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No. 4846

EL 1020, EL 1255 AND EL 1313

WARRIOR

PROGRESS REPORTS TO LICENCE SURRENDER FOR THE PERIOD 28/7/1982 TO 30/3/1987

Submitted by
PNC Exploration (Australia) Pty Ltd
1987

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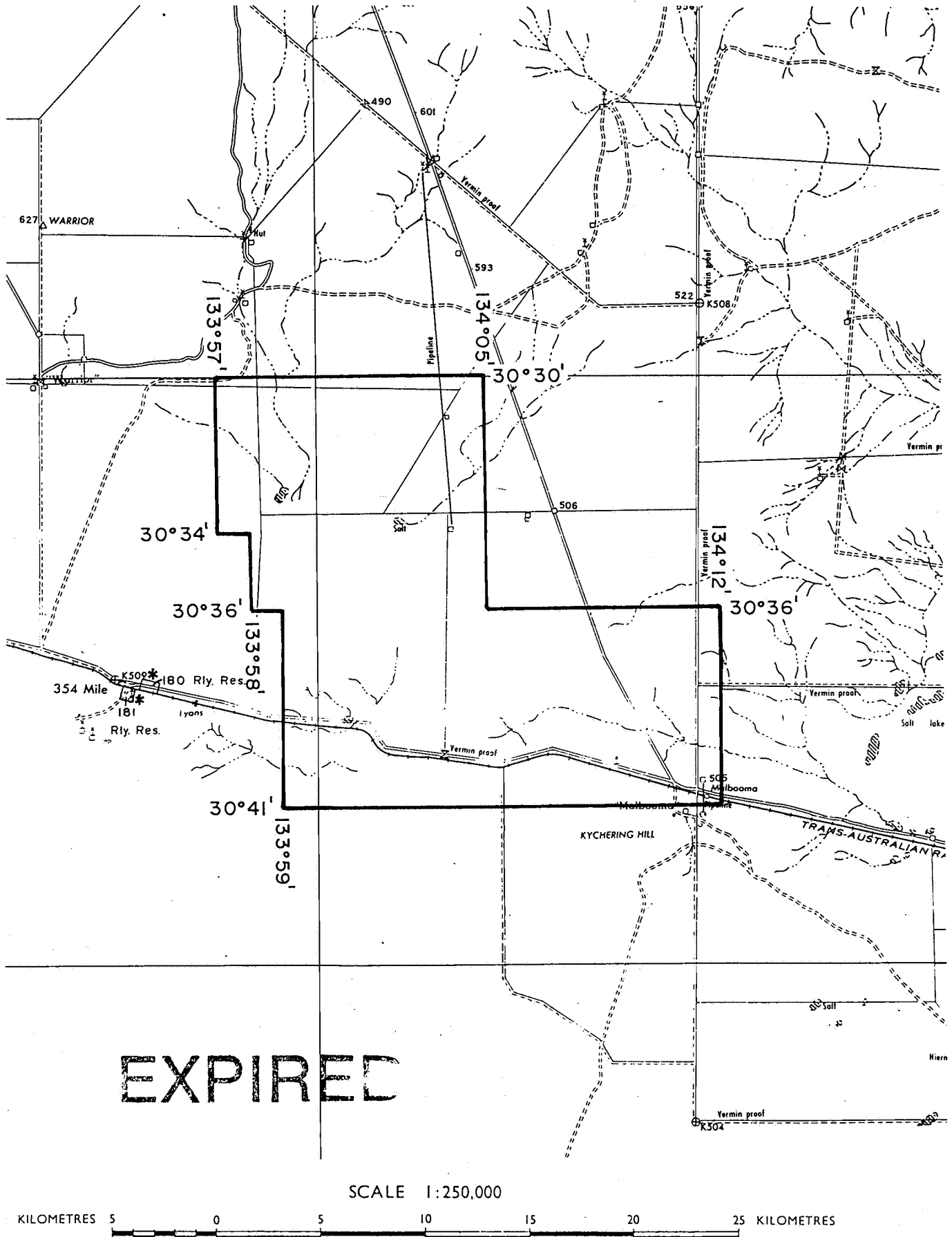
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Government of South Australia
Primary Industries and Resources SA



EXPIRED

SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

APPLICANT: PNC EXPLORATION (AUSTRALIA) PTY. LTD.

DM: 155/82

AREA: 328

square kilometres

1:250 000 PLANS: TARCOOLA

LOCALITY: WARRIOR AREA - Approx. 120km northwest of Kingoonya

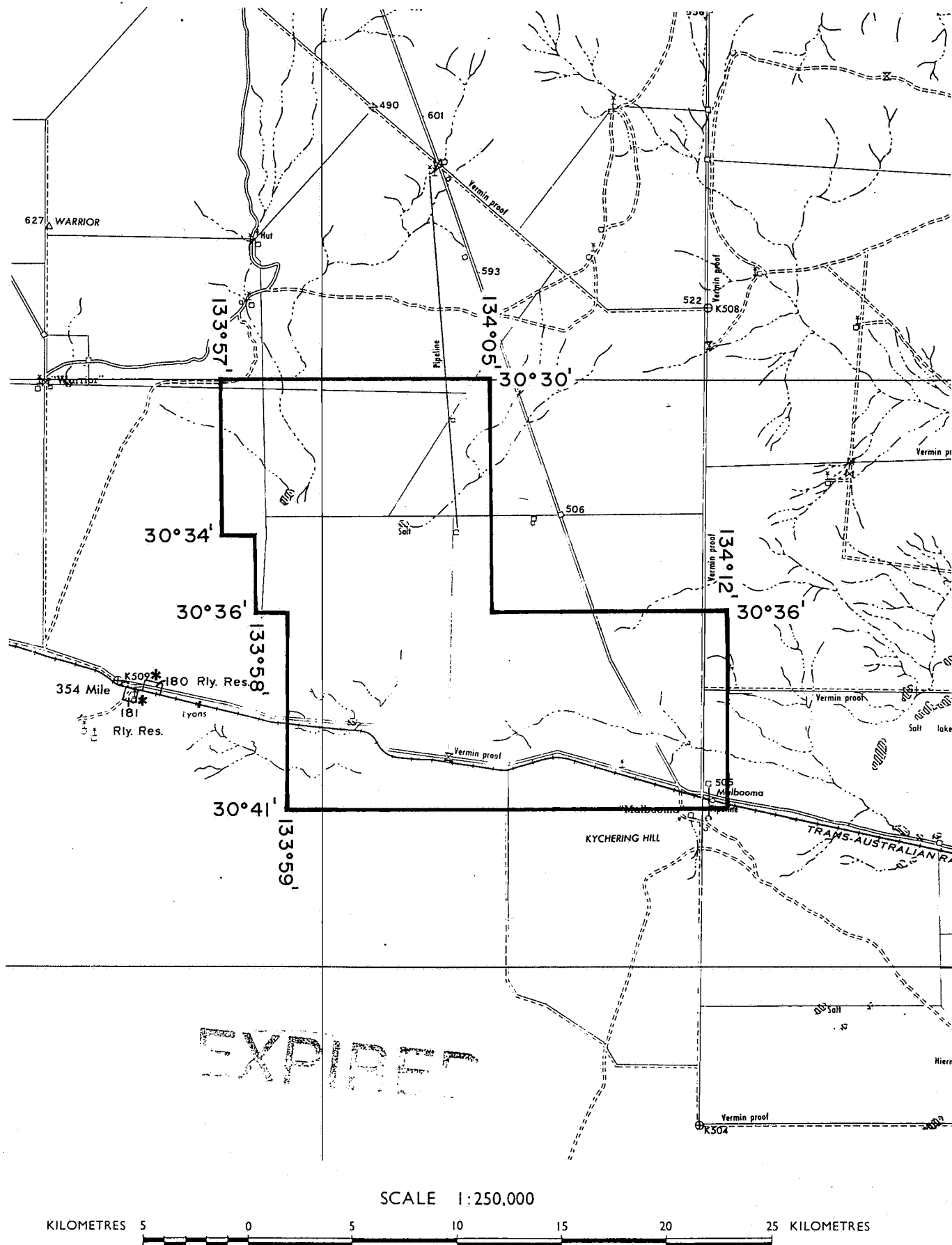
DATE GRANTED: 28.7.82

DATE EXPIRED: 27.7.83

REAPPLICATION:

173/84

EL No: 1020



APPLICANT: PNC EXPLORATION (AUSTRALIA) PTY. LTD.

DM: 173/84

AREA: 328 square kilometres (approx.)

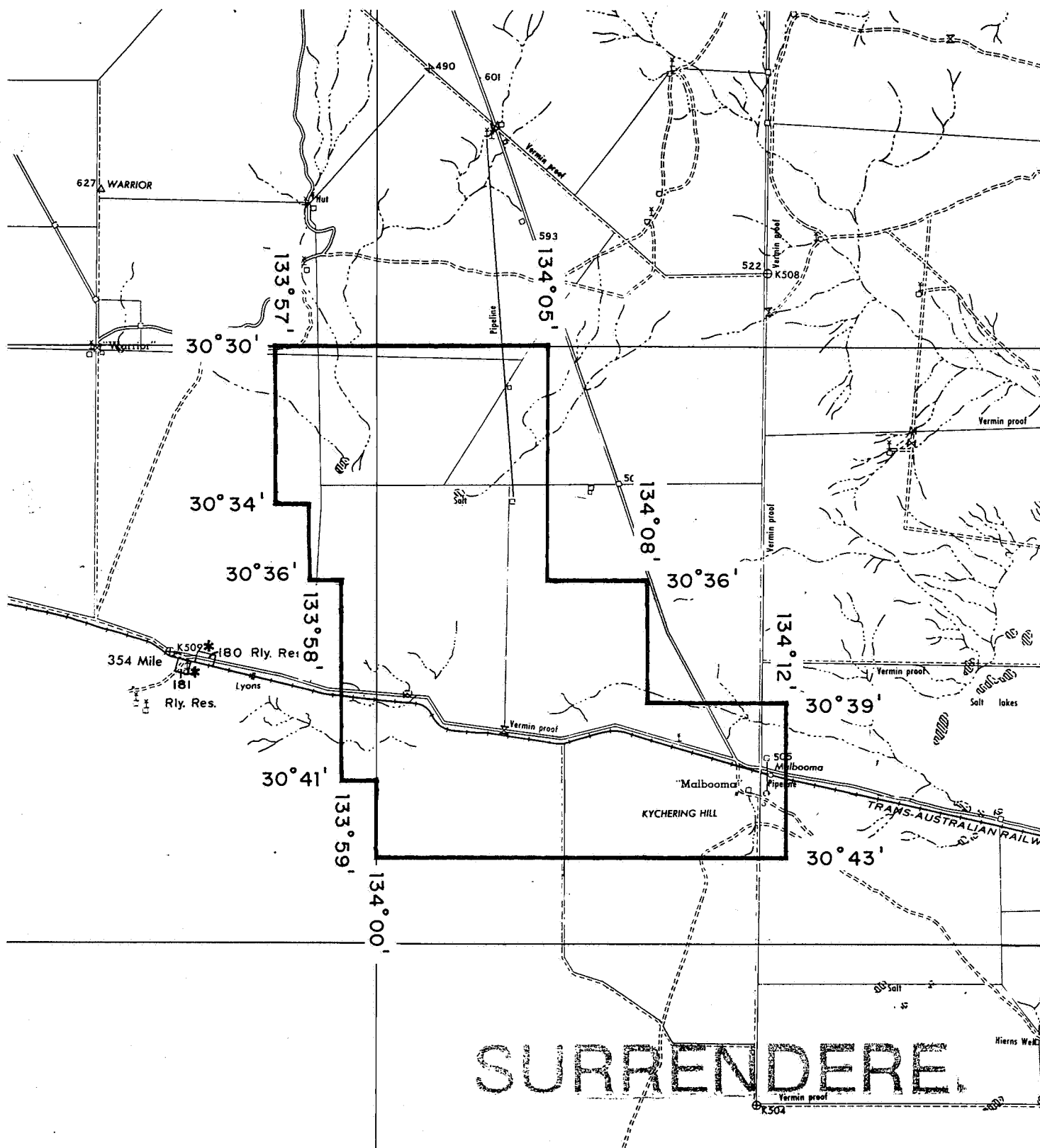
1:250000 PLANS: TARCOOLA

LOCALITY: WARRIOR AREA - Approx. 120km NW of Kingoonya.

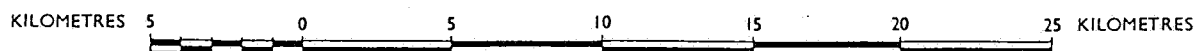
DATE GRANTED: 24-9-84

DATE EXPIRED: 23-9-85

EL No: 1255



SCALE 1:250,000



APPLICANT: PNC EXPLORATION (AUSTRALIA) PTY LTD

DM: 197/85

AREA: 363 square kilometres (approx.)

1:250000 PLANS: Tarcoola

LOCALITY: WARRIOR AREA - approx. 50 km west of Tarcoola.

DATE GRANTED: 7.1.86

DATE EXPIRED: 6.1.87 88

EL No: 1313

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TENEMENT HOLDER: PNC Exploration (Australia) Pty. Ltd.

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QUARTERLY REPORT

28TH JULY TO 27TH OCTOBER, 1982

EXPLORATION LICENCE NO. 1020

WARRIOR AREA

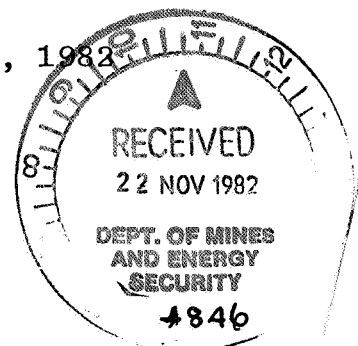
TARCOOLA 1:250,000 SHEET

S.V. WILLIAMS

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY

NOVEMBER, 1982



During the quarter 28th July to 27th October, 1982 a test radon survey was carried out over the known zone of uranium mineralisation within the Warrior Channel. The survey was extended to cover the area surrounding drill hole TM 316 in which a significant down hole radiometric anomaly had been obtained.

Data was obtained from 585 points using an EDA 200 radon counter.

Technical results will be presented in the next quarterly report.



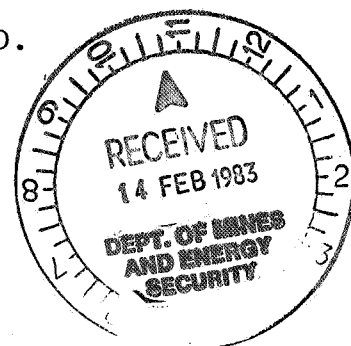
S.V. WILLIAMS
REGIONAL MANAGER

STATEMENT OF EXPENDITUREEXPLORATION LICENCE 1020FOR THE PERIOD 28TH JULY TO 27TH OCTOBER, 1982

	\$	\$
<u>Geology</u>		
Computer hire		1,500
<u>Field Personnel</u>		
Geophysicist	8,250	
Geologist	2,760	
Field Assistants	8,019	
		19,029
<u>Travel & Accommodation</u>		1,507
<u>Logistics</u>		
Repairs & Maintenance	232	
Field Camp expenses	1,283	
Fuel	1,298	
General	85	
		2,898
<u>Vehicle Hire</u>		3,589
<u>Depreciation</u>		
Survey equipment	440	
Vehicle	515	
Camp Equipment	110	
		1,065
<u>TOTAL</u>		\$ 29,588
		=====

QUARTERLY REPORT
28TH OCTOBER, 1982 TO 27th JANUARY, 1983
EXPLORATION LICENCE NO. 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

G. McKAY
PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
FEBRUARY, 1983



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2. RADON SURVEY
3. RESULTS
4. CONCLUSION

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1. Warrior Prospect Radon Survey - Radiometric Count Contours.
2. Warrior Prospect Radon Survey - Rn & Tn Contours
3. Warrior Prospect Radon Survey - Rn Contours
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5. Warrior Prospect Mineralisation.

1. INTRODUCTION

During the quarter 28th November, 1982 to 27th January, 1983, no field work was carried out.

Results are presented for a radon survey carried out during the previous quarter.

2. RADON SURVEY

During July, 1982, a radon survey was conducted over the known zone of uranium mineralisation within the Warrior Channel.

Sampling was carried out using a portable EDA RD200 soil-gas radon counter from 585 points in a grid pattern. Surface radiometric readings were also taken using a total-count spectrometer. Existing drilling tracks were utilised with E-W sample intervals of 50m and N-S line spacing approximately 500m.

The radon detection instrument measured the soil-gas concentration of radon then distinguished alpha emissions due to the two main isotopes; Radon-222 (Rn) from the Uranium-238 decay series and Radon-220 (Thoron, Tn) from the Thorium-232 decay series.

Data presentation is in the form of contour plans at 1:20,000 scale (accompanying this report).

3. RESULTS

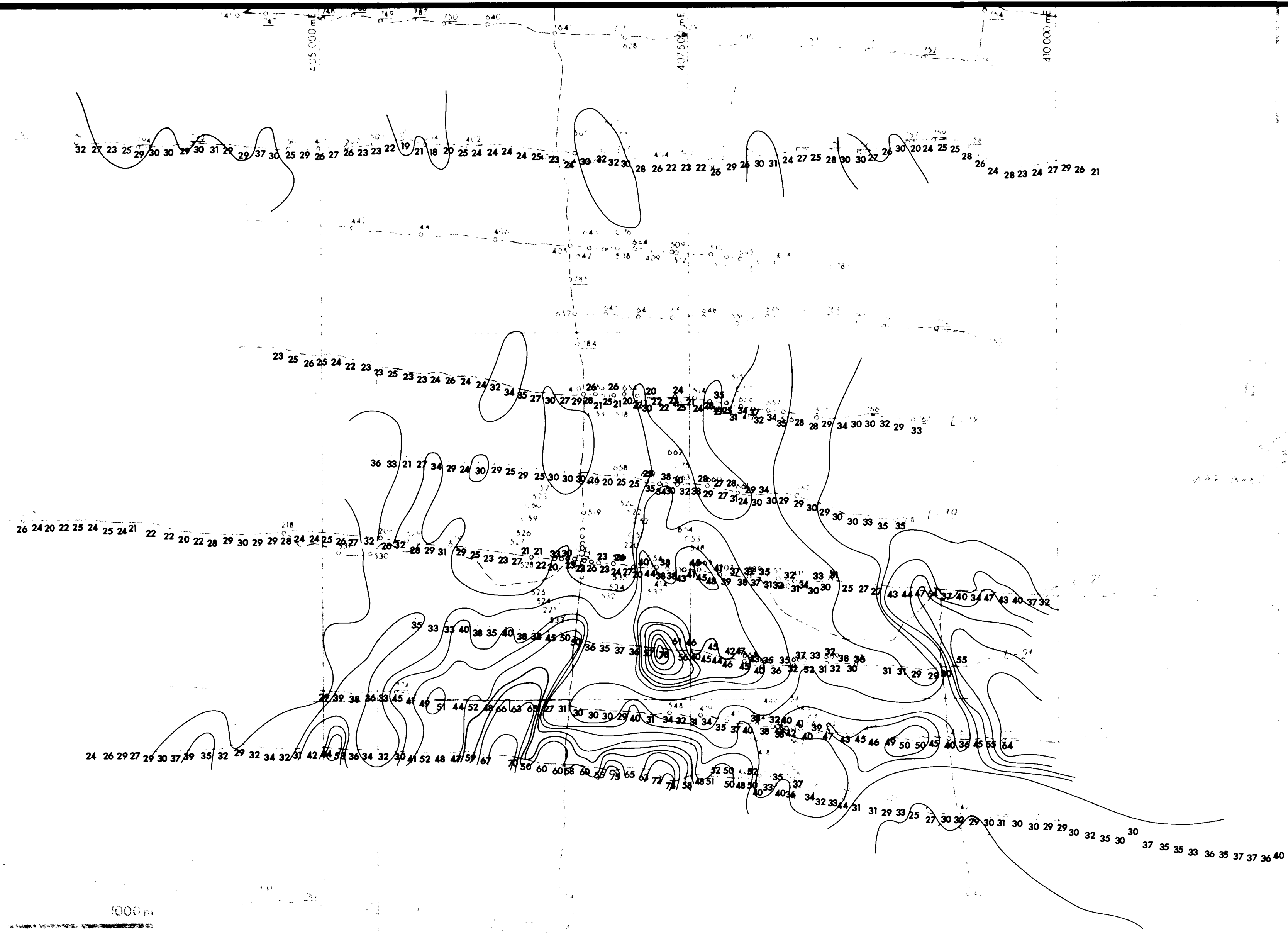
- (i) Surface radiometric contour map shows good correlation with total radon (Rn + Tn) counts and with Tn counts.
- (ii) Rn contour map shows good correlation with known uranium mineralisation at depth.
- (iii) Rn is well distinguished from Tn.

