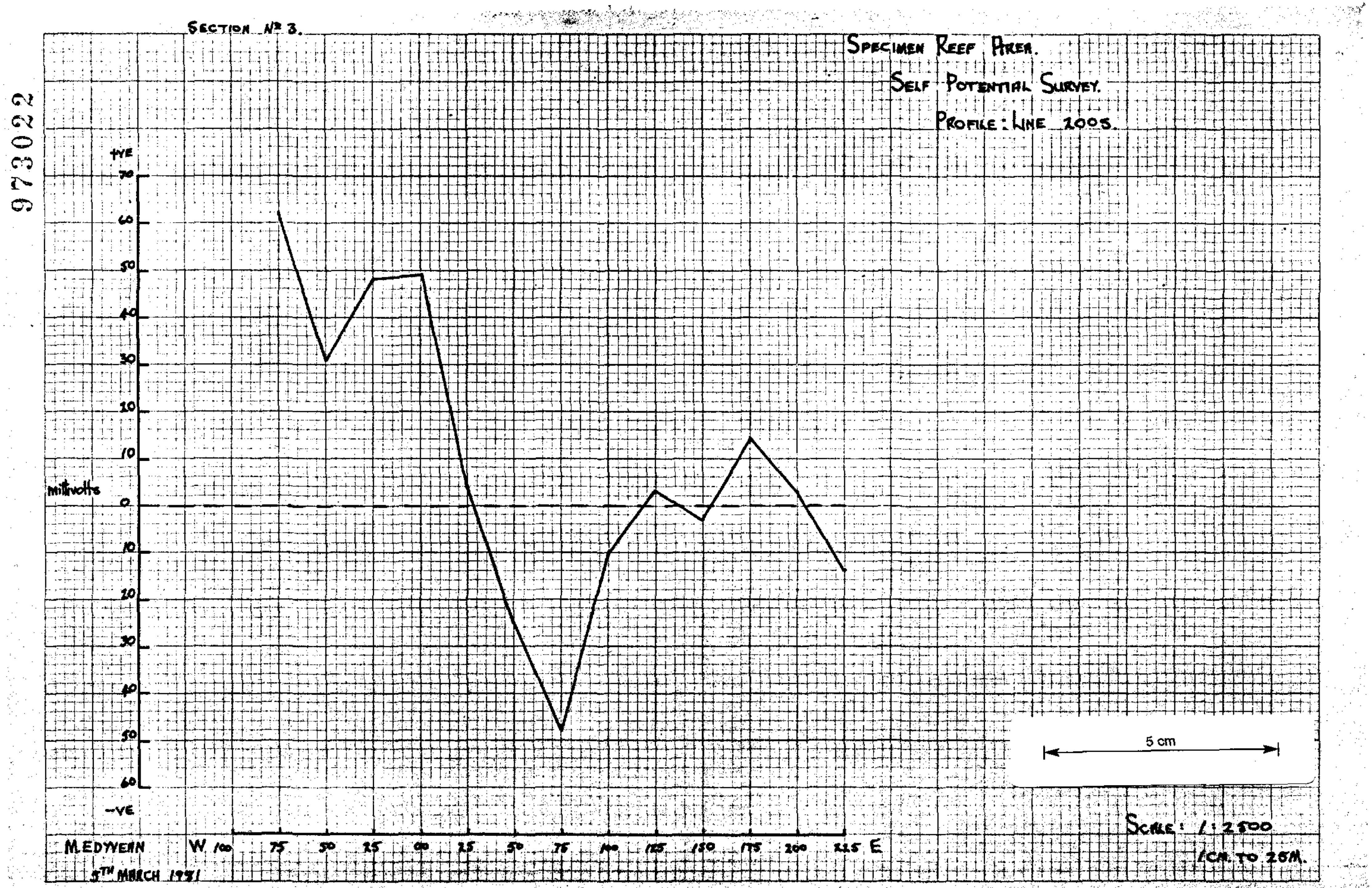
5 cm

SCALE: 1:2500
1 CM. TO 25 M.

M. EDYVEAN
5TH MARCH 1951.

9730221


SECTION Nº 2.
SPECIMEN REEF AREA
SELF POTENTIAL SURVEY
PROFILE: LINE 100 S.
+VE
60
50
40
30
20
10
millivolts
0
10
20
30
40
50
60
-VE
W.
E.
150
125
100
75
50
25
00
25
50
75
100
125
M. EDYVEAN
5TH MARCH 1981
5 cm
SCALE 1 : 2500
1CM. TO 25 M.

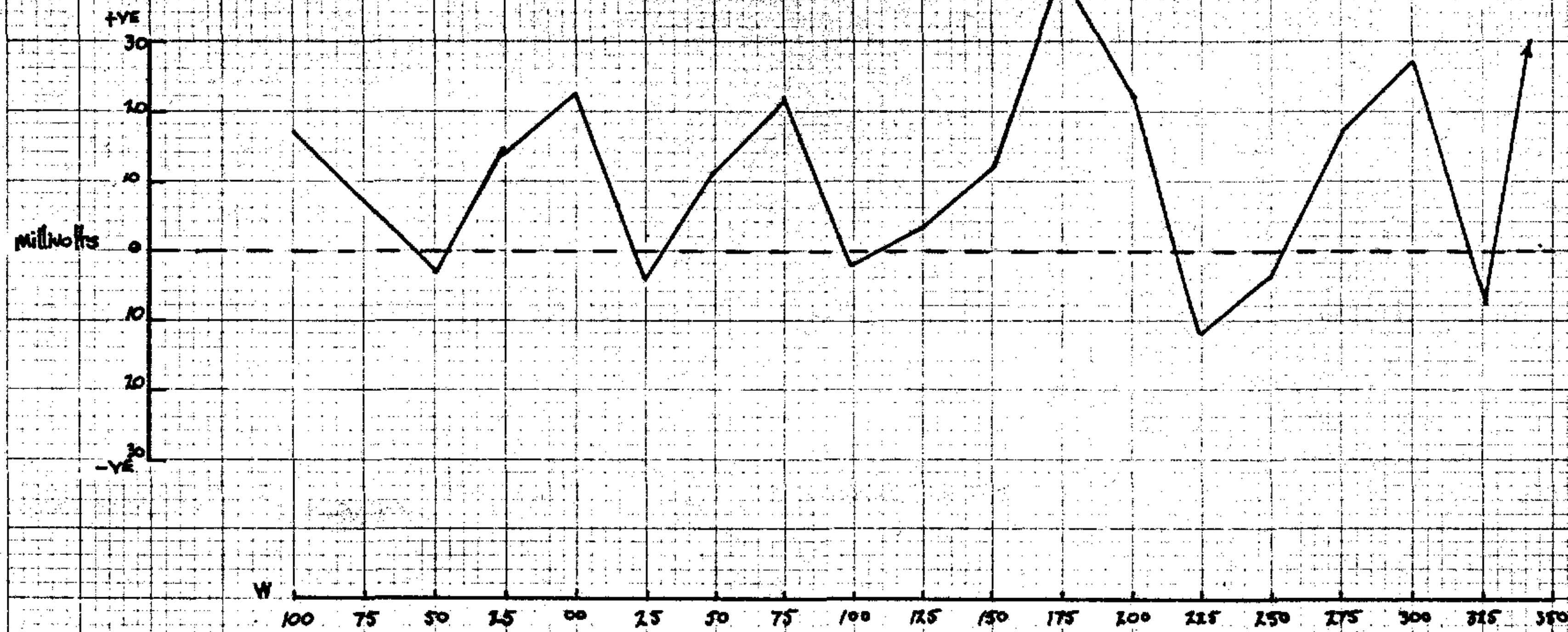


973022
SECTION Nº 3.
SPECIMEN REEF AREA.
SELF POTENTIAL SURVEY.
PROFILE: LINE 200S.
+VE
70
60
50
40
30
20
10
millivolts
0
10
20
30
40
50
60
-VE
M. EDYVEAN
5TH MARCH 1981
W 100
75
50
25
00
25
50
75
100
125
150
175
200
225 E
5 cm
SCALE: 1:2500
1CM. TO 25M.

9730 23

SECTION Nº 4.

SPECIMEN REEF AREA
SELF POTENTIAL SURVEY
PROFILE: LINE 300S

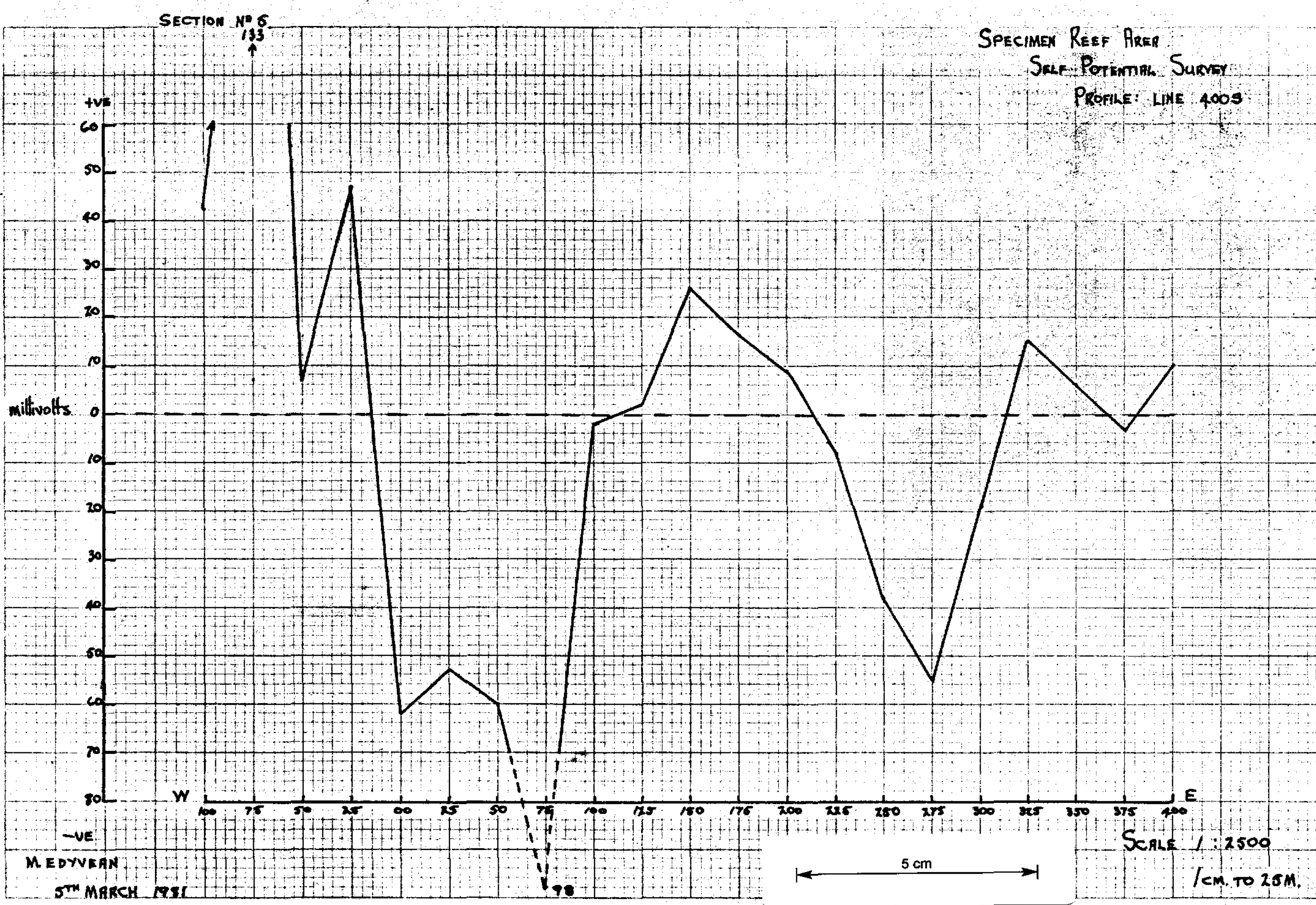


5 cm

SCALE 1:2500
1CM. TO 25M.

M. EDYVEAN
5TH MARCH 1971.

973024


SECTION Nº 6
133
SPECIMEN REEF AREA
SELF POTENTIAL SURVEY
PROFILE: LINE 400S
+VE
60
50
40
30
20
10
millivolts 0
10
20
30
40
50
60
70
80
-VE
W
100
75
50
25
00
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400
E
98
SCALE 1 : 2500
1cm. TO 25M.
5 cm
M. EDYVEAN
5TH MARCH 1981

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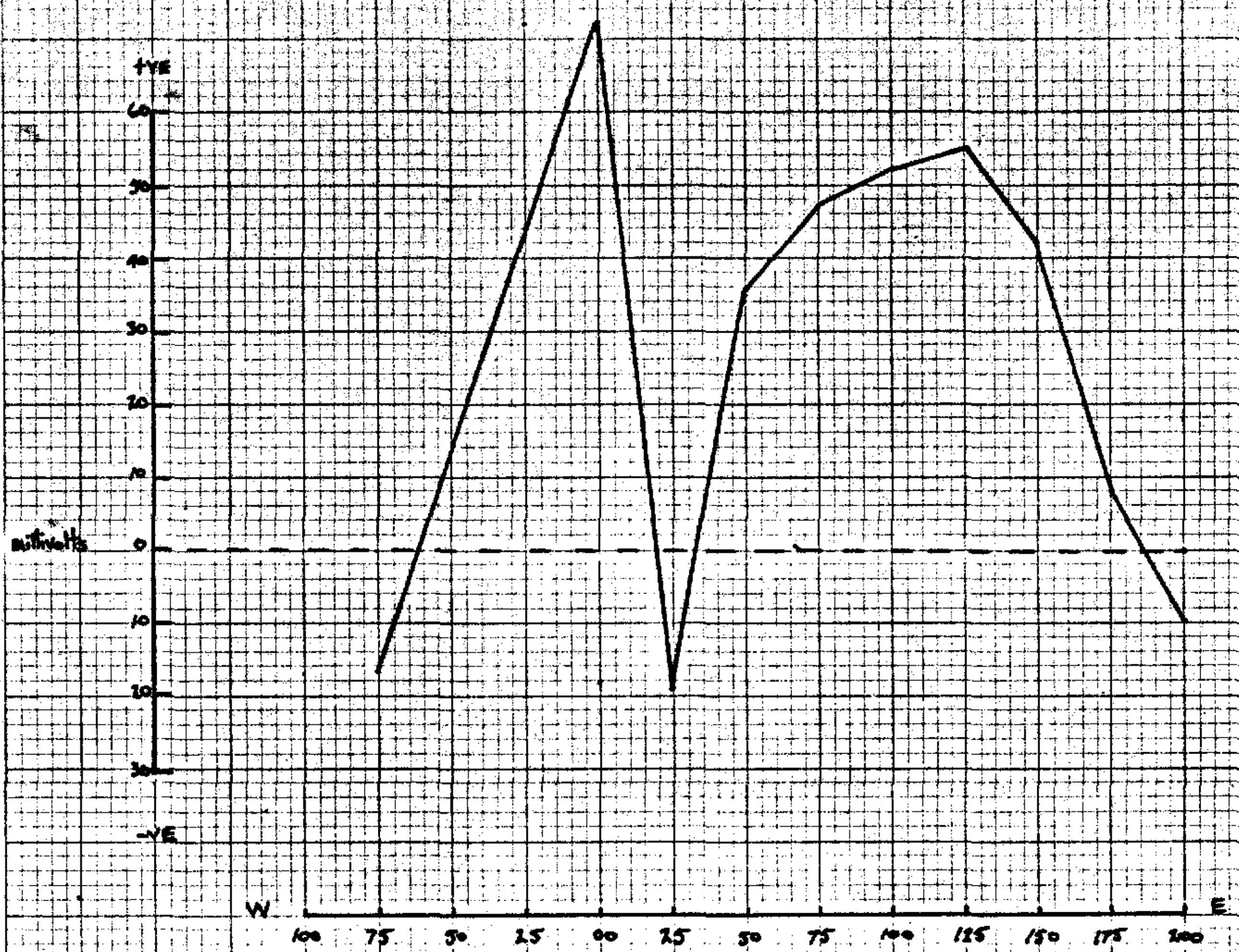
SECTION Nº 6

SPECIMEN REEF AREA
SELF POTENTIAL SURVEY
PROFILE: LINE 500S

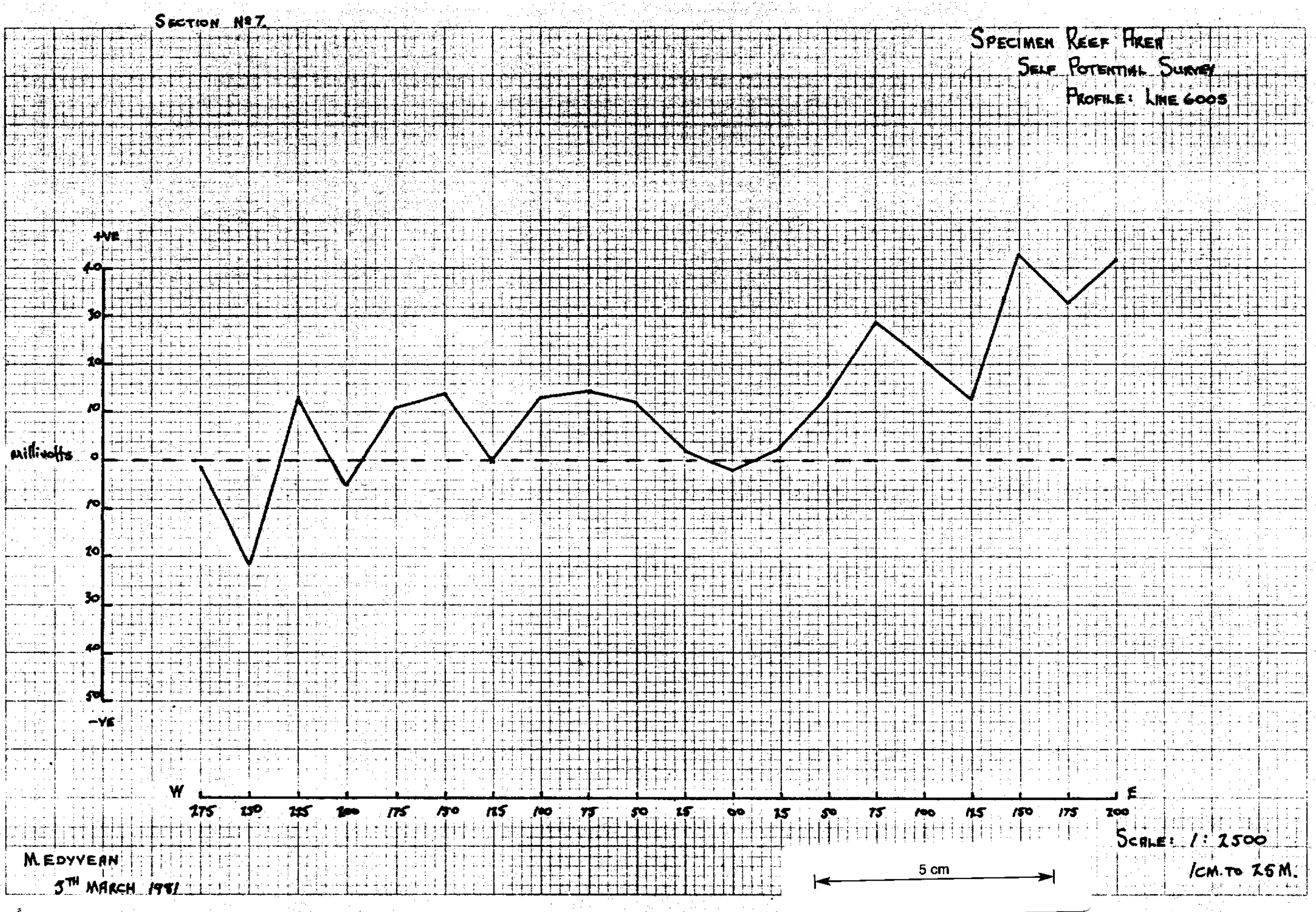


SCALE 1 : 2500
1CM TO 25M.

5 cm

M. EDYVEAN
5TH MARCH 1981

973026


SECTION No 7.
SPECIMEN REEF AREA
SELF POTENTIAL SURVEY
PROFILE: LINE 600S
+VE
40
30
20
10
millivolts 0
10
20
30
40
50
-VE
W
275 250 225 200 175 150 125 100 75 50 25 00 25 50 75 100 125 150 175 200
E
SCALE: 1: 2500
1CM. TO 25M.
M. EDYVEAN
5TH MARCH 1981
5 cm

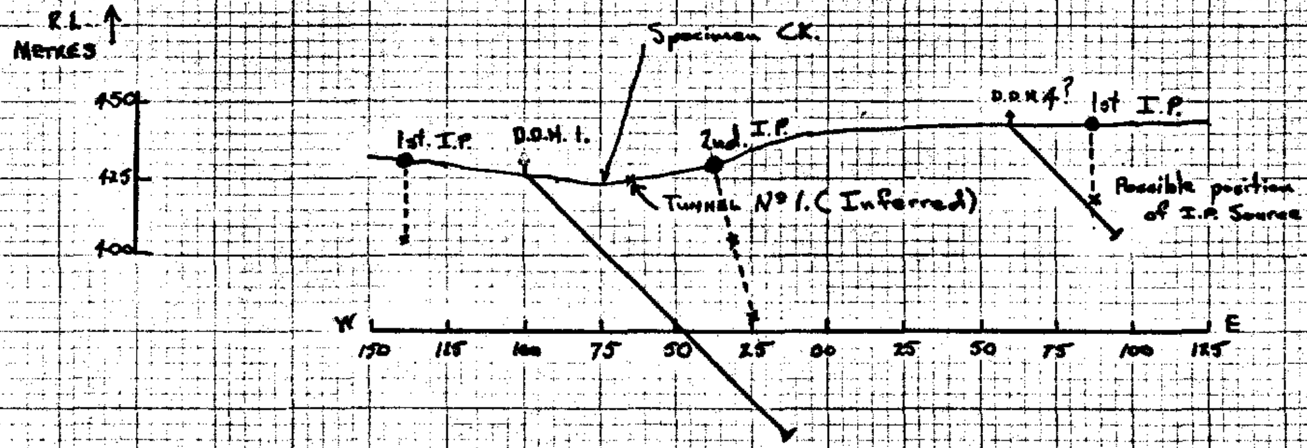
SECTION Nº 8

SPECIMEN REEF AREA

CROSS SECTION

LINE 100 S.

Outlining Proposed Drillholes Nº 1 + Nº



D.D.H. 1. LENGTH : 100 METRES
INCLINATION : 45°
LOCATION : 100S/100W

D.D.H. 6. LENGTH : 50 METRES
INCLINATION : 45°
LOCATION : 100S/60E

x = Possible maximum depths of I.P. Sources.

SCALE 1: 2500

5 cm

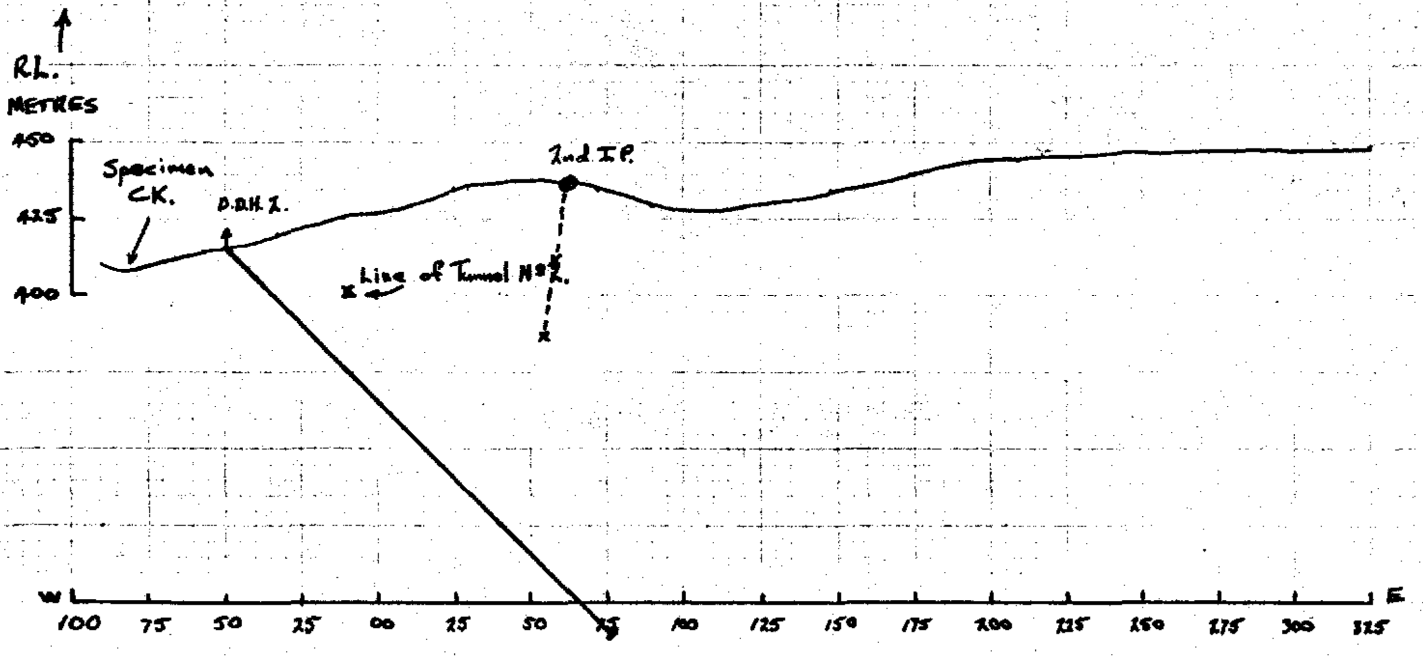
M. EDYVEAN
5TH MARCH 1981

973028

SECTION Nº 9

SPECIMEN REEF AREA
CROSS SECTION
LINE 200S
Outlining Proposed Drillhole Nº 2.

D.D.H Nº 2. LENGTH: 180 METRES
INCLINATION: 45°
LOCATION : 200S/50W



x = possible maximum depths of I.P. Source

SCALE 1:2500

5 cm

M. EDYVEAN
5TH MARCH 1981

973029

SECTION Nº 10

SPECIMEN REEF AREA

CROSS SECTION

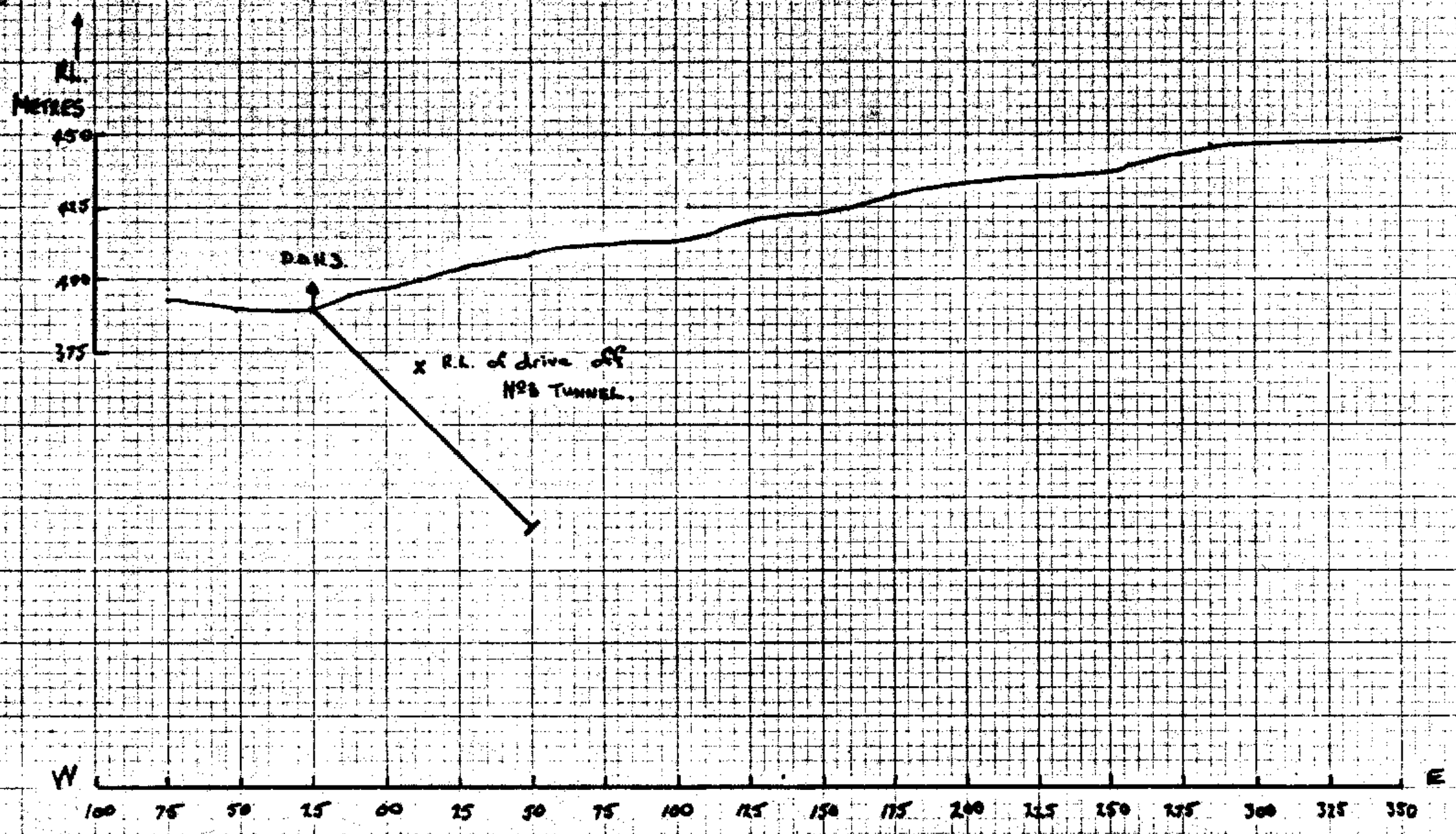
LINE 300S

Outlining Proposed Drillhole Nº 3.

D.D.H. Nº 3. LENGTH : 110 METRES

INCLINATION: 45°

LOCATION : 300S/25W.



SCALE 1 : 2500

5 cm

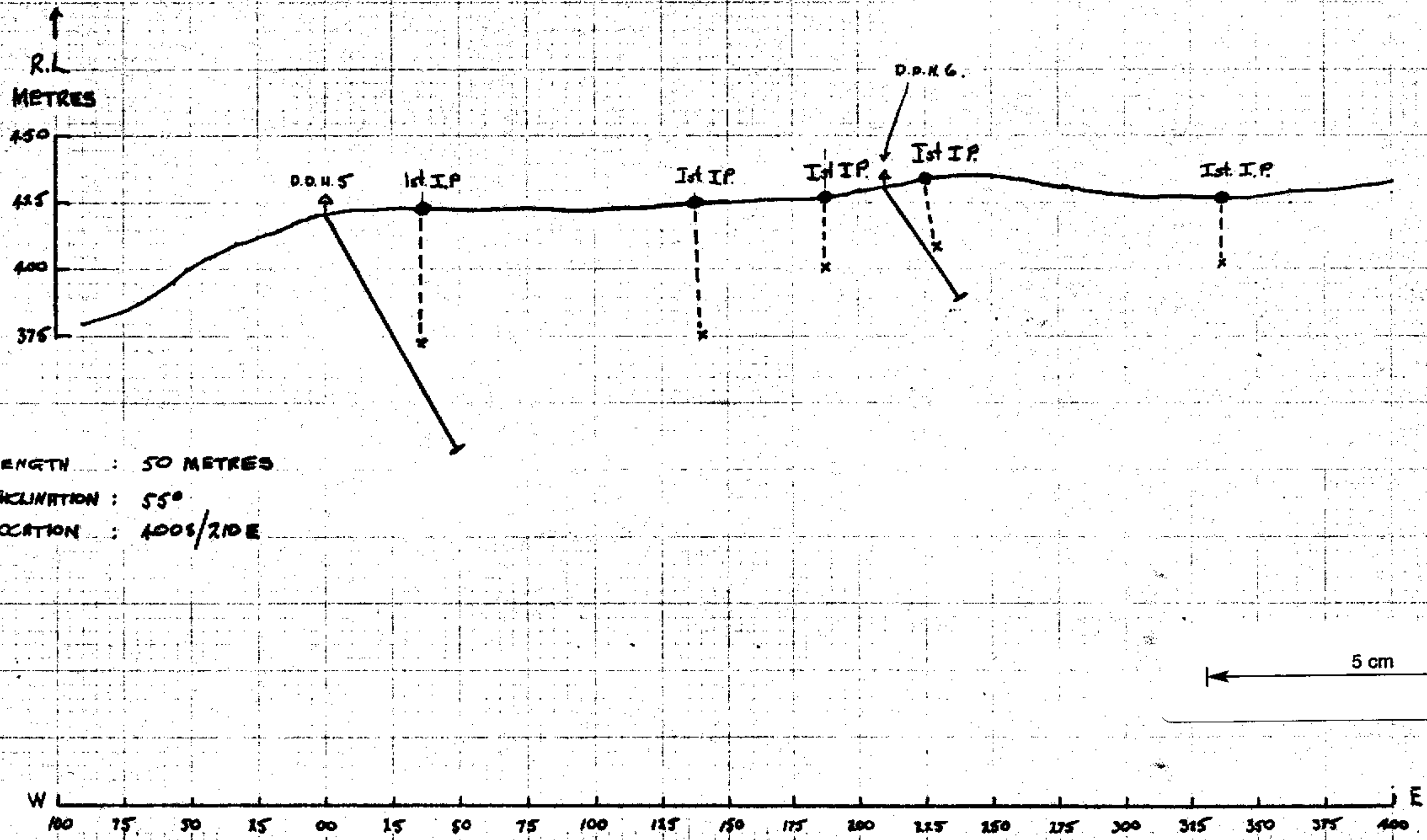
M EDYVEAN
5TH MARCH 1981

973030

SPECIMEN REEF AREA
CROSS SECTION
LINE 400 S
Outlining Proposed Drillholes Nº 5 + N

SECTION Nº II

D.D.H Nº 5 LENGTH : 100 METRES
INCLINATION : 60°
LOCATION : 400S/00



D.D.H Nº 6 LENGTH : 50 METRES
INCLINATION : 55°
LOCATION : 400S/210E

5 cm

SCALE 1:2500

M. EDYVEAN
5TH MARCH 1981

APPENDIX "A"

GEOCHEMICAL ANALYSES - SPECIMEN REEF AREA

APPENDIX A

Geochemical Analyses - AMDEL

973033

amdel

Analysis code C1 Report AC 3370/81

NATA Certificate Results in ppm

	Sample	Cu	Pb	Mn
LINE 0	0025W	38	5	260
LINE 0	0050W	40	10	190
LINE 0	0075W	4	<5	10
LINE 0	0100W	4	<5	10
LINE 0	0125W	2	<5	5
LINE 0	0150W	2	<5	5
LINE 1	1025W	4	<5	5
LINE 1	1050W	6	<5	5
LINE 1	1075W	20	5	50
LINE 1	1100W	6	<5	20
LINE 1	1125W	6	<5	5
LINE 1	1150W	30	<5	40
LINE 1	1025E	8	<5	25
LINE 1	1050E	8	5	10
LINE 1	1075E	2	<5	5
LINE 1	1100E	6	<5	170
LINE 1	1125E	4	<5	50
LINE 2	2025W	10	<5	10
LINE 2	2050W	50	10	30
LINE 2	2075W	8	<5	25
LINE 2	2100W	6	<5	90
LINE 2	2025E	4	<5	5
LINE 2	2050E	2	<5	5
LINE 2	2075E	14	5	35
LINE 2	2100E	24	20	210
LINE 2	2125E	14	5	85
LINE 2	2150E	60	10	210
LINE 2	2175E	20	10	100
LINE 2	2200E	12	5	580
LINE 2	2225E	50	10	80
LINE 2	2250E	40	5	110
LINE 2	2275E	65	5	340
LINE 2	2300E	85	20	690
LINE 2	2325E	38	10	140
LINE 3	3025W	42	20	130
LINE 3	3050W	100	5	120
LINE 3	3075W	2	<5	5
LINE 3	3100W	75	40	1700
LINE 3	3025E	38	15	65
LINE 3	3050E	12	5	40
	Detn limit	(2)	(5)	(5)

amdel

Analysis code Cl   Report AC 3370/81

NATA Certificate   Results in ppm

	Sample	Cu	Pb	Mn
LINE 3	3075E	55	5	340
LINE 3	3100E	80	5	45
LINE 3	3125E	24	<5	25
LINE 3	3150E	44	5	140
LINE 3	3175E	12	<5	55
LINE 3	3200E	8	<5	25
LINE 3	3225E	4	<5	15
LINE 3	3250E	12	10	90
LINE 3	3275E	26	10	40
LINE 3	3300E	10	5	50
LINE 3	3325E	2	<5	45
LINE 3	3350E	26	5	150
LINE 4	4025W	4	<5	20
LINE 4	4050W	10	5	70
LINE 4	4075W	6	10	80
LINE 4	4100W	16	10	40
LINE 4	4025E	2	5	5
LINE 4	4050E	2	<5	5
LINE 4	4075E	20	95	15
LINE 4	4100E	12	30	10
LINE 4	4125E	14	20	15
LINE 4	4150E	16	10	20
LINE 4	4175E	2	<5	5
LINE 4	4200E	4	<5	5
LINE 4	4225E	<2	<5	5
LINE 4	4250E	<2	<5	5
LINE 4	4275E	<2	<5	5
LINE 4	4300E	34	5	700
LINE 4	4325E	18	<5	100
LINE 4	4350E	48	10	300
LINE 4	4375E	22	5	80
LINE 4	4400E	26	35	1200
LINE 5	5025W	46	15	110
LINE 5	5050W	65	15	110
LINE 5	5075W	60	10	240
LINE 5	5100W	80	10	450
LINE 5	5025E	55	10	150
LINE 5	5050E	12	10	85
LINE 5	5075E	8	10	25
LINE 5	5100E	8	15	35
	Detn limit	(2)	(5)	(5)

973035

Analysis code Cl   Report AC 3370/81

NATA Certificate   Results in ppm

Sample		Cu	Pb	Mn
LINE 5	5125E	<2	5	40
LINE 5	5150E	2	5	5
LINE 5	5175E	2	<5	10
LINE 5	5200E	2	<5	5
LINE 6	6025W	50	5	210
LINE 6	6050W	75	10	1200
LINE 6	6075W	50	5	490
LINE 6	6100W	32	5	410
LINE 6	6025E	24	5	130
LINE 6	6050E	20	5	50
LINE 6	6075E	24	5	85
LINE 6	6100E	42	20	170
LINE 6	6125E	50	20	370
LINE 6	6150E	24	25	110
LINE 6	6175E	4	<5	20
LINE 6	6200E	2	<5	5
BASELINE	0000B	26	<5	180
BASELINE	0025B	28	5	300
BASELINE	0050B	16	10	250
BASELINE	0075B	38	20	350
BASELINE	1000B	4	<5	5
BASELINE	1250B	18	<5	190
BASELINE	1500B	14	5	45
BASELINE	1075B	6	<5	20
BASELINE	2000B	<2	<5	5
BASELINE	2025B	4	<5	10
BASELINE	2050B	20	5	30
BASELINE	2075B	10	5	20
BASELINE	3000B	18	10	30
BASELINE	4000B	<2	<5	5
BASELINE	4025B	2	<5	10
BASELINE	4050B	2	<5	5
BASELINE	4075B	2	5	5
BASELINE	5000B	4	<5	40
BASELINE	5025B	85	5	120
BASELINE	5050B	38	5	410
BASELINE	5075B	42	5	370
BASELINE	6000B	65	10	350
BASELINE	6025B	140	5	400
BASELINE	6050B	170	10	290
Detn limit		(2)	(5)	(5)

amdel

Analysis code C1 Report AC 3370/81

NATA Certificate Results in ppm

Sample	Cu	Pb	Mn
BASELINE 6075B	310	5	1900
Detn limit	(2)	(5)	(5)

amdel

973037

Analysis code C1 | Report AC 3370/81 | Page 5

NATA Certificate | Results in ppm

	Sample	Zn
LINE 0	0025W	60
LINE 0	0050W	55
LINE 0	0075W	12
LINE 0	0100W	10
LINE 0	0125W	20
LINE 0	0150W	12
LINE 1	1025W	4
LINE 1	1050W	8
LINE 1	1075W	22
LINE 1	1100W	14
LINE 1	1125W	10
LINE 1	1150W	12
LINE 1	1025E	12
LINE 1	1050E	20
LINE 1	1075E	10
LINE 1	1100E	38
LINE 1	1125E	10
LINE 2	2025W	10
LINE 2	2050W	20
LINE 2	2075W	20
LINE 2	2100W	26
LINE 2	2025E	4
LINE 2	2050E	4
LINE 2	2075E	16
LINE 2	2100E	44
LINE 2	2125E	40
LINE 2	2150E	130
LINE 2	2175E	34
LINE 2	2200E	60
LINE 2	2225E	22
LINE 2	2250E	28
LINE 2	2275E	90
LINE 2	2300E	200
LINE 2	2325E	55
LINE 3	3025W	55
LINE 3	3050W	38
LINE 3	3075W	12
LINE 3	3100W	240
LINE 3	3025E	32
LINE 3	3050E	26
	Detn limit	(2)

amdel

Analysis code C1 Report AC 3370/81

NATA Certificate Results in ppm

	Sample	Zn
LINE 3	3075E	80
LINE 3	3100E	50
LINE 3	3125E	24
LINE 3	3150E	100
LINE 3	3175E	50
LINE 3	3200E	34
LINE 3	3225E	12
LINE 3	3250E	40
LINE 3	3275E	24
LINE 3	3300E	14
LINE 3	3325E	12
LINE 3	3350E	36
LINE 4	4025W	8
LINE 4	4050W	20
LINE 4	4075W	26
LINE 4	4100W	24
LINE 4	4025E	6
LINE 4	4050E	6
LINE 4	4075E	14
LINE 4	4100E	16
LINE 4	4125E	22
LINE 4	4150E	20
LINE 4	4175E	4
LINE 4	4200E	12
LINE 4	4225E	10
LINE 4	4250E	14
LINE 4	4275E	6
LINE 4	4300E	70
LINE 4	4325E	28
LINE 4	4350E	160
LINE 4	4375E	20
LINE 4	4400E	260
LINE 5	5025W	26
LINE 5	5050W	55
LINE 5	5075W	44
LINE 5	5100W	55
LINE 5	5025E	280
LINE 5	5050E	38
LINE 5	5075E	20
LINE 5	5100E	22
	Detn limit	(2)

amdel

NATA Certificate Results in ppm

	Sample	Zn
LINE 5	5125E	22
LINE 5	5150E	28
LINE 5	5175E	12
LINE 5	5200E	6
LINE 6	6025W	40
LINE 6	6050W	60
LINE 6	6075W	60
LINE 6	6100W	40
LINE 6	6025E	30
LINE 6	6050E	23
LINE 6	6075E	24
LINE 6	6100E	39
LINE 6	6125E	55
LINE 6	6150E	20
LINE 6	6175E	8
LINE 6	6200E	6
BASELINE	0000B	55
BASELINE	0025B	55
BASELINE	0050B	70
BASELINE	0075B	110
BASELINE	1000B	14
BASELINE	1250B	60
BASELINE	1500B	14
BASELINE	1075B	12
BASELINE	2000B	12
BASELINE	2025B	14
BASELINE	2050B	20
BASELINE	2075B	16
BASELINE	3000B	24
BASELINE	4000B	8
BASELINE	4025B	6
BASELINE	4050B	4
BASELINE	4075B	4
BASELINE	5000B	14
BASELINE	5025B	30
BASELINE	5050B	39
BASELINE	5075B	65
BASELINE	6000B	95
BASELINE	6025B	50
BASELINE	6050B	42
	Detn limit	(2)

amdel

Analysis code C1 Report AC 3370/81

NATA Certificate Results in ppm

Sample	Zn
BASELINE 5075B	100
Detn limit	(2)

amdel

Analysis code C2 Report AC 3370/81 Page 9

NATA Certificate Results in ppm

	Sample	As
LINE 0	0025W	20
LINE 0	0050W	20
LINE 0	0075W	<20
LINE 0	0100W	<20
LINE 0	0125W	<20
LINE 0	0150W	<20
LINE 1	1025W	<20
LINE 1	1050W	<20
LINE 1	1075W	<20
LINE 1	1100W	<20
LINE 1	1125W	<20
LINE 1	1150W	<20
LINE 1	1025E	30
LINE 1	1050E	<20
LINE 1	1075E	<20
LINE 1	1100E	<20
LINE 1	1125E	<20
LINE 2	2025W	<20
LINE 2	2050W	20
LINE 2	2075W	<20
LINE 2	2100W	<20
LINE 2	2025E	<20
LINE 2	2050E	<20
LINE 2	2075E	<20
LINE 2	2100E	<20
LINE 2	2125E	20
LINE 2	2150E	80
LINE 2	2175E	20
LINE 2	2200E	20
LINE 2	2225E	50
LINE 2	2250E	30
LINE 2	2275E	40
LINE 2	2300E	30
LINE 2	2325E	<20
LINE 3	3025W	<20
LINE 3	3050W	<20
LINE 3	3075W	<20
LINE 3	3100W	<20
LINE 3	3025E	30
LINE 3	3050E	<20

Detn limit (20)

Analysis code C2 Report AC 3370/81

NATA Certificate Results in ppm

	Sample	As
LINE 3	3075E	20
LINE 3	3100E	30
LINE 3	3125E	<20
LINE 3	3150E	30
LINE 3	3175E	30
LINE 3	3200E	<20
LINE 3	3225E	<20
LINE 3	3250E	30
LINE 3	3275E	<20
LINE 3	3300E	<20
LINE 3	3325E	<20
LINE 3	3350E	<20
LINE 4	4025W	<20
LINE 4	4050W	<20
LINE 4	4075W	20
LINE 4	4100W	60
LINE 4	4025E	20
LINE 4	4050E	20
LINE 4	4075E	40
LINE 4	4100E	30
LINE 4	4125E	<20
LINE 4	4150E	<20
LINE 4	4175E	<20
LINE 4	4200E	<20
LINE 4	4225E	<20
LINE 4	4250E	<20
LINE 4	4275E	<20
LINE 4	4300E	20
LINE 4	4325E	30
LINE 4	4350E	50
LINE 4	4375E	<20
LINE 4	4400E	20
LINE 5	5025W	<20
LINE 5	5050W	20
LINE 5	5075W	<20
LINE 5	5100W	<20
LINE 5	5025E	<20
LINE 5	5050E	<20
LINE 5	5075E	<20
LINE 5	5100E	<20

Detn limit (20)

amdel

Analysis code C2 Report AC 3370/81

NATA Certificate Results in ppm

	Sample	As
LINE 5	5125E	<20
LINE 5	5150E	<20
LINE 5	5175E	<20
LINE 5	5200E	<20
LINE 6	6025W	<20
LINE 6	6050W	<20
LINE 6	6075W	30
LINE 6	6100W	<20
LINE 6	6025E	20
LINE 6	6050E	<20
LINE 6	6075E	<20
LINE 6	6100E	20
LINE 6	6125E	<20
LINE 6	6150E	<20
LINE 6	6175E	<20
LINE 6	6200E	<20
BASELINE	0000B	<20
BASELINE	0025B	20
BASELINE	0050B	20
BASELINE	0075B	<20
BASELINE	1000B	<20
BASELINE	1250B	<20
BASELINE	1500B	40
BASELINE	1075B	<20
BASELINE	2000B	<20
BASELINE	2025B	30
BASELINE	2050B	50
BASELINE	2075B	30
BASELINE	3000B	50
BASELINE	4000B	<20
BASELINE	4025B	<20
BASELINE	4050B	<20
BASELINE	4075B	20
BASELINE	5000B	<20
BASELINE	5025B	40
BASELINE	5050B	50
BASELINE	5075B	50
BASELINE	6000B	70
BASELINE	6025B	60
BASELINE	6050B	70

Detn limit (20)

amdel

Analysis code C2 Report AC 3370/81

NATA Certificate Results in ppm

Sample	As
BASELINE 6075B	50
Detn limit	(20)

FORM 6 JOB 3370/81

AMDEL ANALYTICAL SERVICE

Results in ppm unless otherwise stated

BATCH NO. 1/2

TT	Sample No.		Au.						
1	LINE 0 0025 W		<0.05						
2	0050 W		<0.05						
3	0075 W		<0.05						
4	0100 W		<0.05						
5	0125 W		<0.05						
6	0150 W		<0.05						
7	LINE 1 1025 W		<0.05						
8	1050 W		<0.05						
9	1075 W		<0.05						
10	1100 W		<0.05						
11	1125 W		<0.05						
12	1150 W		<0.05						
13	1025 E X		<0.05						
14	1050 E		<0.05						
15	1075 E		<0.05						
16	1100 E		<0.05						
17	1125 E		<0.05						
18	LINE 2 2025 W		<0.05						
19	std								
20	LINE 1 1025 EX								

FORM 6 JOB 3370/81

AMDEL ANALYTICAL SERVICE

Results in ppm unless otherwise stated

BATCH NO. 2

TT	Sample No.		Au.						
1	LINE 2 2050 W		<0.05						
2	2075 W		<0.05						
3	2100 W		<0.05						
4	2025 E		<0.05						
5	2050 E		<0.05						
6	2075 E		<0.05						
7	2100 E		<0.05						
8	2125 E		<0.05						
9	2150 E		<0.05						
10	2175 E		<0.05						
11	2200 E		<0.05						
12	2225 EX		<0.05						
13	std								
14	2250 E		<0.05						
15	2275 E		<0.05						
16	2300 E		<0.05						
17	2325 E		<0.05						
18	LINE 3 3025 W		<0.05						
19	3050 W		<0.05						
20	LINE 2 2225 EX								

FORM 6 JOB 3370 /81 Results in ppm unless otherwise stated BATCH NO. 3/4

TT	Sample No.		Au						
1	LINE 3 3075 W		<0·05						
2	3100 W X		1·3						
3	std								
4	3025 E		<0·05						
5	3050 E		<0·05						
6	3075 E		<0·05						
7	3100 E		<0·05						
8	3125 E		<0·05						
9	3150 E		<0·05						
10	3175 E		<0·05						
11	3200 E		<0·05						
12	3225 E		<0·05						
13	3250 E		<0·05						
14	3275 E		<0·05						
15	3300 E		<0·05						
16	3325 E		<0·05						
17	3350 E		<0·05						
18	LINE 4 4025 W		<0·05						
19	4050 W		<0·05						
20	LINE 3 3100 W X								

AMDEL ANALYTICAL SERVICE

FORM 6 JOB 3370 /81 Results in ppm unless otherwise stated BATCH NO. 4

TT	Sample No.		Au						
1	LINE 4 4075 W		<0·05						
2	4100 W		<0·05						
3	4025 E		<0·05						
4	4050 E		<0·05						
5	4075 E		<0·05						
6	4100 E		<0·05						
7	4125 E		<0·05						
8	4150 E		<0·05						
9	4175 E		<0·05						
10	4200 E X		<0·05						
11	std								
12	4225 E		<0·05						
13	4250 E		<0·05						
14	4275 E		<0·05						
15	4300 E		<0·05						
16	4325 E		<0·05						
17	4350 E		<0·05						
18	4375 E		<0·05						
19	4400 E		<0·05						
20	LINE 4 4200 E								

FORM 6 JOB 3370 /81

AMDEL ANALYTICAL SERVICE

Results in ppm unless otherwise stated

BATCH NO. 5/6

TT	Sample No.		Au						
1	LINE 5 5025WX		<0·05						
2	5050W		<0·05						
3	5075W		<0·05						
4	5100W		<0·05						
5	5025E		<0·05						
6	5050E		<0·05						
7	5075E		<0·05						
8	5100E		<0·05						
9	5125E		<0·05						
10	5150E		<0·05						
11	5175E		<0·05						
12	5200E		<0·05						
13	LINE 6 6025W		<0·05						
14	6050W		<0·05						
15	std								
16	6075W		<0·05						
17	6100W		<0·05						
18	6025E		<0·05						
19	6050E		<0·05						
20	LINE 5 5025WX								

FORM 6 JOB 3370 /81

AMDEL ANALYTICAL SERVICE

Results in ppm unless otherwise stated

BATCH NO. 6

TT	Sample No.		Au						
1	LINE 6 6075E		<0·05						
2	6100E		<0·05						
3	6125E		<0·05						
4	6150E		<0·05						
5	6175E		<0·05						
6	6200E		<0·05						
7	BASELINE 0000B		<0·05						
8	0025B		<0·05						
9	0050B		<0·05						
10	0075B		<0·05						
11	1000BX		<0·05						
12	std								
13	1025B		<0·05						
14	1050B		<0·05						
15	1075B		<0·05						
16	2000B		<0·05						
17	2025B		<0·05						
18	2050B		<0·05						
19	2075B		<0·05						
20	BASELINE 1000BX								

FORM 6 JOB 3370 /81

AMDEL ANALYTICAL SERVICE

Results in ppm unless otherwise stated

BATCH NO. 7 -final

TT	Sample No.		Au						
1	BASELINE 3000B		<0.05						
2	4000B		<0.05						
3	4025B		<0.05						
4	4050B		<0.05						
5	4075B		<0.05						
6	5000B		<0.05						
7	5025B		<0.05						
8	5050B		<0.05						
9	5075B		<0.05						
10	6000B		<0.05						
11	6025B X		<0.05						
12	6050B		<0.05						
13	6075B		<0.05						
14	BASELINE 6025BX								
15	std								
16	blank								
17									
18									
19									
20									

amdel

Analysis code C1 Report AC 3709/81

NATA Certificate Results in ppm

Sample	Cu	Pb	Zn	Mn
30250	30	20	44	110
30500	2	<5	12	20
30750	<2	<5	4	5
Detn limit	(2)	(5)	(2)	(5)

amdel

Analysis code C3/2   Report AC 3709/81

NATA Certificate   Results in ppm

Sample	Au
S001	<0.02
S002	<0.02
S003	<0.02
S004	<0.02
S005	0.05
S006	0.10
S007	0.55
S008	0.24
S009	0.10
S010	0.22
S011	0.12
S012	0.02
S013	0.15
S014	0.10
S015	0.14
S016	0.10
S017	0.03
S018	0.15
S019	0.05
S020	0.10
S021	<0.02
S022	0.04
S023	0.08
S024	0.02
S025	0.05
S026	0.10
3025[illegible]	0.08
3050[illegible]	0.04
3075[illegible]	<0.02
Detn limit	(0.02)

amdel

Analysis code C2 Report AC 3709/81

NATA Certificate Results in ppm

Sample	As
30256	70
30506	<20
30756	<20
Detn limit	(20)

973052

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

12th February 1981

CERTIFICATE OF ANALYSIS

To Industrial & Mining Invest. P/L
1st Floor A.M.P. Building 46 St John Street L'Ton

The sample of Specimen *received from* you *on the* 30th Jan'81 *and stated to be from* Specimen Reef Area E.L. 4/61 *~~has~~ have been examined, with the following results:—*

	Registered Number	Description	g/tonne Au	
2.81	810571	No. 1 Quartz from adit	<0.3	
	810572	No. 2 Quartz float on surface	<0.3	
	810573	No. 3 Ferruginous Floater on dump	<0.3	

In the absence of gold nothing further will be done in these samples.

Analyses by. J. R. [signature]

Fee $15.00

[signature]
Chief Chemist and Metallurgist

21382

APPENDIX B

Scintrex Report

973054

SCINTREX

COMMENTS ON

GRADIENT RECONNAISSANCE AND DIPOLE-DIPOLE

ELECTRICAL INDUCED POLARIZATION SURVEYS

SPECIMEN REEF AREA, EL4/61

NEAR SAVAGE RIVER, TASMANIA

ON BEHALF OF

INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD.

973055

SCINTREX

PRIVATE AND CONFIDENTIAL

COMMENTS ON GRADIENT RECONNAISSANCE AND DIPOLE-DIPOLE ELECTRICAL INDUCED POLARIZATION SURVEYS SPECIMEN REEF AREA, EL4/61 NEAR SAVAGE RIVER, TASMANIA

ON BEHALF OF

INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD.

BY

A.W. HOWLAND-ROSE

MSC,DIC,AMAUSIMM,FGS.

GEOPHYSICIST

SYDNEY, N.S.W.

FEBRUARY, 1981

TAS - 087

SCINTREX

CONTENTS

SCINTREX PTY. LTD.

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

A gradient array electrical induced polarization survey carried out over the Specimen Reef area has defined a series of moderate but significant induced polarization responses typical of disseminated or electrically discontinuous sulphides (or graphite). The strike length of each source is less than the interline spacing, namely, 100 metres, while the depths to source vary from 25 metres to 50 metres.

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WESTERN AUSTRALIA
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TELEGRAMS: SCINTREX, PERTH

6 TRAMORE PLACE,
KILLARNEY HEIGHTS, 2087
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SCINTREX

COMMENTS ON GRADIENT RECONNAISSANCE AND DIPOLE-DIPOLE ELECTRICAL INDUCED POLARIZATION SURVEYS SPECIMEN REEF AREA, EL4/61 NEAR SAVAGE RIVER, TASMANIA ON BEHALF OF INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD.

INTRODUCTION

At the request of Mr. M. Edyvean, Manager for Industrial and Mining Investigations Pty. Ltd., Scintrex Pty. Ltd. carried out a series of gradient and dipole-dipole array electrical induced polarization surveys on the Specimen Reef area.

The work was carried out over 3½ production days between 6th and 10th February, 1981 by Scintrex crew leader Mr. I. Newby assisted by D. Healy. The work was supervised on site by Industrial and Mining Investigations geologist Mr. J. Wall, while the author provided such additional geophysical supervision as was required.

Brief comments on the method are appended to this report.

EQUIPMENT

The equipment consisted of a Scintrex 3 kilowatt time domain transmitter for energisation and a Scintrex time domain induced polarization receiver, model IPR-8, to monitor the primary (resistivity) and secondary (induced polarization) potential fields.

DATA PRESENTATION

The *gradient data* is presented at the horizontal scale of 1:2500 for both contour and profile presentations. The profile data shows resistivity in ohm-metres on a 10 centimetre log scale, while chargeability is shown on the arithmetic scale of 1 centimetre = 1 millivolt/volt.

Plate 1 shows a contour presentation of the chargeability; Plate 2 a contour presentation of the resistivity, and Plate 3 shows an interpretation of both the resistivity and chargeability data.

The *dipole-dipole* data is plotted in standard pseudo-section format.

DISCUSSION OF THE DATA

General

The gradient array data gives an overall picture of the area surveyed. The apparent resistivities range from less than 700 ohm-metres to just in excess of 1500 ohm-metres for the most part. There is a general grid north-south trend below 200S, and a grid north-east south-west to north-north-east south-south-west trend above 200S.

The chargeability is either of higher than normal background or anomalous. The general trend of anomalies is again implied to be as per that seen on the resistivity, however, as individual responses are in fact never greater than the line spacing, the *true* strike length and orientation of individual events may in fact be at variance to the apparent strike length and direction. The resolution for these important characteristics can only be improved by using a 50 metres line spacing in this case.

The chargeability data shows a distinct break which crosses line 300S at about 100E(±) and has a grid east-north-east west-south-west trend (see Plate 3). This may represent a flexure or fault, and while not being obvious on the apparent resistivity data, nevertheless truncates some of the more distinct features on that electrical property also. Also, a distinct relative chargeability low (pink on Plate 3) may be a 'marker horizon' which may have some geological interest.

In most cases there is a depression in the apparent resistivity profile coincident with the increased induced polarization response, however, the absolute level of the associated resistivity remains high. This clearly implies that the source to the chargeability observed is either disseminated in nature and contained within a host less resistive than the enclosing rocks, or that there is only minimal condution between the graphite and/or sulphide sources causing the anomalies.

Three decay slices were measured, M_1, M_3 and M_5, but little variation from the normal $M_1 = M_3 = M_5$ was observed, and thus only M_3 has been plotted. This implies that the grain size of the causative mineralisation is of average grain size.

Significant Induced Polarization Responses Located on the Gradient Array Survey

A - Line 100S at or west of 137W ..... The 'local' background would appear to be of the order of 22 millivolts/volt, and the anomaly is about 14 millivolts/volt above this level. The associated apparent resistivity background is about 1200 ohm-metres, however, a rapid fall at 137W to 400 ohm-metres implies a more conductive source at, or west of this point. While the anomaly is incomplete, the maximum inferred depth to source is about 50 metres.

B - Line 100S at 075E ..... A sharp three station chargeability anomaly at 075E associated with a slight increase in the background resistivity above the 1000 ohm-metres level, implies a disseminated source within a host more resistive than background. The anomaly is open to the north, and there is no diagnostic correlative on the line to the south. The maximum depth to source is 25 metres.

C - Line 400S at 037.5E (1C[1] line 600S at 037.5E) ..... A 7 millivolts/volt response above 26 millivolts/volt background was recorded centred at 037.5E ± 25 metres. The source has a maximum depth of 50 metres. The associated resistivity is about 1000 ohm-metres compared to 1500 ohm-metres to the immediate east and west. There is a possibility that the significant response recorded at 037.5E on line 600S *may* be related.