4. CONCLUSION

The radon test survey proved successful for delineating the mineralised area of the Tertiary channel.

Authorised By:

S.V. WILLIAMS
REGIONAL MANAGER



EXPLORATION (AUST) PTY LTD

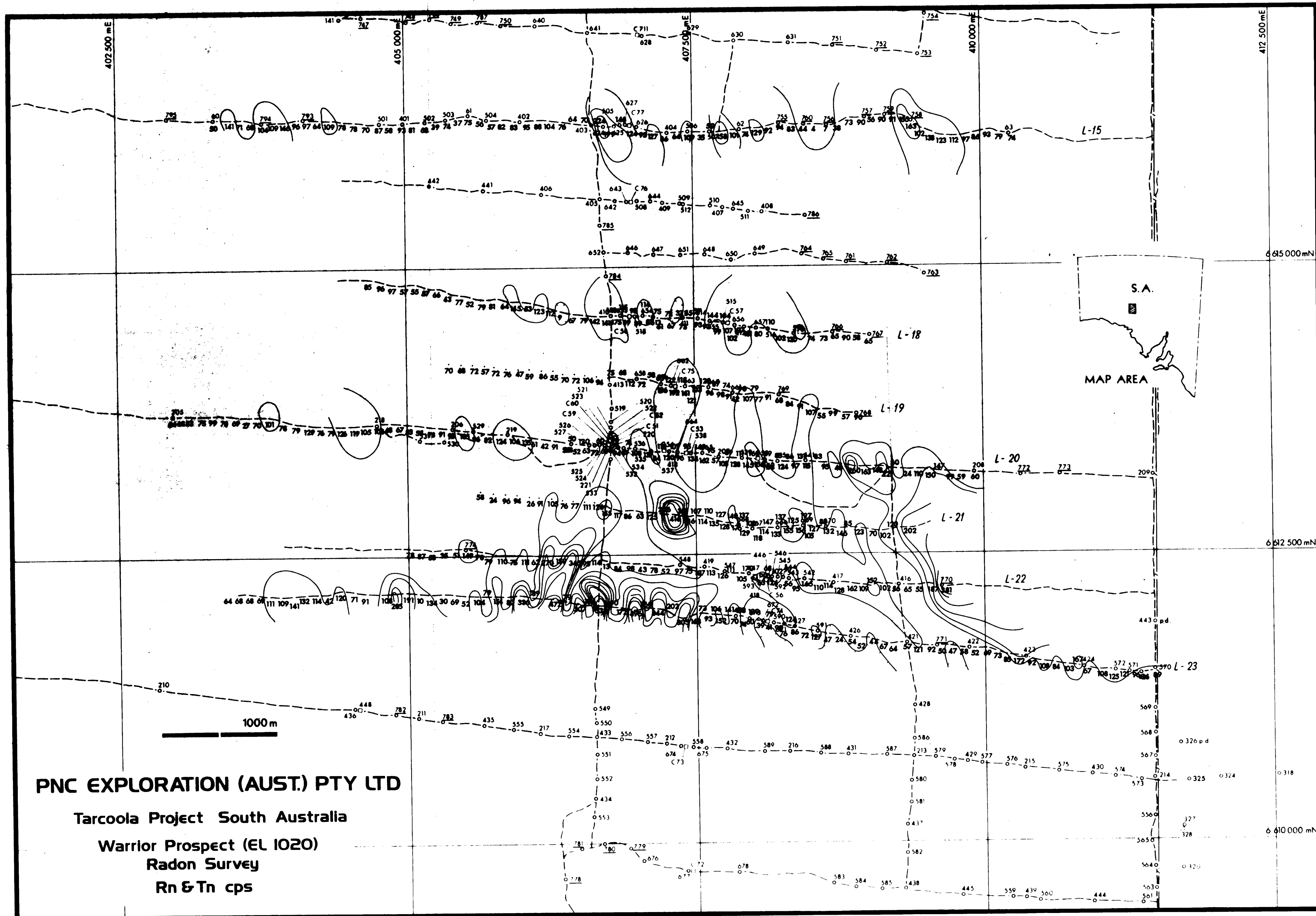
Geological Project, South Australia

Geological Survey of South Australia

Radiometrics Count cps

Plate 1.

4846(I)-1



PNC EXPLORATION (AUST.) PTY LTD

Tarcoola Project South Australia

Warrior Prospect (EL 1020)

Radon Survey

Rn & Tn cps

0 10 0 0 12 13 23 0 12 9 10 7 7 0 11 5 8 0 0 0 0 8 0 0 0 4 3 2 17 18 16 1 30 44 25 18 8 25 0 12 16 8 3 30 7 8 10 4 6 11 7 2 0 8 0 14 18 7 6 10 12 17 5 13 13 12 12 13 9 11

7 17 0 3 0 1 6 0 6 5 10 16 10 38 1 10 14 0 0 6 30 4 37 8 0 7 22 20 10 8 0 7 0 8 8 1 11 12 11 14 14 21 27 4 2 7 0 14 3

12 6 12 17 4 10 4 19 7 9 15 5 12 24 3 5 22 11 6 11 14 22 4 17 21 10 21 0 22 7 27 14 24 5 0 2 14 12 7 3 12 0 0 1

6 8 8 15 0 1 5 0 5 14 7 9 15 13 10 10 9 12 0 0 10 3 10 0 10 0 0 9 0 16 11 32 4 2 17 6 9 4 0 0 0 13 0 15 14 9 15 0 8 10 0 0 1 2 3 4 8 0 6 3 20 12 24 5 1 7 12 21 22 11 8 5 25 22 7 10 12 0 17 9 3 18 0 0

9 3 18 5 0 1 13 5 4 16 4 0 2 13 6 11 8 0 0 3 6 0 8 13 2 14 4 11 15 5 20 19 7 6 12 11 7 17 12 17 10 19 3 17 0 0 0 7 0

2 0 0 2 1 5 7 6 8 6 0 0 14 8 14 7 19 5 11 5 7 1 9 6 14 4 11 15 5 20 19 7 6 12 11 7 17 12 17 10 19 3 17 0 0 0 7 0

2 3 10 6 12 17 5 19 0 8 0 0 5 3 3 18 22 0 1 0 5 8 1 2 4 21 21 27 0 22 18 0 5 0 0 0 14 14 10 26 0 2 9 7 15 0 25 0 8 0 10 7 13 16 8 4 5 3 0 10 0 6 14 5 8 10 0 15 10 2 1 0 38 19 16 3 8 22 10 6 0 9 0 8 1 12

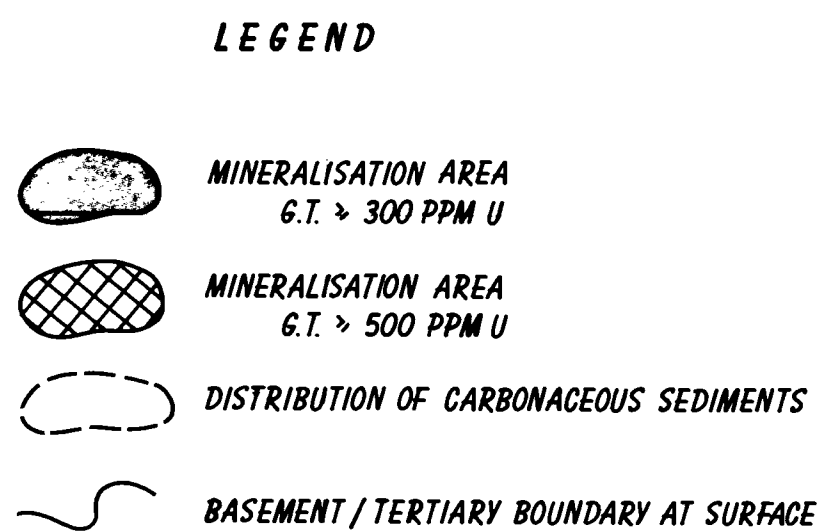
PNC EXPLORATION (AUSTRALIA) PTY LTD

Larson's Project, South Australia

Wimmer Prospect (P11010)

Radon survey

Rn (cps)



PNC EXPLORATION (AUST) PTY LTD

Exploration for Uranium in South Australia

Geological Map Sheet 1020

STATEMENT OF EXPENDITURE
FOR PERIOD 28TH OCTOBER, 1982 TO 27TH JANUARY, 1983

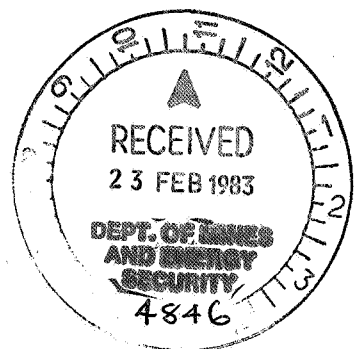
EXPLORATION LICENCE NO. 1020

WARRIOR

TARCOOLA 1:250,000 SHEET

SOUTH AUSTRALIA

S.V. WILLIAMS
PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY



FEBRUARY, 1983

No expenditure incurred.

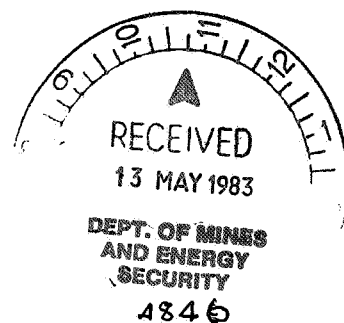
QUARTERLY REPORT FOR
PERIOD ENDING 27TH APRIL, 1983

EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY OFFICE

MAY, 1983



No work was carried out during the quarter ending
27th April, 1983 within E.L. 1020.

.....*S. V. Williams*.....
S.V. WILLIAMS
REGIONAL MANAGER

STATEMENT OF EXPENDITURE FOR
QUARTER ENDING 27TH APRIL, 1983

EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY

MAY, 1983

No expenditure was incurred during the quarter ending
27th April, 1983 within E.L. 1020.

.....*S. V. Williams*.....
S.V. WILLIAMS
REGIONAL MANAGER

REPORT FOR QUARTER ENDING 27TH JULY, 1983

EXPLORATION LICENCE 1020

WARRIOR AREA

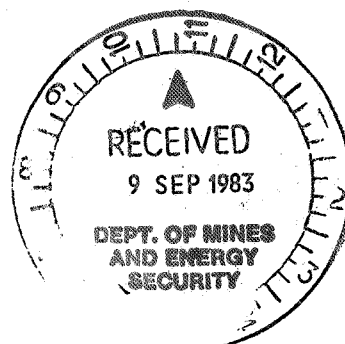
TARCOOLA 1:250,000 SHEET

SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY

AUGUST, 1983



During the quarter ending 27th July, 1983, no field work was carried out within Exploration Licence 1020.

Tenure for Exploration Licence 1020 was extended for a further twelve months (expiry date 28th July, 1984) to enable a programme of radon surveying and core drilling to be carried out.



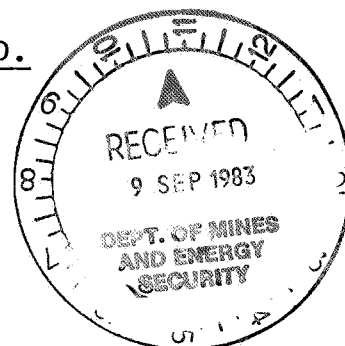
.....
S.V. WILLIAMS

STATEMENT OF EXPENDITURE
FOR QUARTER ENDING 27TH JULY, 1983
EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY OFFICE

AUGUST, 1983



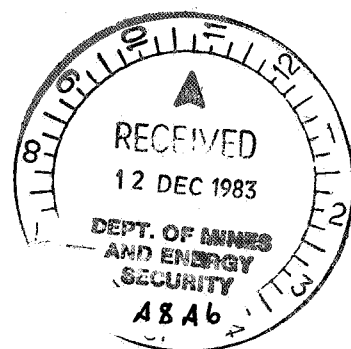
No expenditure was incurred.

.....*S. V. Williams*.....

S.V. WILLIAMS

REPORT FOR QUARTER ENDING
28TH OCTOBER, 1983
EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY OFFICE
NOVEMBER, 1983



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3. DISCUSSION
4. PROPOSED PROGRAMME

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APPENDIX

DRILLHOLE LOG SHEETS

1. INTRODUCTION

Tenure for Exploration Licence 1020 was extended until 28th July, 1984 to allow a programme of radon sampling and core drilling to be carried out.

The radon survey was designed to test areas of possible uranium mineralisation in prospective areas untested by previous drilling programmes.

The core drilling was designed to obtain representative samples of uranium bearing sediments for permeability tests.

2. COMPLETED PROGRAMME

During the quarter ending 28th October, 1983, radon measurements were obtained over two areas (Plate 1) totalling approximately 254 stations on a two hundred metre square grid basis. An EDA emanometer was used to obtain the radon data. Data has been processed and contour maps and point posted maps prepared and presented as Plates 3 to 9.

In addition to the radon survey three four inch core holes were drilled at widely spaced locations as shown in Plate 1. A total of 153.5 metres were drilled of which 55 metres were cored. All holes were radiometrically logged using an Austral Middilogger down hole logging system. Drill hole logs are presented as an appendix to this report. The drilling was carried out by Thompson Drilling Company of Millicent South Australia using a Mayhew 1000 rig.

Sections of mineralised core were sampled and delivered to Amdel for permeability determinations and analysis for uranium content.

3. DISCUSSION

The results of laboratory analysis of core samples are given in table 1. As was anticipated from lithological descriptions the mineralised sediments are impermeable with values ranging from 0.02 m darcies (mudstone) to 2.14 m darcies (clayey sandstone), and offer no possibility for solution mining methods.

Standing water levels were carefully measured with values ranging from 83.7 metres a.s.l. in the north of the Warrior Channel to 81.1 metres a.s.l. in the south. (C91 has a perched? aquifer with a standing water level 88.9 metres a.s.l.)

TARCOOLA PROJECT

WARRIOR PROSPECT E.L. 1020

PERMEABILITY, POROSITY AND DENSITY RESULTS

HOLE NUMBER	SAMPLE NUMBER	INTERVAL (m)	WET BULK DENSITY	PERMEABILITY (md)	POROSITY (%)	U (ppm)	Th (ppm)	LITHOLOGY
C91	1853	26.9 - 27.2	1.55	0.14	53.4	410	58	Black Humic Silty Clay
	1854	27.2 - 27.4	1.42	0.78	54.9	385	38	Humic fine Sandy Silt
	1855	27.4 - 27.65	1.52	0.09	53.5	410	46	Brown Black Silty Clay
	1856	27.65- 27.85	1.68	0.06	60.7	225	24	Brown Black Silty Clay
	1857	27.85- 28.0	1.51	0.12	51.6	930	52	Dark Grey Humic Silt
C92	1858	44.0 - 44.3	1.73	0.07	43.8	650	16	Black Humic very fine grain Qtz sandstone in abundant clay matrix
	1859	47.6 - 47.9	1.92	2.14	39.6	650	6	47.6-47.7 Coarse gritty qtz sand 47.7-47.9 Jet black humic lignite chunks in med grain sand
C93	1860	32.6 - 32.9	2.02	0.02	35.7	390	30	Black Humic Clay
	1861	32.9 - 33.2	1.81	0.02	39.3	340	24	Black Humic Clay

NOTES

1. For the liquid permeability tests, plugs of core were evacuated under vacuum and saturated with distilled water. A differential pressure was then applied and flow rates measured over a period of 6 to 15 hours.
2. Porosity was determined by helium injection into dried plugs.
3. U and Th by XRF.

Plate 2 is a long section of the Warrior Channel and shows that most of the uranium mineralisation lies just below the standing water level except for the extreme northern portion (hole 66 area).

Significant radon anomalies (16c.p.m.) were obtained between 6,616,000 mN and 6,612,000 mN and these are positioned over the known uranium mineralisation within the Warrior Channel. Similar anomalies have been obtained in the area north west of the main channel. No significant anomalism was recorded in the north eastern area.

4. PROPOSED PROGRAMME

No further field work is planned at this stage.

DRILL HOLE LOG SHEET

024

PROJECT WARRIOR, SA

METHOD CORE
HOLE NO. C91
LOCATION 41.5m on 342°M from 617
TOTAL DEPTH 45m 0-15 Blade, Mud
INCLINATION Vertical
BIT SIZE 4" core
CORE RECOVERY ~98%
ELEVATION

LOGGING INSTRUMENT Austral Middellogger No827
PROBE 2-01, 38mm diam
LOGGING SPEED 4 m/min
CHART SPEED 2 m/10cm
TIME CONSTANT 5 sec
DATE 15/9/83
LOGGING BY Mark Dunn
GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION				RADIOACTIVITY LOG		
								OPEN	COUNT RATE	1,000CPS
3				Red Brown Aeolian fine grain qtz sands						
5				Sandy Clay Fawn.						
6				Sandy Clay Red Brown very poorly sorted qtz sands, grits						
10				minor clay, basal grit						
13				light grey indurated Sandy Clay mottled						
15				red, purple, yellow mottles						
17				Light Grey Clay. minor yellow brown mottles						
20				Generally light grey (off white) silts and clays	19.6					
25				Strongly oxidised limonitic qtz sands with minor clay horizons	26.9					
30				Black Silty Clay. Humic Siltstone horizons lignitic	30.4					
35				Generally fine to medium grain qtz sands in abundant light grey clay matrix. Humic whisps and horizons	36.8					
40				Medium to coarse grain, poorly sorted qtz sands in minor clay. Several oxidised horizons: yellow tan, limonitic where reduced humic whisps and mottles						
42.5				Saprolite.						
45				Coarse pebbly qtz sands, grits in light blue grey kaolin pyritic with yellow limonitic horizon 44.1 to 44.4						
50										

DRILL HOLE LOG SHEET

025

PROJECT WARRIOR, SA

METHOD CORE

LOGGING INSTRUMENT Austral Middel logger No 827

HOLE NO. C92

PROBE 2-01, 38 mm diam

LOCATION 24.5m from 730 on 273°M

LOGGING SPEED 4 m/min

TOTAL DEPTH 73m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE 4" core

DATE 17/9/83

CORE RECOVERY ~85%

LOGGING BY Mark Lunn

ELEVATION

GEOLOGY BY Mark Lunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG		
					OPEN	COUNT RATE	300 CPS
5				Red brown Aeolian qtz sands and silts ① calcrete to base. possible palaeosurface soil) in clay rich base			
10				Mottled Olive-Green Clays			
				White Clay			
15				Mottled sandy clays			
				Very light grey to Off White Silty Clay			
20				Mottled yellow, coarse grained qtz-feldspathic sands			
25				coarse gritty qtz sands strongly stained			
				Gradual downward coarsening clay matrix unit. ↓ Silty Clay Off White			
30				Sandy Clay			
				Fine grn qtz sandstone in clay matrix			
35				Medium grn qtz sandstone in clay			
				coarse grn qtz sands in clay			
40				gritty Fe stained cherty red haematitic clay			
				Med to Coarse gritty qtz sands strongly oxidised			
44.7				fine sandy clay brown			
45				Black Humic sandy clay			
46				Very poorly sorted coarse gritty qtz sands to 5mm			
47.2				pyritic, lignitic humic whips			
48.9				Jet Black lignite in humic, pyritic medium grained			
50				sands			

Continuation

HOLE NO. C92

300CPS

Overall	Downward coarsening very poorly sorted qtz sands with lignite bands, pyritic oily. Black to Dark Grey
54 55	Coarse gritty qtz sands Grey. Minor pyrite, lignite. poorly sorted
59 60	Grits and Gravels. 2mm - 5mm. angular, poorly sorted qtz. Pyritic
65	
69 70	Saprolite Qtz grit in light blue grey kaolin
73	

DRILL HOLE LOG SHEET

027

PROJECT... WARRIOR, SA

METHOD... CORE

LOGGING INSTRUMENT... Austral Middlelogger No 827

HOLE NO. C93

PROBE... 2-04, 25 mm diam

LOCATION... 16.5m on 275M from 667

LOGGING SPEED... 4 m/min

TOTAL DEPTH... 35.5m

CHART SPEED... 2 m/10cm

INCLINATION... Vertical

TIME CONSTANT... 5 sec

BIT SIZE... 4" core

DATE... 18/9/83

CORE RECOVERY... 60%, Very Poor.