D - Line 500S at 162.5E ..... One of the most significant induced polarization anomalies was defined on line 500S with a 'shoulder' of about 10 to 12 millivolts/volt above background at 125E, and a maximum at, or east of, 162.5E of 16 millivolts/volt above the local background. The inferred maximum depth to source in each case is of the order of 35 to 50 metres. The accompanying resistivity is still very high at 800 to 900 ohm-metres. Thus the source is interpreted as being either disseminated, or if massive, electrically discontinuous.

This anomaly is almost certainly associated with the sharp 7 millivolts/volt above background anomaly at 137E on line 400S, and an anomaly of similar magnitude on line 600S at the same co-ordinate. (But see the comment on line spacing above.)

E - Line 400S at 190E and 225E ..... Related maxima of 10 millivolts/volt and 18 millivolts/volt above background associated with a general decrease in apparent resistivity to 700 ohm-metres from 1500 ohm-metres to the west, and 800(±) ohm-metres to the east, are considered to have a source at a maximum depth of 25 metres. The source is considered to be due to a disseminated source.

F - Line 400S at 337E±25 metres ..... This broad anomaly is interpreted as having a source whose width is 40 to 50 metres and whose maximum depth is of the order of 25 metres. A distinct decrease in apparent resistivity to 500 ohm-metres at 320E contrasts with an apparent resistivity of 800 ohm-metres at 350E and implies this section of the source to be less resistive.

Dipole-Dipole Survey

This array was run between 075W and 250E on 400S using an *a* spacing of 25 metres and *n* values of 1 to 6.

The data shows the influences of the multiple sources which make up the section surveyed. (These can be readily identfied from the gradient data)

The high 45 millivolts/volt reading at 112E on *n* = 1 confirms the gradient response at this point comes within 25 metres of surface. The rapid decrease in chargeability for increasing *n* spacings implies the source is narrow. The broad gradient source centred at 050E± 25 metres is seen on the dipole-dipole data as a double peak centred at 50E. This anomaly continues to be significant at greater *n* values, therfore implying importance with depth. Higher resistivity, and lower chargeability values together with horizontal contouring of the data close to the surface between 25W and 25E, imply a shallow resistive cover above the chargeable source varying between 10 and 30 metres (guesstimate!)

Correlation with Self-Potential Data

The contour interpretation of the strike direction of the induced polarization and apparent resistivity data does not agree with that chosen for the self potential data. There is, however, often (but not always) a relation between moderate self-potential anomalism and induced polarization. This suggests that there may well be narrow electrically discontinuous sulphides (or graphite) zones (which cross the local water table) which are surrounded by a disseminated sulphide (or graphite) halo. The self-potential will emphasise the former and induced polarization-the latter (and vice versa). However, should the sulphides be electrically continuous across the water table over limited sections, then only these sections will be seen as self-potential anomalies. The disseminated sulphides will, however, still be shown by induced polarization if discontinuous. Thus the data from the self-potential and induced polarization surveys can be considered wholly compatible.

CONCLUSIONS

1 - The area as a whole has moderate resistivity and high background chargeability.

2 - A number of distinct anomalous induced polarization responses have been defined whose strike lengths are considered to be less than the line

spacing of 100 metres, and lie at *maximum depths* between 25 metres and 50 metres. All have apparent resistivities which are high in absolute terms, thus the sources must either be disseminated or, if massive, electrically discontinuous.

3 - The form of the chargeability data suggests a grid north-north-west south-south-east strike north of line 200S, and a grid north south strike to the south. Also, an east-north-east west-south-west trending dislocation appears to disrupt this pattern crossing line 300S at about 100E.

RECOMMENDATIONS

The author is not familiar with the nature of the gold mineralisation occurring in the Specimen Reef. However, the majority of pyrite-quartz-gold reef occurrences have the characteristics of high chargeability, limited and discontinuous expression along strike, and are invariably associated with *higher* than background resistivities rather than lower than background values. Self-potential anomalies would not be expected as a rule. Thus it is recommended that the location of known mineralisation be studied with respect to the chargeability responses, and if a clear correlation is seen in these areas, then the significant anomalies discussed in this report should be investigated by trenching or drilling.

Prior to any interline drilling it is strongly recommended that 50 metre lines be surveyed with both self-potential and induced polarization to precisely define strike and structure, as all major events apparea to have a strike length less than the present interline spacing.

SCINTREX

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

A.W. HOWLAND-ROSE,MSc,DIC,AMAusIMM,FGS.

Geophysicist

APPENDIX

BRIEF SIMPLE COMMENTS ON THE GRADIENT, DIPOLE-DIPOLE AND POLE-DIPOLE ARRAYS AND ON DECAY FORM

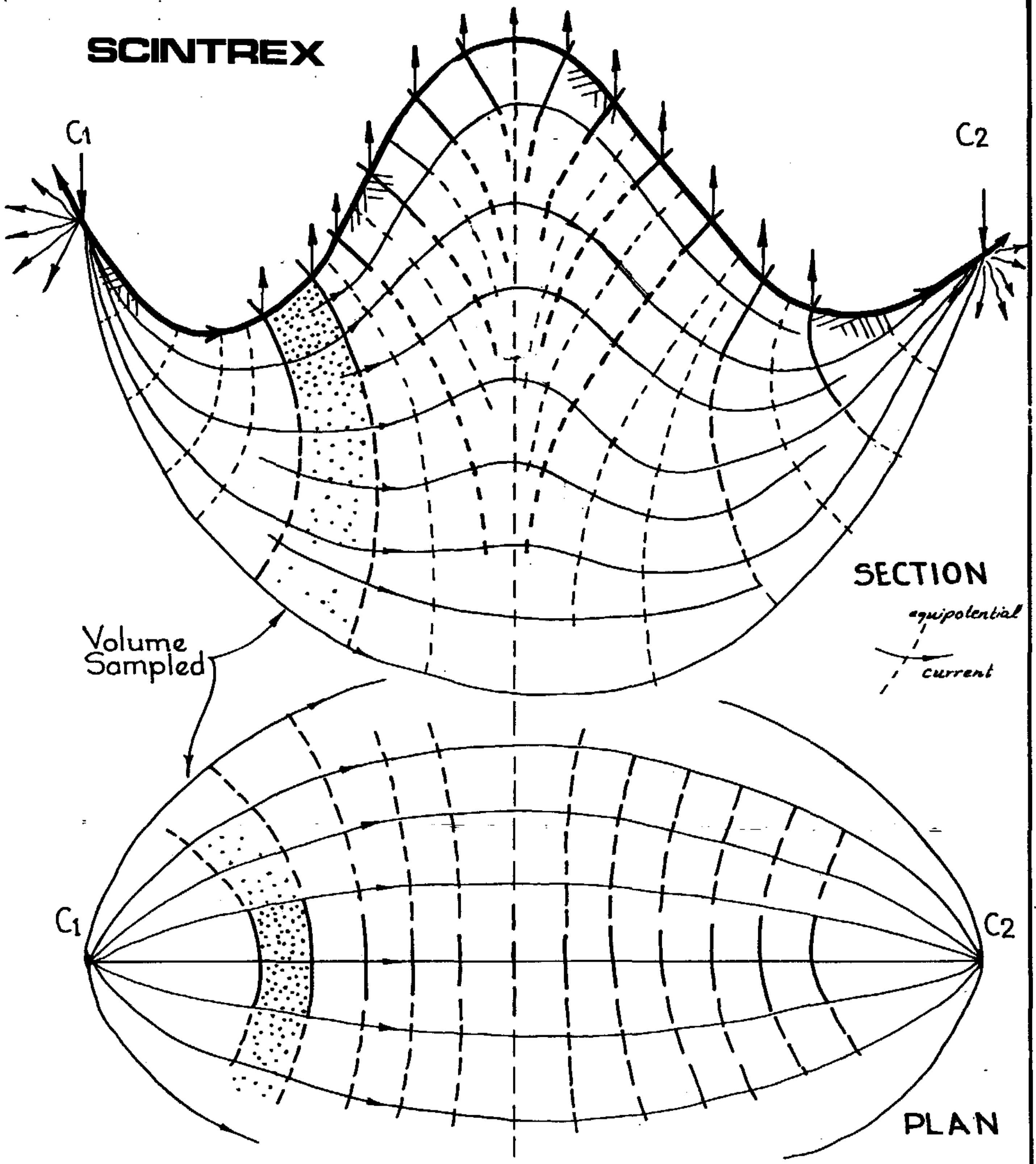
INTRODUCTION

In the case of the surveys discussed in this report, it is important that the geologist can relate the geophysical data to the underlying geology if he is to make the best use of this data. It is the author's opinion that *only* the geologist will be able to relate the data to geology. For this reason brief, simple comments follow on the salient features of the gradient, dipole-dipole and pole-dipole arrays. These comments show how the data relates to the volume of underlying rock which influences it. Comments are also made on the decay form.

DISCUSSION

Gradient Array:- In this array both current electrodes are distant from the potential dipole. Figure 1 displays the salient features of the *primary* current flow and primary equipotential field generated during energisation and shows the influence of terrain on the current paths. From this diagram it can be seen that the *apparent resistivity* measurement is a summation of a volume of material normal to the local slope, *beneath* the surface and at *right angles* to the line.

The apparent resistivity will be *biased by* the influence of each current electrode, but the *relative* values of *adjacent* readings can be considered to be *reliable*. As each electrode is approached, the readings become *increasingly biased by* that electrode.



Diagrammatic Representation of Primary Current and Potential Field in Steep Topography.

FIGURE 1.

Note particularly that the *source volume* is *normal to slope* and not vertically beneath the potential dipole. Therefore all maximum depths refer to depths below surface *normal to the slope*.

Note also that the volume of material *closest to* the potential electrodes will influence the data most. It is difficult to easily quantify the complex relationship between the volume of material sampled and its distance from the potential dipole.

Figure 2 displays the secondary current pattern generated from the decay of induced polarization effect *within* a chargeable sulphide source, together with the equipotential field generated by that decay. Note that due to the necessarily curved nature of the current flow outside the body, the on-surface manifestation is *wider than* the *source width*. Note also that the volume sampled in the primary potential field (apparent resistivity ρa) is not necessarily the same volume as is the secondary potential field (apparent chargeability Ma). This is, of course, true for *any* array.

Dipole-Dipole:- In this array the current dipole is generally small, generally 20 to 100 metres. Figure 3 displays the current pattern in section and in plan for a dipole-dipole array. The equipotential P_1 and P_2 tap a volume as shown in this diagram whose characteristics are read on the $n = 1$ station and plotted as a single point midway between the transmitting dipole C_1 to C_2 and the potential dipole P_1 to P_2. As progressively higher n values are read, a deeper and wider volume of material is sampled, this always being plotted midway between the transmitting and receiving dipole, and at a deeper level in the pseudo-section presentation used in this report. It is *vital* to realise that this data point

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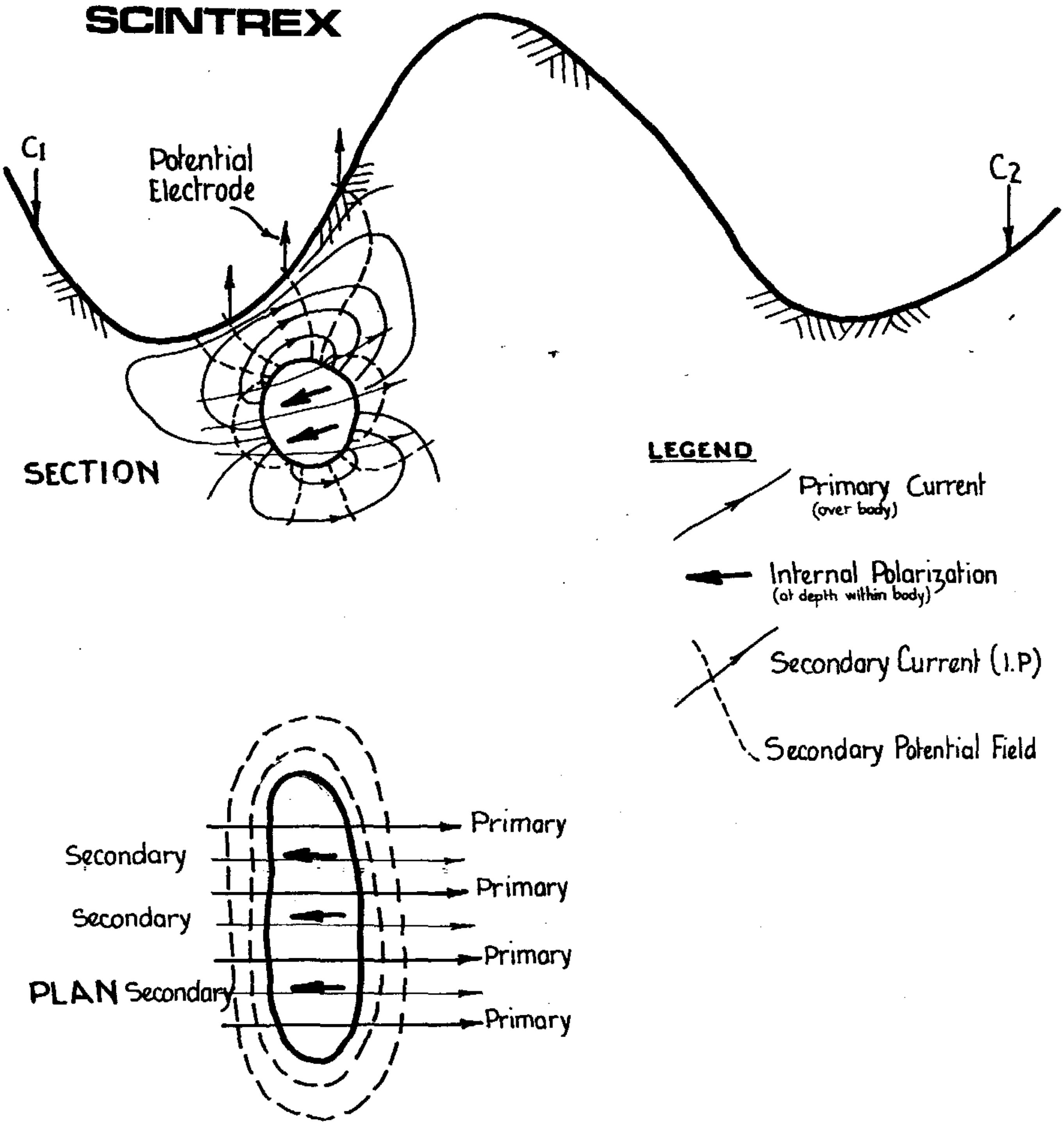

Diagrammatic representation of secondary current (I.P. effect) and secondary potential field in steep terrain.

FIGURE 2.

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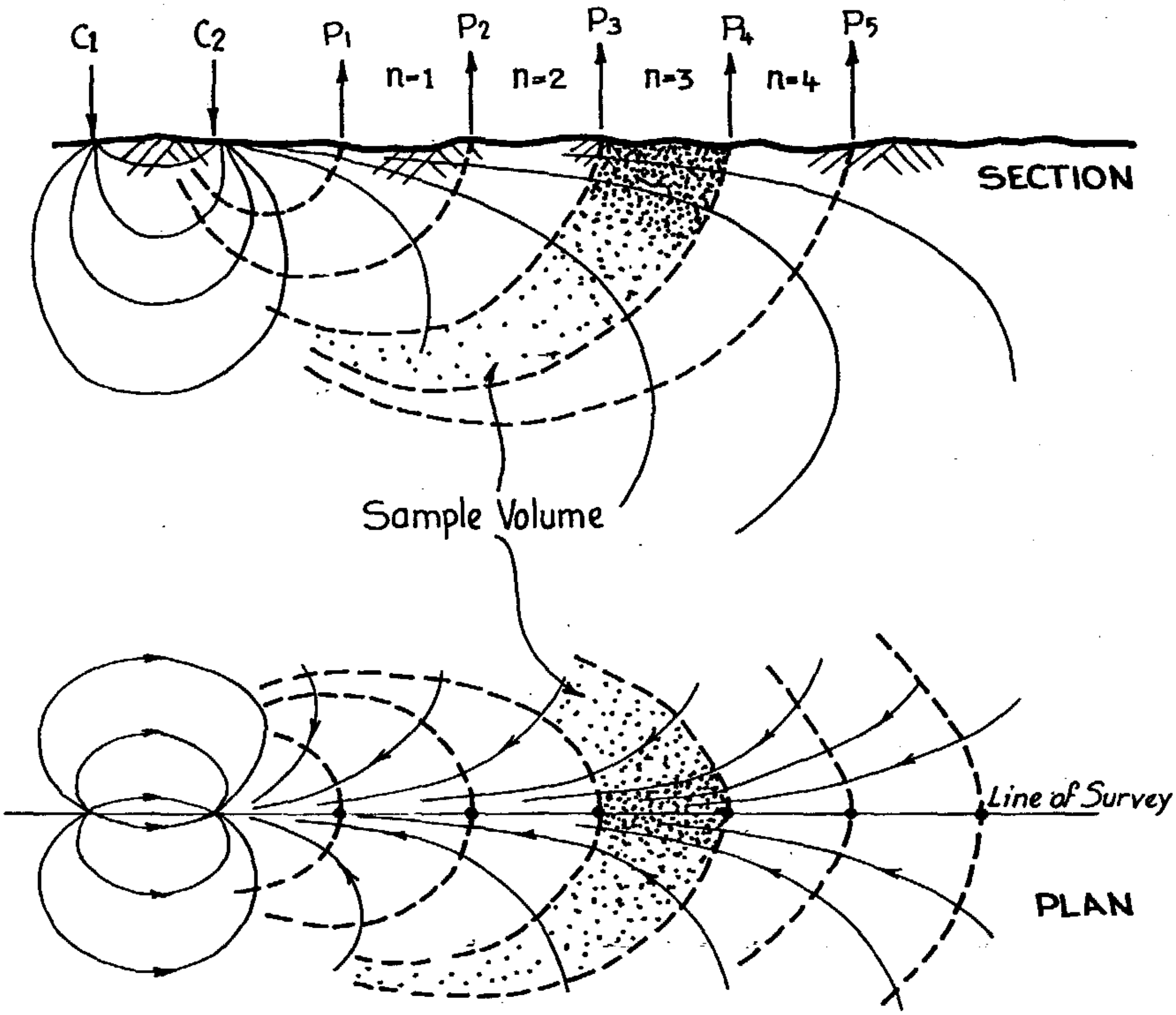
SCINTREX



Dipole - Dipole Array
Primary current paths and equipotential field
Showing volumes sampled

FIGURE 3.

does not represent the characteristics of the ground at the point plotted, but that of the *total volume* sampled.

A further characteristic of the array is that where the effective spacing ($n \times a$) is greater than the depth to the source, a 'high' (or 'low', depending on characteristics) will occur as each of the dipoles (i.e. transmitting C_1 and C_2 and potential P_1 and P_2) pass over the source of that anomaly. The resultant 45° patterns on the pseudo-section DO NOT represent dip, or even depth extent, but merely represent a complex interference pattern over the source due to the potential and current dipoles. For a single source, this *double peak effect* can be recognised as it tends to have two maxima displaced by ($n \times a + w$) where w is the width of the source. For multiple bodies this is difficult if not impossible to resolve by dipole-dipole arrays alone.

The enclosed Figure 4 shows the discharge of the energy stored in the body. As can be seen, the area sampled in section is tapped between the equipotentials generated by the discharge of the stored energy. These will not necesssarily be of the same form as those for the resistivity data, although they are, for convenience, plotted in the same format as for resistivity. Again, it is vital to note that theyrepresent the volume sampled as shown in Figure 4, *and not* the characteristics of the point at which they are plotted. Double peaks also occur as each of the two sets of electrodes pass over a source, where $n \times a$ is greater than the depth to source. Where $n \times a$ is less than the depth to source, a single maximum will be produced midway between the energising and measuring dipoles C_1/C_2 and P_1/P_2.

Pole-Dipole:- This array is similar in principle to the dipole-dipole array,

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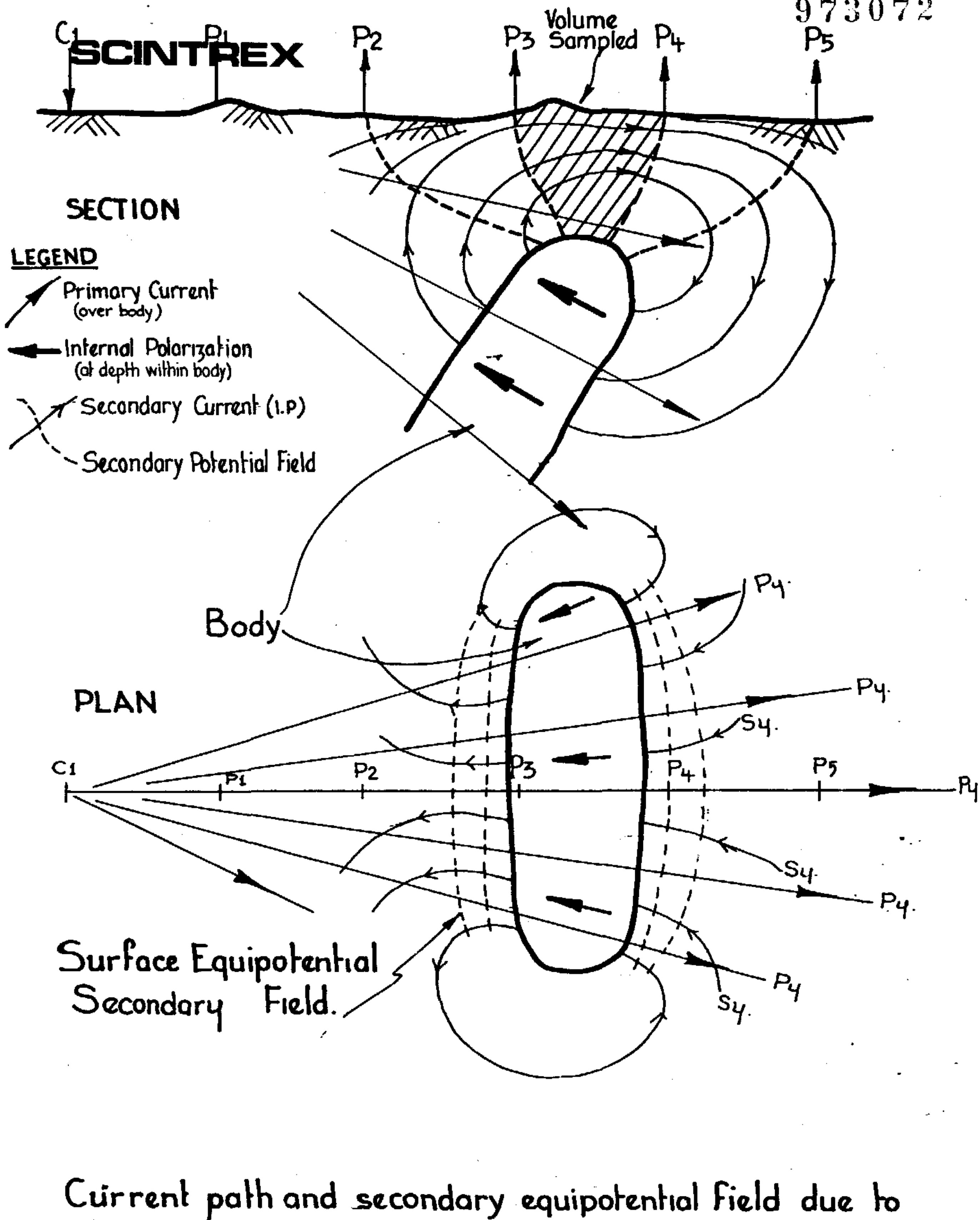

Current path and secondary equipotential field due to discharge of stored energy (I.P. effect) in the case of Pole-Dipole or Dipole-Dipole.

FIGURE 4.

except that a single electrode is placed 'close' to the potential dipole, with an 'infinite' electrode placed 10 $\times n \times a$ away from the 'pole-dipole' set-up, and, where practical, at right angles to it. The enclosed Figure 5 shows the distribution of current flow in section and in plan, about the pole source C_1. The potential electrodes P_1 and P_2 tap off the volume between them, which is contained between spheres whose centres are the pole source. The primary current reading is normalised for the geometry and plotted in profile or pseudo-section format as per dipole-dipole, namely, midway between the closest potential and current dpoles, which in the pseudo-section format is 45° towards the pole source. The chargeability reading is generated in a similar fashion to that described for dipole-dipole (Figure 4).

As with the dipole-dipole array, a double peak will result when $n \times a$ is greater than the depth to source, however, with pole-dipole it will be asymmetric. This will be true for both major resistivity features as well as for chargeability features. An example of this asymmetry for different depth to spacing arrays is shown for the three-array. (The three-array is a pole-dipole array when $n = 1$ and the a spacing is varied.)

The Choice Between Arrays:- Even after some thirty years of active use of gradient, dipole-dipole and pole-dipole arrays, controversy still reigns as to the relative merit of the various arrays. Much depends on the object of the programme, the terrain, the type of source sought, the type and complexity of the overburden/oxidation. Table 1 shows a comparison between arrays which may be helpful, taken from a fairly recent Canadian Geological Survey publication. In resistive mountainous terrain the author prefers the gradient array as the prime reconnaissance method due to the high productivity (2 to 5 times that for

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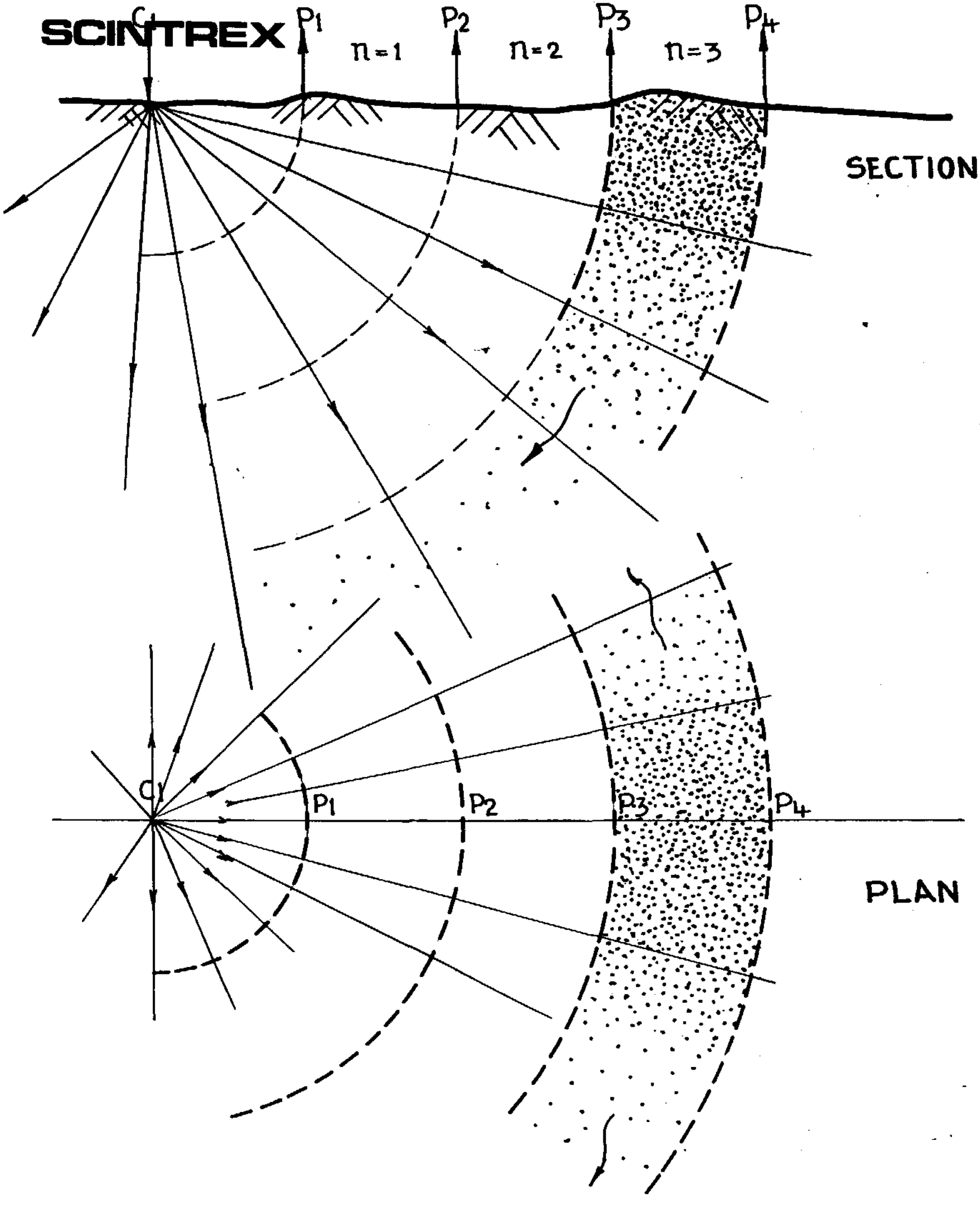

Current Path and Primary Equipotential Field from Pole-Dipole Array

FIGURE 5

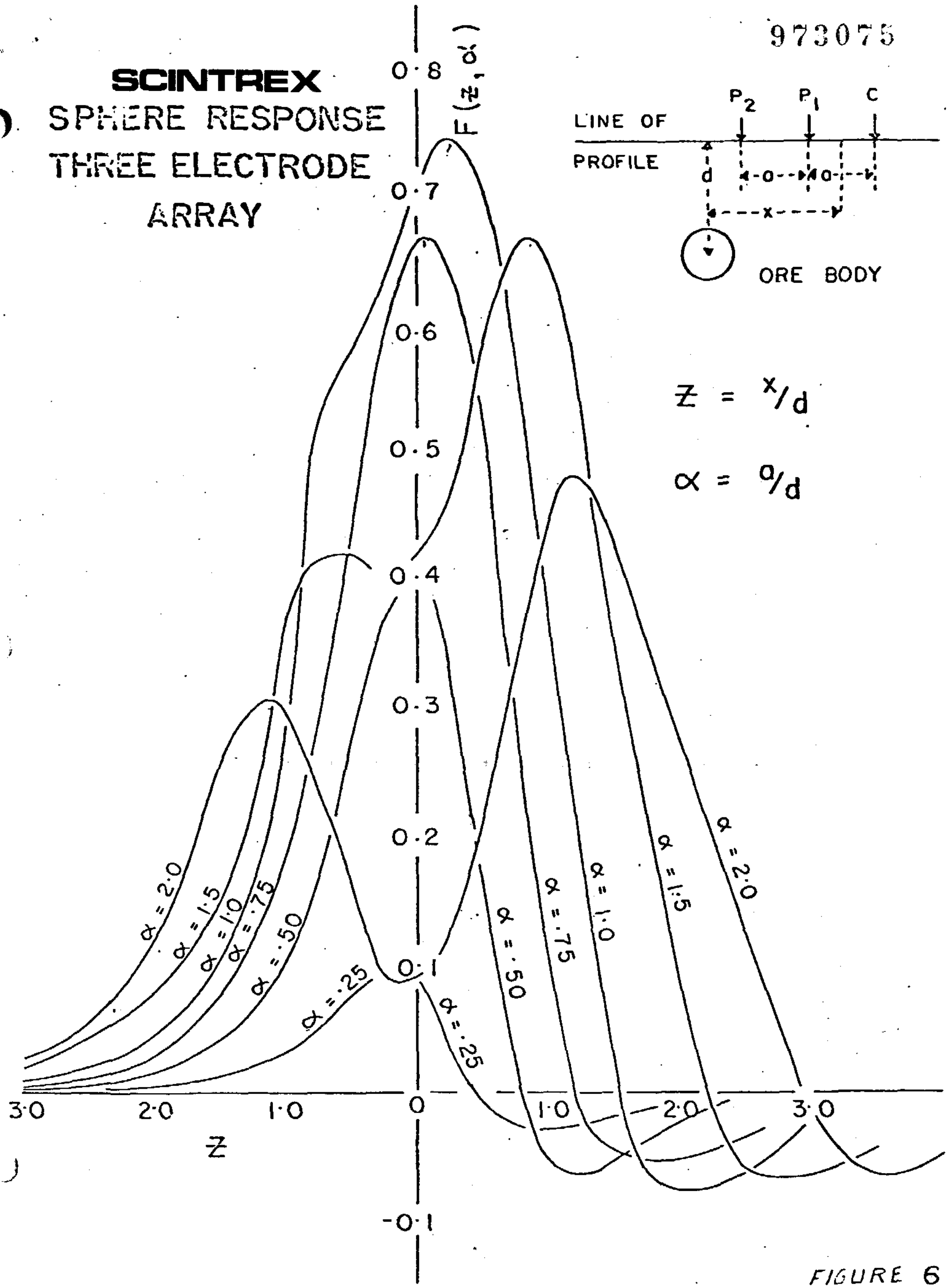
SCINTREX
SPHERE RESPONSE
THREE ELECTRODE
ARRAY
F(Z, α)
LINE OF
PROFILE
P2
P1
C
d
a
a
x
ORE BODY
Z = x/d
α = a/d
0·8
0·7
0·6
0·5
0·4
0·3
0·2
0·1
0
-0·1
3·0
2·0
1·0
0
1·0
2·0
3·0
Z
α = 2·0
α = 1·5
α = 1·0
α = ·75
α = ·50
α = ·25
α = ·25
α = ·50
α = ·75
α = 1·0
α = 1·5
α = 2·0

FIGURE 6

dipole-dipole), but this should be followed-up by detailed dipole-dipole or pole-dipole surveys as the gradient array, while giving 'maximum depths', cannot give 'minimum depths' as moving source arrays can. Similarly pole- or dipole-dipole surveys which have complex or muliptle sources can very often be resolved by use of limited gradient array detail. While pole-dipole is more efficient to apply in mountainous terrain, it tends to yield asymmetric double peak anomalies, however, to the trained observer, this is no disadvantage.