LOGGING BY... Mark Dunn

ELEVATION... 2.7m lost immediately above (?) anomaly

GEOLOGY BY... Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG		
					IN	RODS	COUNT RATE 300 CPS
4				Aeolian Gtz sands.			
5				Red Brown			
10				Silty, fine sandy clay.			
11				Downward Fining.			
12				silty mottled			
13				claystone light grey			
14				Fine grn. qtz sandstone			
15				minor clay matrix			
16				v. well sorted and rounded			
17				light brown grey.			
18				Silty Clay			
19				Siltstone. abundant clay mat			
20				Siltstone fawn clay matrix			
21				fine grain qtz sandstone			
22				in abundant fawn clay matrix			
23				Fawn Clay			
24				Very poorly sorted coarse			
25				qtz-feldspathic sands			
26				2 rapidly downward coarsening			
27				cycles from fine sand to coarse			
28				grit			
29				downward coarsening fine to			
30				medium coarse			
31				LOST 2.7m			
32				Assumed coarse qtz			
33				grits, sands			
34				fine sandy humic lignitic clay			
35				lignite bands CLAY DOMINANT			
				SAPROLITE			

TARCOOLA -
WARRIOR
CHANNEL

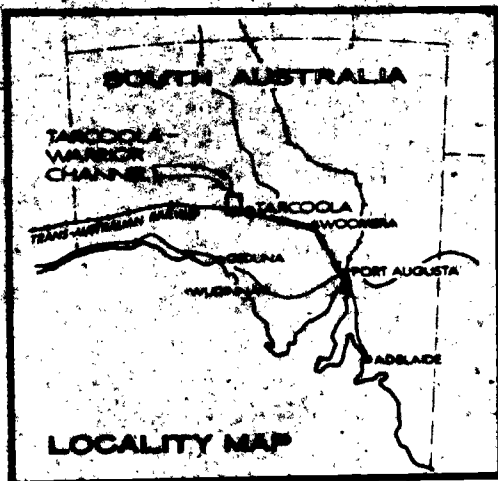
SECTION LINE

SECTION LINE

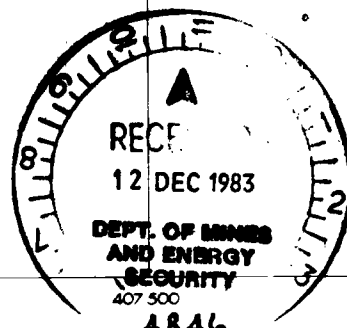
LEGEND

- 11 OPEN HOLE 1983
- C91 CORE HOLE 1983
- TRACK
- - - FENCELINE
- ▭ AREA OF RADON SURVEY 1983

COORDINATE GRID BY
GEOSPECTRUM AUSTRALIA, 1981



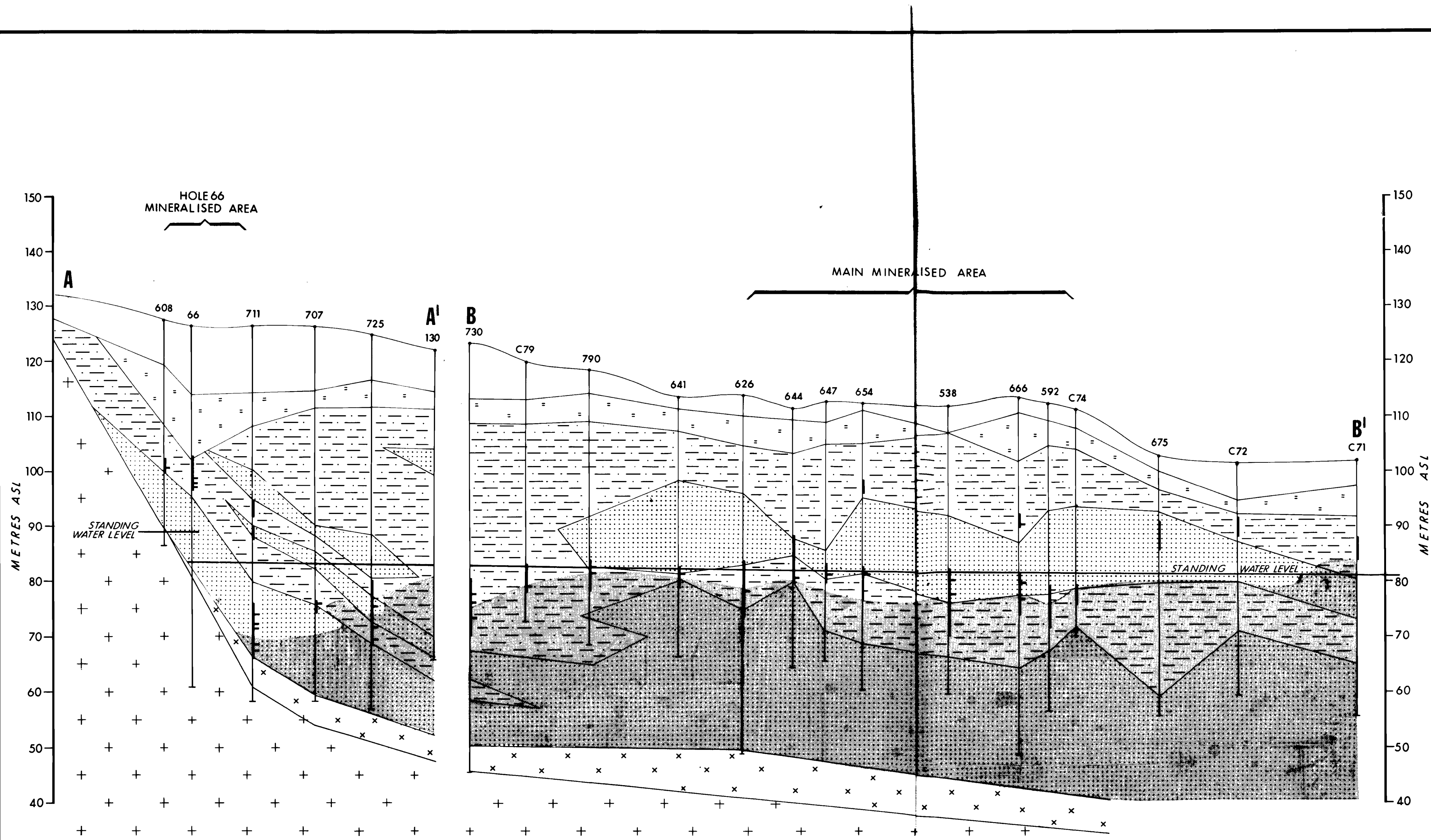
TARCOOLA PROJECT, SOUTH AUSTRALIA LOCATION PLAN WARRIOR CHANNEL EL 1020



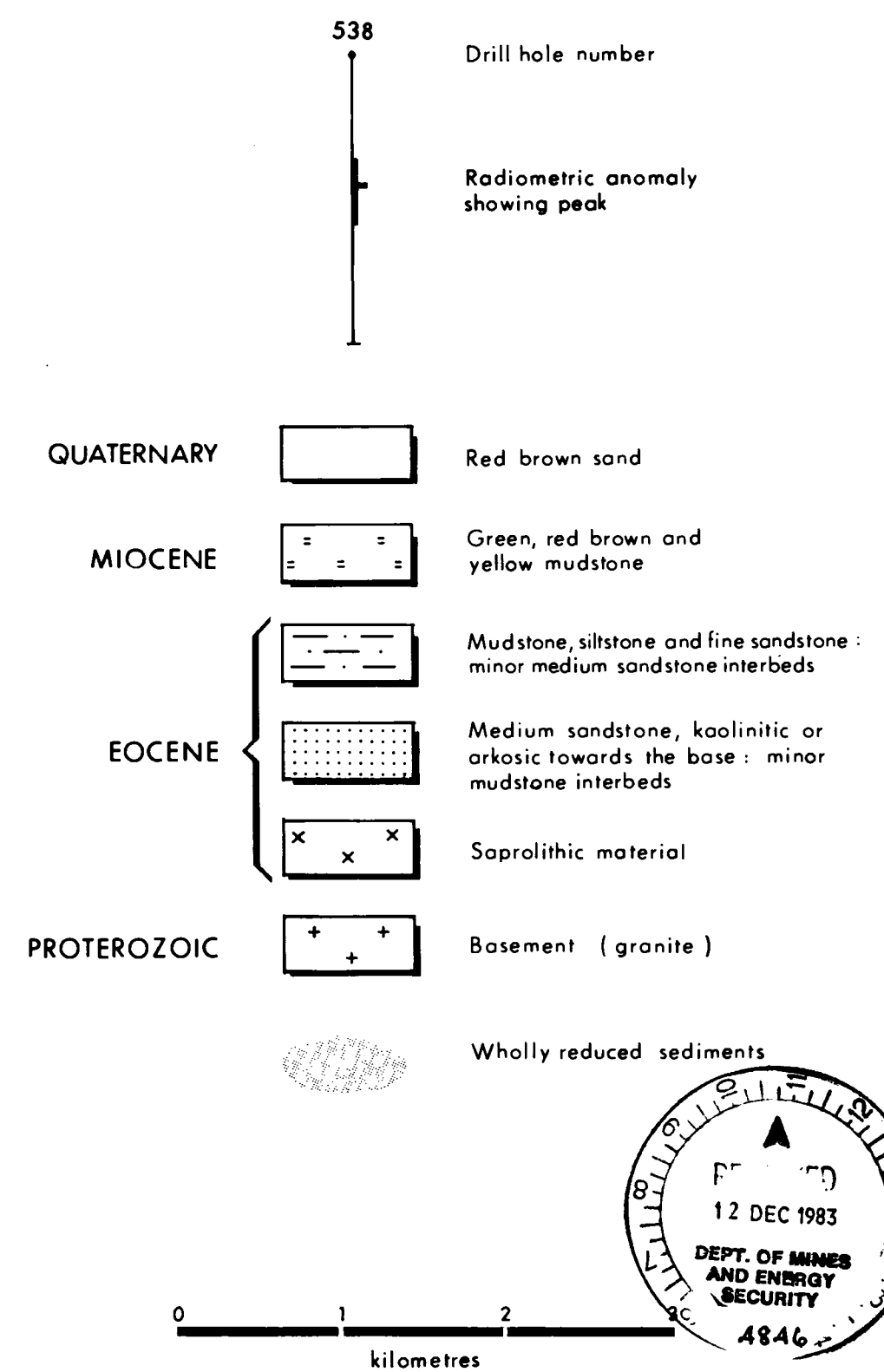
0 500 1000
METRES

4846 (1)-6

PLATE 1



REFERENCE



PNC EXPLORATION (AUST.) PTY LTD

TARCOOLA PROJECT, SOUTH AUSTRALIA
EL 1020 WARRIOR CHANNEL

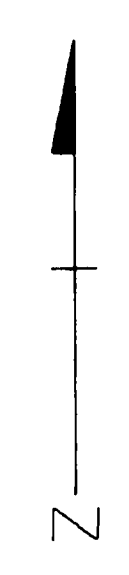
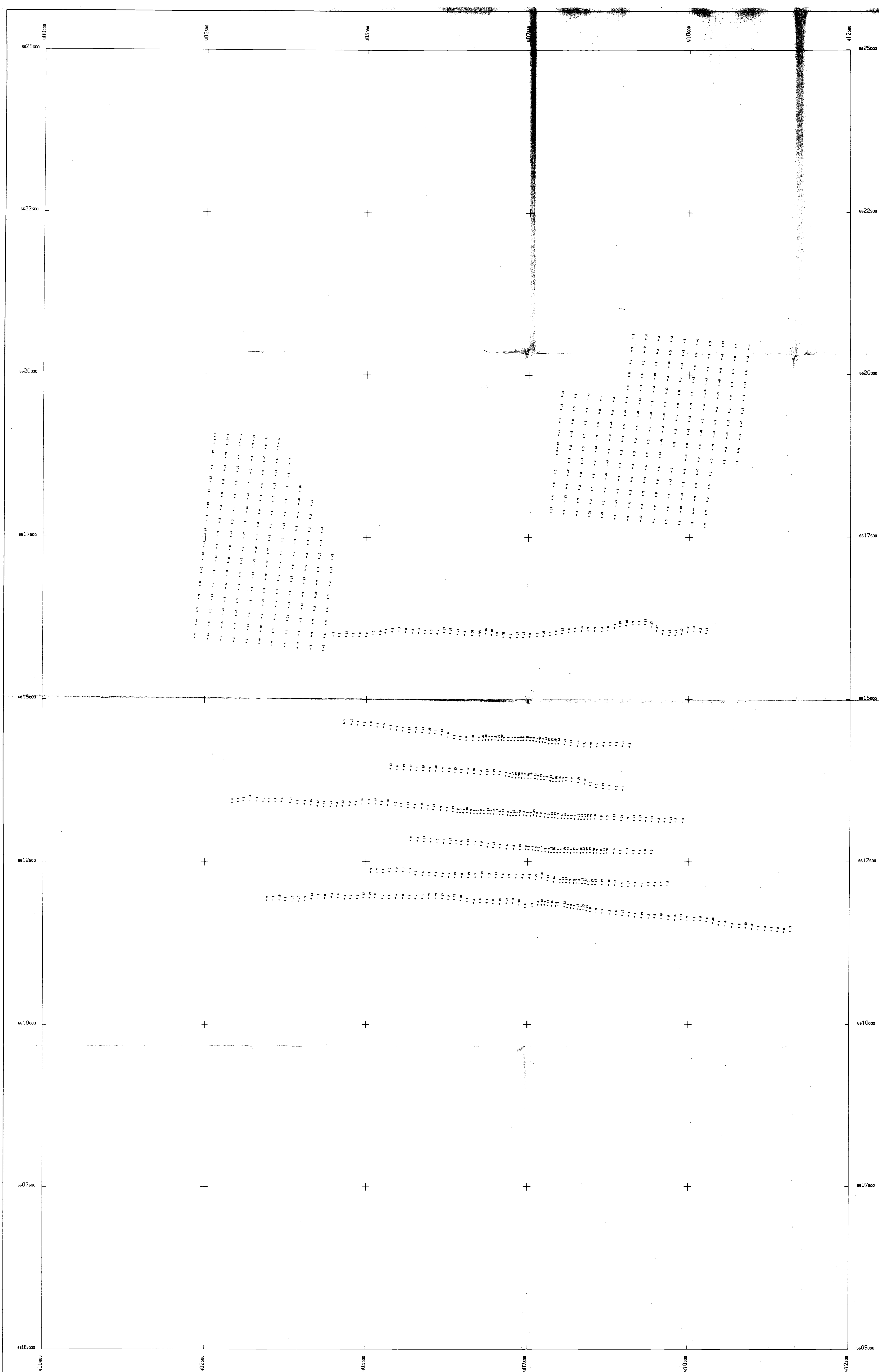
LONG SECTION A - B

Compiled: S.WILLIAMS

Date: NOV. 1983

Drawn: HOVICK

Drawing No:



HORIZONTAL DATUM: AUSTRALIAN MAP GRID (ZONE 53)

SCALE
1:20000

0 200 400 600 800 1000
M

PNC EXPLORATION (AUSTRALIA) PTY LTD

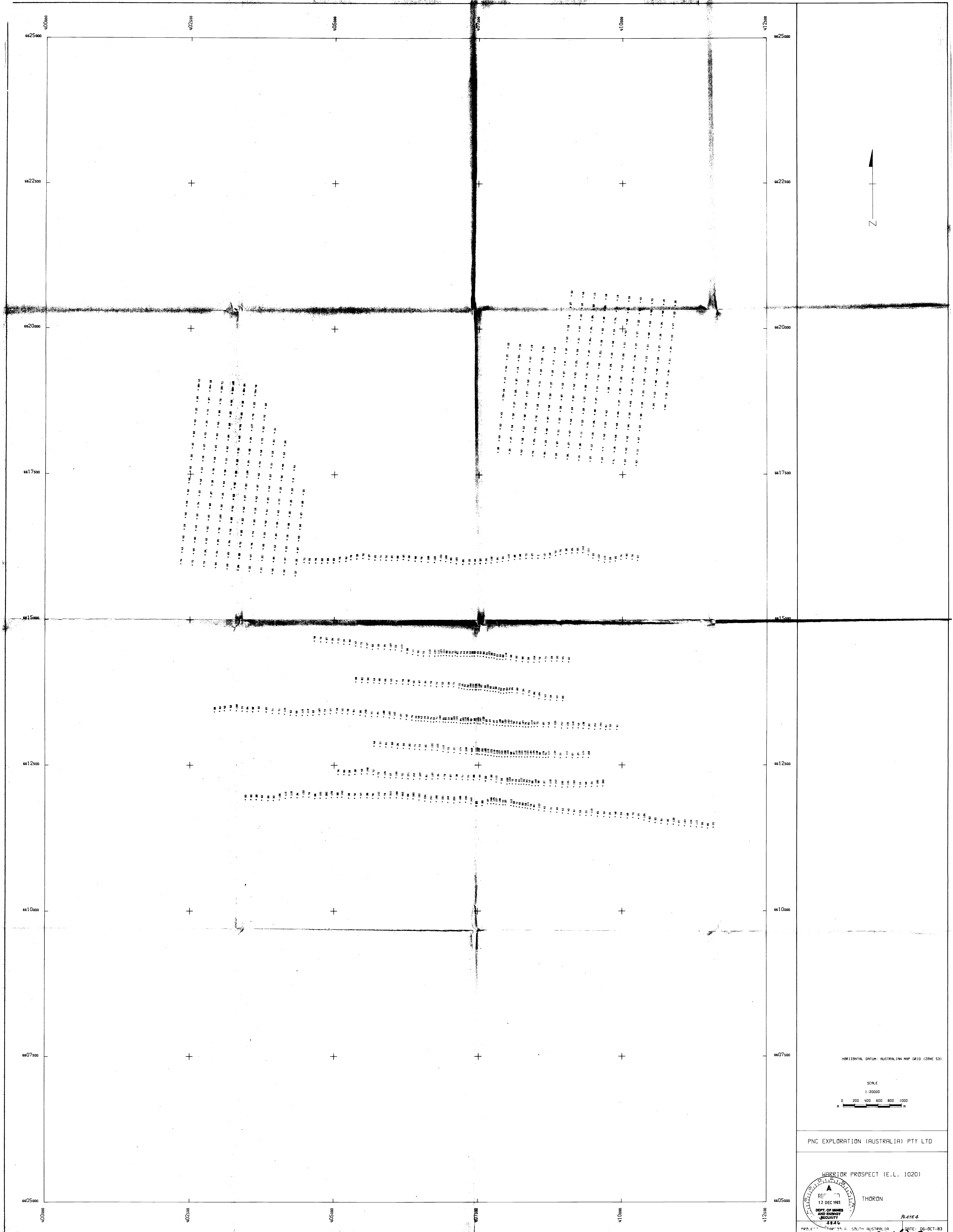
RESERVOIR PROSPECT (E.L. 1020)

12 DEC 1983
DEPT. OF MINES
AND ENERGY
4846

RADON

PROJECT: TARKOOLA, SOUTH AUSTRALIA DATE: 06-OCT-83

4846(1)-8

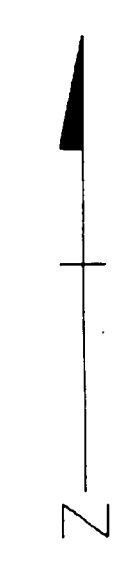
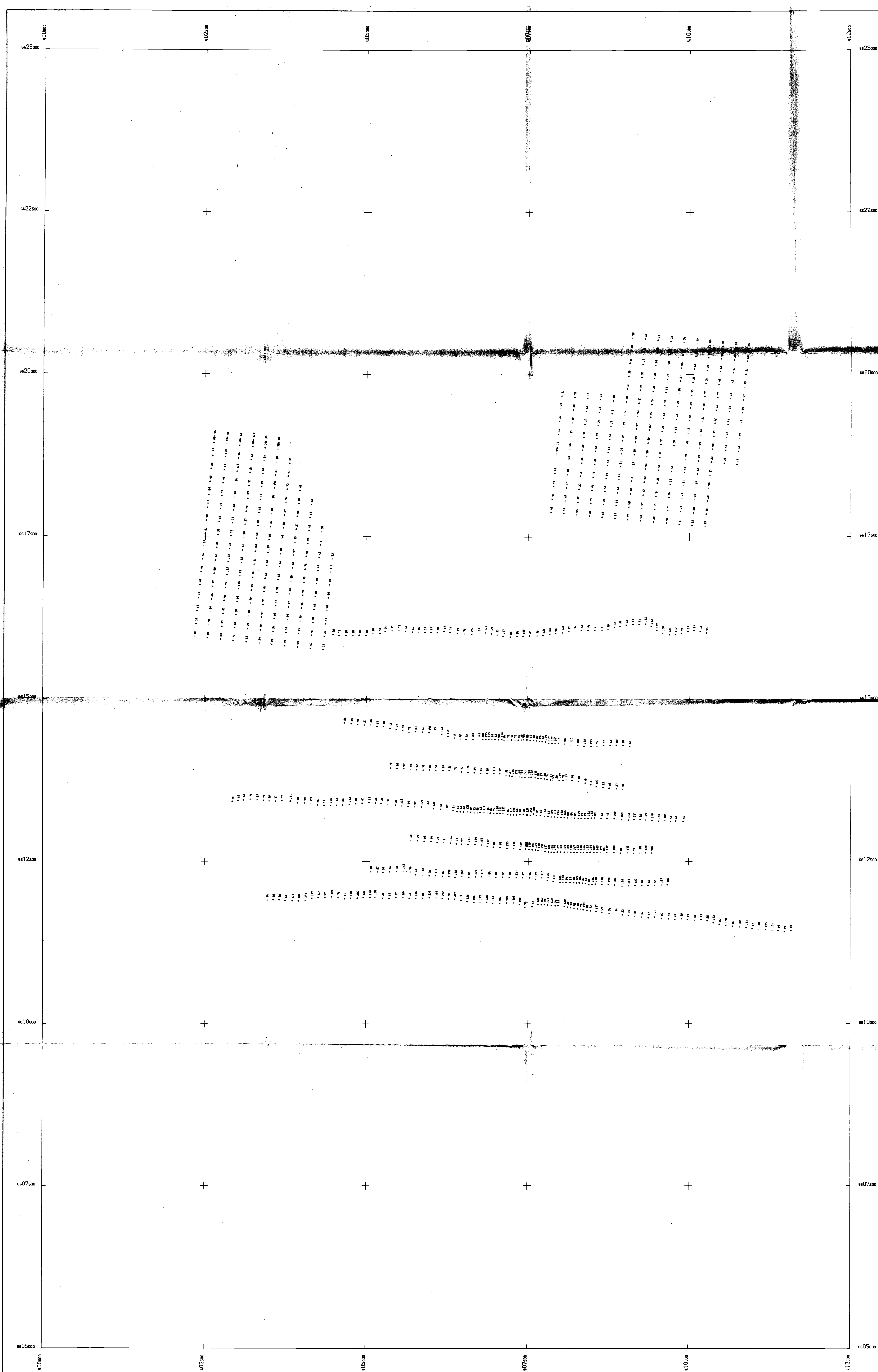


PNC EXPLORATION (AUSTRALIA) PTY LTD

WARRIOR PROSPECT (E.L. 1020)

THORON

DATE: 06-OCT-83



HORIZONTAL DATUM: AUSTRALIAN MAP GRID (ZONE 53)

SCALE
1:20000

0 200 400 600 800 1000
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PNC EXPLORATION (AUSTRALIA) PTY LTD

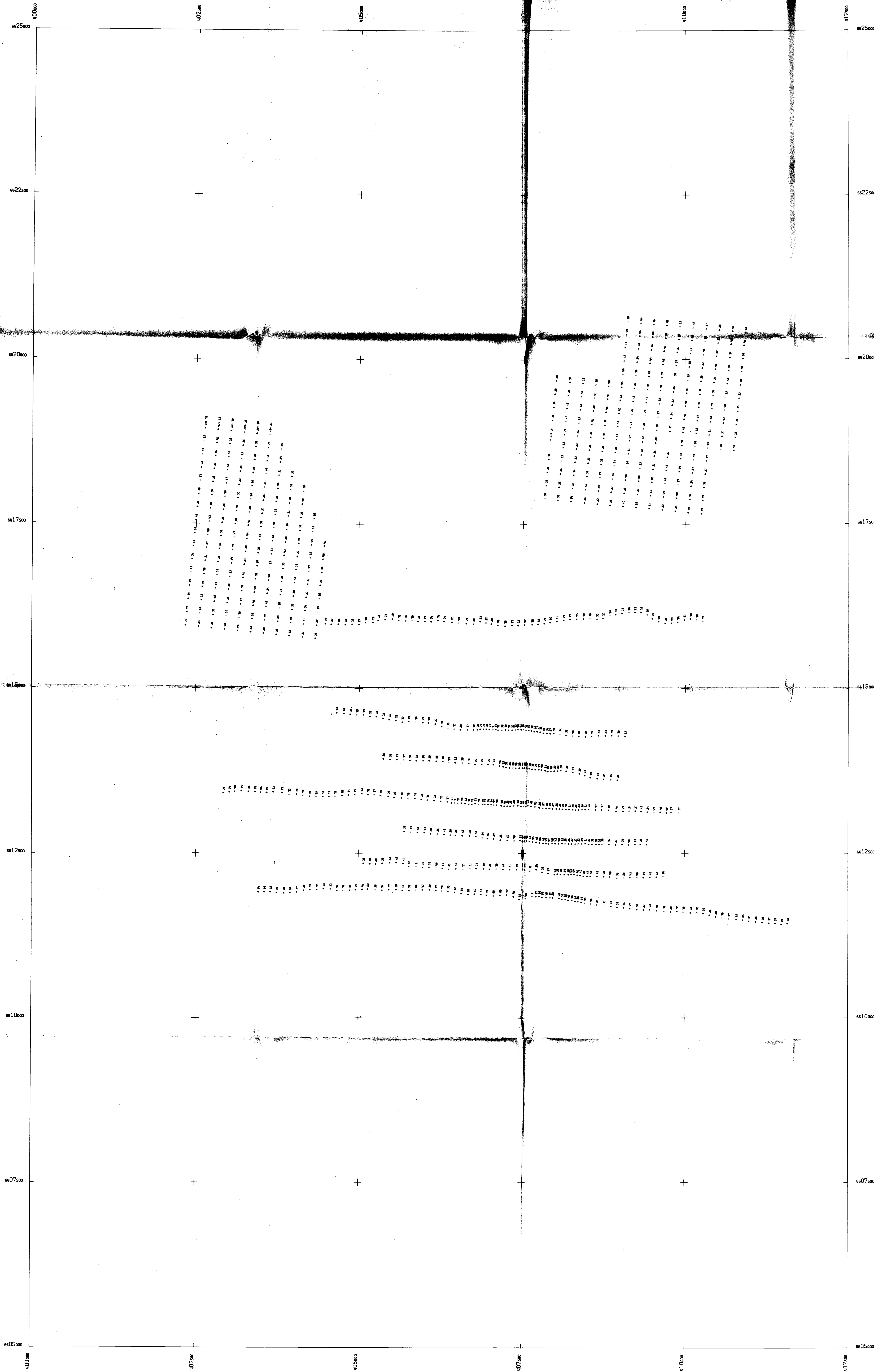
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RECEIVED
12 DEC 1983
DEPT. OF MINES
AND ENERGY
SECURITY

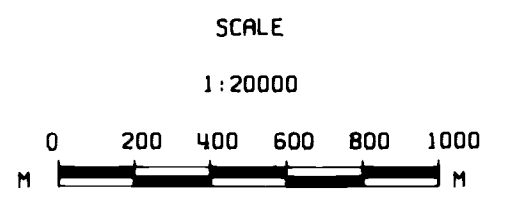
DATE: 05-OCT-83

4846

4846 (1)-10



HORIZONTAL DATUM: AUSTRALIAN MAP GRID (ZONE 53)



PNC EXPLORATION (AUSTRALIA) PTY LTD

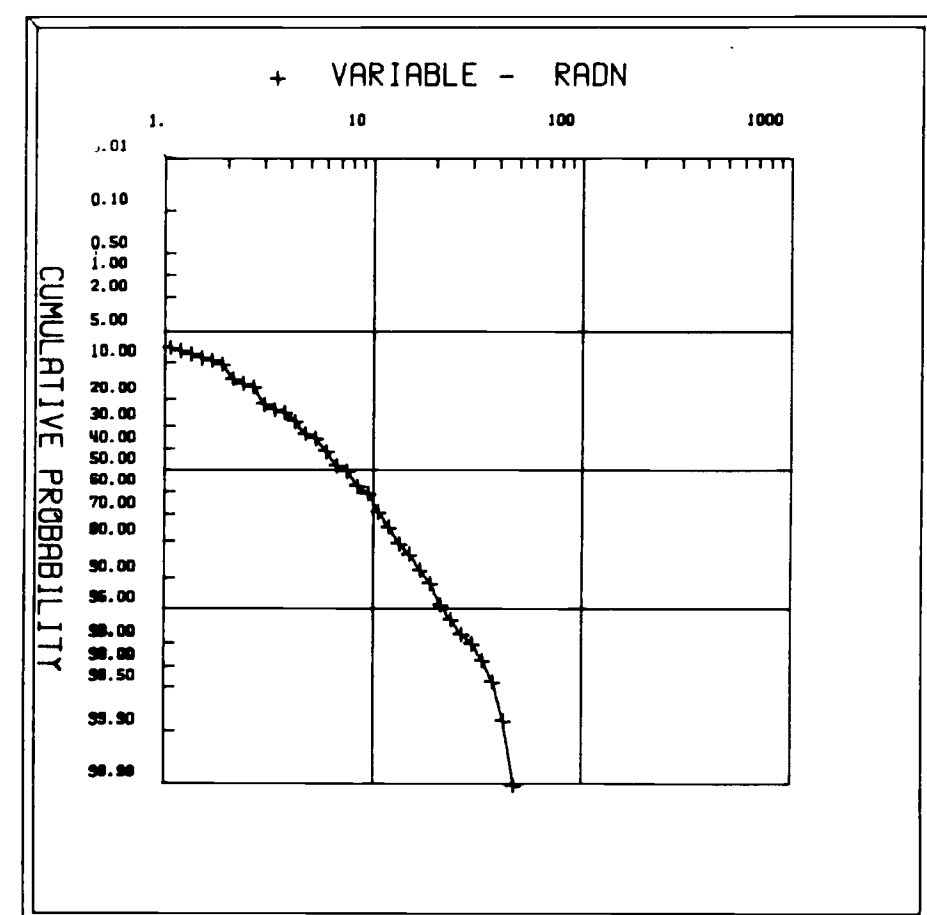
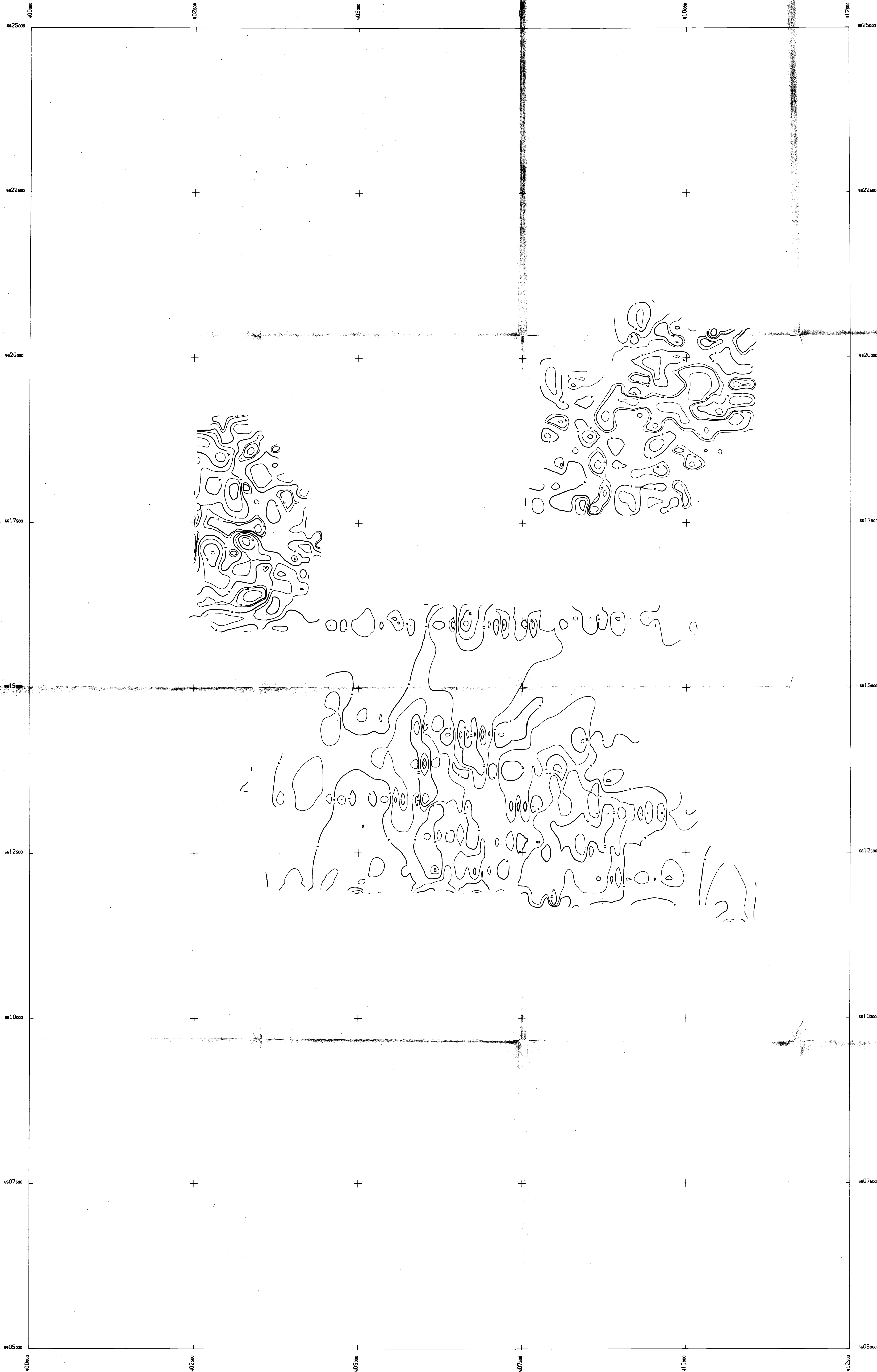
WARRIOR PROSPECT (E.L. 1020)

DEPT. OF MINES AND ENERGY
SECURITY

TOTAL COUNT

DATE: 05-OCT-83

4846(1)-11



CONTOUR LEVELS

3.9
0.4
1.0
4.0
10.0
16.0
24.0
36.0
45.0

SELECTED NON-LINEAR CONTOUR INTERVAL
HORIZONTAL DATUM: AUSTRALIAN MAP GRID (ZONE 53)

SCALE

1:20000



PNC EXPLORATION (AUSTRALIA) PTY LTD

WARRIOR PROSPECT (E.L. 1020)