Brief Comments on Decay Form:- In most surveys three 'slices' of the decay form for the induced polarization reponse are acquired for each station as shown in Figure 7. While six slices are capable of being measured (M_1 to M_6), they are normally combined into pairs $M_1 + M_2 = M_1$ etc. as shown in Figure 7(C). Each of the slices M_1 to M_6 is normalised for a 'normal' decay form such that should the decay form be 'normal' $M_1 = M_3 = M_5$. Thus the operator can immediately recognise any anomalous decay forms which may arise from one of two major sources. Firstly the type of the source can influence the decay form. Coarse grained efficient sources such as sulphides show *slow* decay forms, magnetic and fine grained sulphides often show *fast* decay forms. This can be shown as $\Delta M = M_5 - M_1$, where positive ΔM infers *slow* decay form and negative ΔM *fast* decay form. A superior parameter is ΔMn where

$$\Delta Mn = \frac{M_5 - M_1}{M_3} \times 100 \text{ (in percent)}$$

which is essentially ΔM normalised for the amplitude of the decay. ΔM and ΔMn are merely short hand ways to profile changes in decay form and are essentially qualitative and relative.

Decay forms can also demonstrate the presence of electromagnetic coupling as Figure 7 shows. This is a regional effect as shown on Figure 7(b). This will

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TABLE 1

(Table 3.1)

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Comparison of IP Survey Electrode Arrays

(after Sumner, 1972)

	Advantages	Disadvantages	Survey Speed	Signal to-Noise	EM Coupling Rejection
Parallel Field Arrays Wenner	Anomalies symmetrical Synchronous detector possible Many case histories available	Requires more wire: larger field crew Poor resolution Unfavourable in capacitive coupling situations	Fair	Good	Fair
Schlumberger	Symmetrical array Synchronous detection possible Fewer men required Works well in layered earth Type curves available	Less horizontal resolution Unsuitable for horizontal profiling Capacitive coupling possible	Fair	Fair	Fair
Gradient	Map interpretation easier Less masking by conductive overburden Penetration good; safer Communications easier Can use two or more receivers Less topographic effect Data easily contoured in plan Useful where difficulty in making good current contacts	Poor resolution with depth Poor in low resistivity areas Geometric factor varies complexly	Good	Fair	Poor
Potential-About-a-Point Three-Array	Good reconnaissance array Fairly good resolution	Asymmetrical More wire needed	Fair	Good	Good
Pole-Dipole, Collinear	Good resolution Good subsurface coverage	Asymmetrical Asymmetrical	Fair	Fair	Fair
Perpendicular Three-Array, Pole-Dipole, Pole-Pole	Virtually eliminates EM coupling	More wire needed	Fair to Poor	Fair	Very Good
Pole-Pole (Two-Array)	Smaller crew needed Less wire needed than for some arrays Good penetration in nonconductive overburden	Susceptible to masking by conductive over-burden	Good	Fair	Poor
PDR (Potential Drop Ratio)	Sensitive to lateral variations "Common mode" noise rejection	Complex interpretation	Fair	Good	Fair
Dipole Field Array Dipole-Dipole Collinear	Symmetrical, good resolution Good penetration Less survey wire needed	Slow unless equipment is portable Resistivity topographic effects Interpretation somewhat involved	Fair	Poor	Fair
Dipole-Dipole, Parallel	Special use for EM coupling interpretation	Not used for routine surveying	Poor	Poor	Fair
Down-the-Hole Arrays Azimuthal Array (One Potential Electrode Down the Hole)	Fair for exploration purposes Useful in finding the best search direction	Interpretation complex Negative anomalies Strong geometric effects Mainly measures changes in resistivity	Fair	Good	Good
Radial Array (One Current Electrode Down the Hole, mise-à-la-masse)	Good for exploration purposes Useful in finding the best search direction Hole need not stay open	Interpretation complex Negative anomalies Not good for obtaining rock properties	Fair	Good	Good
In-Hole Arrays (More than One Electrode in the Hole)	Good for obtaining rock properties Good for assaying Interpretation simple	Current densities may be too large Possible capacitive coupling problems Not designed for exploration purposes Special equipment, expensive	Good	Fair	Good

Extract from: Geological Survey of Canada - Paper 75-31 "Borehole Geophysics Applied to Metallic Mineral Prospecting: A Review"

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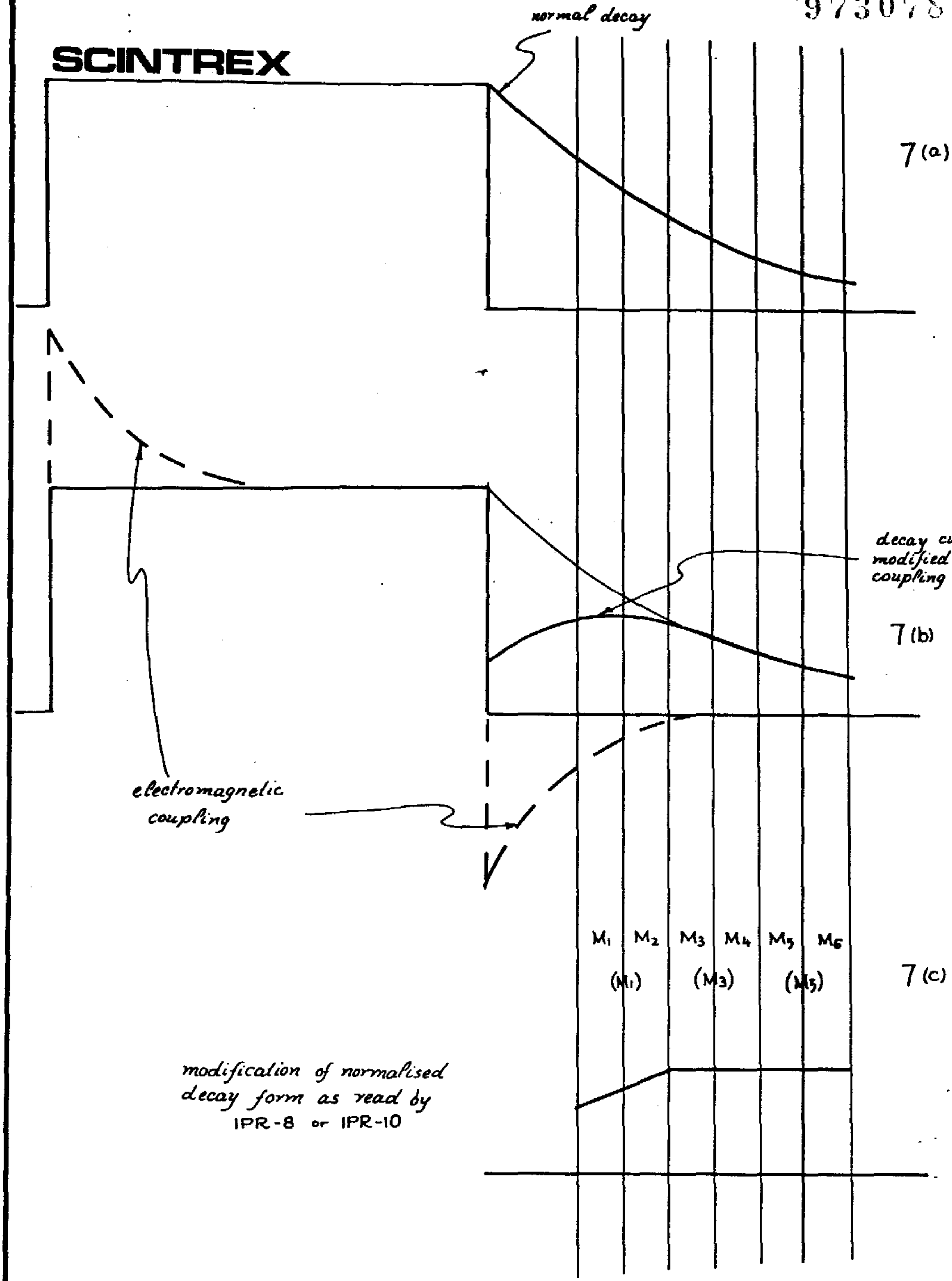

EFFECTS OF ELECTROMAGNETIC COUPLING ON IPR-8/10

Fig. 7

produce a normalised M_1 smaller than either M_3 or M_5.

Conclusion:- The above comments are indeed simplistic, and should be considered as a guide only. The author would be pleased to supply references on additional reading on any of the points commented upon.

A.W. HOWLAND-ROSE, MSc, DIC, AMAusIMM, FGS.

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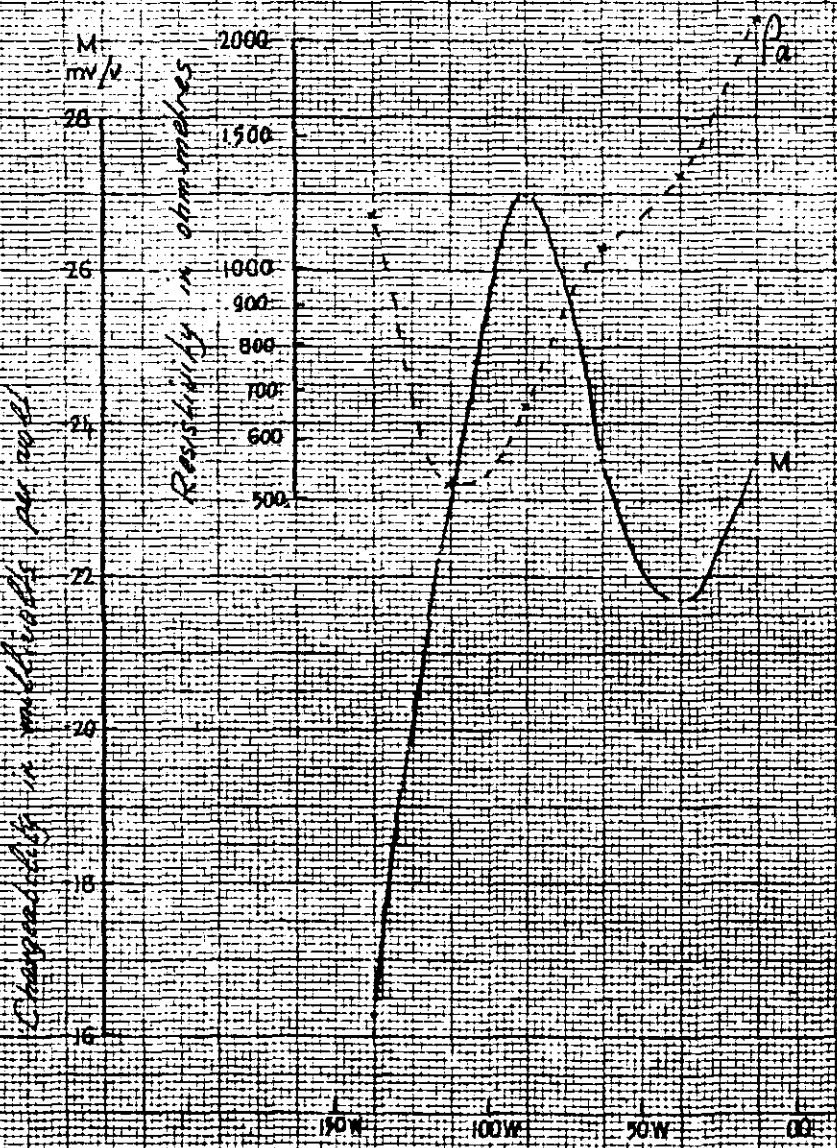
Specimen Reef
GRADIENT ARRAY
TAS-087

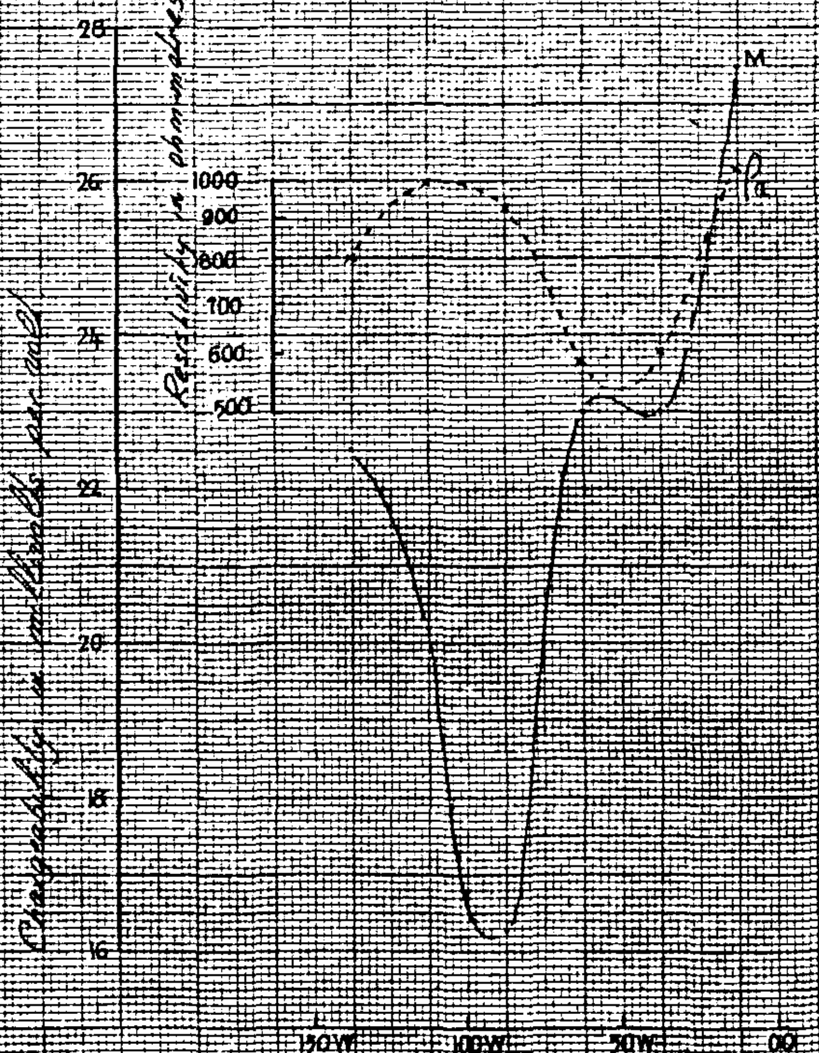


50S

Specimen Reef

GRADIENT ARRAY

TAS-087



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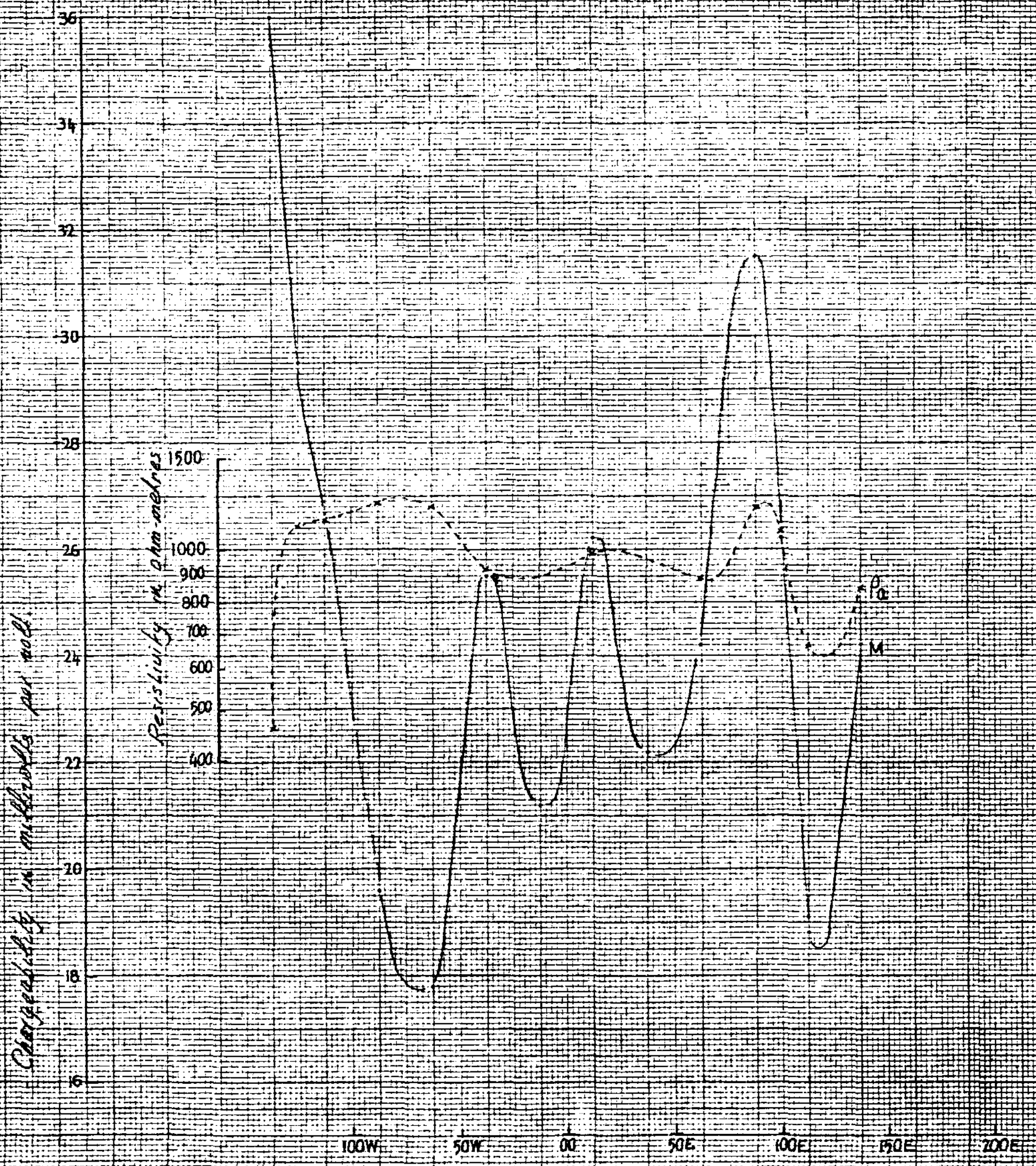
100S

Specimen Reef

GRADIENT ARRAY

TAS-087



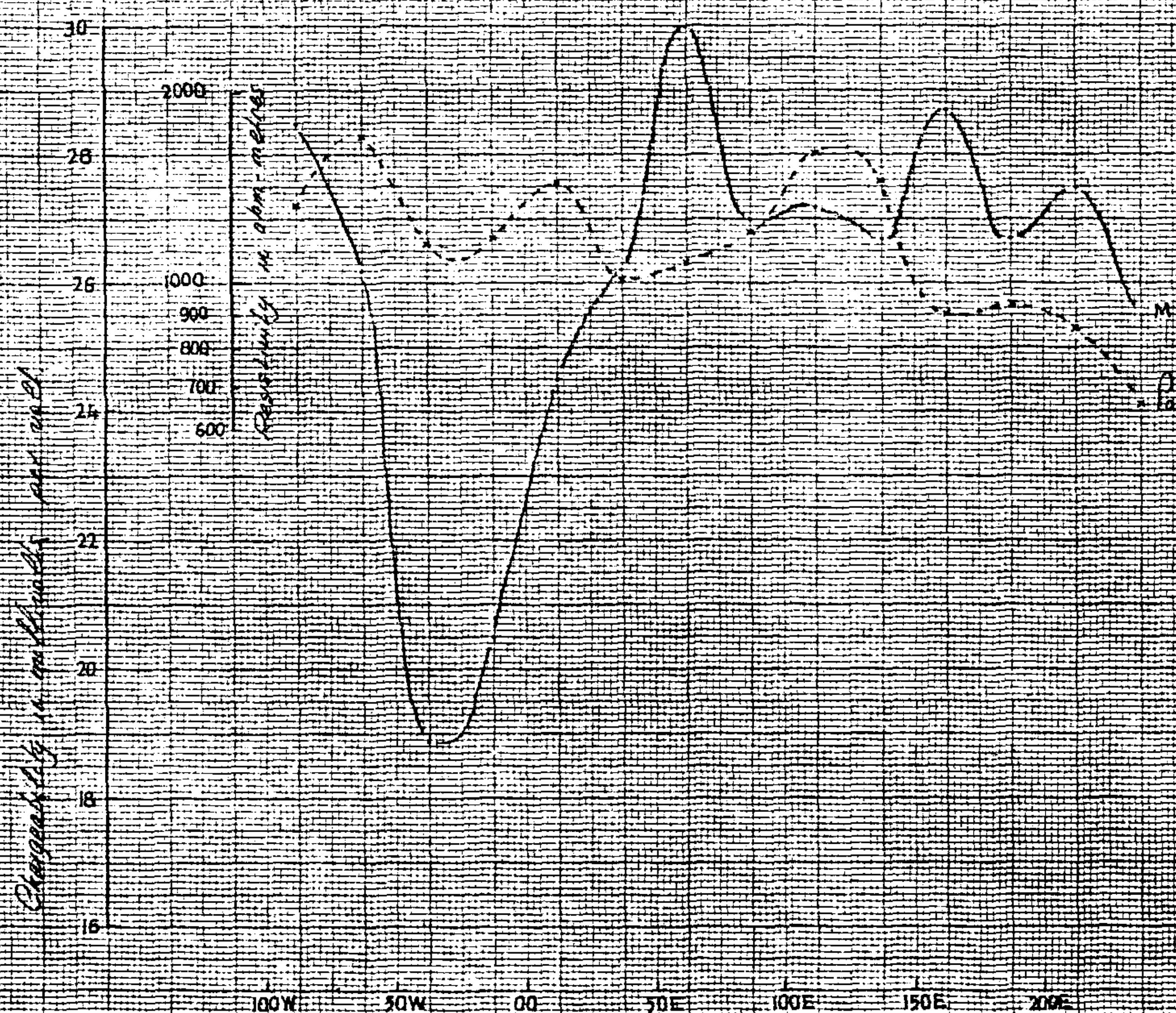
973083

2005

Specimen Reef

GRADIENT ARRAY

TAS-087



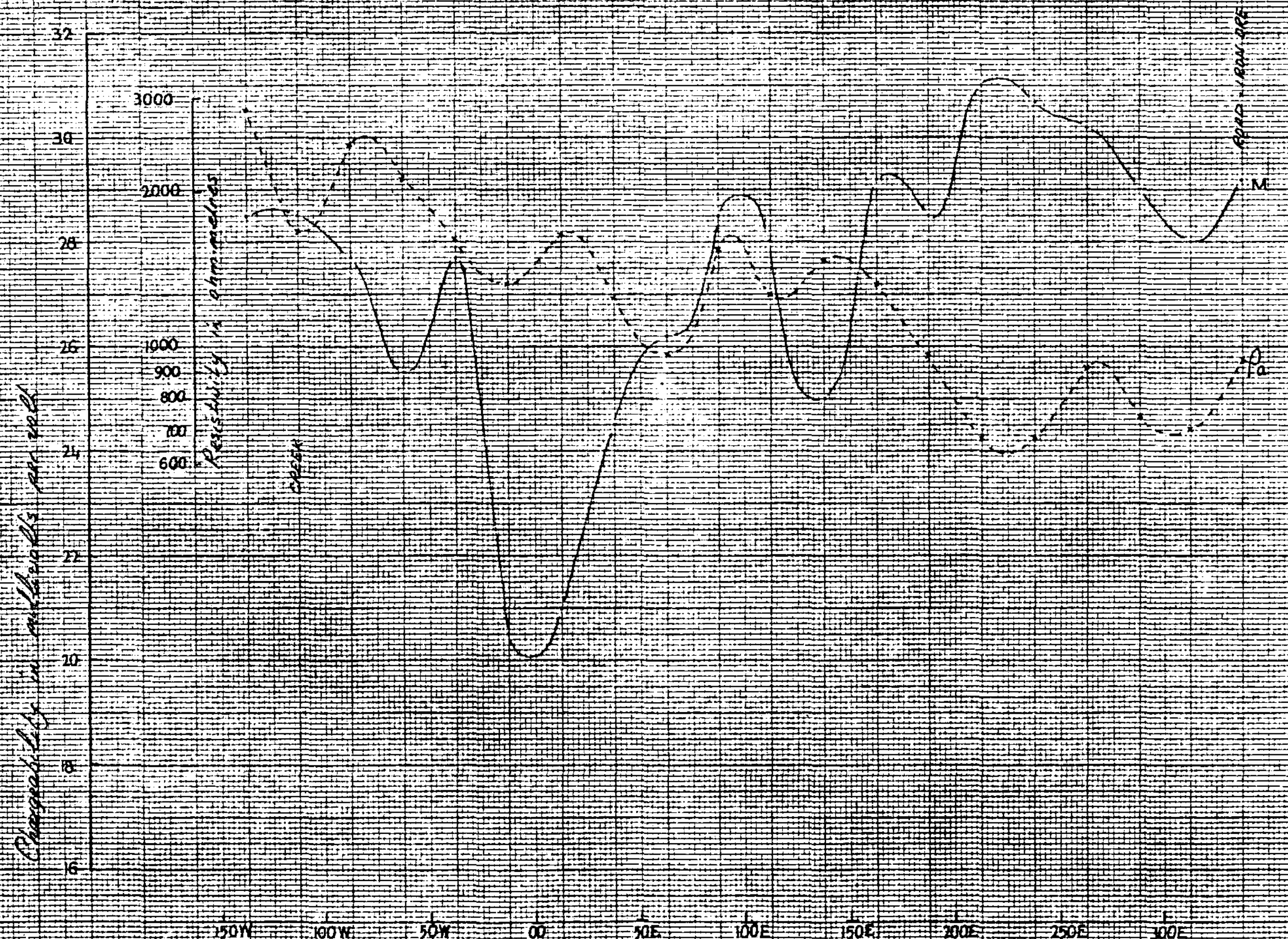
973084

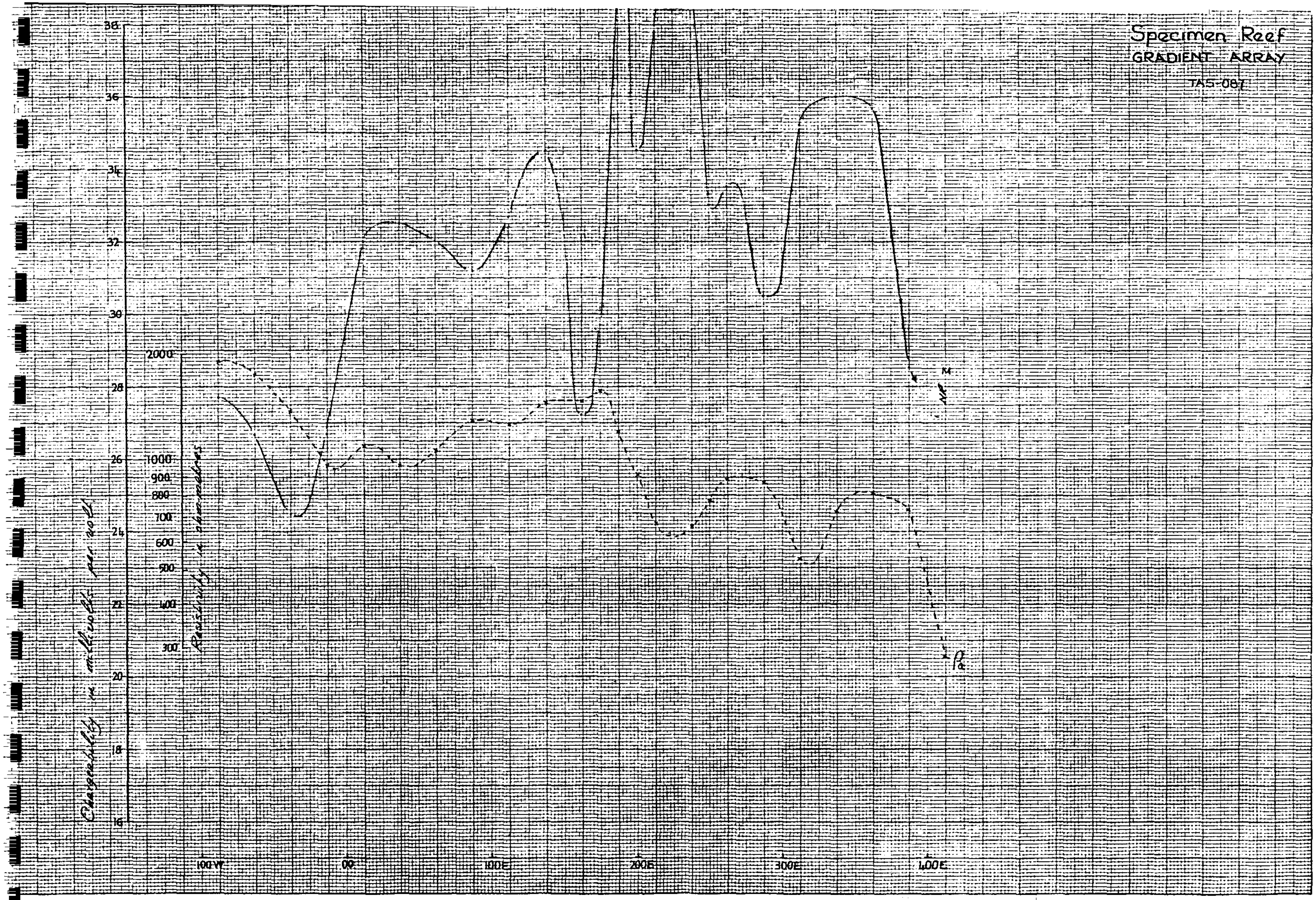
300S

Specimen Reef

GRADIENT ARRAY

TAS 087





Specimen Reef
GRADIENT ARRAY
TAS-087
Chargeability in millivolts per volt
Resistivity in ohm-metres
38
36
34
32
30
28
26
24
22
20
18
16
2000
1000
900
800
700
600
500
400
300
100W
00
100E
200E
300E
400E
M
ρa