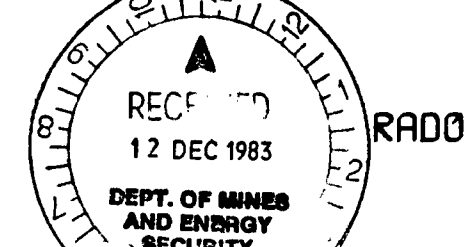
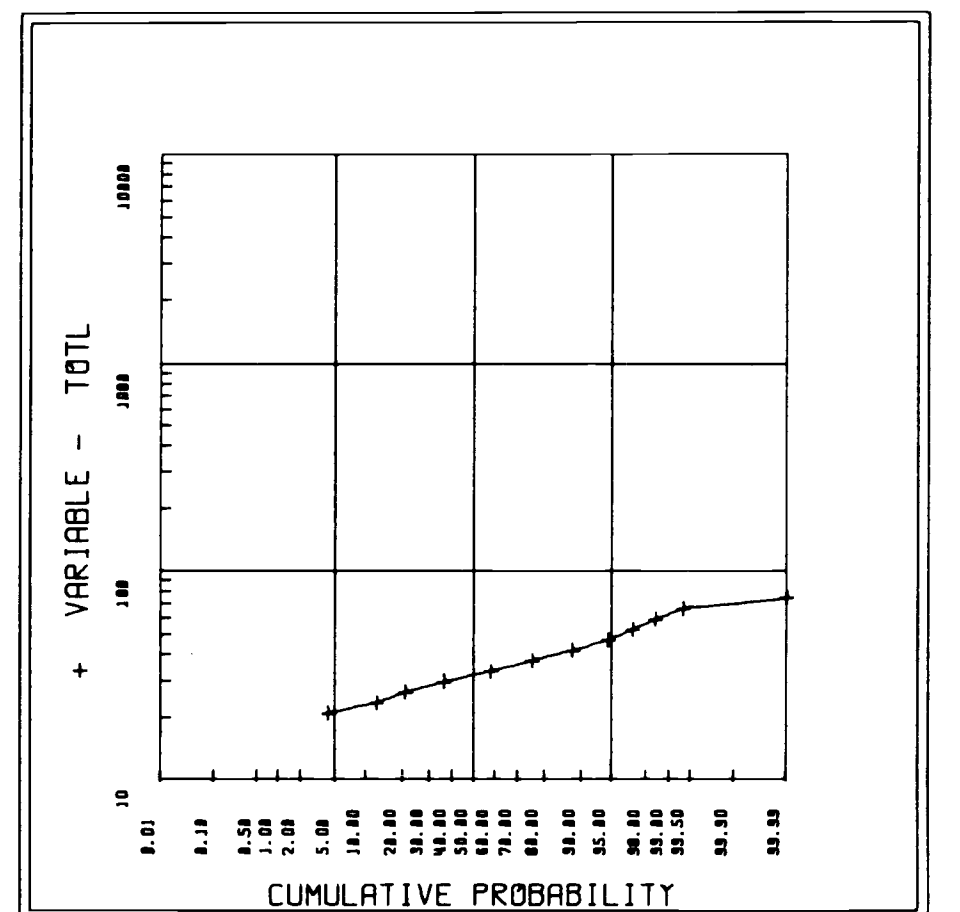
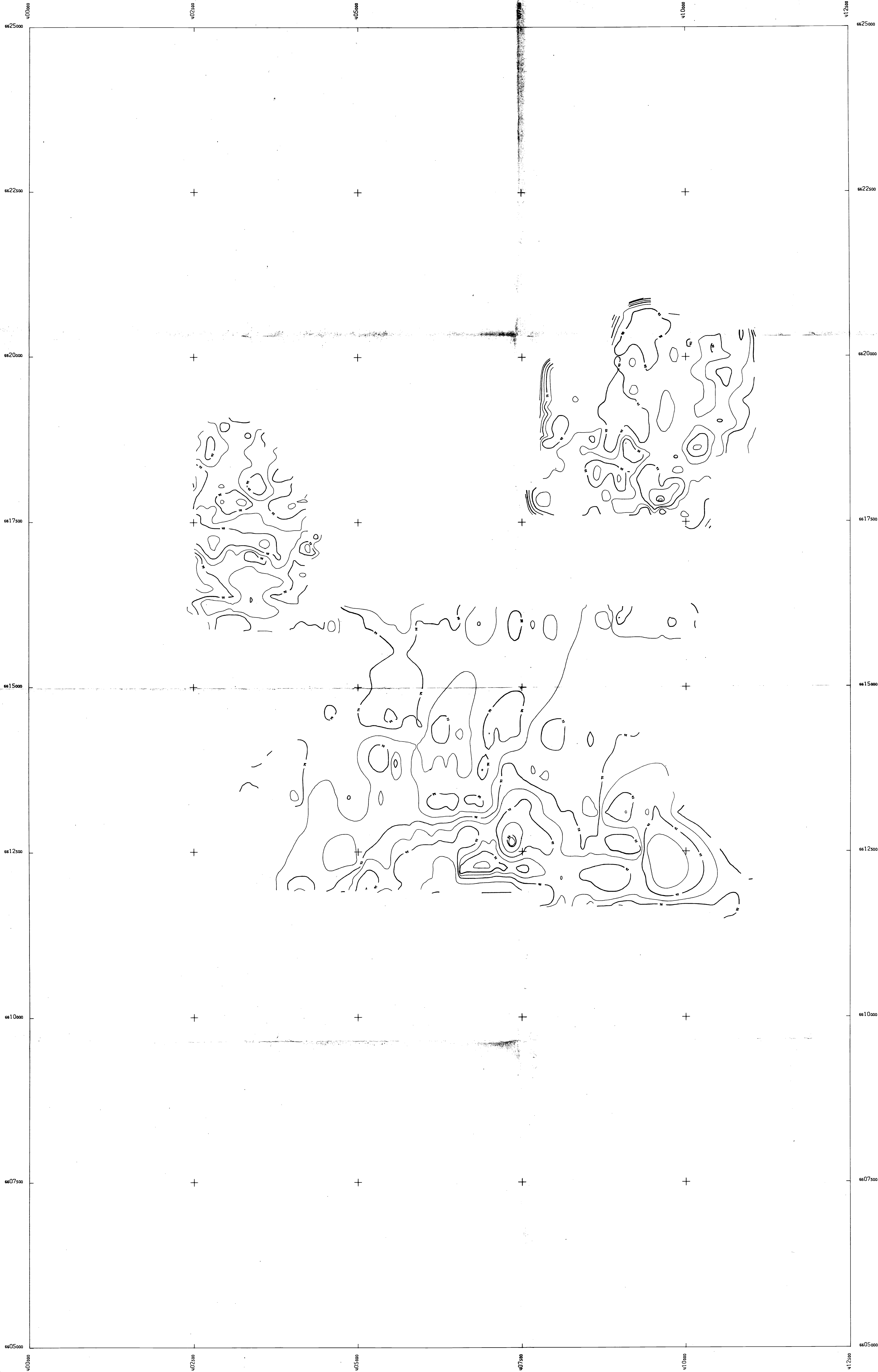


PLATE 7

PROJECT TARCORA, SOUTH AUSTRALIA DATE: 14-OCT-83

4846 (1)12



COUNTDOWN LEVELS
21
24
28
32
36
40
44
48
52
56
60
64
68
72

SELECTED NON-LINEAR CONTOUR INTERVAL
HORIZONTAL DATUM: AUSTRALIAN MAP GRID (ZONE 53)

SCALE
1:20000
0 200 400 600 800 1000
M

PNC EXPLORATION (AUSTRALIA) PTY LTD

WARRIOR PROSPECT (E.L. 1020)

TOTAL COUNT

DATE: 14-OCT-83

4346(1)-14

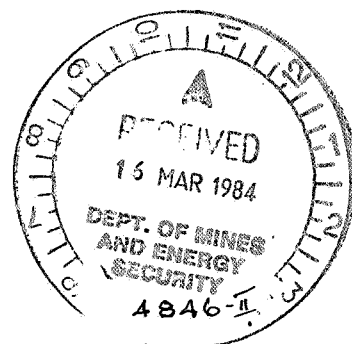
QUARTERLY REPORT
FOR PERIOD ENDING 27TH JANUARY, 1984
EXPLORATION LICENCE 1020

WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY

FEBRUARY, 1984



No field exploration was conducted during this quarter.

S. V. Williams
.....
S.V. WILLIAMS
REGIONAL MANAGER

STATEMENT OF EXPENDITURE
FOR PERIOD ENDING 27TH JANUARY, 1984

EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY

MARCH, 1984

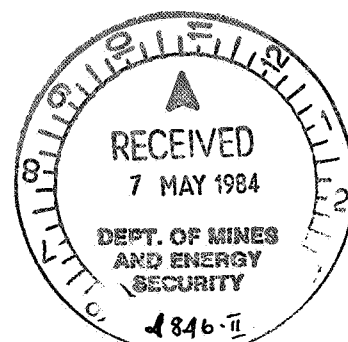
No expenditure was incurred.



.....
S.V. WILLIAMS
REGIONAL MANAGER

QUARTERLY REPORT ENDING
27TH APRIL, 1984
EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
APRIL, 1984



No field work was conducted in this period.

No expenditure was incurred during this quarter.

REPORT FOR QUARTER ENDING
29TH JULY, 1984
EXPLORATION LICENCE 1020
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JULY, 1984

No field work was conducted within Exploration Licence 1020 during the quarter ending 29th July, 1984. Full technical details of exploration within the tenement during the past twelve months were given in the report for the quarter ending 29th October, 1983.

Further exploration has been proposed for the area and an application for tenure has been lodged.

STATEMENT OF EXPENDITURE
QUARTER ENDING 29TH JULY, 1984
EXPLORATION LICENCE 1020
WARRIER AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JULY, 1984



No expenditure was incurred.

REPORT FOR QUARTER ENDING
24TH DECEMBER 1984
EXPLORATION LICENCE 1255
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
DECEMBER, 1984

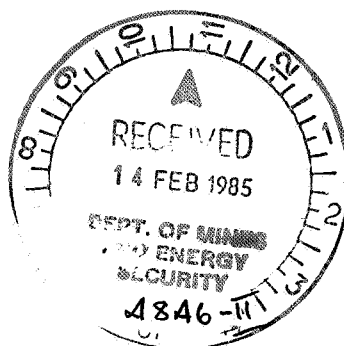


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1. INTRODUCTION

Exploration Licence 1255 was granted to PNC Exploration (Australia) Pty. Ltd. for a period of one year commencing 24th September, 1984. The tenement was originally held under EL 1020 and the boundaries and area of 328 square kilometres remain unchanged. EL 1255 lies 40 km west of Tarcoola on the Trans Australia Railway. Malbooma Homestead serves as an exploration base whilst field investigations concentrate on the southernmost portions of the tenement.

Exploration during 1984 was directed towards gold and uranium mineralisation within moderately folded Middle Proterozoic sediments in the vicinity of Kychering Gold Field (Malbooma).

A Location Map is given in Figure 1.

2. COMPLETED PROGRAMME

Prior to December 1984 a 6 km x 1.2 km grid was established at Malbooma. Thirty (30) north-south grid lines at 200 m spacing with stations every 50 m were designed to cover units of the Tarcoola Formation in close proximity to intrusive Hiltaba Granite.

An east-west base line pegged at 50 m spacing was surveyed at line 5,000N.

Grid dimensions are given in Figure 2.

Gridding totalled 40.5 line kilometres and was completed by Surtec Geosurveys.

Geological mapping at 1:5,000 scale and a ground radiometric survey were completed. The geology is presented in two sheets in Plates 1 and 2, with corresponding radiometrics in Plates 3 and 4. Fourteen (14) rock samples (No.'s 824-834, 841-843) were analysed by Comlabs in Adelaide for U, Th, Ce, La, Ba using XRF and Cu, Pb, Zn, Au, Ag, Bi, Mo, Co, Fe, Mn using AAS. Stream sediments from six major intermittent creeks at 1mm and 100 mesh fractions were also analysed by the same procedure. Rock and stream sediment assay results are given in Tables 1 and 2 respectively. Six (6) petrographic descriptions were obtained from Amdel.

In September 1984 Surtec Geosurveys completed a ground magnetic survey for an aggregate of 34.7 line kilometres. Two Geometrics G586 Magnetometers were employed. Results have been computer plotted with a 20 nT contour interval in 2 sheets at 1:5,000 scale to correspond with the geology base maps (Plates 5 and 6).

Magnetic Profiles can be found in Plates 7 and 8.

Gradient IP surveys over two portions of the Malbooma Grid were carried out in September. 10.9 line kilometres of gradient and 1.6 line kilometres of dipole-dipole IP were completed by Surtec Geosurveys. A Hunttec 2.5kva transmitter and Scintrex IPR8 receiver were utilised.

The IP survey specifications are given in Figure 2 with IP results presented as Plates 9, 10, 11, and 12.

Kruse Earthmoving of Coober Pedy completed approximately 7 km of access track in early October.

In late October three percussion drillholes totalling 432m were completed by John Nitschke Drilling Pty. Ltd. using a Ingersoll Rand 24 rig (1200 cfm at 600 psi).

All holes were logged by Century Geophysical Corporation (Australia) to obtain gamma, electrical, density and neutron-neutron logs as analog charts and magnetic tapes.

Drillhole Log Sheets can be found in Appendix 1. 106 drill chip samples were submitted to Amdel for AAS analysis of Cu Pb Zn Ag and Au. Results are given in Appendix 2 (Sample No's 1200.1 - 1200.106). Five samples from a very minor radiometric anomaly of twice background were analysed for U and Th by XRF. (Table 3.)

Six (6) thin sections and two (2) polished sections have been prepared from drill cuttings by Central Mineralogical Services.

3 RESULTS

3.1 GEOLOGY

The area consists of moderately folded Middle Proterozoic sediments of the Tarcoola Formation, intruded by Carpentarian Hiltaba Granite, and resting unconformably on gneissic metamorphics of the Archaean Mulgathing Complex which have been partially ingested by Lower Proterozoic granite.

The discovery of the metamorphics is a significant advancement in the regional geology. Outcrop is restricted to very small shear zones of granitic gneiss and black metasomatised schist which were almost completely ingested by Lower Proterozoic (Kimban ?) porphyritic biotite granite. Better knowledge of the

Archaean remnants was uncovered when the nearby drillhole, W3, intersected chloritic schist, quartz-feldspar gneiss and granitic gneiss. (Figure 3)

The stratigraphy of the Tarcoola Formation has been well described by S.A.D.M.E. geologists. (see "The Stratigraphy of the Tarcoola 1:250,000 map Sheet Area" by S. J. Daly. Report No. 81/5). Three upward fining, marine, members have been delineated.

The basal Peela Conglomerate Member consists of pebbles to boulders of acid and basic volcanics, granite and local jaspillite and dark green quartz lithic sandstone matrix. It contains minor interbeds of tuffaceous rhyolite and basalt. This member is completely absent from the Malbooma Grid, as is the uppermost Sullivan Shale member which consists of grey black pyritic carbonaceous siltstone and interbedded volcanoclastics and tuffs.

Outcrop consists entirely of sediments from the Fabian Quartzite Member (Ptf) which is well exposed as a low ridge on the Malbooma Grid. This member itself has been divided into three upward fining, near shore marine to littoral units.

The basal unit (Ptf1) consists of pyritic, heavy mineral bearing, arkosic pebble and rare cobble conglomerate in a haematitic matrix. Spot radiometric anomalies of around 500 cps (Scintrex GIS 5 Spectrometer) were encountered persisting along strike for over 200m. Assay results (Sample No's 831,841-843) reveal high Thorium and strongly anomalous Barium contents. For example, sample number 843 returned 380ppm Th & 5,400ppm Ba; whilst sample number 831 assayed 1.95% Ba and 6.55% Fe. This indicates detrital heavy minerals, particularly monazite

with lesser ilmenite, in a barite rich cement/matrix. Petrographic descriptions noting minor zircon confirm the presence of heavy minerals.

Ptf2 comprises mostly medium to coarse grained, sub arkosic through quartzo feldspathic to quartz sandstone with a clay matrix. Symmetrical ripple marks, prominent graded bedding and outstanding sets of herringbone cross beds are common. Well defined cross sets are not due to heavy mineral bands but rather iron staining in clay rich laminae. At the top of this unit two beds of sedimentary talus breccia have been developed. The two cobble breccia horizons are about 5m thick and are separated by a 250 m thick littoral sequence of medium to coarse grained, quartzo feldspathic sandstones with cross beds. The angular clasts of the breccia range from grit to boulder size. Field distribution and exposures in gullies prove that the breccias are conformable Ptf2 units. Joint planes transect clasts and matrix, and indicate that the breccia was well indurated and consolidated prior to folding. Due to the highly irregular nature of the breccia, Tertiary silicification has affected all outcrops.

The uppermost unit, Ptf3, consists of blue grey silstone in clay matrix and fine sandy silstone to sub greywacke.

Biotite granite of the Middle Proterozoic Hiltaba Suite has intruded into the nose of a plunging anticline in the extreme south-east of the Malbooma Grid. Very low grade contact metamorphic hornfelsing of the Tarcoola Formation sediments has been noticed in outcrop and in drill section. The granite is virtually absent in outcrop from the northern limb of the anticline, but the tone, colour and texture of aerial photographs suggest it lies near surface. There is also a possibility of dip slip faulting along the anticlinal axis which would explain the absence of granite in the northern limb.

The porphyritic biotite granite mapped around 3,200E is Lower Proterozoic and not a Hiltaba equivalent. The lack of contact metamorphism of the overlying arkosic conglomerate and petrological differences support this conclusion.

Quartz veining from the intrusive Hiltaba episode brought with it very small amounts of gold. Milk white quartz veins and veinlets, some with angular pyritic, carbon inclusions to 1cm, commonly trend 150° to 160°M in numerous outcrops at anticlinal crests. Veining into cross bedded, medium grained quartzo-feldspathic sandstone is the source of the few pennyweight of gold extracted by early pioneers from the "Kychering Goldfield".

All of the 14 rock samples and 5 stream sediments collected from the area did not contain any gold above detection limits (0.05ppm and 0.01 ppm respectively). The stream sediments were coarsely sieved, dry panned to obtain denser material, and sieved into two fractions. There was minimal enhancement of the 100 mesh portion in Cu, Pb and Zn; but U, Au, Ag, Bi were all below detection limits. (See Tables 1 and 2).

3.2 DRILLHOLE GEOLOGY

Drillholes W1 and W2 were designed to investigate a very promising IP target, truncated by a fault to the west and pitching to the east. Thick units of silicified, carbonaceous and pyritic black silstone with interbedded fawn grey quartzite were discovered. This sequence is ideally suited as a host for base metal sulphide deposits, silver, and gold. 106 samples from both drillholes were submitted for analysis of Cu, Pb, Zn, Ag, Au using AAS. Four (4) thin sections and two (2) polished sections were prepared.

No visible mineralisation, other than richly disseminated pyrite and very rare chalcopyrite, was detected. A very minor supergene zone with negligible copper enrichment of 310 ppm was returned from drillhole W2. A weak radiometric anomaly just below the water table at the base of surface oxidation also returned minimal values (8ppm U at 42 - 44 metres).

A geological section is presented as Figure 4. The favourable lithology has been divided into three units; an upper carbonaceous, pyritic silstone of 50m thickness, and two units with quartzite interbeds.

An apparent dip of about 15° can be calculated. Outcrop 400 metres to the south-east trends at 040° M. Aerial photography and IP/magnetic data indicate a similar strike for units in the drillhole section. Therefore a true dip of 25° to 30° to the northwest has been determined for the carbonaceous silstones.

Drillhole W3 was designed to check the basal pebbly arkosic conglomerates of unit Ptf1 well below the weathered zones. Although radiometric anomalism at surface is the result of thorium rich heavy minerals, it was also decided to investigate the synclinal axis for hydrogenic uranium flushed through the system. No radiometric anomalism was recorded. Two petrographic thin sections of Archaean drill cuttings were prepared.

3.3 STRUCTURE

The three units of the Fabian Quartzite Member have been subjected to moderate folding with prominent north-east fold axes. Faulting and dislocation parallel to this trend favours the slightly tighter synforms.

The north-east structural control had been regionally imprinted since the Archaean. Both the Coorabbie Fault, 30 km to the west, and the nearby Bulgunnia Fault, are major north-east lineaments disrupting the Archaean Mulgathing Complex. 20 km to the south the layering of Archaean gneiss is parallel to the north-east trending fold axis of Tarcoola Formation sediments of Mt. Finke.

The structural control on the syntectonic Kimban Granite exposed around 3000E cannot be ascertained by field mapping. The emplacement of such granite at Wynbring Rocks coincided with partial retrograde metamorphism of the Mulgathing Complex. Perhaps a similar development has occurred at the Malbooma Grid.

The rejuvenation of the north-east features which affect the Fabian Quartzite Member can be dated at around 1500MY.

Biotite granite outcropping at Malbooma shows a strong south-south-east control. Jointing, foliation, quartz veins and dyking all trend 150-160°M, and indicate structural control at the time of intrusion. The Hiltaba granite at Malbooma has a Rb/Sr radiometric age of 1475±45MY whereas the Tarcoola Formation has an inferred age of 1511±9MY (Webb 1978)

4. CONCLUSIONS

. There is little potential for uranium mineralisation within the Fabian Quartzite Member.

. The carbonaceous /graphite pyritic black silstone, intruded by Hiltaba Granite with associated veining and metasomatism, is a perfect host for gold mineralisation.

Tarcoola Project Area Location Plan

Figure 1



PNC EXPLORATION (AUSTRALIA) PTY. LTD.

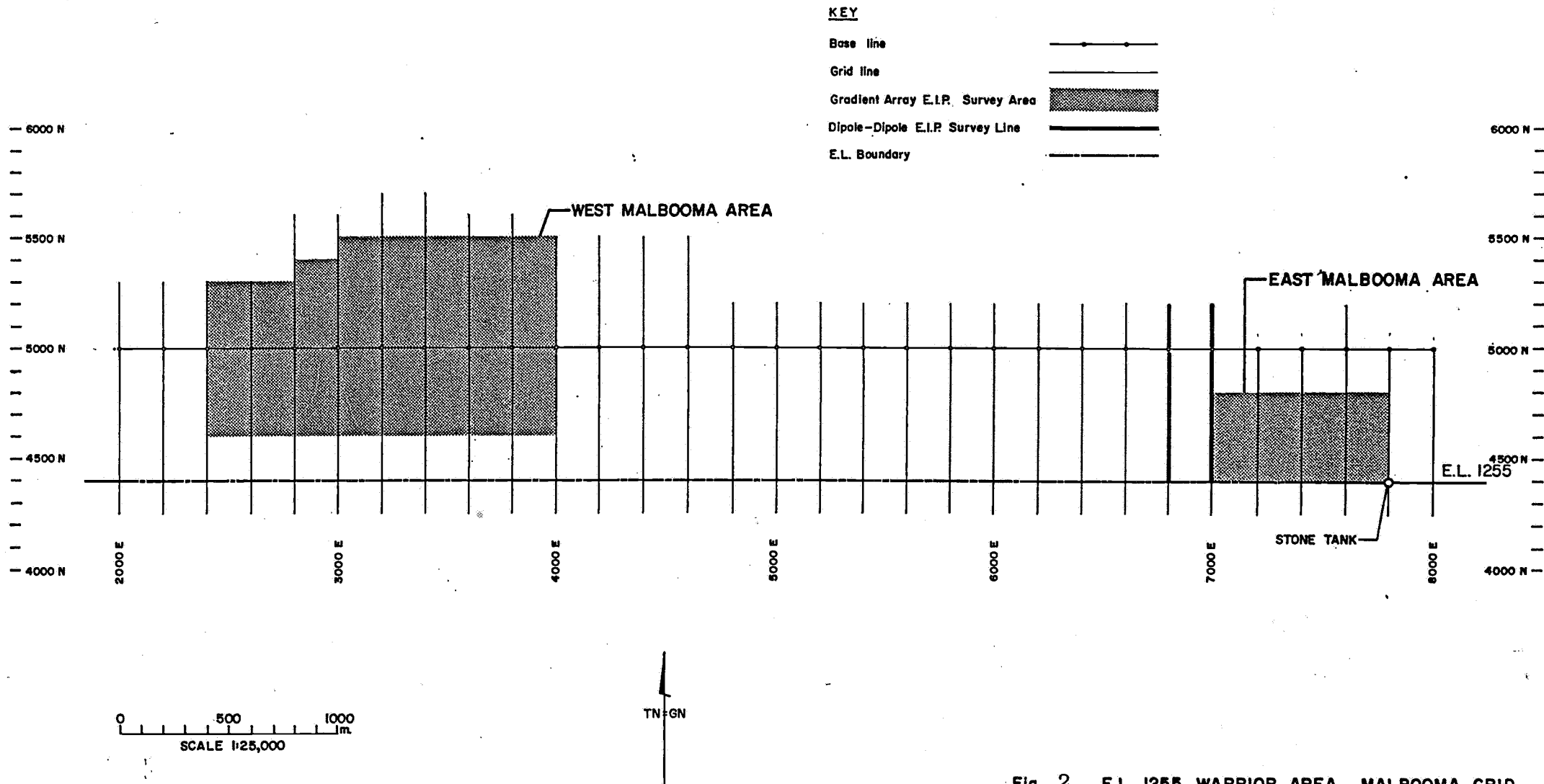


Fig. 2 E.L. 1255, WARRIOR AREA, MALBOOMA GRID.
GRID & E.I.P. SURVEY LAYOUTS



PNC EXPLORATION (AUSTRALIA) PTY. LTD.

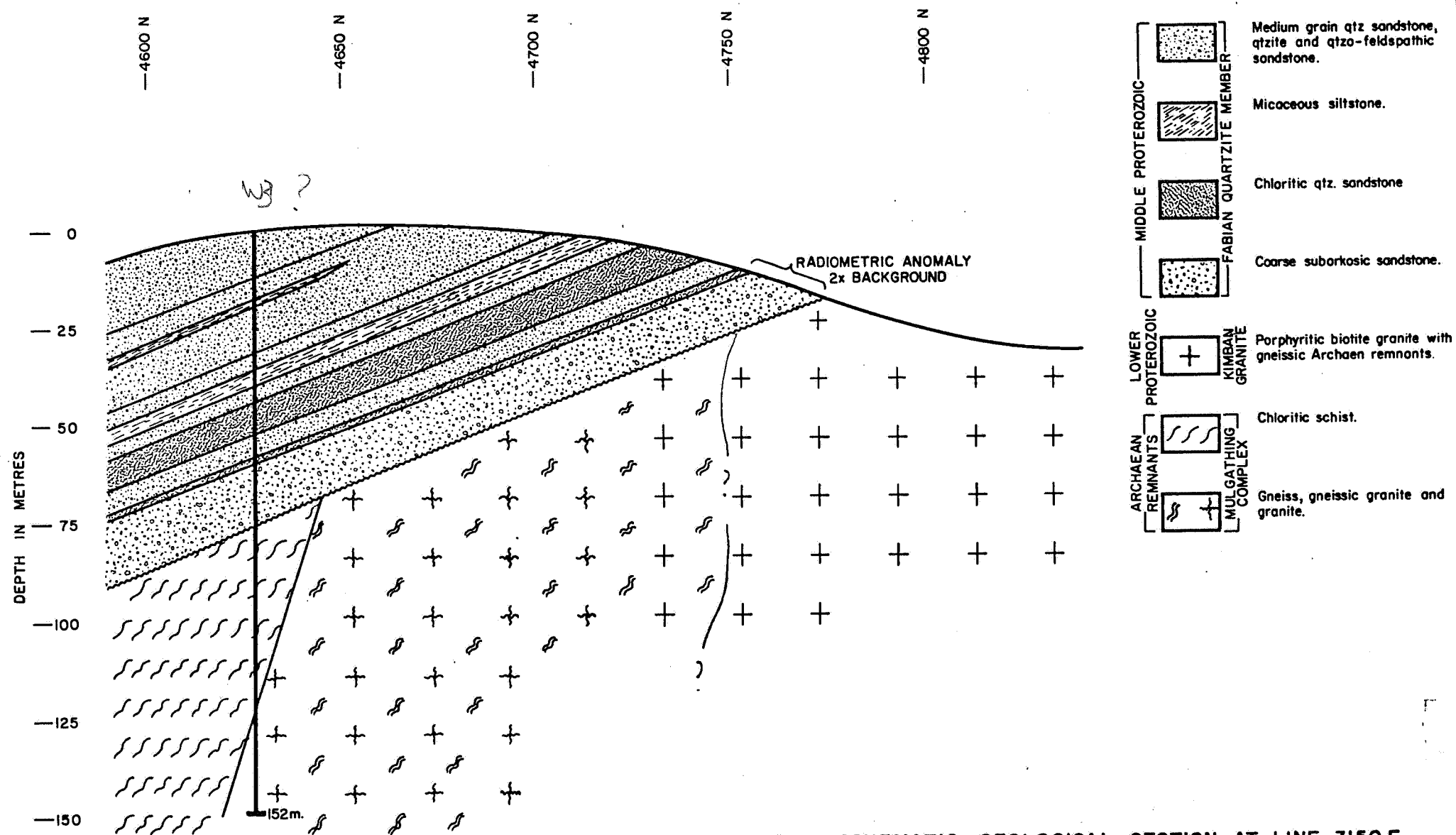
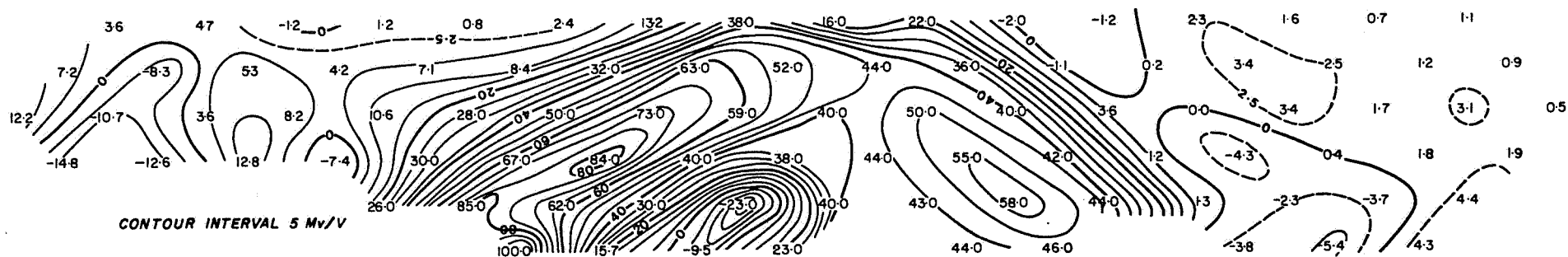
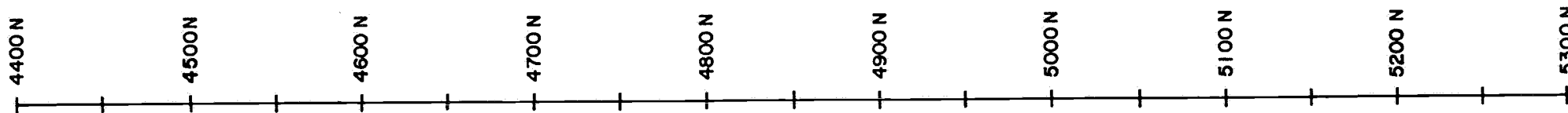
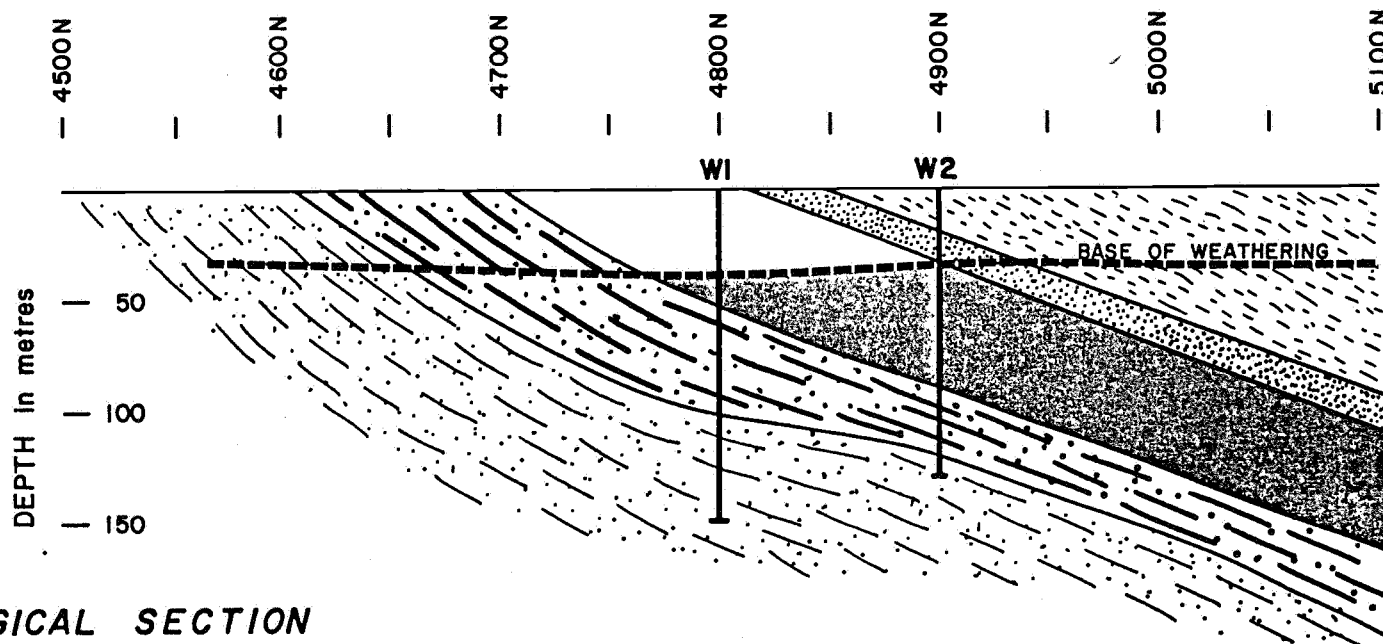


Fig. 3 SCHEMATIC GEOLOGICAL SECTION AT LINE 3150 E
EXPLORATION LICENCE 1255, MALBOOMA GRID.

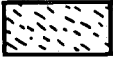
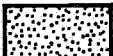
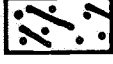


CONTOUR INTERVAL 5 Mv/V

DIPOLE-DIPOLE E.I.P. SECTION



REFERENCE

-  Clayey Sandstone
-  Sandstone
-  Black Carbonaceous and pyritic Siltstone
-  Weathered blue-grey Siltstone
-  Quartzite with minor black Siltstone
-  Siltstone with minor Quartzite

GEOLOGICAL SECTION

Fig. 4 GEOLOGICAL SECTION W1-W2

TABLE 1.

ROCK ASSAY RESULTS
MALBOOMA GRID - EL 1255

SAMPLE	U	Th	Ce	La	Ba	Au	Cu	Pb	Zn	Bi	Ag	Mo	Co	Fe	Mn
824	4	28	70	60	4000	-	6	34	12	-	-	8	-	1.94	42
825	-	-	-	-	70	-	3	-	6	-	-	8	-	0.28	32
826	-	6	-	20	4550	-	6	-	12	-	-	8	-	0.74	28
827	14	18	-	-	460	-	60	20	22	-	-	6	-	18.40	34
828	-	-	-	-	200	-	3	-	14	-	-	8	-	0.24	42
829	-	4	170	110	1150	-	28	10	36	-	-	4	28	3.55	270
830	-	14	-	-	450	-	4	12	12	-	-	6	-	0.35	95
831	4	14	50	50	1.95%	-	6	6	24	-	-	8	-	6.55	75
832	-	155	50	40	2600	-	8	12	10	-	-	6	-	1.06	18
833	-	4	-	-	110	-	4	-	20	-	-	8	-	0.78	170
834	-	-	-	-	650	-	8	-	24	-	-	6	-	1.41	175
841	8	110	90	50	1750	-	3	4	2	-	-	6	-	0.38	34
842	4	250	80	50	2250	-	3	8	3	-	-	8	-	0.55	40
843	-	380	60	60	5400	-	10	10	8	-	-	10	-	1.81	32
METHOD	XRF----- / AAS-----														
DETECTION LIMIT	4	4	20	20		0.05	4			4	1		4		

- DENOTES BELOW DETECTION LIMIT

ALL RESULTS IN PPM, EXCEPT % Fe

TABLE 2.

STREAM SEDIMENT ASSAY RESULTS
MALBOOMA GRID - EL 1255

FRACTION	SAMPLE	U	Th	Ce	La	Ba	Au	Cu	Pb	Zn	Bi	Ag	Mo	Co	Fe	Mn
100#	857	-	6	20	20	185	-	10	16	36	-	-	4	6	1.40	110
1mm	858	-	-	20	-	150	-	6	6	16	-	-	6	4	0.94	70
100#	859	-	-	20	-	175	-	8	4	24	-	-	4	4	1.37	110
1mm	860	-	-	-	-	150	-	5	-	12	-	-	6	-	0.89	70
100#	861	-	-	30	-	200	-	9	6	26	-	-	6	6	1.48	110
1mm	862	-	10	-	-	180	-	6	-	12	-	-	4	4	0.93	75
100#	863	-	8	20	20	180	-	8	4	30	-	-	6	4	1.33	90
1mm	864	-	4	-	-	165	-	5	4	12	-	-	-	4	0.88	60
100#	865	-	4	20	-	240	-	9	6	24	-	-	4	4	1.36	100
1mm	866	-	6	20	-	290	-	5	-	12	-	-	4	4	0.91	65
100#	867	-	-	30	20	220	-	12	8	30	-	-	6	6	1.66	155
1mm	868	-	4	20	20	210	-	8	4	16	-	-	6	6	1.17	95
METHOD		<-----XRF----->					<-----AAS----->									
DETECTION LIMIT		4	4	20	20		0.01	4		4	1		4			

- DENOTES BELOW DETECTION LIMIT

ALL RESULTS IN PPM, EXCEPT % Fe

TABLE 3.

U & Th ASSAY RESULTS - DRILLHOLE W2
MALBOOMA GRID - EL 1255

SAMPLE NO.	DEPTH	U	Th
1200.56	34 - 36	-	16
1200.57	36 - 38	4	16
1200.58	38 - 40	-	22
1200.59	40 - 42	6	20
1200.60	42 - 44	8	18

DETECTION LIMIT		4	4

All results in ppm

- Denotes below detection limit

APPENDIX 1. DRILLHOLE LOG SHEETS

DRILL HOLE LOG SHEET

058

PROJECT WARRIOR SA

METHOD PERCUSSION, HAMMER

LOGGING INSTRUMENT.....

HOLE NO. W1

PROBE.....

LOCATION Malbooma Grid; 6800E/4,800N

LOGGING SPEED.....

TOTAL DEPTH 152m

CHART SPEED.....

INCLINATION Vertical True Depth 149.4m

TIME CONSTANT.....

BIT SIZE.....

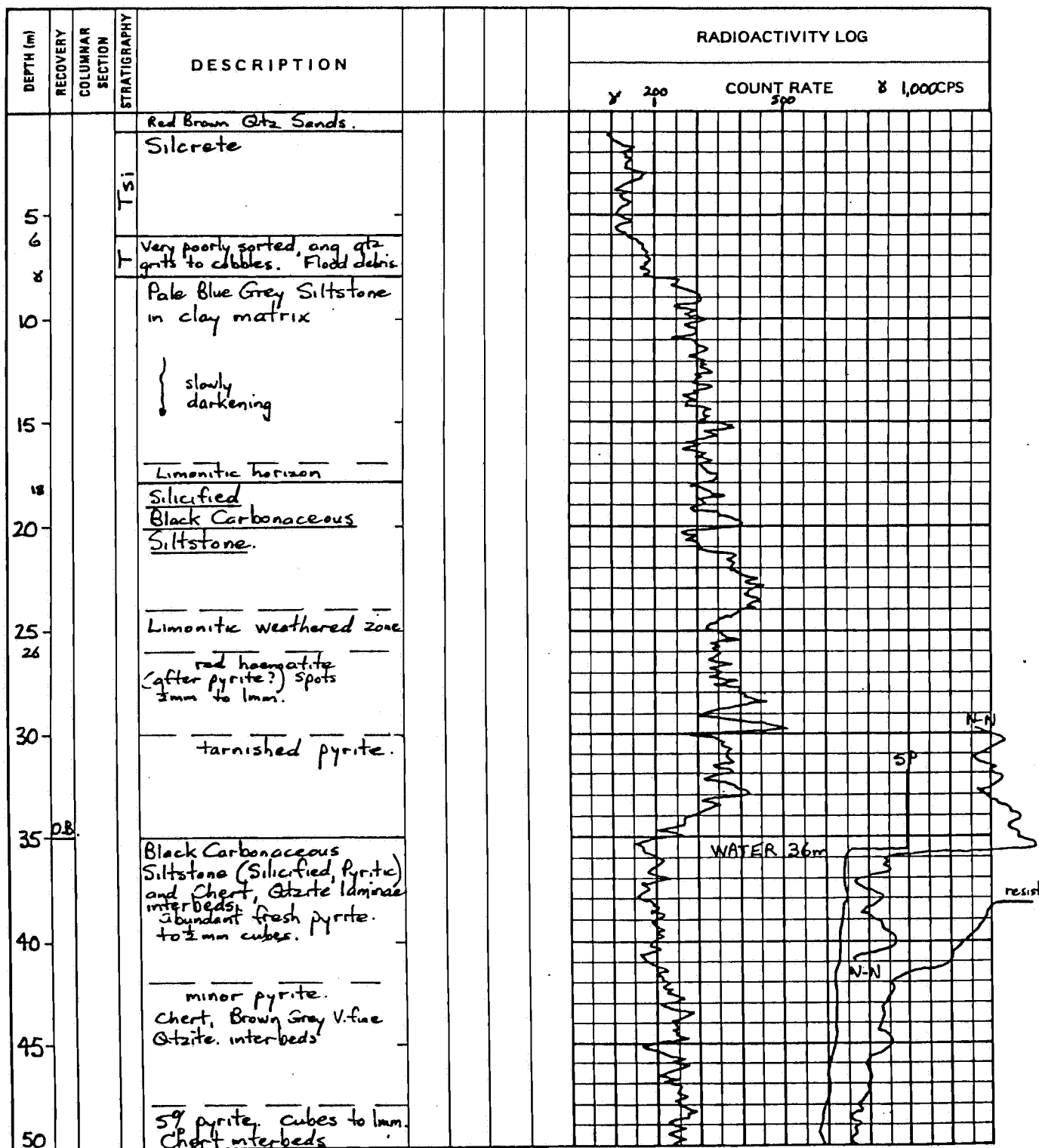
DATE 29/10/84

CORE RECOVERY.....