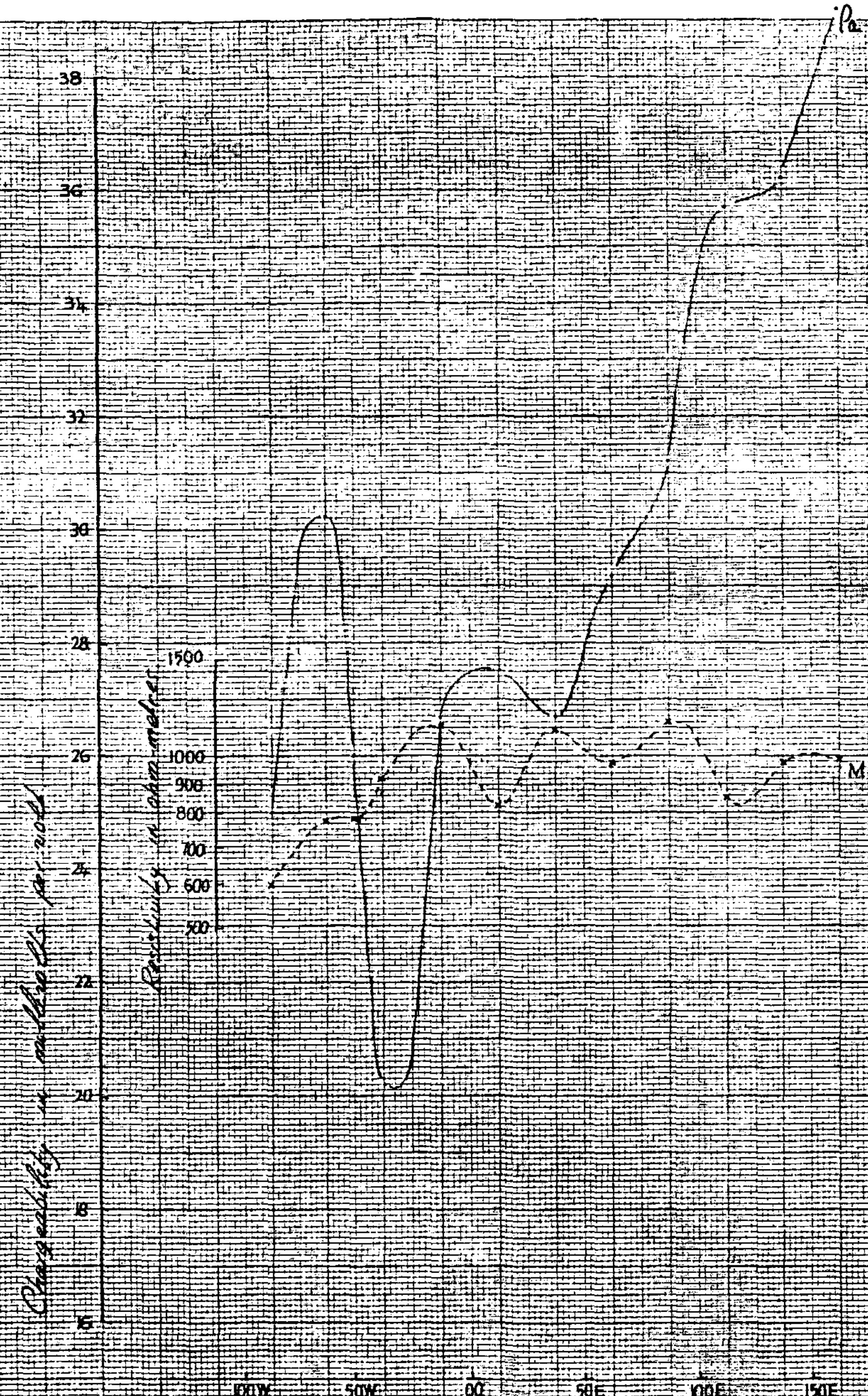
973086

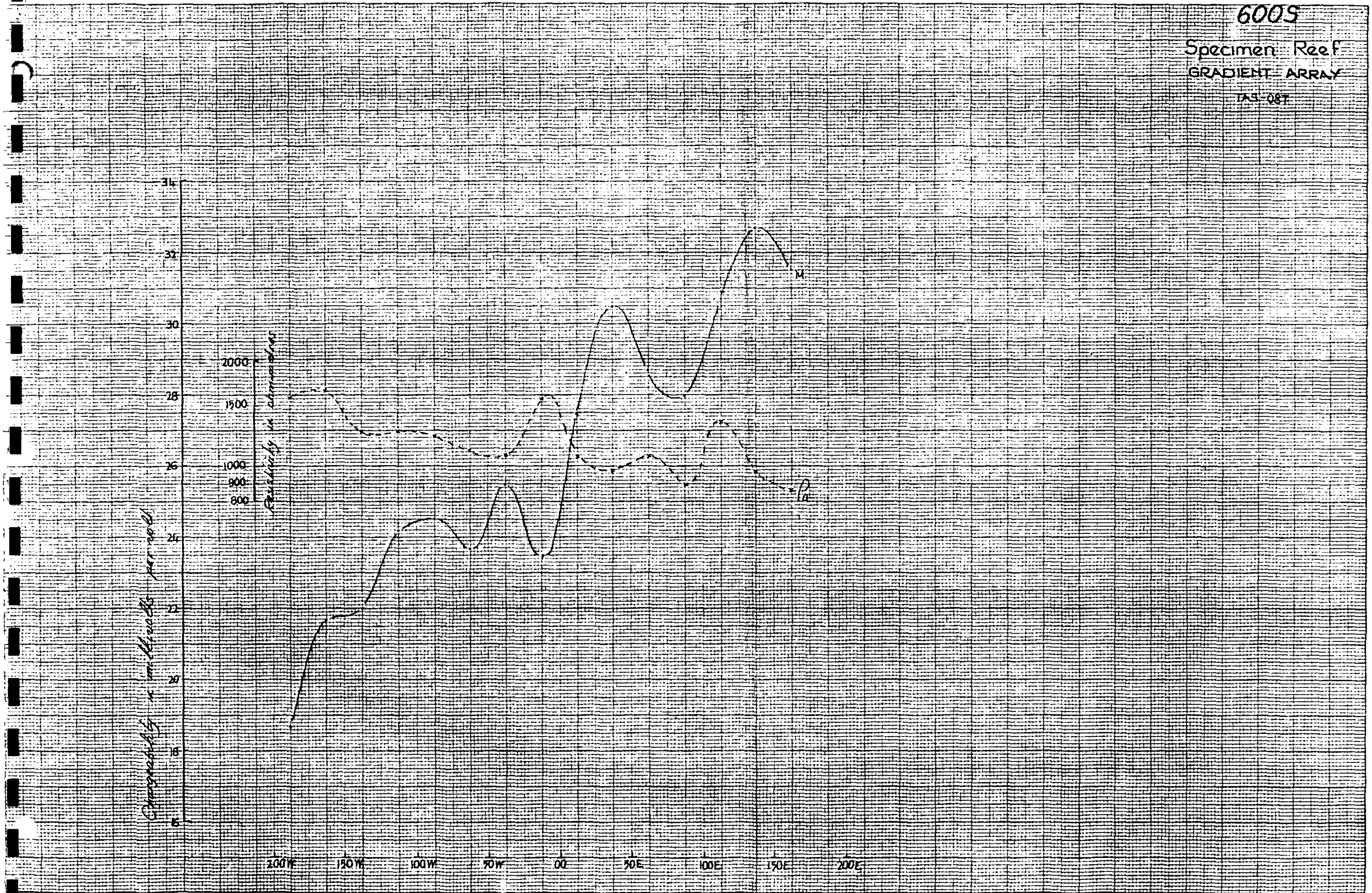
500S

Specimen Reef

GRADIENT ARRAY

IAS 087





600S
Specimen Reef
GRADIENT ARRAY
TAS-087
Chargeability in millivolts per volt
Resistivity in ohmmeters
34
32
30
28
26
24
22
20
18
16
2000
1500
1000
900
800
M
Pa
200W
150W
100W
50W
00
50E
100E
150E
200E

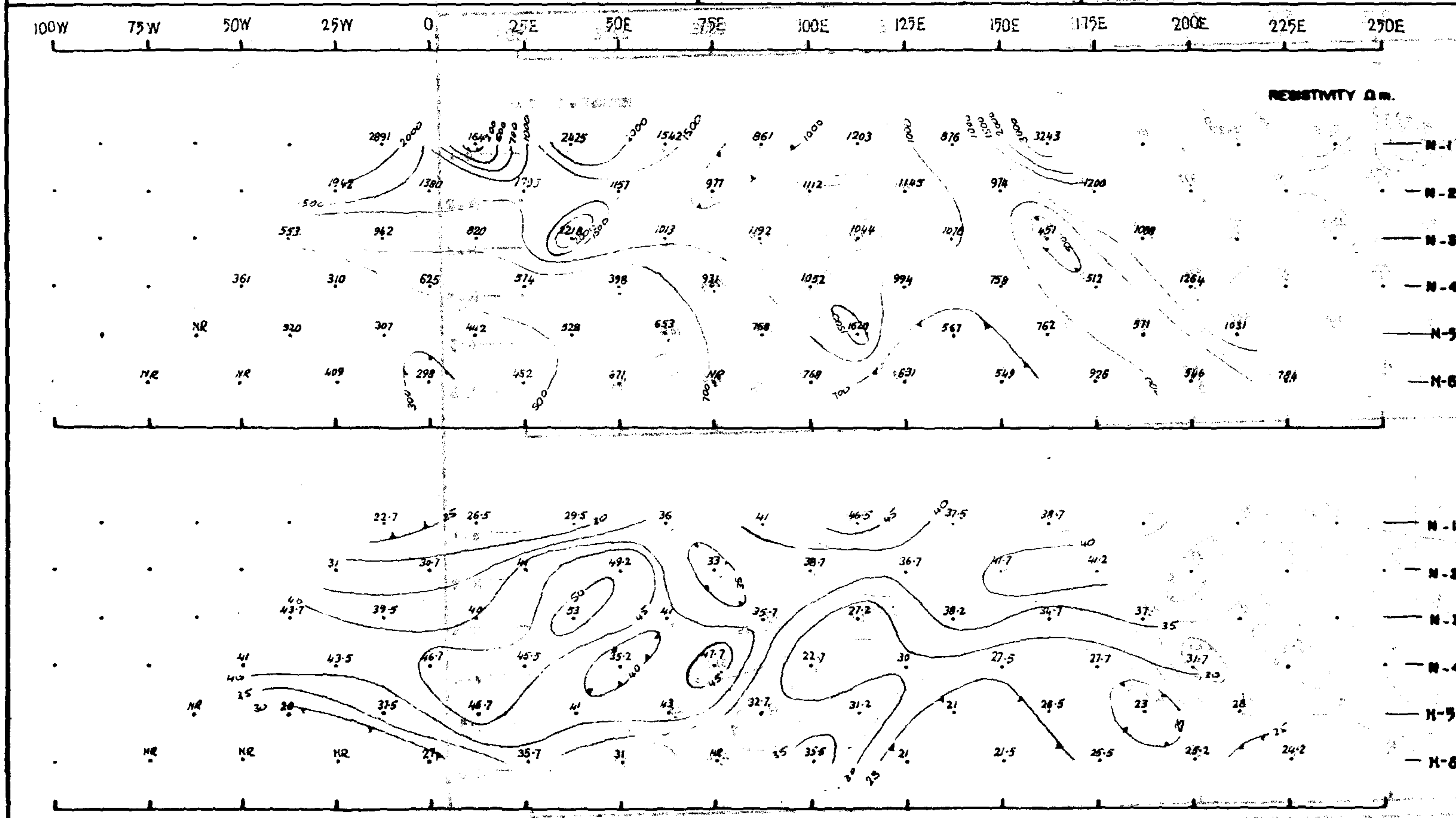
973088

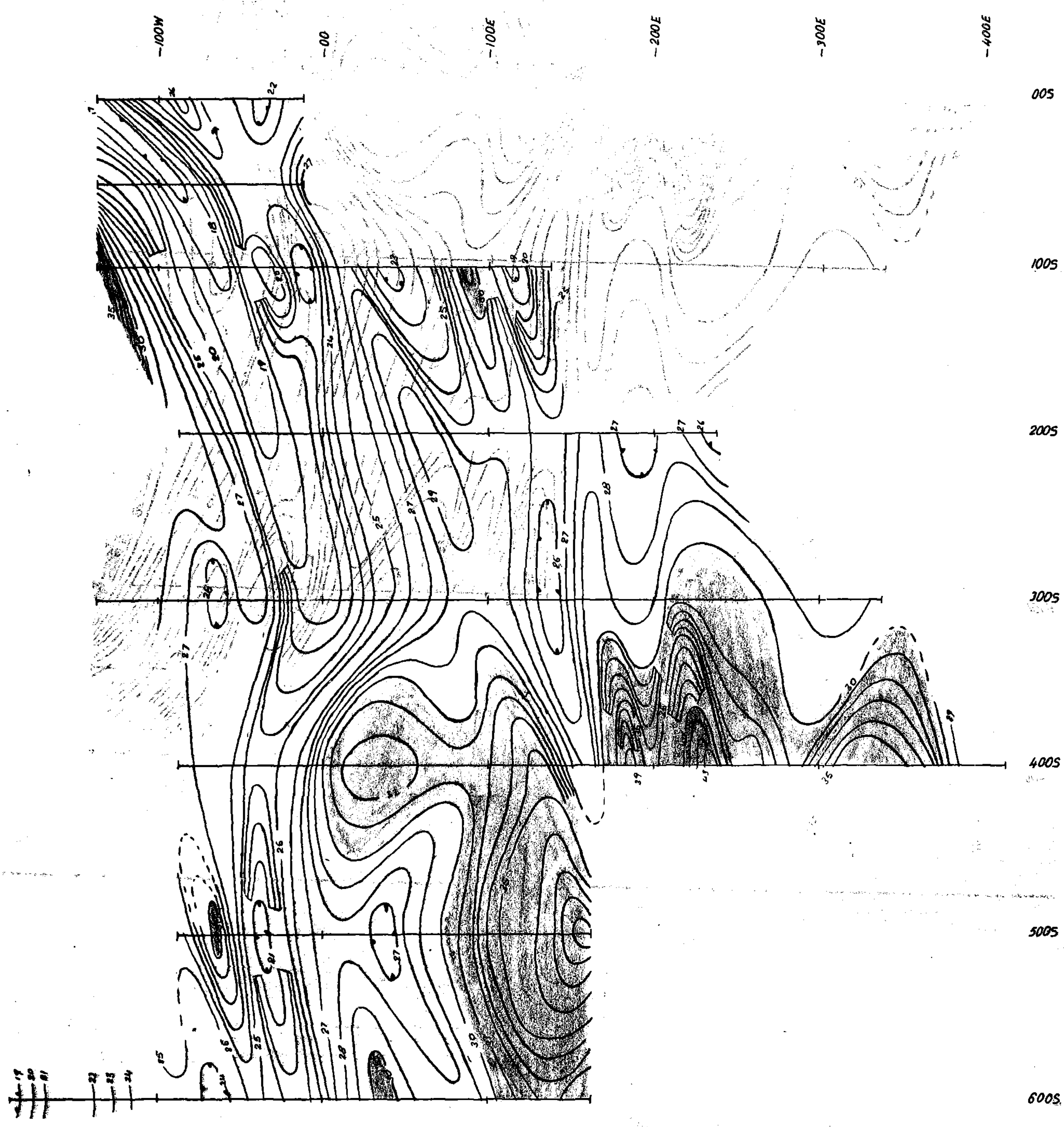
SCINTREX PTY. LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY

DIPOLE - DIPOLE ARRAY

DATE 8-2-81		LINE No. 400S
PLOTTED BY IAN NEWBY		PROSPECT SPECIMEN REEF
2 Sec	Rx. 790268	
DIPOLE SPACING 25m		JOB No. TAS-087





INDUSTRIAL & MINING INVESTIGATIONS PTY. LIMITED

SPECIMEN REEF

NR. SAVAGE RIVER - TASMANIA

ELECTRICAL INDUCED POLARIZATION SURVEY

CHARGEABILITY CONTOUR PLAN

SURVEYED & COMPILED BY

FEBRUARY 1981

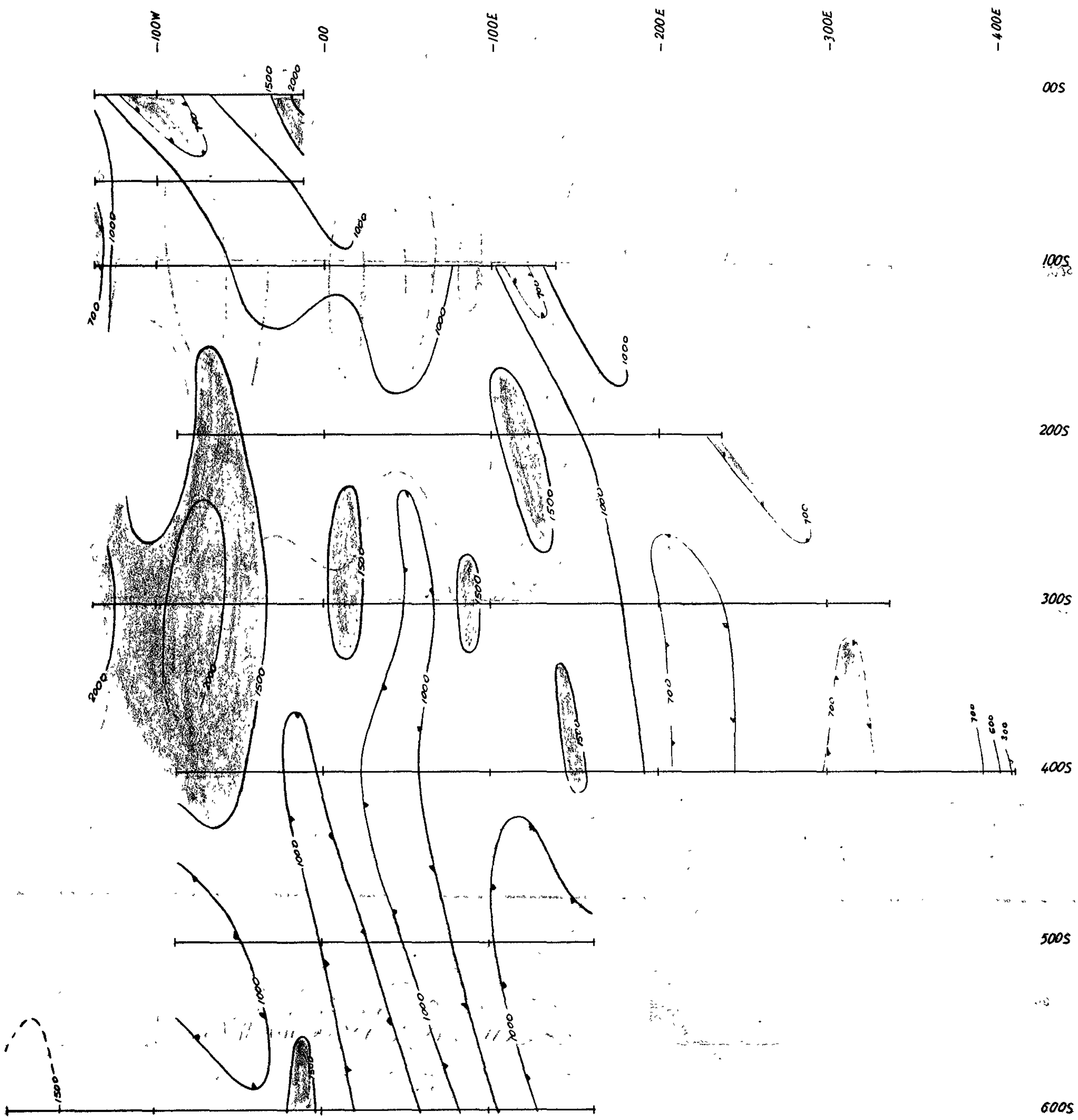
SCALE 1:2500

5 cm

JOB No. TAS -087

PLATE 1.

81-1552 Report



INDUSTRIAL & MINING INVESTIGATIONS PTY. LIMITED

SPECIMEN REEF

NR. SAVAGE RIVER - TASMANIA

ELECTRICAL INDUCED POLARIZATION SURVEY

RESISTIVITY CONTOUR PLAN

SURVEYED & COMPILED BY

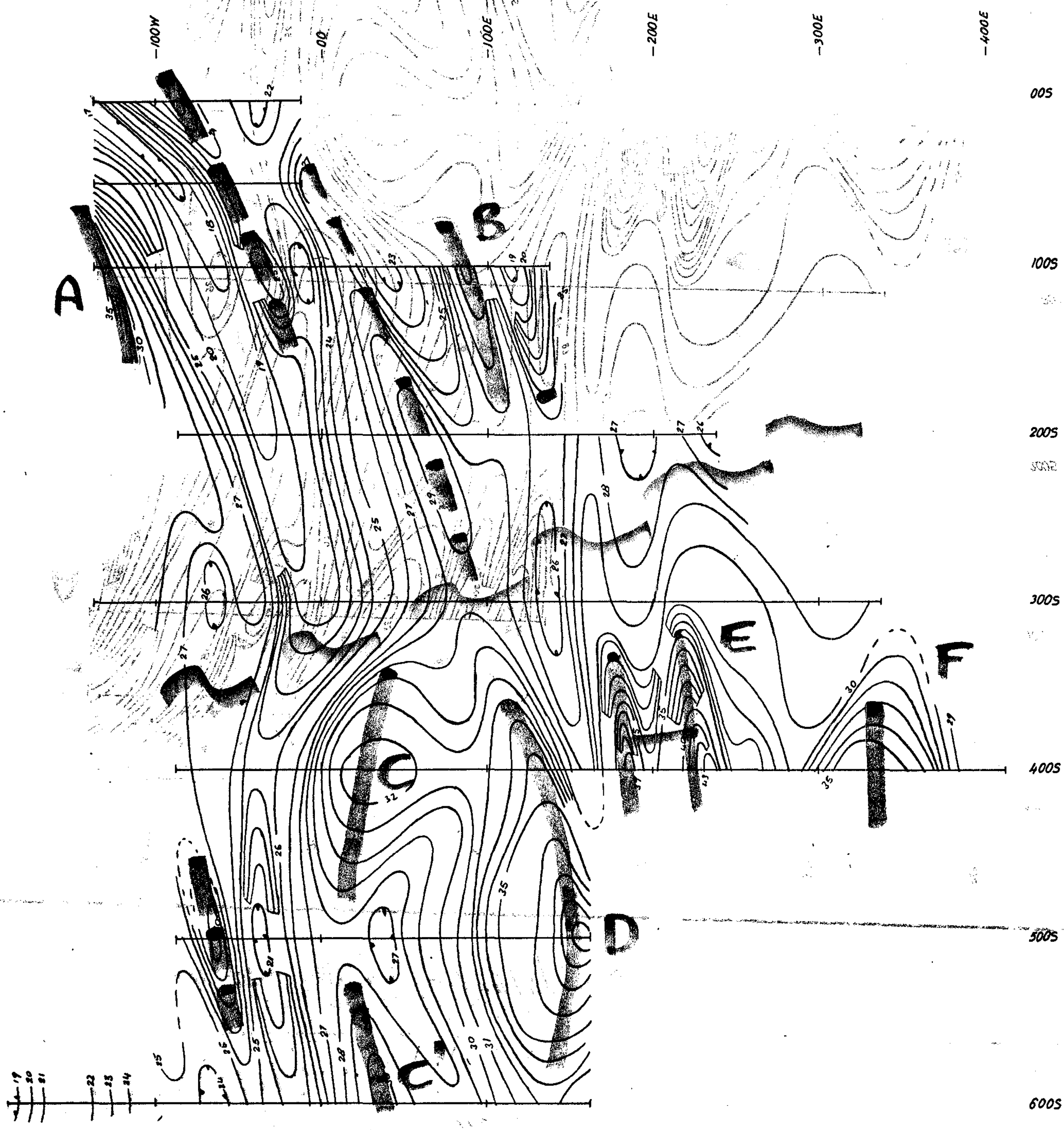
FEBRUARY 1981

SCALE 1:2500

JOB Nº TAS-087

PLATE 2

81-1552
Report 1



Legend

Major I.P. axes

Secondary I.P. axes

Dislocation

Marker horizon (?)

5 cm

INDUSTRIAL & MINING INVESTIGATIONS PTY. LIMITED

SPECIMEN REEF

NR. SAVAGE RIVER - TASMANIA

ELECTRICAL INDUCED POLARIZATION SURVEY

CHARGEABILITY CONTOUR PLAN

(INTERPRETATION PLAN)

SURVEYED & COMPILED BY

FEBRUARY 1981

SCALE 1:2500

JOB No TAS -087

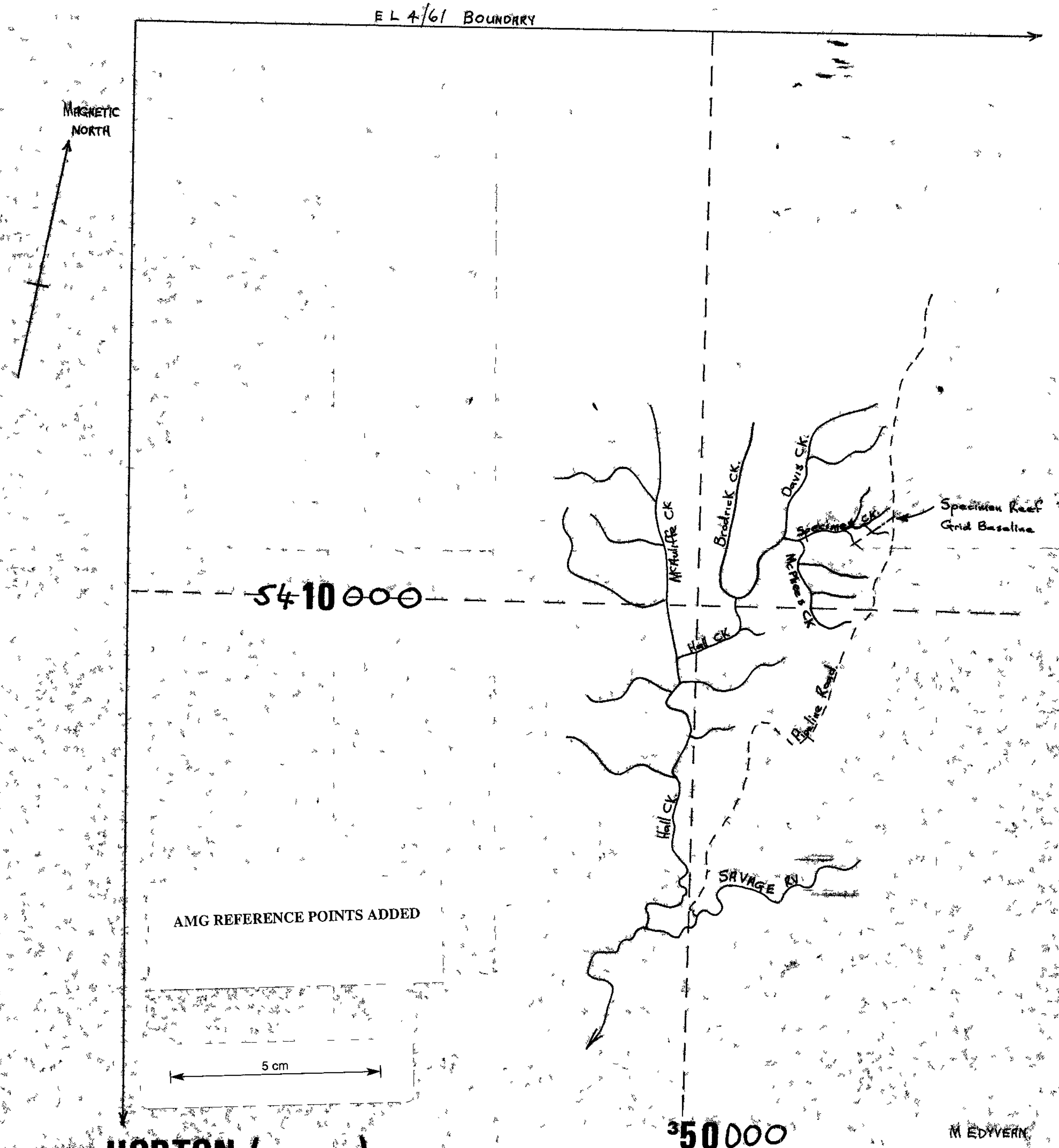
PLATE 3

973091

81-1552 Report 1.