LOGGING BY Geoff Ford CENTURY GEOPHYSICAL

ELEVATION.....

GEOLOGY BY Mark Dunn



DRILL HOLE LOG SHEET

Continuation

059

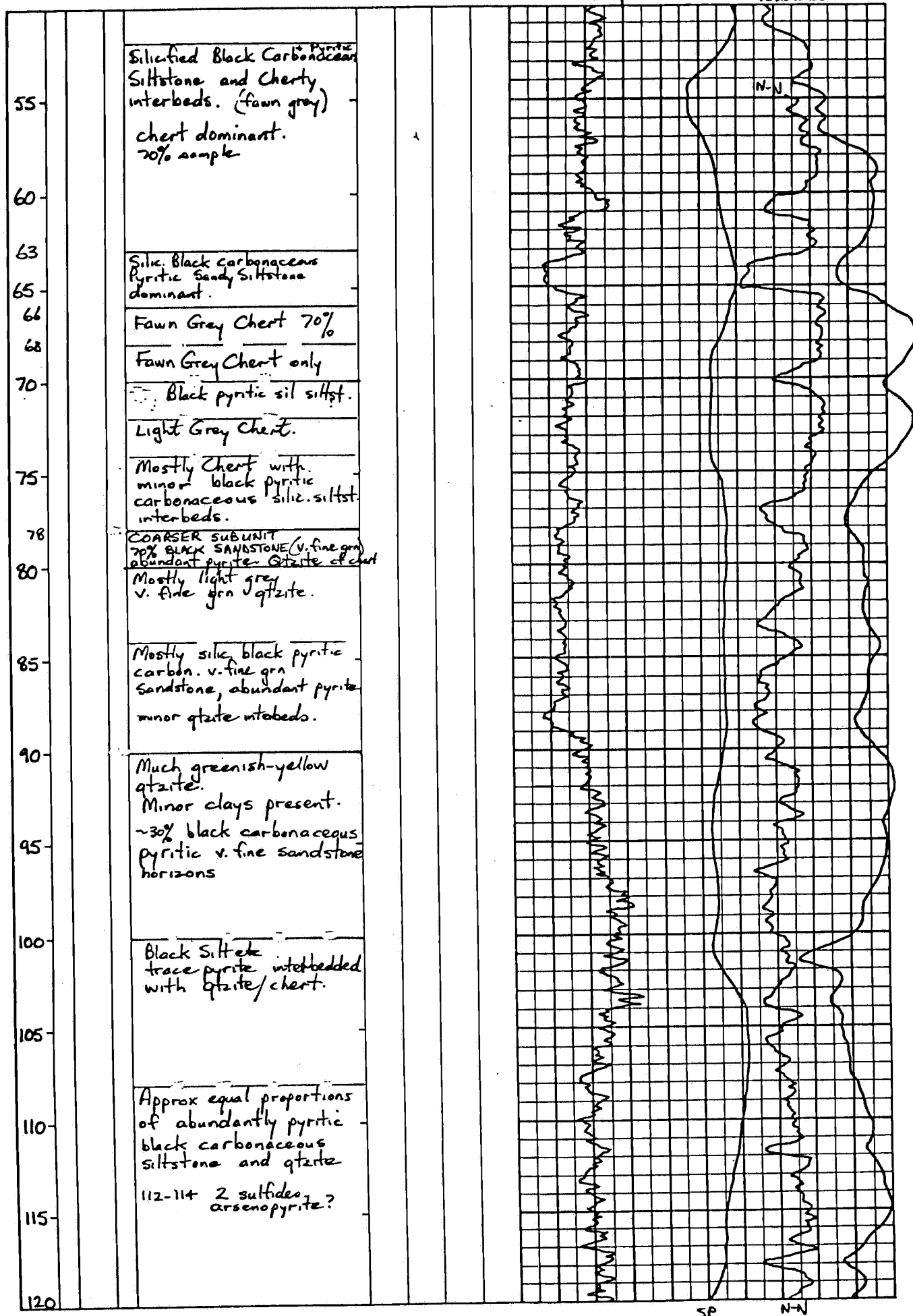
HOLE NO. W1

300

SP

8,000 CPS

resistance



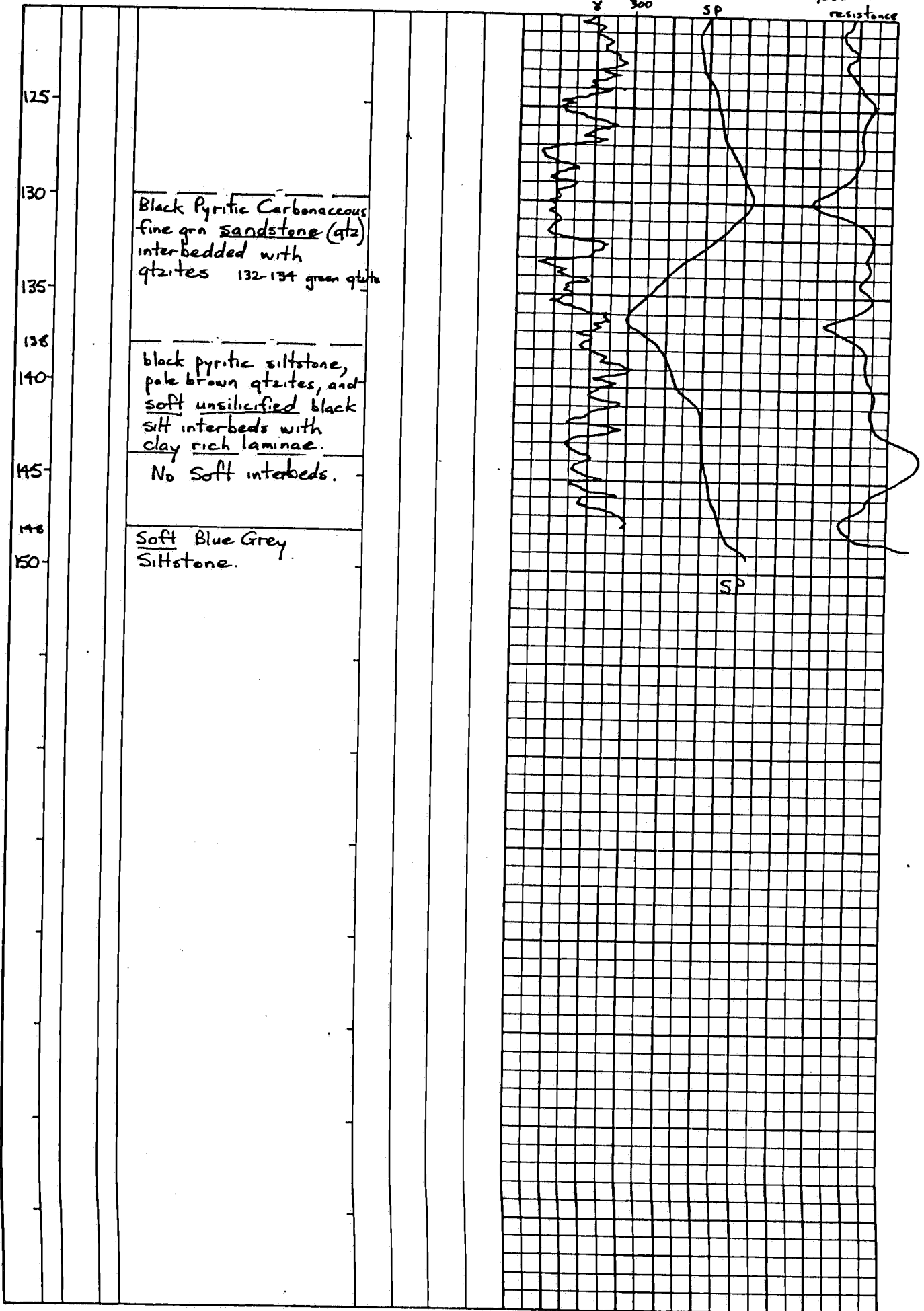
DRILL HOLE LOG SHEET

Continuation

060

HOLE NO. W1

7:1,000 CPS
resistance



DRILL HOLE LOG SHEET

061

PROJECT WARRIOR SA

METHOD PERCUSSION, HAMMER

LOGGING INSTRUMENT

HOLE NO. W2

PROBE

LOCATION Malboma Grid 6800E/4900N

LOGGING SPEED

TOTAL DEPTH 128m

CHART SPEED

INCLINATION Vertical True Depth 119.8m

TIME CONSTANT

BIT SIZE

DATE 30/10/84

CORE RECOVERY

LOGGING BY Geoff Ford CENTURY GEOPHYSICAL

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG			
					γ	COUNT RATE	γ 1000CPS	
2				red qtz sands and calcare.				
5				Off White qtz sands, grits, pebbles in clay heavily oxidised limonitic horizons				
10				White Clays				
14				Partly Silicified fine to med grn qtz sands in clay matrix. light grey.				
15				Limonitic stained quartzite debris, haematitic sandstone clasts and silic. qtz sandstone clasts in clay.				
18				Silicified Olive Green Siltstone / fine sandstone				
20								
22								
25								
28				Silicified, light gray, fine to med grn qtz sandstones.				
30					Cu	Pb	Zn	
33				v. strongly limonitic base.	34	8	90	V. Minor Supergene Cu
35				Silicified Blue Gray Siltstone. Pyritic	255	26	72	
					30	66	130	
				36-38 abundant fresh pyrite	115	14	45	
40				Dark Blue Gray darkening Pyritic Siltstone	160	16	115	
42				Partly silicified, jet black, carbonaceous, pyritic, slightly fissile Siltstone.	27	26	84	
45					32	26	80	
				very abundant, finely disseminated pyrite and as cubes to 1mm.	36	28	110	
					21	14	64	
50					21	18	74	

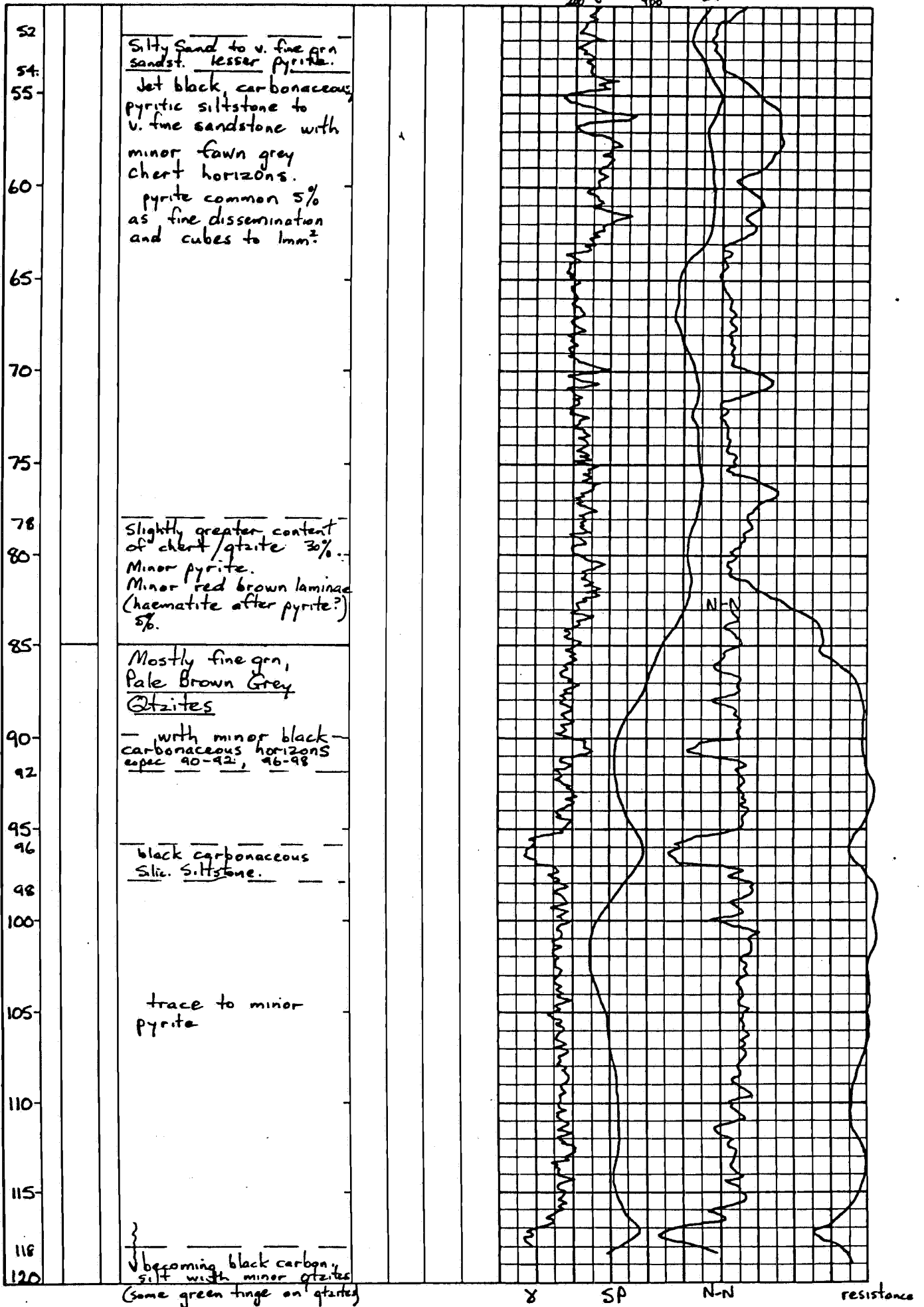
DRILL HOLE LOG SHEET

Continuation

062

HOLE NO. W2

γ 1000cps



DRILL HOLE LOG SHEET I

Continuation

063

HOLE NO. W2

CPS

125-		80% black carbonaceous silt siltstone to fine grn sandstone 20% orange brown chert and quartzite.			
128	END				

DRILL HOLE LOG SHEET

065

PROJECT WARRIOR SA

METHOD PERCUSSION, HAMMER

LOGGING INSTRUMENT

HOLE NO. W3

PROBE

LOCATION Malbooma Grid, 3150 E; 4628 N

LOGGING SPEED

TOTAL DEPTH True Depth 147.7m

CHART SPEED

INCLINATION Vertical

TIME CONSTANT

BIT SIZE

DATE 30/10/84

CORE RECOVERY

LOGGING BY Geoff Ford CENTURY GEOPHYSICAL

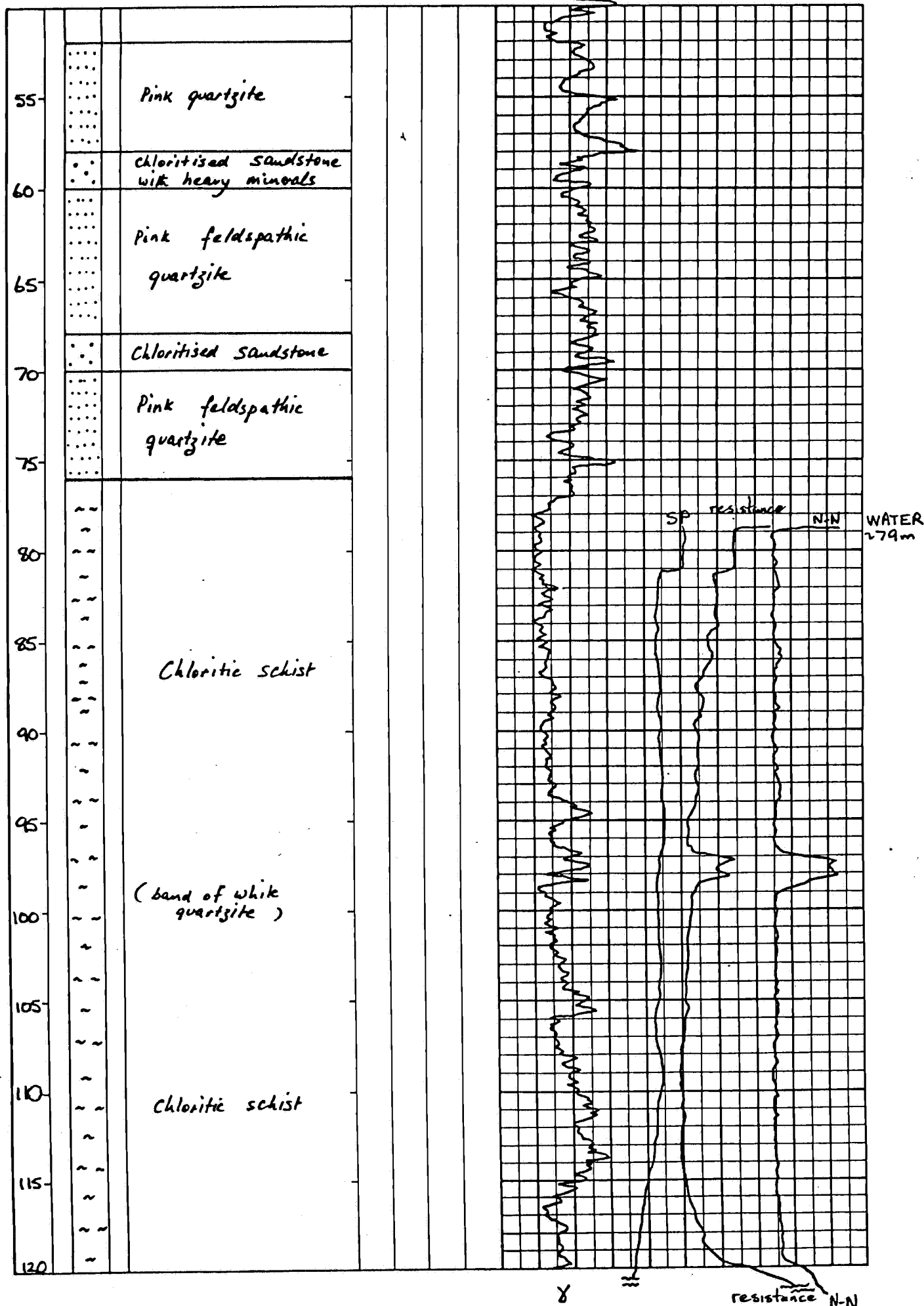
ELEVATION

GEOLOGY BY S.V. WILLIAMS

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					γ 300	COUNT RATE γ : 1,000CPS
5				Pink quartzite		
10				Pink quartzite & chloritised sandstone		
15				light grey quartz sandstone		
20				micaceous siltstone		
25				fine to coarse quartz sandstone		
30				micaceous siltstone minor qtz veining		
35				clayey qtz sandstone		
40				fine to coarse quartz sandstone		
45				Pink quartzite		
50				clayey micaceous siltstone		
				Pink quartzite		
				chloritised fine to medium sandstone		