PLAN No 7 973092

LOCATION: SPECIMEN REEF AREA — EL.4/61



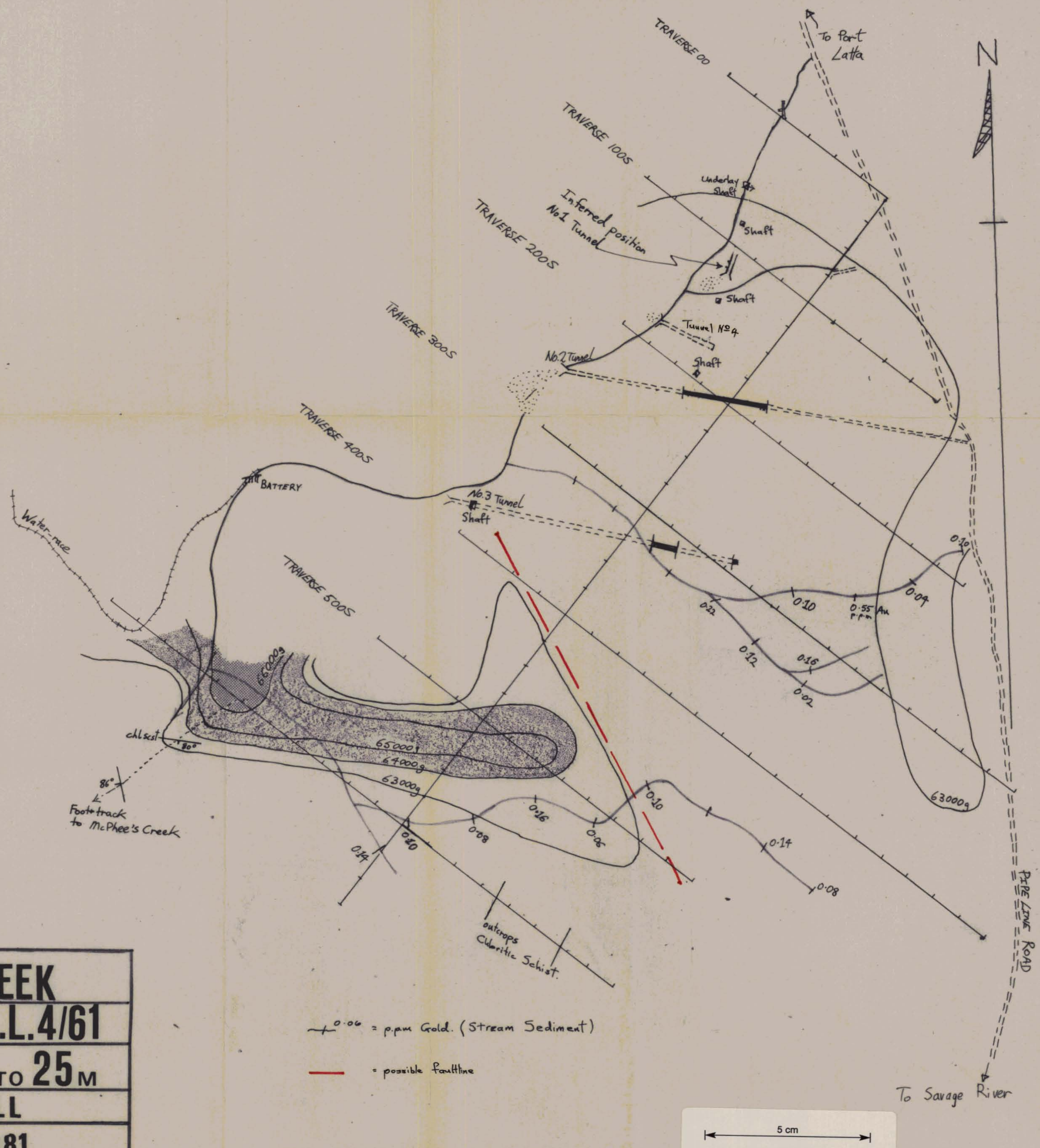
1 : 50000 **HORTON** (part map)

M EDYVERN
6TH MARCH 1981

PLAN No 2. 973093

Specimen Reef

MAGNETIC.



SPECIMEN CREEK
I.M.I. PTY. LTD. E.L.4/61
SCALE: 1CM TO 25M
AUTHOR: J. WALL

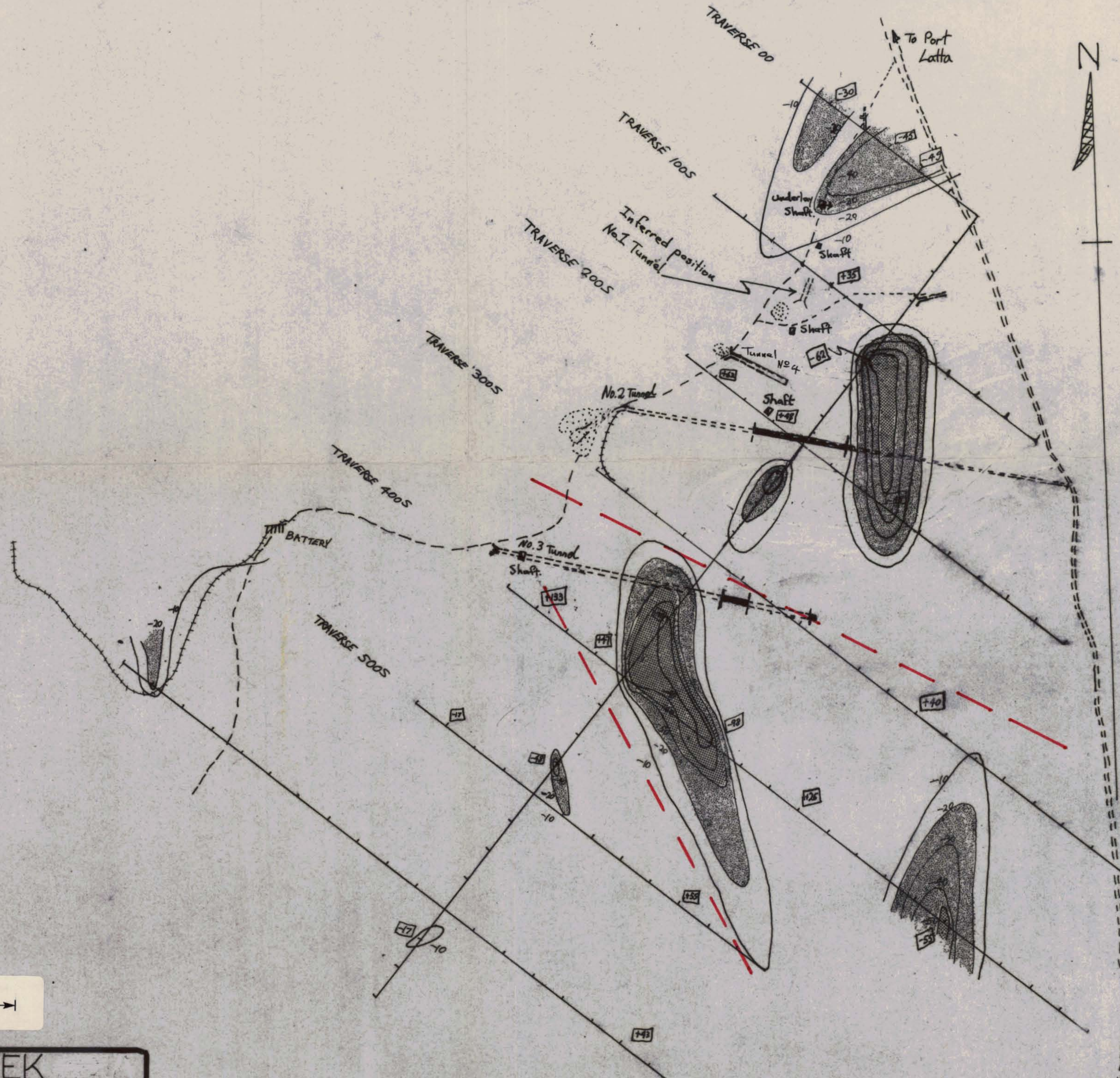
DATE: FEB.1981

81-1552

PLAN Nº 3

Specimen Reef

S.P.



NEGATIVE READINGS: 10 TO 50 MILLIVOLTS
50 TO 98 MILLIVOLTS
POSSIBLE FAULTLINE

973094

5 cm

SPECIMEN CREEK
I.M.I. Pty. Ltd. E.L. 4/61
N.W. TASMANIA.
SCALE: 1CM. TO 25 METRES.
AUTHOR: J. WALL.
DATE: FEB. 1981.

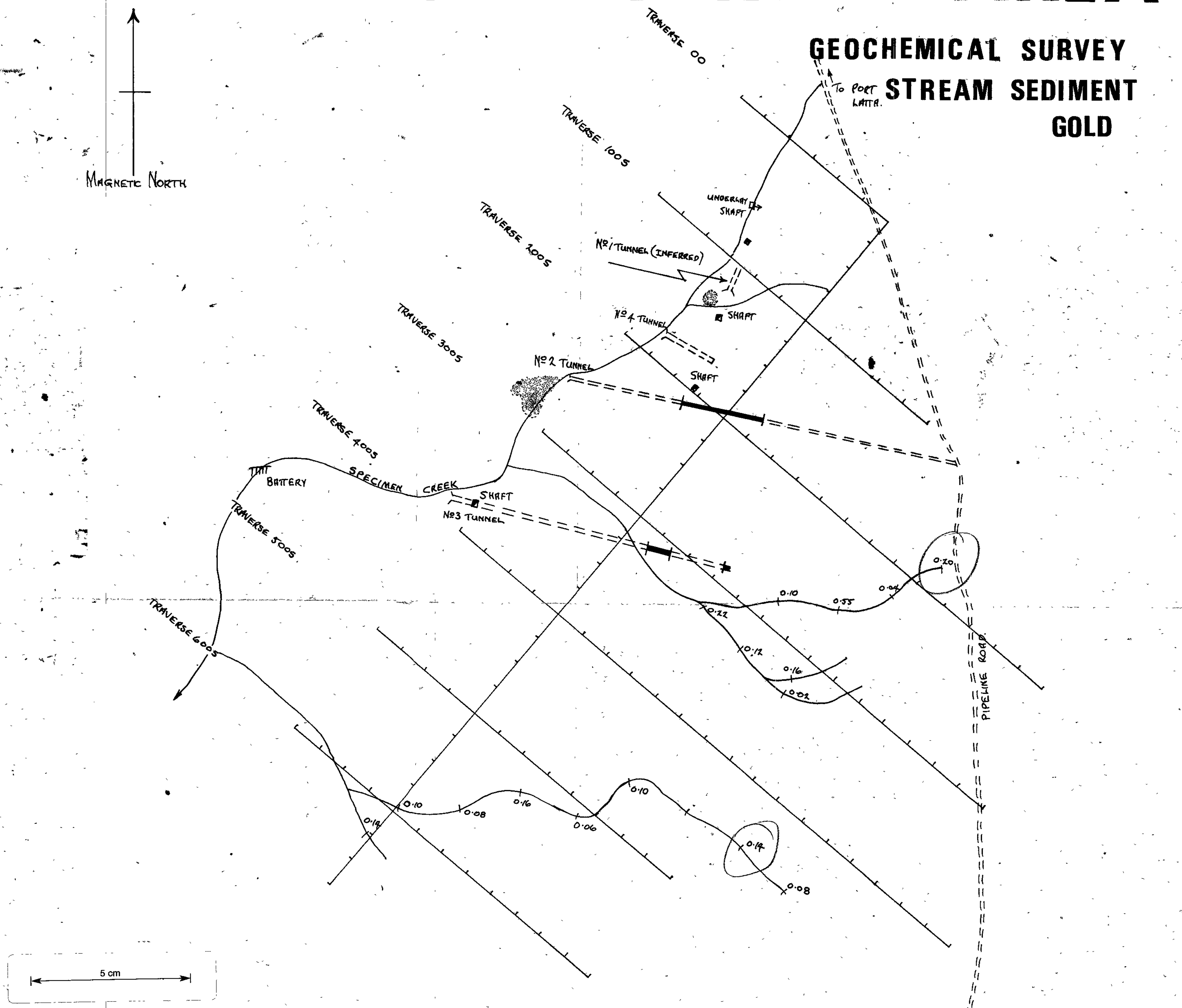
81-552

PLAN No. 4

973095

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
STREAM SEDIMENT
GOLD



INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD. EL 4/61
SPECIMEN CREEK, N.W. TASMANIA
SCALE : 1CM. TO 25 METRES
AUTHOR: ~~M.~~ EDYVEAN
DATE: FEBRUARY, 1981
ANOMALOUS VALUES - ppm.

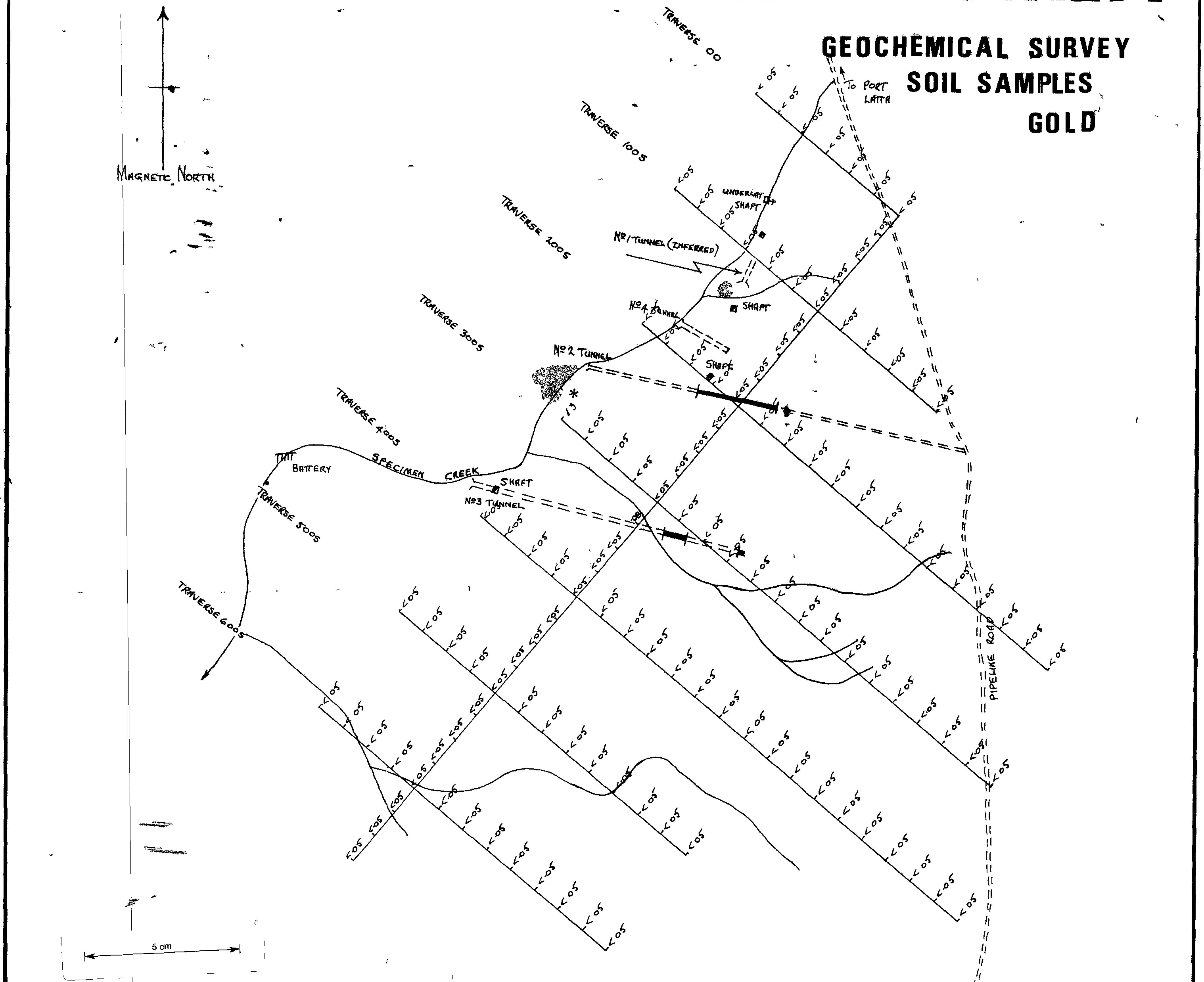
351E
5411N

81-1552

PLAN Nº 5   973096

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
SOIL SAMPLES
GOLD



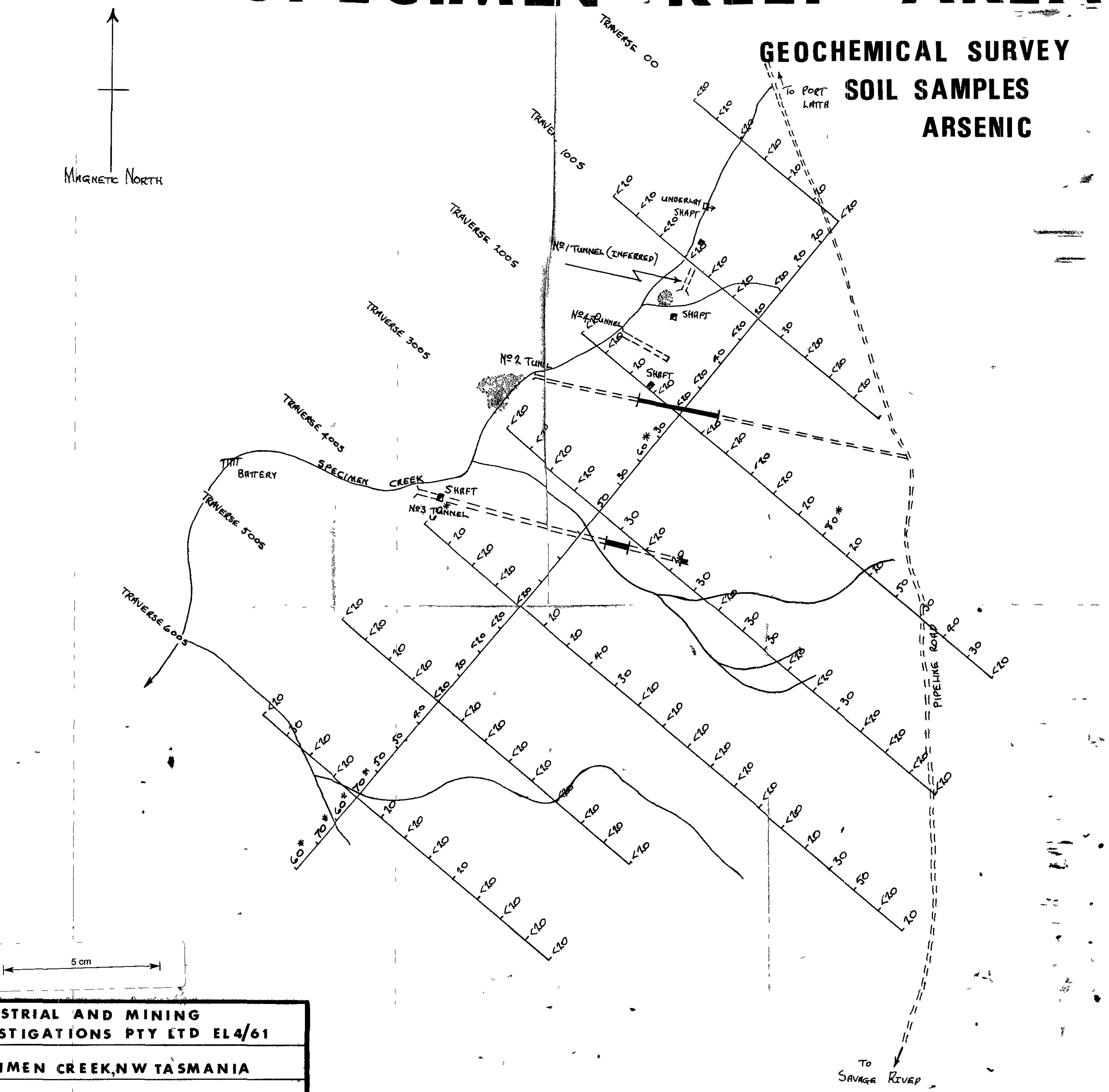
INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61
SPECIMEN CREEK, N W TASMANIA
SCALE: 1CM TO 25 METRES
AUTHOR: M EDYVEAN
DATE: FEBRUARY, 1981
ANOMALOUS VALUES - ppm 13*

81-552

PLAN Nº 6 973097

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
SOIL SAMPLES
ARSENIC



INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61

SPECIMEN CREEK, NW TASMANIA

SCALE: 1CM. TO 25METRES

AUTHOR: M EDYVEAN

DATE: FEBRUARY, 1981

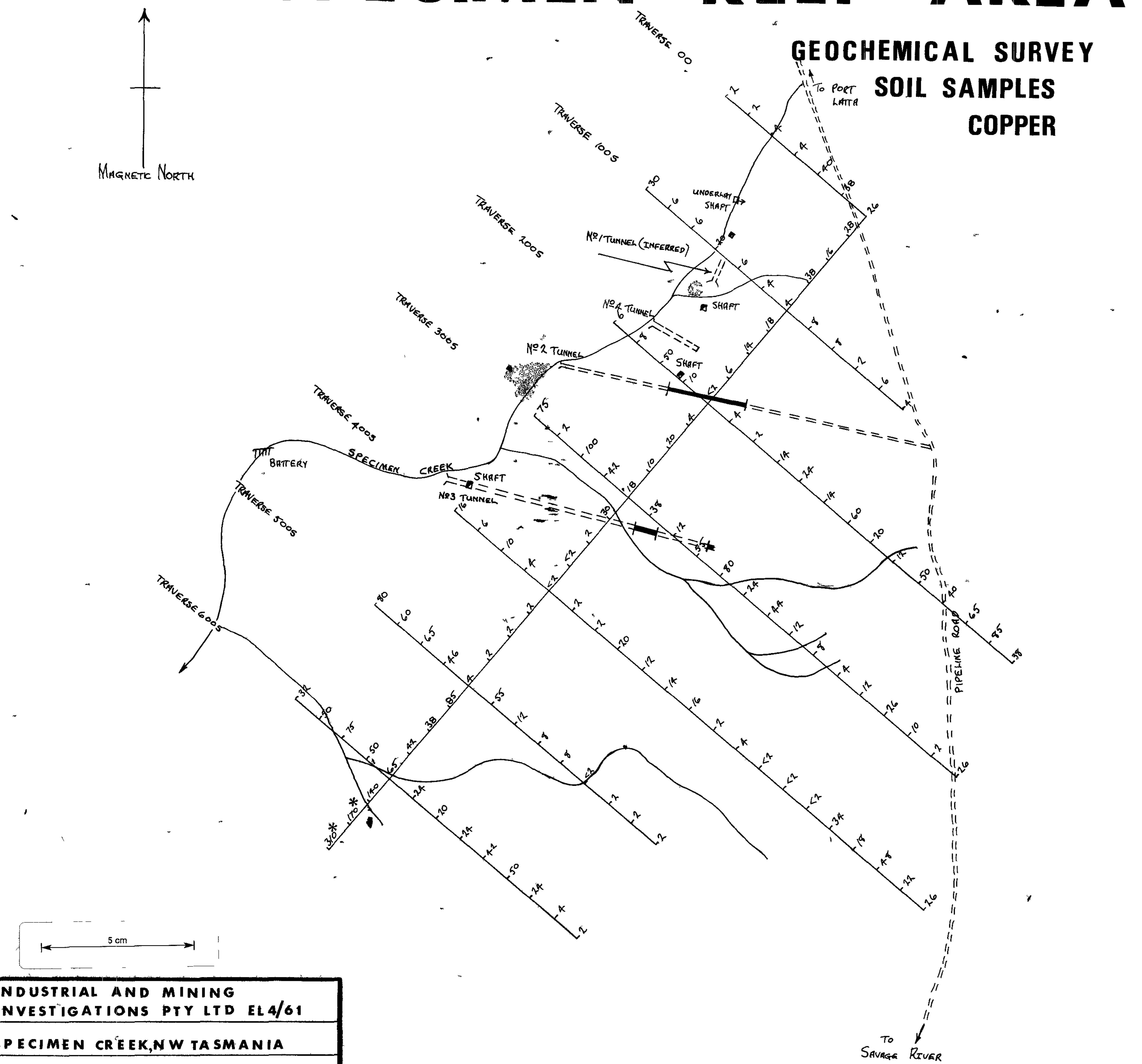
ANOMALOUS VALUES - ppm
60*, 70*, 80*

81-1552

PLAN № 7 973098

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
SOIL SAMPLES
COPPER



INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61

SPECIMEN CREEK, NW TASMANIA

SCALE: 1CM TO 25METRES

AUTHOR: M EDYVEAN

DATE: FEBRUARY, 1981

ANOMALOUS VALUES - ppm

170*

310*

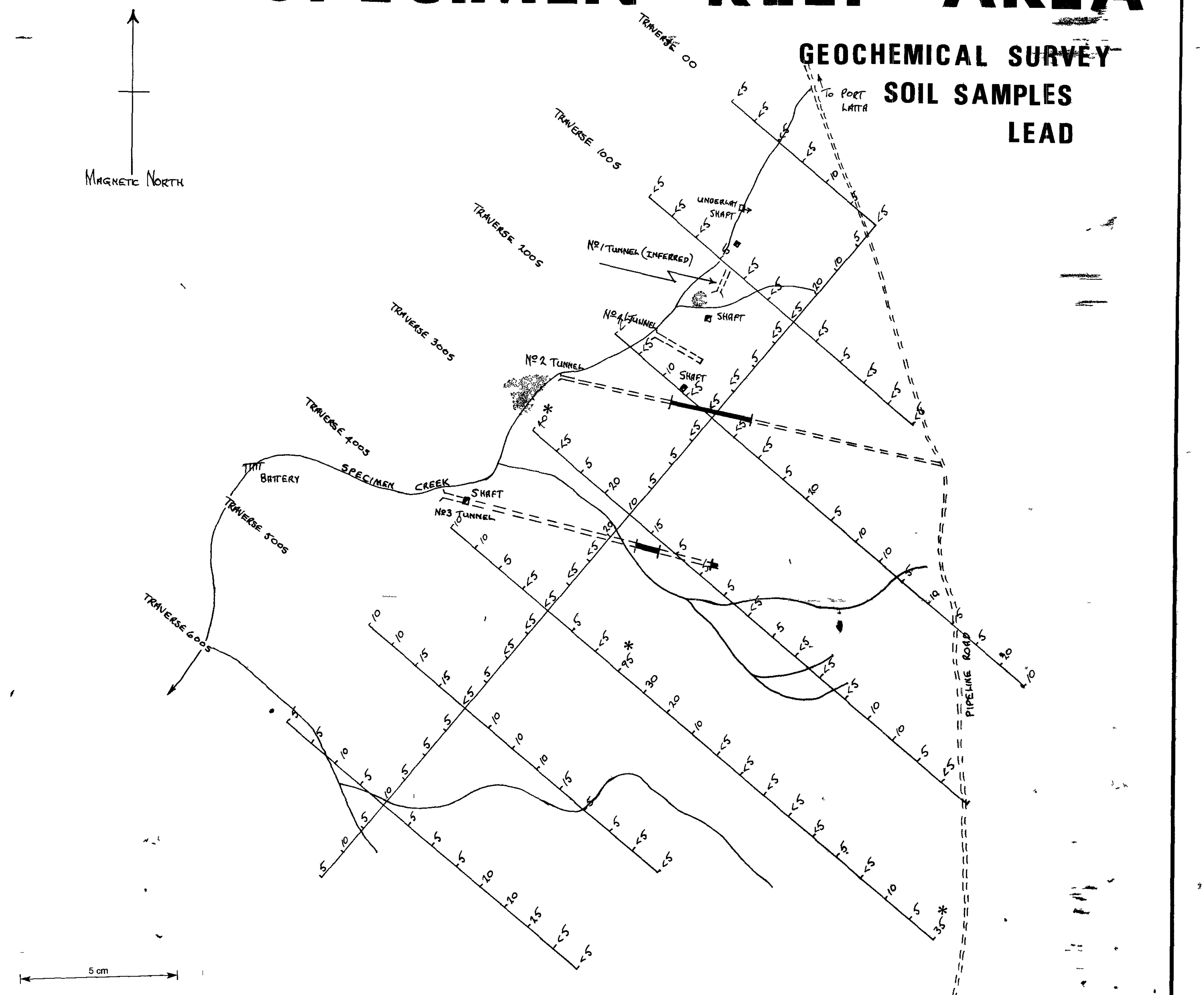
81-1552

PLAN No 8

973099

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
SOIL SAMPLES
LEAD



INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61

SPECIMEN CREEK, NW TASMANIA

SCALE: 1CM TO 25 METRES

AUTHOR: M EDYVEAN

DATE: FEBRUARY, 1981

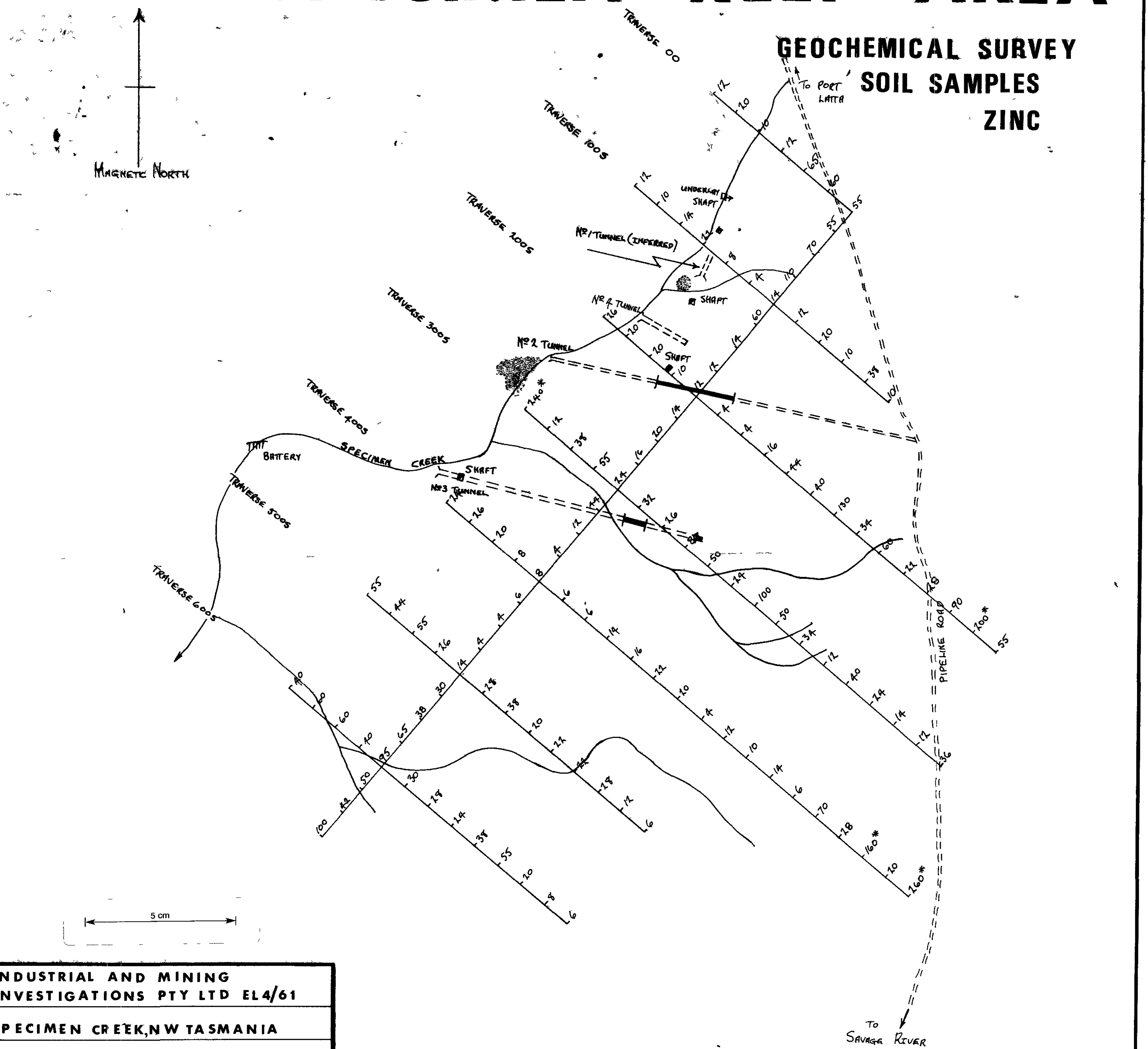
ANOMALOUS VALUES - ppm
35*
40*
95*

81-1552

PLAN Nº 9 973100

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY SOIL SAMPLES ZINC



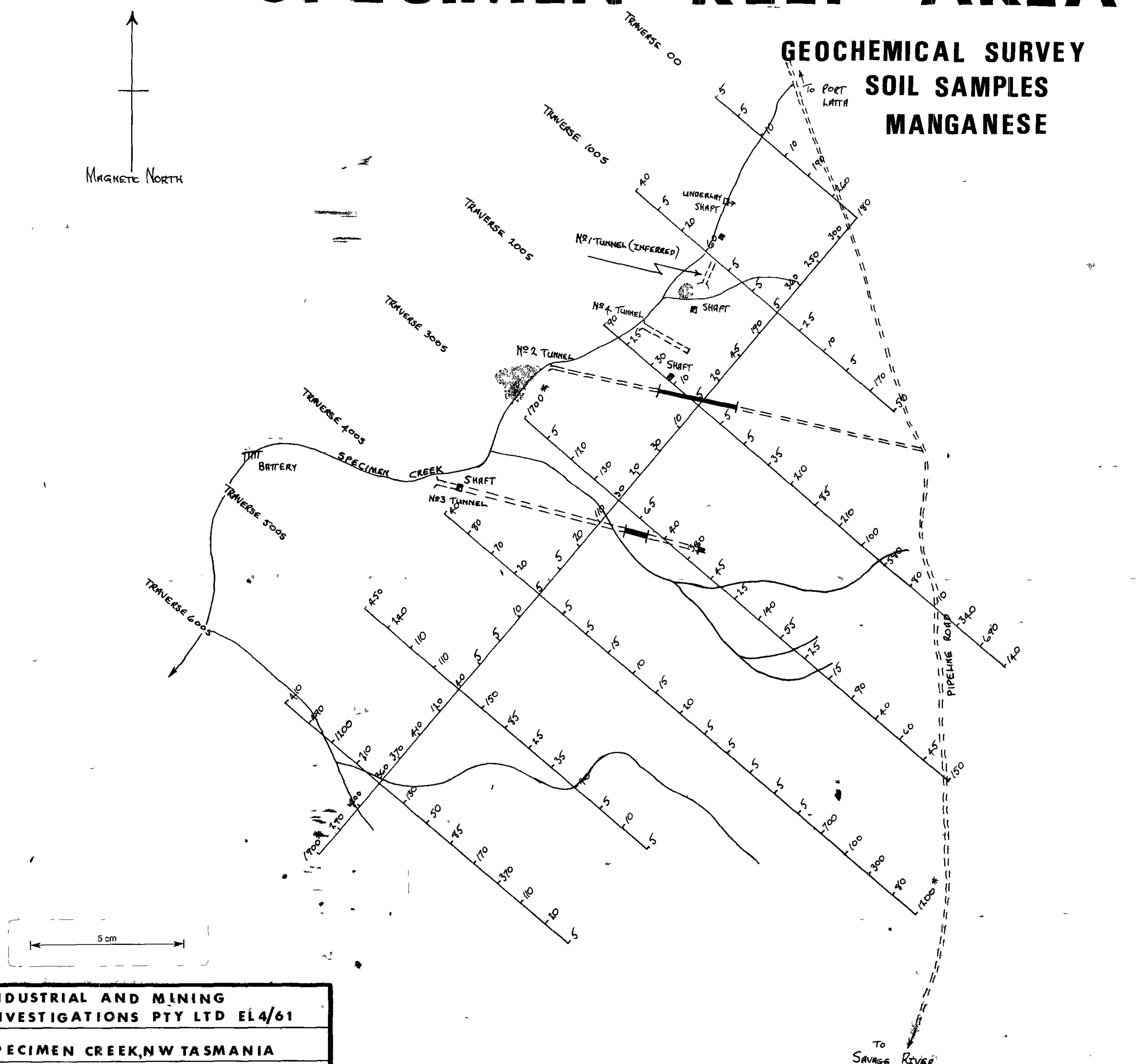
INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61
SPECIMEN CREEK, NW TASMANIA
SCALE: 1CM TO 25METRES
AUTHOR: M EDYVEAN
DATE: FEBRUARY, 1981
ANOMALOUS VALUES - ppm 160*, 200*, 240*, 260*

81-1552

PLAN No 10 973101

SPECIMEN REEF AREA

GEOCHEMICAL SURVEY
SOIL SAMPLES
MANGANESE



INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD EL 4/61

SPECIMEN CREEK, NW TASMANIA

SCALE: 1CM TO 25METRES

AUTHOR: M EDYVEAN

DATE: FEBRUARY, 1981

ANOMALOUS VALUES - ppm
1200*, 1700*, 1900*

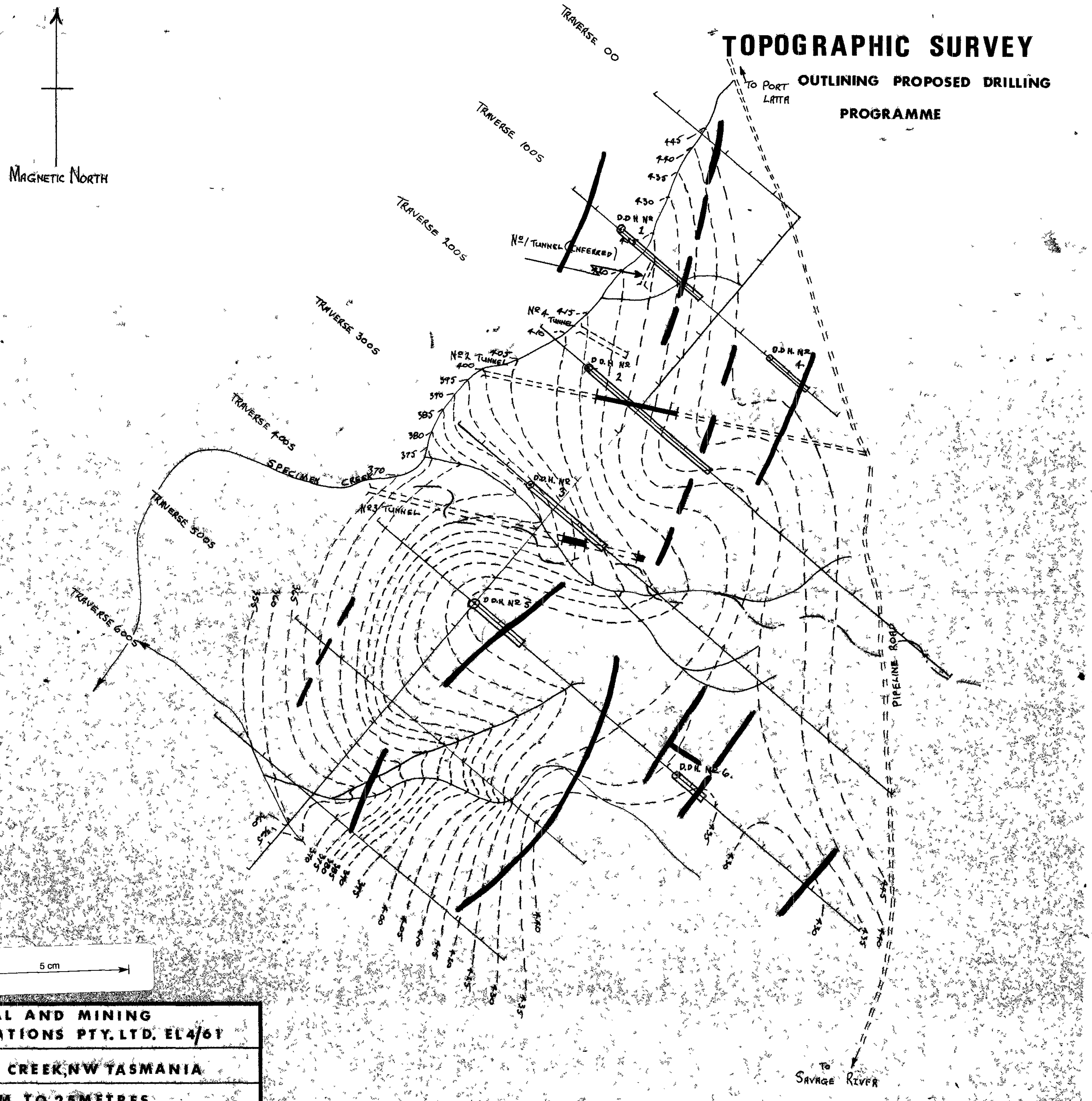
81-1552

PLAN No 11 973102

SPECIMEN REEF AREA

TOPOGRAPHIC SURVEY

OUTLINING PROPOSED DRILLING PROGRAMME



INDUSTRIAL AND MINING INVESTIGATIONS PTY. LTD. EL 4/61
SPECIMEN CREEK, NW TASMANIA
SCALE: 1CM. TO 25METRES
AUTHOR: M EDYVEAN
DATE: FEBRUARY 1981
REDUCED LEVEL AT 5 METRE INTERVAL

MAJOR I P AXES

SECONDARY I.P AXES

POSSIBLE FAULTLINE (I P INTERPRETATION)

81-1552

973103

SIX MONTHLY PROGRESS REPORT ON FIELD INVESTIGATIONS WITHIN EL4/61 - FOR PERIOD ENDED 24TH FEBRUARY, 1981.

PART 2. AREAS OF FUTURE INVESTIGATION AND DEVELOPMENT.

CONTENTS

PLANS

A. McAULIFFE CREEK - BRODERICK CREEK - EAST DONALDSON RIVER AREA - NORTH-EASTERN EL4/61 (Plan No. 1)

A vehicular track is at present being constructed to allow access to the McAuliffe Creek - Broderick Creek - East Donaldson River Areas, areas completely devoid of any known investigation. Some two (2) kilometres of track has been completed to date. It was hoped that this track could be used during the Winter months to facilitate a stream sediment survey, but this now does not seem possible due to the rapid rise in water-level of the creeks, and the swampy zones of horizontal scrub transversed along the route of the track.

B. DAVIS CREEK AREA - (Plan No. 1).

A stream sediment programme is currently being undertaken in the Davis Creek Area, to examine the possible occurrence of lead-silver mineralisation, as indicated by the 1979-80 Summer field programme. Unfortunately, the anomalous lead values occur within, or close to, the Northern Deposit Magnetite zones under question to Pickands Mather. It is hoped that investigations north along the strike of the country rock, will outline lead mineralisation as suggested by the location of several old Pb-Ag mineral leases in the Davis Creek Area. Some gossanous material has been located to the east of Davis Creek, but as of this date, analysis of this gossan has not been received from the Department of Mines laboratories.

C. LONG PLAINS GOLDFIELD - (Plans No. 2, 3, and 4).

A separate report on the Long Plains Goldfield, by Company Geologist John Wall, is attached (Appendix A).

Due to the known erratic and spasmodic distribution of gold at Long Plains, some difficulty was experienced in determining the appropriate "method of attack" for this area. There is no doubt that the near surface material has been well and truly worked over. Thus it is necessary to obtain information beneath the depth of the old workings. I believe that the geophysical approach as outlined by John Wall, namely S.P. and possibly I.P. surveys, is the way to investigate the "goldfield", as long as the possible effect of graphite horizons is taken into consideration.

D. MAIN CREEK MAGNESITE DEPOSIT: - (Plans No. 5 & 6.)

C.S.I.R.O. Investigations on the economical extraction of iron from the lattice of the Magnesite continues. A copy of the latest report is enclosed.

E. LONG PLAINS MAGNETITE DEPOSIT (Plans No. 5 & 6).

Although some 30 million tonnes of magnetite has been outlined for the Long Plains Deposit, due to the narrow nature of the lenses, very little material is available for open cut mining.

However, in the northern end of the deposit, I.M.I. bore No. 46 and R.T.A.E. No. 1, terminated in magnesium carbonate. If this carbonate proves to be the southern extension of the Main Creek Magnesite deposit, it may well be economical for some magnetite to be mined concurrently with the magnesite.

I believe that some 633,000 tonnes of unoxidized magnetite with an average grade of 32% Fe, may be available for open-cut mining.

The "Savage River type" magnetite has proved suitable as a beavy media for coal washing. Endeavours should be made to investigate the southern extent of the Magnesite deposit and therefore the possible use of the Long Plains magnetite as a beavy media, possibly for the local market.

F. BROWN-PLAINS-LEAD (Plans No. 5 & 7.)

In the course of the tin sampling programme at Brown Plains, during the 1979/80 field season, anomalous lead values were obtained along the 1200 N line, peaking at 0.31% for the gravel sample collected at 1200N/400E. These high lead values were obtained on - 80 micron samples.

The plus 30 micron samples from lines 1000N to 1400N were forwarded to the Department of Mines and assayed for lead to check any possibility of lead mineralization running along the strike of the country rock. Apart from the 1200N line, assay results were not encouraging.

There is no doubt that the source of the high lead values along the 1200N line, is in the underlying country rock (ie the psammitic schists. The sinking of a couple of small pits through the overlying gravel into bedrock, would probably determine the cause of the high lead values obtained, but because of the limited extent of the anomalous values, I would not recommend further investigations of this area at this time.

G. ROCKY RIVER DEPOSIT - SAVAGE RIVER TYPE (Plans No. 5 & 8)

Previous geological mapping, samplings of mineral exposures, plus airbourne and ground magnetic surveys, have established that the Rocky River Iron deposit is small, consisting of approximately 9000 tonnes per vertical metre of high grade magnetite ore, with a maximum load width of only nine (9) metres. Consequently this deposit is of little interest as a source of magnetite as it certainly could not be mined economically by underground methods.

Due to the known occurrence of tin mineralisation within the magnetite deposits of the Heemskirk area to the south, it was decided to test a 20 kg sample from the Rocky River adit for possible tin content. This sample, with a head assay of 55.7% soluble Fe assayed 0.10% tin (Sn). However, a mineralogical examination (Enclosed Appendix C) did not reveal any recoverable tin mineral. Thus, further examination of this deposit as a possible tin source is not warranted.

H. THE AREA SOUTH OF ROCKY RIVER - (Plans No. 5 & 8).

Very little is known of that area of EL4/61 south of the Rocky River, approximately one-quarter of the area held under license.

Iron deposits are known at Paradise and Meredith Rivers. These deposits are situated in the rugged and inaccessible area between the Rocky River and the Pieman River, and would be very difficult to approach from the Rocky River end. The B.M.R. aeromagnetic survey of 1956 suggests that these deposits are smaller than the Rocky River banded chloritic - magnetite deposit (approximately 4 million tonnes at 16% Fe). The largest deposit, that at Meredith River, is described by Twelvetrees as "30 feet of magnetite with 300 feet of heamotite" (probably banded magnetite schist).

Other minerals recorded for this area are copper, nickel, cobalt and gold, generally associated with the magnetite deposits. These minerals have never proved to be of economic significance and no indication of concentrations sufficient to be of interest were reported by previous investigators, namely -

i) Twelvetrees + Reid A. Mackintosh (1919) "Iron Ore Deposits of Tasmania" Grol. Survey Min. Res. No. 6.

ii) Reid A. Mackintosh (1924) "Preliminary Report on the Occurrence of Iron Ore at Meredith, Paradise, Rocky, and Whyte Rivers", Dept. of Mines Unpublished Report.

iii) W.J. Atkinson (1960) "Report on the Rocky River Area Iron Deposits, N.W. Tasmania". Rio Tinto Australian Exploration Pty. Ltd., Company Report.

H. THE AREA SOUTH OF ROCKY RIVER - (Plans No. 5 & 8). Continued.

The only way to investigate this area is by grass-roots exploration on the ground, preferably using a helicopter as a means of access. Enquiries have been made with Hookway Aviation Pty. Ltd., of Hobart, and they will have a helicopter based at Queenstown from November 1981, and available for charter at approximately $400 per hour.

I. CONCLUSIONS:

Of all the areas outlined in this report for investigation and possible development, the only areas with reasonable access in the Winter months would be the Long Plains Magnetite area, and the Brown Plains area.

Consequently, Winter activities will be concentrated on the drilling of the Specimen Reef area, as outlined in Part 1 of this Report.

M. EDYVEAN B.Sc.
13/3/81.

973114

APPENDIX "A"

REPORT ON LONG PLAINS GOLDFIELD

J.R. Wall

1. Literature Research

A thorough study of all company and Government reports should first be undertaken at the Mines Department Library in Hobart. Newspaper clippings from around the turn of the century may also be of interest. However much information is contained in Twelvetree's report:

Only two referees have been studied so far:

i) Report on Mineral Fields between Waratah and Long Plains. W.H. Twelvetrees. 1903.

ii) Report on the Mineral District between Corinna and Waratah. J. Harcourt Smith. 1897. (P. XIV).

Twelvetrees introduces the area thus (Plan No. 4):

Location: Near the Bullock's Head, 24 miles from Waratah and 16 from Corinna; the Long Plain extends here eastward for half a mile over rolling country, and then connects by a saddle with the Golden Ridge, a spur which extends for a mile in a direction bearing a few degrees east of north; terminating north at Riley's Creek and south at Cox's Face.

Local Geology: The rocks are thinly bedded on cleaved quartz, micaceous, talcose, and graphitic schists, slates and crystalline sandstone, striking a little east of north, and dipping at very high angles a little south of east. NB: They are here also covered with a layer of angular stones of quartz, derived from the underlying bedrock.

Alluvial: According to the pioneers of this area, Messrs. Weetman and Crockford, a nugget of gold over 5oz. was got in Gray's Creek. The heaviest alluvial gold was recovered here, being in excess of 500 ozs.

Production: "The bulk returns show purchases of about 5000 ounces; the greater part of which would be received from Long Plains, the remainder coming from Brown's Plains, Savage, Pieman and Castray Rivers. This, too, only represents a fraction of the gold won, as it is believed that most of it was taken to Victoria direct. The late Mr. J. Harcourt Smith obtained information to the effect that b/n 20,000 and 30,000 ozs. may be accepted as the total Long Plains produce".

Gold Occurrence: "The absence of quartz reefs has always puzzled prospectors, and although a good deal of quartz occurs in the form of laminae, veinlets and irregular bunches, it does not appear to be the source of gold. The occurrence of auriferous pyrites points to pyritic veins being the original carriers of the (alluvial) gold".

Weetman and Crockford's experience was:

(i) That all their veins had a strike approximately east and west, with a southerly underlie;

LONG PLAINS GOLD AREA - EL4/61

CONTENTS

Proposed Programme of Investigation:

(ii) that these veins were gold-bearing only while passing through a chloritic schist.

(iii) that the veins were always gossanous in this schist, but widened out, and carried a good deal of quartz when they entered the hungry-looking micaceous-schist, which is the prevailing rock (in this rock they never carried a trace of gold);

(iv) that the veins were not persistent, but died out, and were replaced by others, and so on.

Finally, referring to Lynch's Tunnels, which are a few chains north of Riley's Creek: (LINE 300S).

Twelvetrees (Pg. 13) states that:

"The upper tunnel has been driven in decomposed talcose schist, with irregular veins of quartz.

The indications for gold are promising, but the metal is more likely to be associated with the rusty (Iron-oxides) country-rock than with the quartz".

Other Minerals: Smith refers to a section in Big Duffer Creek (1600S) about 200 yards above its junction with Little Duffer Creek:

"A formation has been cut showing copper pyrites, zinc blende, and quartz, but no work has been done on it beyond putting a shot in the capping. Its apparent strike is a little east of north, underlaying to the east".

(This is not an outcrop, and has nothing to do with Syke's Tunnel (Hans Julen, pers. comm.)).

2. Coloured Aerial Photography

The newest aerial photos luckily available for the area should assist with:

(i) Access through the dense forest and sample/outcrop location references.

(ii) Structural geology - look for any major drainage lineations to support inferred fault lines.

(iii) Possible relationships between vegetation and soils or rocktypes.

3. Survey Gridding

The following proposal is recommended:

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Baseline: (1) A baseline running at 14^{o} magnetic, bisecting the Northern block of "CROWN LAND". This line to be extrapolated through the area of old workings (down to Big Duffer Creek).

(2) If the line spacing is to be 100m, then this gives us 17 lines with a total of 5700 metres of track-cutting. Consequently, $350/km, this would cost approx. $2000. Alternately, the lines could be spaced 200m apart. However, this is not recommended because geophysical plan relationships between lines may become too obscure.

(3) The lines in the Northern Lease Application Area will extend not more than 100m both E. and W. The other E/W lines will extend out to the East only, up to 400 metres in length.

In view of the following reference from Twelvetrees, lines 1600S (and or 1300S) could be extended similarly out to the West at a later stage:

"The Golden Ridge belt, as defined by the creek channels on each side, is about a quarter of a mile wide. It may possibly extend 10 chains further west to Main Creek, but I could not explore that part of the country in the time at my disposal". (P. 4).

Finally, I think it better to have a line pegging separation of 50 metres for lines spaced 100 metres apart rather than a separation of 25 metres for lines spaced 200 metres apart. Slope corrections will be essential.

4. Structural Geology

Underground Mapping: This should involve underground mapping along all tunnel sections which are still accessible and safe.

Creeks: Also strike and dip measurements of schistosity along all the creek outcrops throughout the entire region. Isochinal folding is well known in the whyte schists. Studies of jointing may also be useful. Faulting will be ascertained following geophysical surveys and sections available from the workings.

5. Geochemistry

Principal base metals for analysis, Au, Cu, Pb, Zn.

Most of the area has been reworked on the surface and so geochemistry may not be very efficient for this area. Anyway, a study of the soil profile and soil types would be the first step. Also, the deepest possible augering holes may help. Twelvetrees does mention a scree cover over the higher portions of the area.

After reading Twelvetrees descriptions of workings in the creeks; stream sediment sampling is not advisable for gold. However, a lead-zinc

./

survey may be indicative of a target area.

6. Geophysics

Carefully controlled S.P. and the I.P. surveys area recommended for the entire grid areas. Possible elevation effects may influence the S.P. results. Elevation changes give potencials due to water seepage so that potencials become more negative as the ground rises.

Graphite is the big enemy of S.P. and all electrical methods unless of course graphite is the target. Graphitic schists are known in the Long Plains gold area.

Graphitic formations can occasionally be differentiated from sulphide bodies either because of the strength of the potencials recorded, or of their pattern of distribution. However, usually such differentiation is not possible, and the results must be interpreted with the full realisation that, where graphite is likely to occur, it can be responsible for the potencials observed.

J.R. Wall
Diploma of Geology
Ballarat School of Mines.

12/3/81.

APPENDIX "B"

BROWN PLAINS LEAD ASSAYS

APPENDIX "C"

ROCKY RIVER TIN ASSAY

AND

MINERALOGICAL REPORT

M 1555

973122

DEPARTMENT OF MINES—TASMANIA

TELEPHONES:
Metallurgical Research .. .. }
Laboratory .. .. .. } 44 2431-2
Mines Inspection .. .. .. } (2 lines)
Explosives & Inflammable Liquids }

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

15th December 1980

Industrial & Mining Invest. Pty Ltd,
1st Floor,
A.M.P. Building,
46 St, John Street,
LAUNCESTON 7250

Rocky River Magnetite: 802457

Dear Sir,

From the above sample which assayed 0.1% Sn and 55.7% S.Fe a magnetic separation was made on a -1 mm + 0.5 mm fraction and the following products sent for mineralogical examination.

A341: M/A 1 Magnetite

A342: M/A 2 Sulphides etc.

A343: N Pyrite.

David Green reports as follows:-

"No cassiterite was found in any of the products on optical examination nor was there any Sn fluorescence on microprobe analysis of broad areas. Stannite was suspected in one case in the A343 M/A2 product but not confirmed in a second mount of the same material. The only minerals definitely present are magnetite and pyrite, however, a small amount of a copper mineral (possibly stannite) may occur sporadically. In view of the low Sn value of the head feed (0.1%), this will not be an easy problem. If necessary, the investigation could be continued with hand specimens.

It may be worth noting that many authorities find tin in the magnetite lattice in solid solution. Microprobe analysis of magnetite showed no tin above a detection limit of 0.2% but in view of the abundance of magnetite, the occurrence of Sn in solid solution in magnetite cannot be ruled out".

Yours faithfully,

(H. K. Wellington)
Chief Chemist & Metallurgist.

973123

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

5th Nov'80

CERTIFICATE OF ANALYSIS

Attent M. Edyvean

To Industrial & Mining Ivest. Pty Ltd,
1st Floor A,M,P, Building, 46 St. John Street L'ton

The sample of Magnetite *received from* you *on the* 21st Oct'80 *and stated to be from* ...... *has been examined, with the following results:—*

	Registered Number	Description	%Sn	%S.Fe
5/11/80	802457	Magnetite - Rocky River.	0.10	55.7
		Analyses by..........		
		Fee $10.00		

21392

Chief Chemist and Metallurgist

973124

TETCHEM LABORATORIES PTY. LTD.

1 Ogden Street,
Cairns

Phone 51 5518
Telex: "Tetlab" AA48423

CERTIFICATE OF ANALYSIS

No. 173/80

SHEET No. 2

INV. No.

Samples Submitted by INDUSTRIAL & MINING INVESTAGATIONS. PTY. LTD

Samples Received by .... Request No. ....

All results in p.p.m. unless otherwise indicated.

SAMPLE MARKINGS		Cu	Pb	Zn	Ag				
[redacted]					–				
1000N/0		14	14	8	–	BROWN PLAINS.			
100		11	15	9	–				
200		15	14	9	–				
300		14	16	11	–				
400		30	22	24	–				
1000N/500		13	13	9	–				
1100/0		11	12	8	–				
100		66	15	27	–				
200		36	16	25	–				
300		32	56	48	–				
400		28	47	39	–				
1100/500		23	71	37	–				
1200/0		18	15	37	–				
100		25	204	82	–				
200		54	802	298	–				
300		56	857	292	2				
1200/400		163	3100	425	9				

FOR METHOD DETAILS, SEE PRICE LIST

CHEMIST ....

DATE 29/4/1980

REMARKS:

ABBREVIATIONS:

bld—below limit of detection.

dwt—pennyweights troy per short ton of 2000 pounds.

973125

TETCHEM LABORATORIES PTY. LTD.

Phone 51 5518
Telex: "Tetlab" AA48423

1 Ogden Street,
Cairns

CERTIFICATE OF ANALYSIS

No. 173/80

SHEET No. 3

INV. No.

Samples Submitted by INDUSTRIAL & MINING INVESTAGATIONS PTY. LTD

Samples Received by Request No.

All results in p.p.m. unless otherwise indicated.

SAMPLE MARKINGS				Pb					
1200/400 – BROWN PLAINS				0.31%					

FOR METHOD DETAILS, SEE PRICE LIST

CHIEF CHEMIST

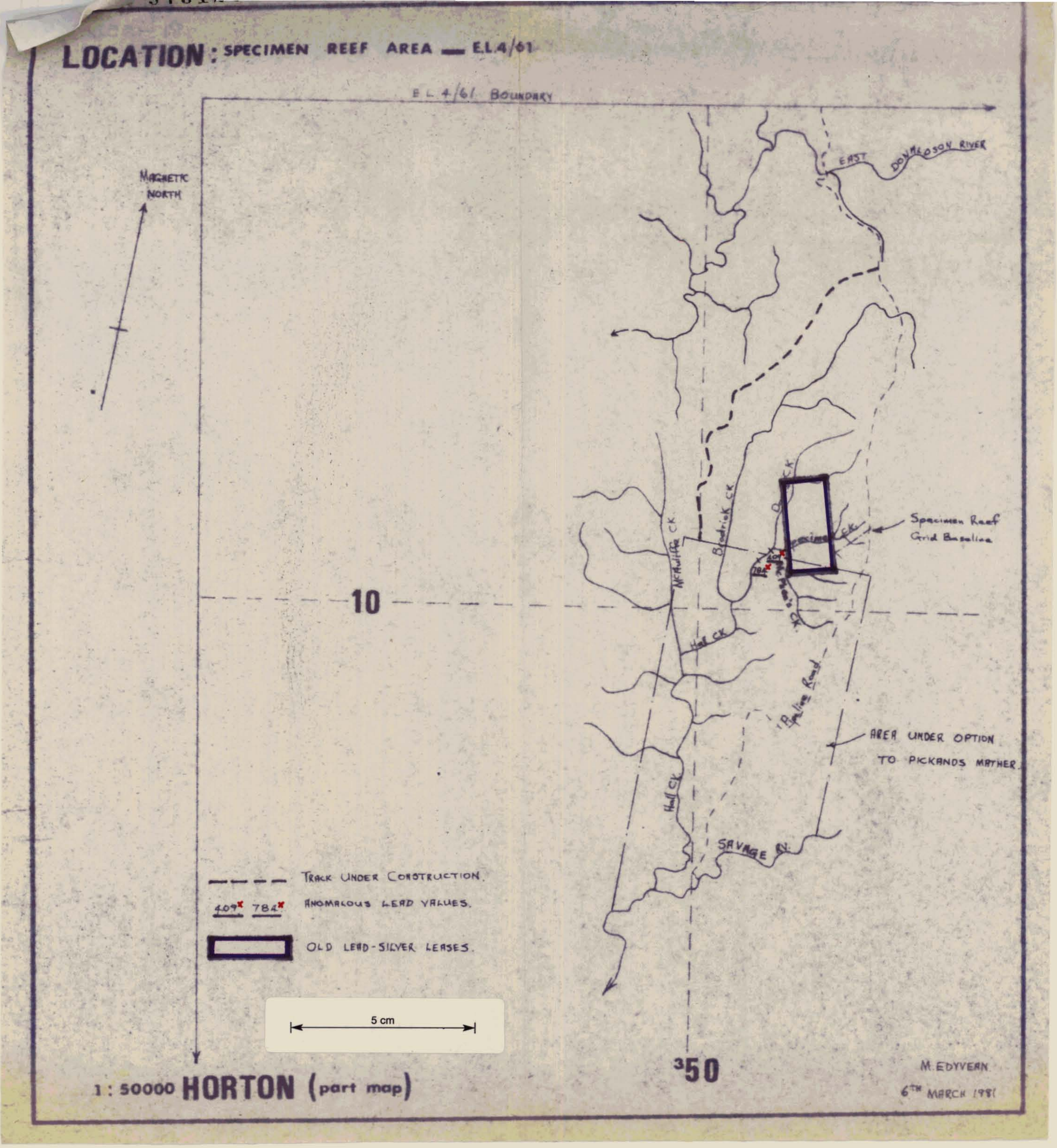
DATE 6/5/1980

REMARKS:

ABBREVIATIONS:

bld—below limit of detection.

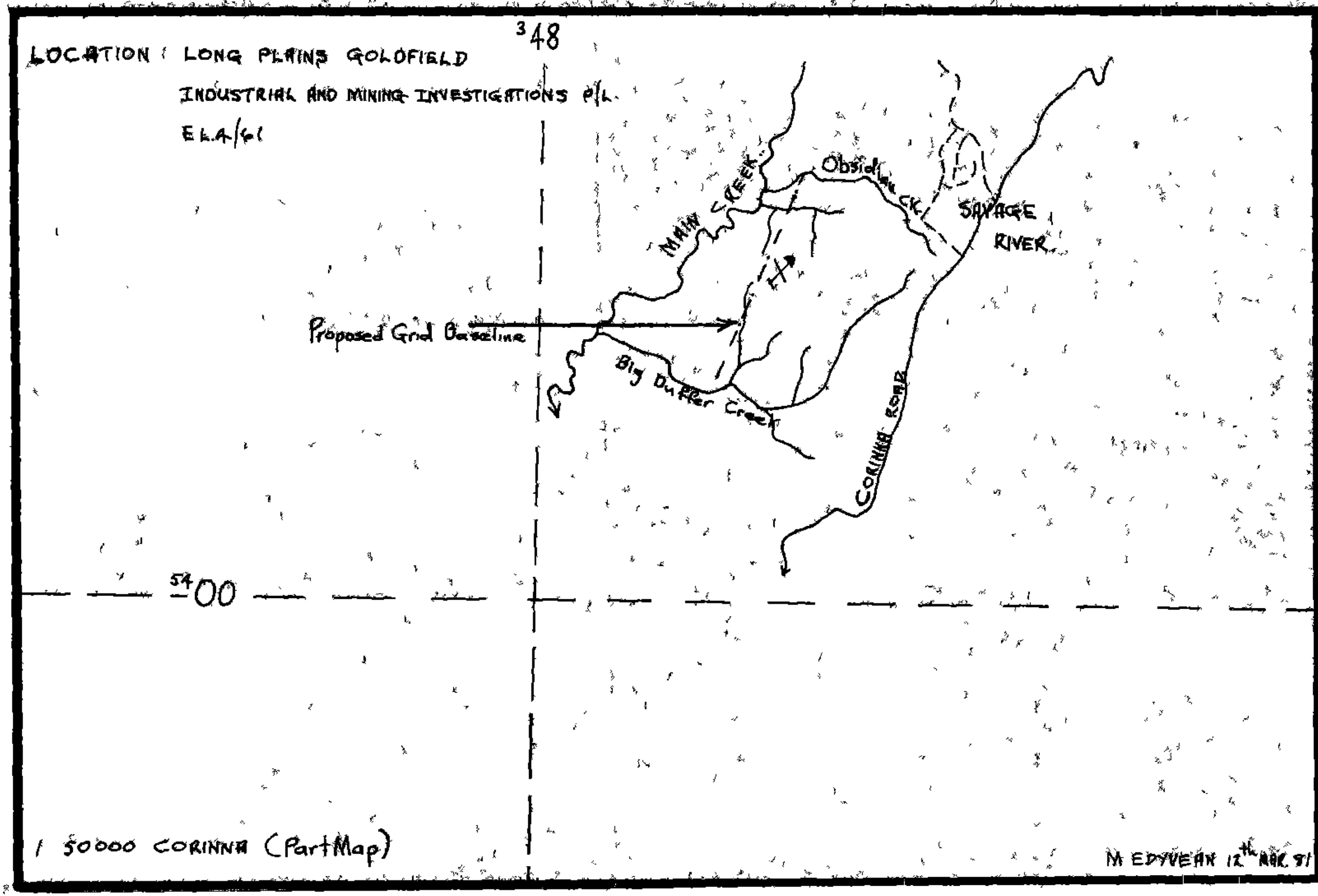
dwt—pennyweights troy per short ton of 2000 pounds.


LOCATION: SPECIMEN REEF AREA — E.L.4/61
E.L. 4/61 BOUNDARY
MAGNETIC NORTH
EAST DONALDSON RIVER
Specimen Reef Grid Baseline
Brodrick CK
10
Hall CK
Pipeline Road
AREA UNDER OPTION TO PICKANDS MATHER
SAVAGE RD.
TRACK UNDER CONSTRUCTION.
409 784
ANOMALOUS LEAD VALUES.
OLD LEAD-SILVER LEASES.
5 cm
350
1:50000 HORTON (part map)
M. EDYVEAN
6TH MARCH 1981

81-1552

973127

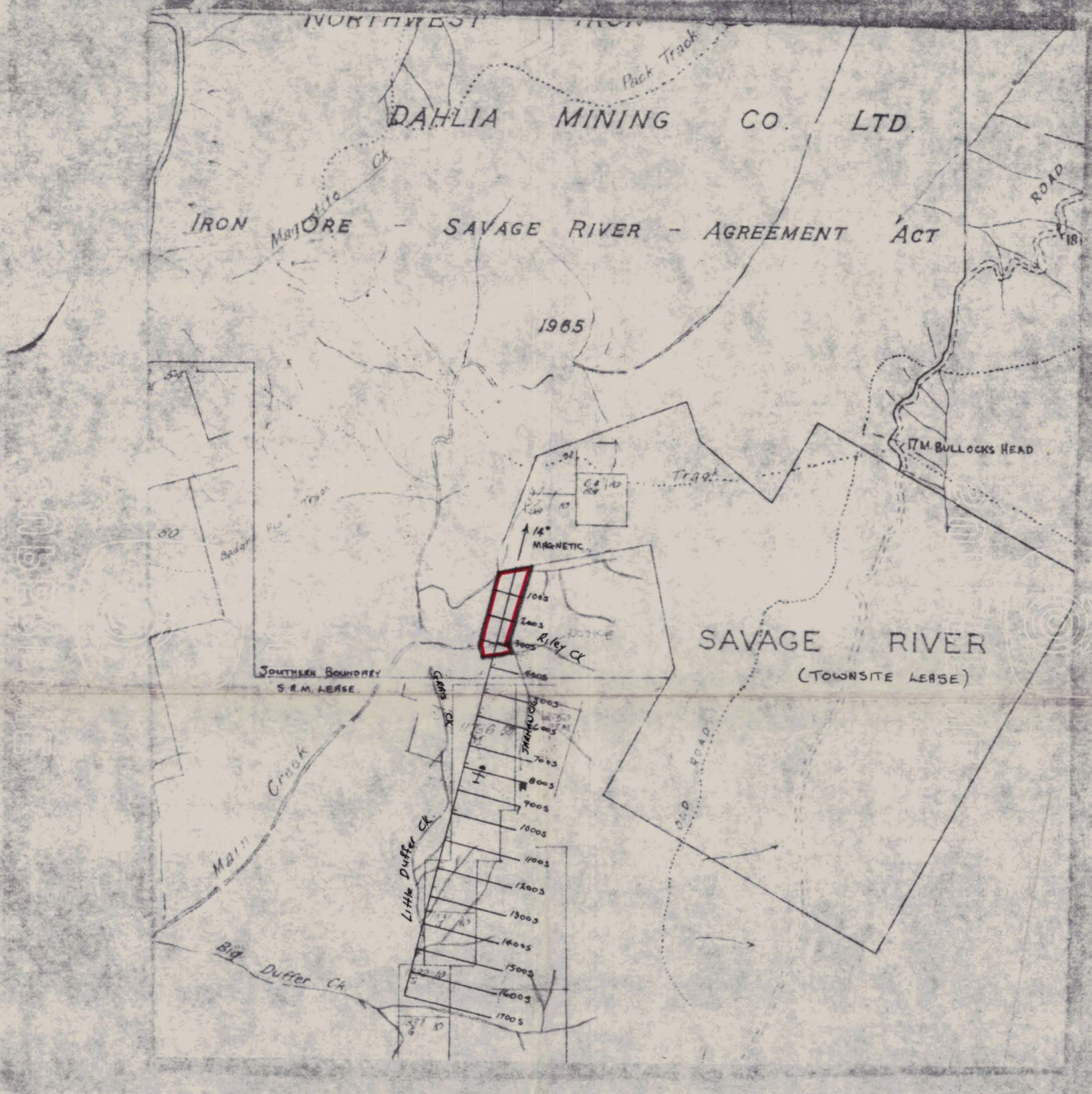
PLAN No 2



5 cm

PLAN No 3. 973128

LONG PLAINS GOLDFIELD – E.L. 4/61.
(Outlining Proposed Grid)



LEASE APPLICATION – INDUSTRIAL AND MINING INVESTIGATIONS P/L.

5 cm

PART MAP LONG PLAINS MINERAL CHART.
N.B. GRID LOCATION IS APPROXIMATE ONLY.

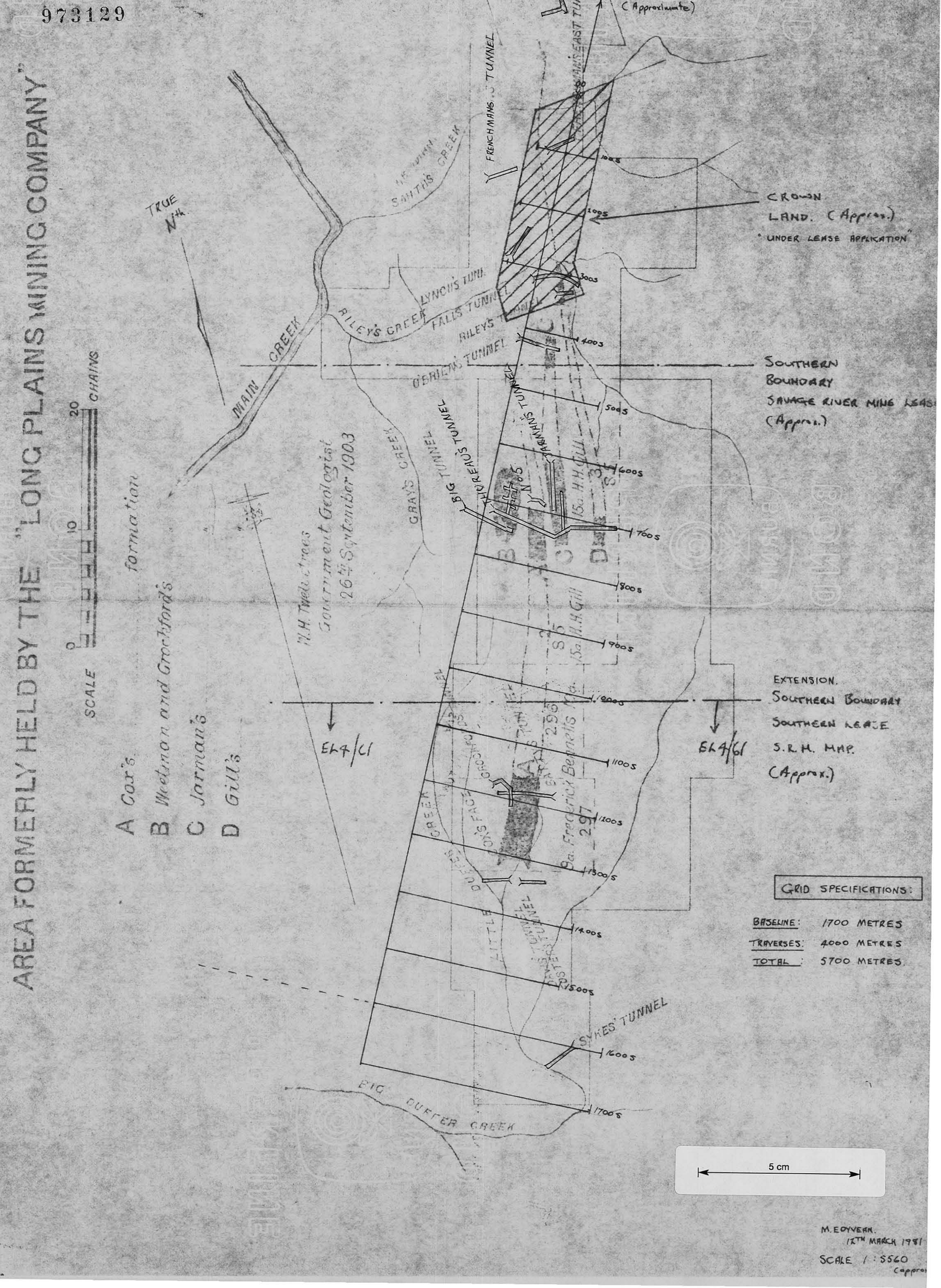
SCALE: 1:15840

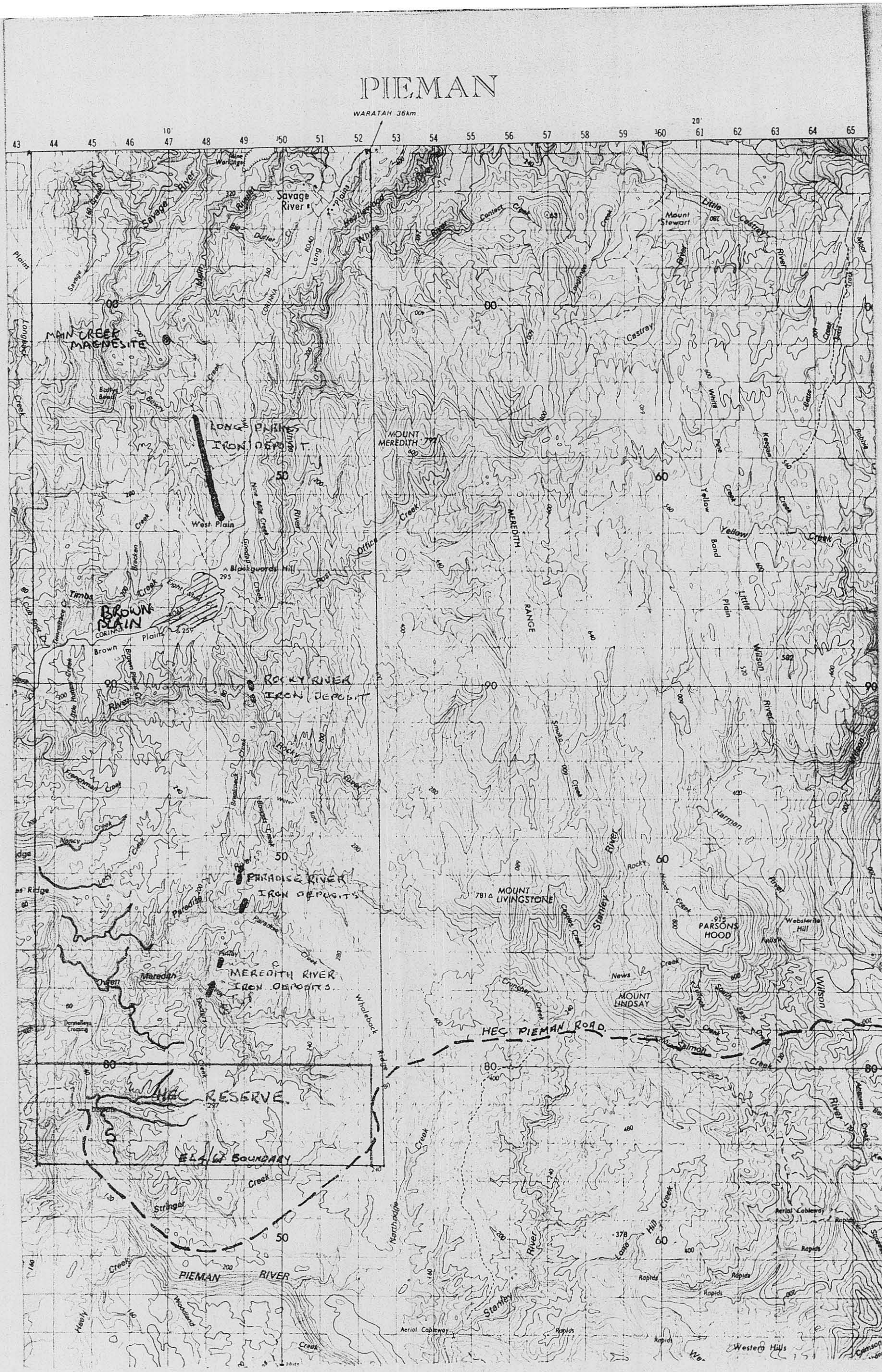
M. EDYVEAN. 12TH MARCH 1981.

PLAN No 4.

LOCATION: (Approximate)
PROPOSED GRID
LONG PLAINS GOLDFIELD – E.L.4/61.

973129





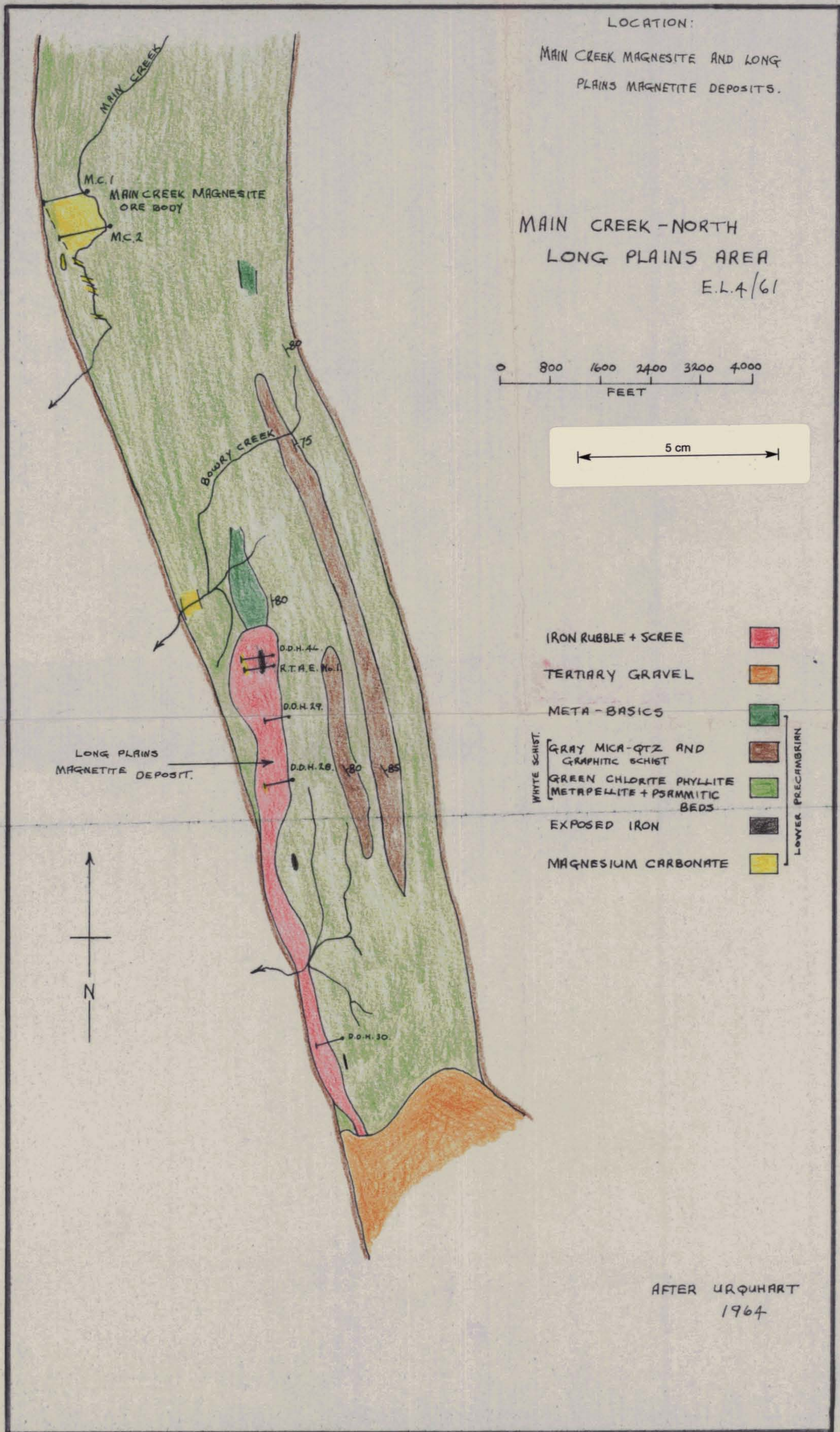
LOCATION: MAIN CREEK MAGNESITE, BROWN PLAINS, LONG PLAINS MAGNETITE, ROCKY RIVER AREA MEREDITH AND PARADISE RIVER AREAS WITHIN E.L. 4/61.

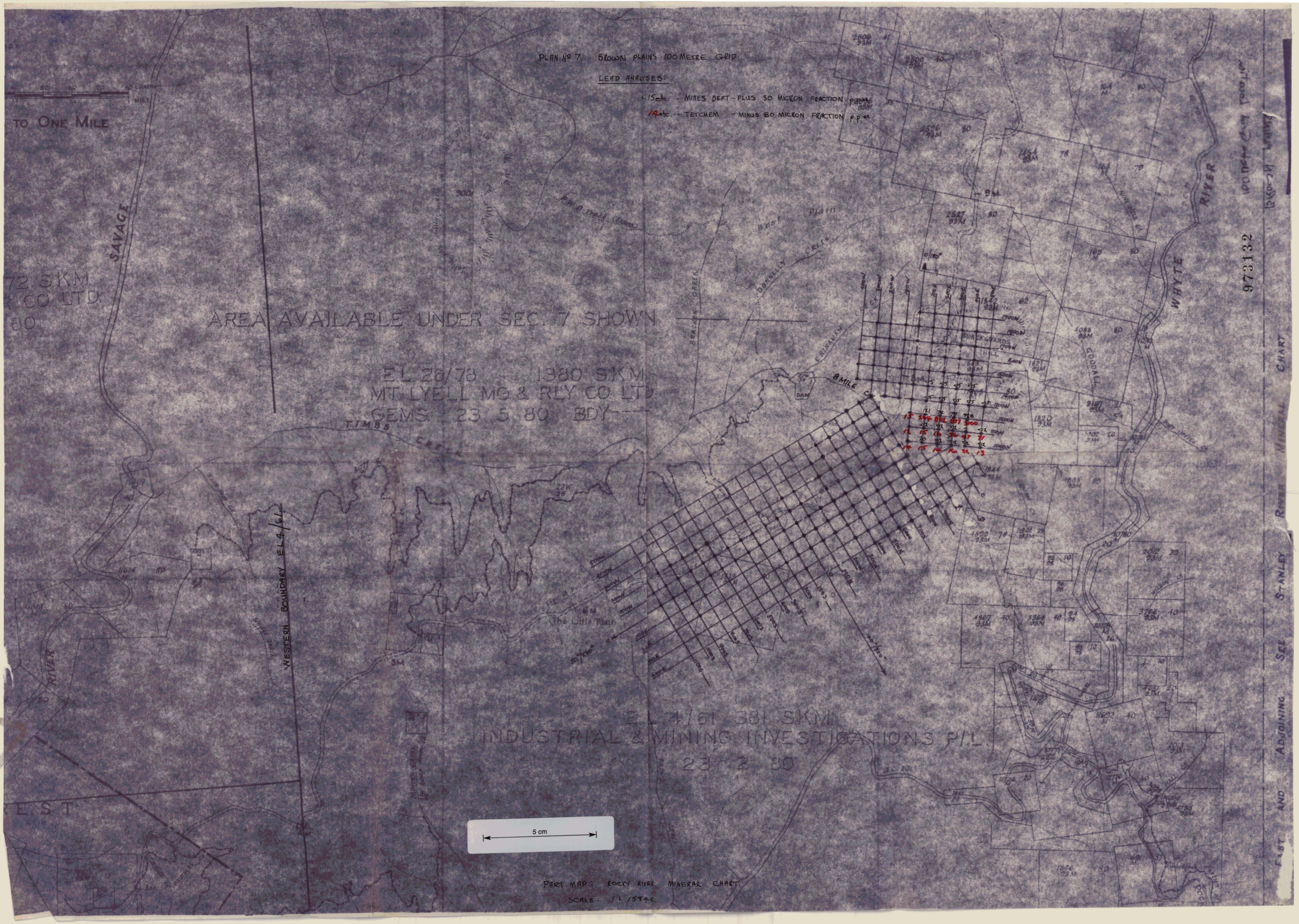
5 cm

Plan 5

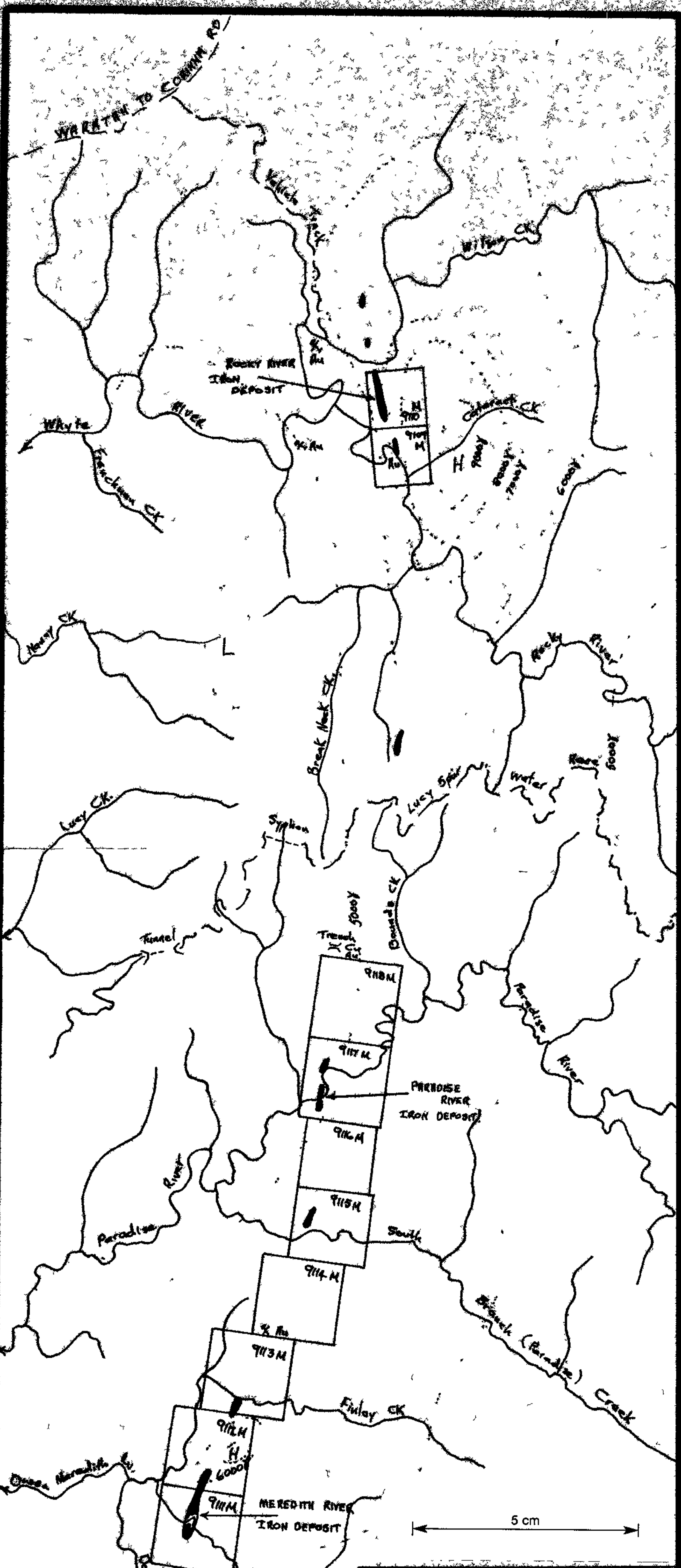
973130

PLAN No 6. 973131




PLAN Nº 7. BROWN PLAINS 100 METRE GRID.
LEAD ANALYSES:
<15etc. - MINES DEPT. - PLUS 80 MICRON FRACTION p.p.m.
14etc. - TETCHEM - MINUS 80 MICRON FRACTION p.p.m.
TO ONE MILE
AREA AVAILABLE UNDER SEC. 7 SHOWN
E.L. 26/78 1380 S.K.M.
MT. LYELL MG & RLY CO LTD
GEMS 23 5 80 BDY
E.L. 4/61 381 S.K.M.
INDUSTRIAL & MINING INVESTIGATIONS P/L
23 2 80
SAVAGE
WHYTE RIVER
TIMBS CREEK
WESTERN BOUNDARY E.L. 4/61
8 MILE CK
The Little Plain
973132
EAST AND ADJOINING SEE STANLEY RIVER MINERAL CHART
PART MAP: ROCKY RIVER MINERAL CHART.
SCALE: 1:15840.
5 cm

PLAN No 8. 973133



INDUSTRIAL AND MINING INVESTIGATIONS PTY LTD

REGIONAL PLAN WITH AEROMAGNETIC CONTOURS ROCKY RIVER, PARADISE RIVER, MEREDITH RIVER IRON DEPOSITS

Scale: 1. 31680	M EDYVEAN 16-3-81