HOLE NO. W3

γ: 1,000 CPS



APPENDIX 2. DRILL CHIP ASSAY RESULTS

DRILL CHIP ASSAY RESULTS
MALBOOMA GRID - EL1255

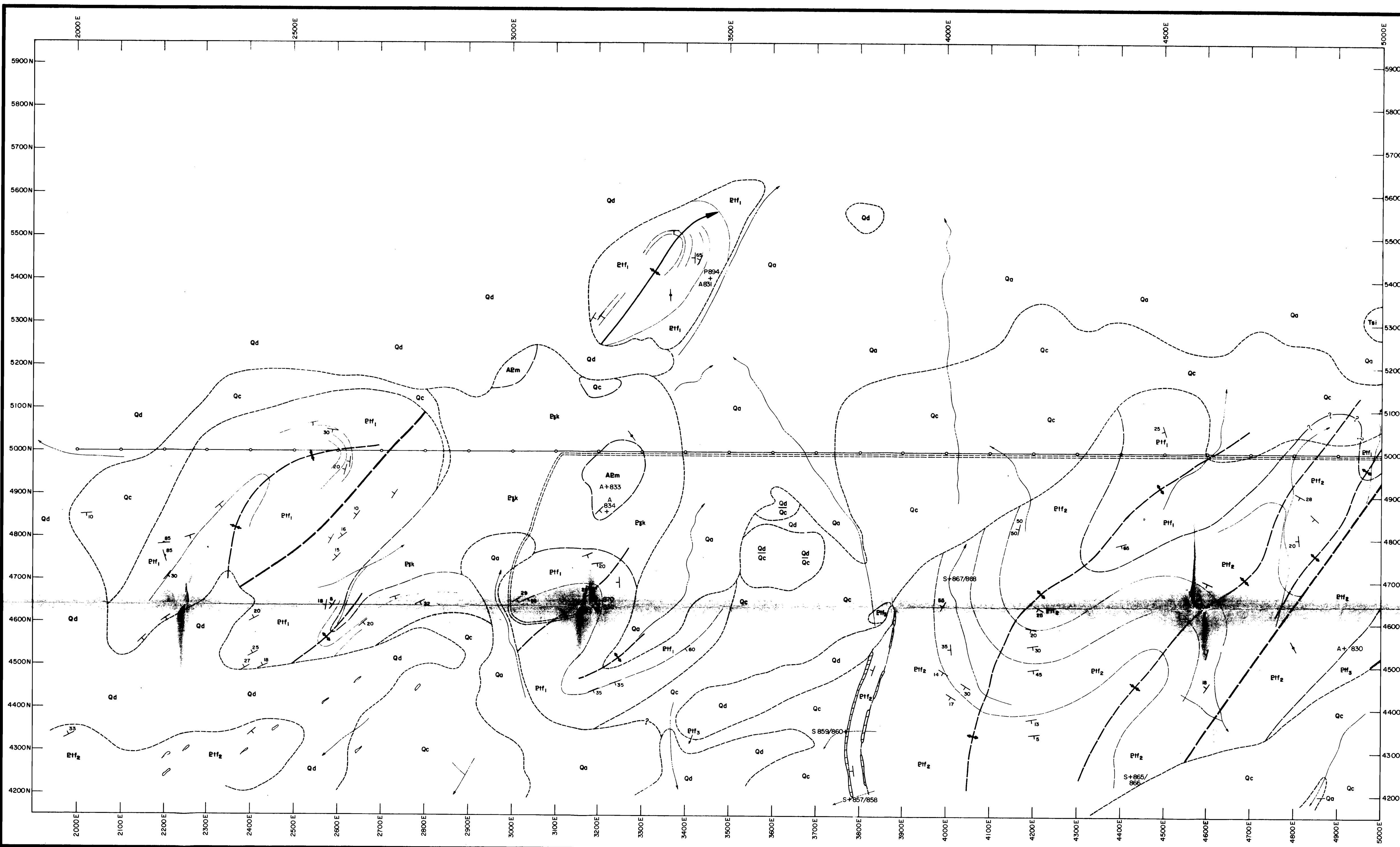
HOLE NO.	SAMPLE NO.	DEPTH (m)	Cu	Pb	Zn	Ag	Au
W1	1200.1	46-48	25	22	46	-	-
	1200.2	48-50	25	18	58	-	0.06
	1200.3	50-52	18	16	54	-	-
	1200.4	52-54	14	12	66	-	-
	1200.5	54-56	13	16	37	-	-
	1200.6	56-58	15	16	43	-	-
	1200.7	58-60	14	12	24	-	-
	1200.8	60-62	9	12	22	-	-
	1200.9	62-64	10	18	29	-	-
	1200.10	64-66	42	18	78	-	-
	1200.11	66-68	10	18	50	-	-
	1200.12	68-70	8	18	18	-	-
	1200.13	70-72	19	6	35	-	-
	1200.14	72-74	10	10	16	-	-
	1200.15	74-76	12	6	47	-	-
	1200.16	76-78	22	6	33	-	-
	1200.17	78-80	31	38	310	-	-
	1200.18	80-82	14	16	33	-	-
	1200.19	82-84	17	10	12	-	-
	1200.20	84-86	62	38	29	-	-
	1200.21	86-88	11	14	58	-	-
	1200.22	88-90	15	12	78	-	-
	1200.23	90-92	44	20	70	-	-
	1200.24	92-94	44	26	29	-	-
	1200.25	94-96	42	22	39	-	-
	1200.26	96-98	35	32	39	-	-
	1200.27	98-100	33	28	62	-	-
	1200.28	100-102	18	36	100	-	-
	1200.29	102-104	52	60	70	-	-
	1200.30	104-106	105	34	125	-	-
	1200.31	106-108	52	50	38	-	-
	1200.32	108-110	62	30	25	-	-
	1200.33	110-112	52	28	17	-	-
	1200.34	112-114	52	22	29	-	-
	1200.35	114-116	60	26	27	-	-
	1200.36	116-118	43	18	19	-	-
	1200.37	118-120	66	24	31	-	-
	1200.38	120-122	32	42	37	-	-
	1200.39	122-124	23	28	41	-	-
	1200.40	124-126	19	30	47	-	-
	1200.41	126-128	17	34	60	-	-
	1200.42	128-130	20	28	35	-	-
	1200.43	130-132	64	58	46	-	-
	1200.44	132-134	45	14	185	-	-
	1200.45	134-136	31	22	36	-	-
	1200.46	136-138	20	16	29	-	-
	1200.47	138-140	21	14	40	-	-
	1200.48	140-142	28	18	52	-	-
	1200.49	142-144	37	12	54	-	-

HOLE NO.	SAMPLE NO.	DEPTH (m)	Cu	Pb	Zn	Ag	Au
W1	1200.50	144-146	33	18	47	-	-
	1200.51	146-148	36	12	43	-	-
	1200.52	148-150	37	10	34	-	-
	1200.53	150-152	46	16	49	-	-
W2	1200.54	30-32	34	8	90	-	-
	1200.55	32-34	255	26	72	-	-
	1200.56	34-36	310	66	130	-	-
	1200.57	36-38	115	14	45	-	-
	1200.58	38-40	160	16	115	-	-
	1200.59	40-42	27	26	84	-	-
	1200.60	42-44	32	26	80	-	-
	1200.61	44-46	36	28	110	-	-
	1200.62	46-48	21	14	64	-	-
	1200.63	48-50	21	18	74	-	-
	1200.64	50-52	21	8	58	-	-
	1200.65	52-54	20	14	38	-	-
	1200.66	54-56	49	16	92	-	-
	1200.67	56-58	72	70	150	-	-
	1200.68	58-60	28	36	105	-	-
	1200.69	60-62	28	70	180	-	-
	1200.70	62-64	23	280	96	-	-
	1200.71	64-66	21	34	56	-	-
	1200.72	66-68	18	18	60	-	-
	1200.73	68-70	16	22	38	-	-
	1200.74	70-72	24	32	48	-	-
	1200.75	72-74	19	14	66	-	-
	1200.76	74-76	20	16	60	-	-
	1200.77	76-78	25	28	88	-	-
	1200.78	78-80	27	42	125	-	-
	1200.79	80-82	32	32	125	-	-
	1200.80	82-84	23	22	66	-	-
	1200.81	84-86	17	16	42	-	-
	1200.82	86-88	12	14	26	-	-
	1200.83	88-90	15	20	35	-	-
	1200.84	90-92	18	24	41	-	-
	1200.85	92-94	18	22	70	-	-
	1200.86	94-96	12	20	29	-	-
	1200.87	96-98	14	20	115	-	-
	1200.88	98-100	10	20	58	-	-
	1200.89	100-102	15	18	32	-	-
	1200.90	102-104	10	26	22	-	-
	1200.91	104-106	13	36	43	-	-
	1200.92	106-108	13	30	22	-	-
	1200.93	108-110	13	26	23	-	-
	1200.94	110-112	10	36	27	-	-
	1200.95	112-114	13	16	45	-	-
	1200.96	114-116	12	16	22	-	-
	1200.97	116-118	16	16	24	-	-
	1200.98	118-120	13	12	110	-	-
	1200.99	120-122	36	20	58	-	-
	1200.100	122-124	19	12	115	-	-

HOLE NO.	SAMPLE NO.	DEPTH (m)	Cu	Pb	Zn	Ag	Au
W2	1200.101	124-126	19	16	44	-	-
	1200.102	126-128	24	32	70	-	-
W1	1200.103	0-96	33	26	70	-	-
	1200.104	96-152	74	36	49	-	-
W2	1200.105	0-96	76	34	47	-	-
	1200.106	96-128	20	30	44	-	-
DETECTION LIMIT			2	5	2	1	0.01

- Denotes below detection limits

All results in ppm



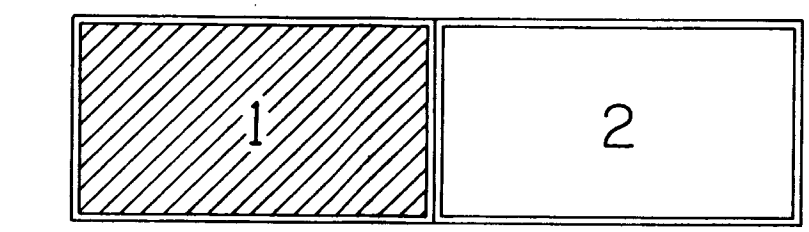
REFERENCE

QUATERNARY	Qa	ALLUVIUM
	Qc	COLLUVIUM
	Qd	DUNE SANDS
TERTIARY	Ts1	SILCRETE
MIDDLE PROTEROZOIC	Pgh	HILTABA GRANITE SUITE: Pinkish red biotite granite
	Pf3	Blue-grey siltstone in clay matrix.
	Pf2	Quartz-feldspathic to sub-arkosic medium grain sandstone. Low angle trough cross beds, ripple marks, graded bedding. Two sedimentary talus breccia in uppermost unit.
	Pf1	Sub-arkosic conglomerate. Basal cobble zone with minor ilmenite and other heavy minerals.
LOWER PROTEROZOIC	Pk	Porphyritic biotite granite
ARCHEAN	AEm	MULGATHING COMPLEX: Granitic gneiss and quartz feldspar gneiss with strong shear zones.

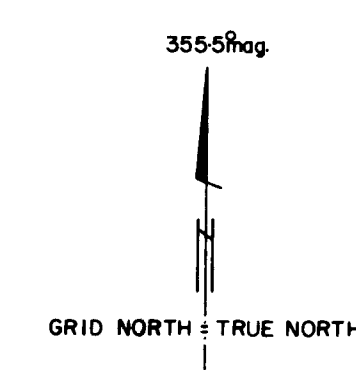
SHEET 1

KEY TO SYMBOLS

Geological boundary, accurate	—
Geological boundary, approximate	- - -
Alluvium or colluvium boundary	—
Lithological trend line	—
Fault, position accurate	—
Fault, position approximate	- - -
Anticlinal axial trend	—
Synclinal axial trend	—
Strike and dip of bedding	—
Strike of vertical bedding	—
Strike and dip of joint plane	—
Strike of vertical joint plane	—
Sampling: Petrographic 850, 869-870, 892-894	P+
Assay 824-835	A+
Stream sediment 857-868	S+
Drillhole with number	OW3
Old exploratory pit	□
Cobble conglomerate	□
Railway	—
Track	—
Intermittent creek	—
Base line	—



SHEET LAYOUT



PNC EXPLORATION (AUSTRALIA) PTY LTD

TARCOOLA PROJECT, SOUTH AUSTRALIA

E.L.1255

MALBOOMA GRID

GEOLOGY & DRILL HOLE LOCATION

compiled by: M. Dunn	date: November 1984
drawn by: Surtex Geosurveys Pty Ltd	drawing no.:

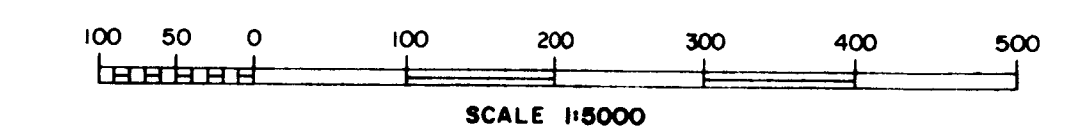
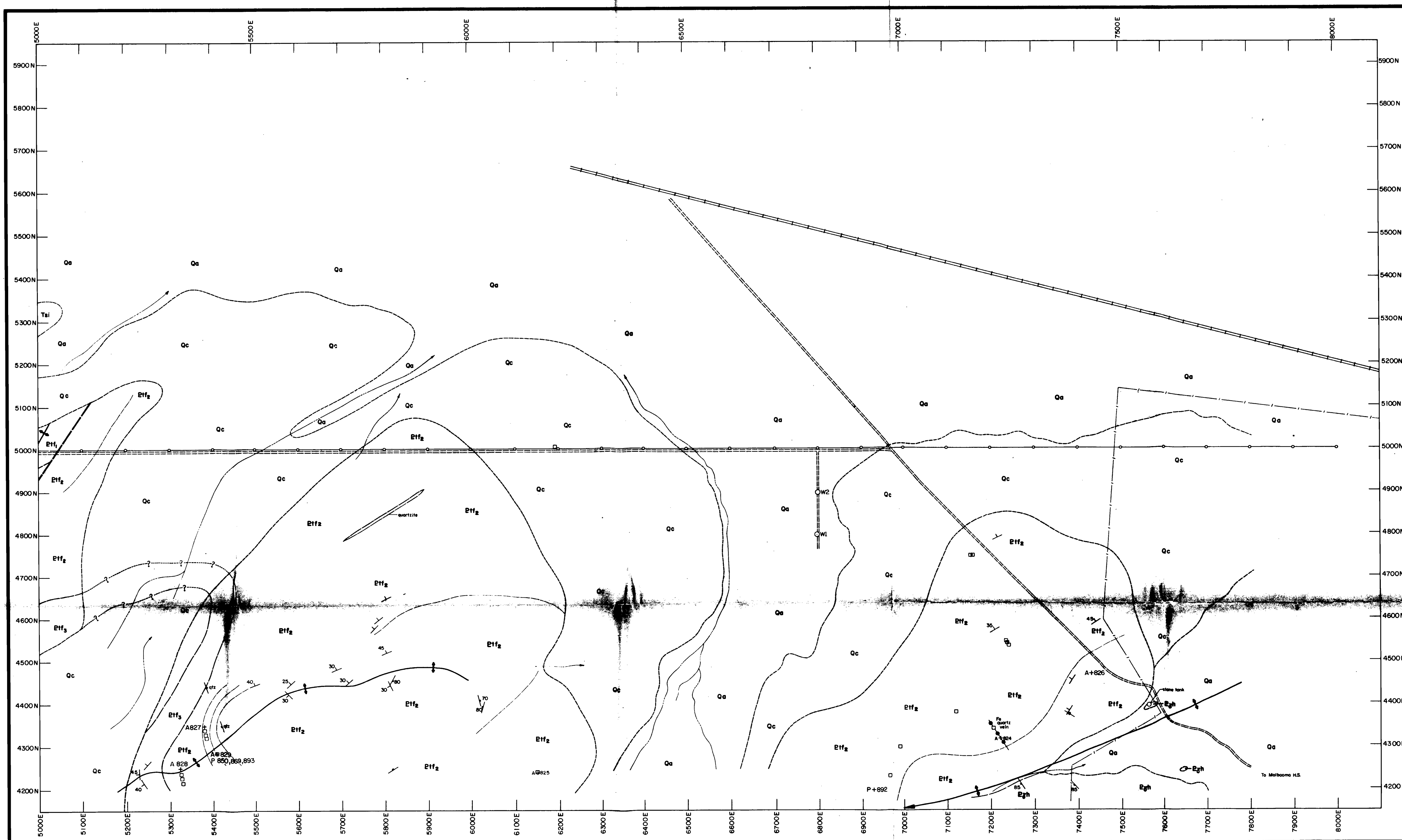


PLATE 1 4846 (n)-1.



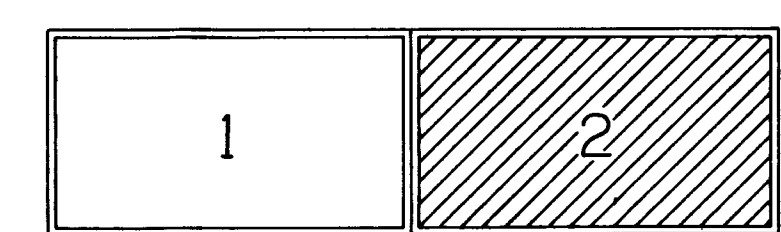
REFERENCE

QUATERNARY	Qa	ALLUVIUM
	Qc	COLLUVIUM
	Qd	DUNE SANDS
TERTIARY	Tsi	SILCRETE
MIDDLE PROTEROZOIC	Egh	HILTABA GRANITE SUITE: Pinkish red biotite granite
	Etf2	Blue-grey siltstone in clay matrix.
	Etf1	
	Etk	Sub-arkosic conglomerate. Basal cobble zone with minor ilmenite and other heavy minerals.
	AEm	Porphyritic biotite granite
LOWER PROTEROZOIC		
ARCHEAN		MULGATHING COMPLEX: Granitic gneiss and quartz feldspar Gneiss with strong shear zones.

SHEET 2

KEY TO SYMBOLS

Geological boundary, accurate	—
Geological boundary, approximate	- - -
Alluvium or colluvium boundary	- · - · -
Lithological trend line	— · — · —
Fault, position accurate	— —
Fault, position approximate	- - - -
Anticlinal axial trend	— —
Synclinal axial trend	- - - -
Strike and dip of bedding	— —
Strike of vertical bedding	— —
Strike and dip of joint plane	— —
Strike of vertical joint plane	— —
Sampling: Petrographic 850, 869-870, 892-894	P+
Assay 824-835	A+
Stream sediment 857-868	S+
Drillhole with number	OW3
Old exploratory pit	□
Cobble conglomerate	□
Railway	— —
Track	— —
Intermittent creek	— —
Base line	— —



SHEET LAYOUT

355-58ag

GRID NORTH = TRUE NORTH

PNC EXPLORATION (AUSTRALIA) PTY LTD

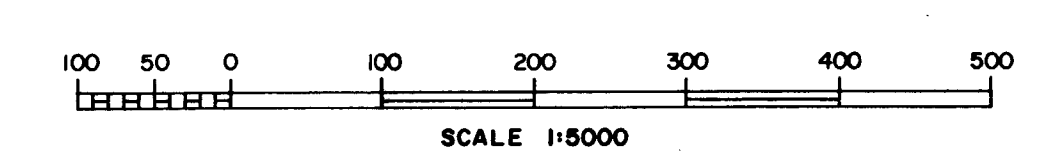
TARCOOLA PROJECT, SOUTH AUSTRALIA

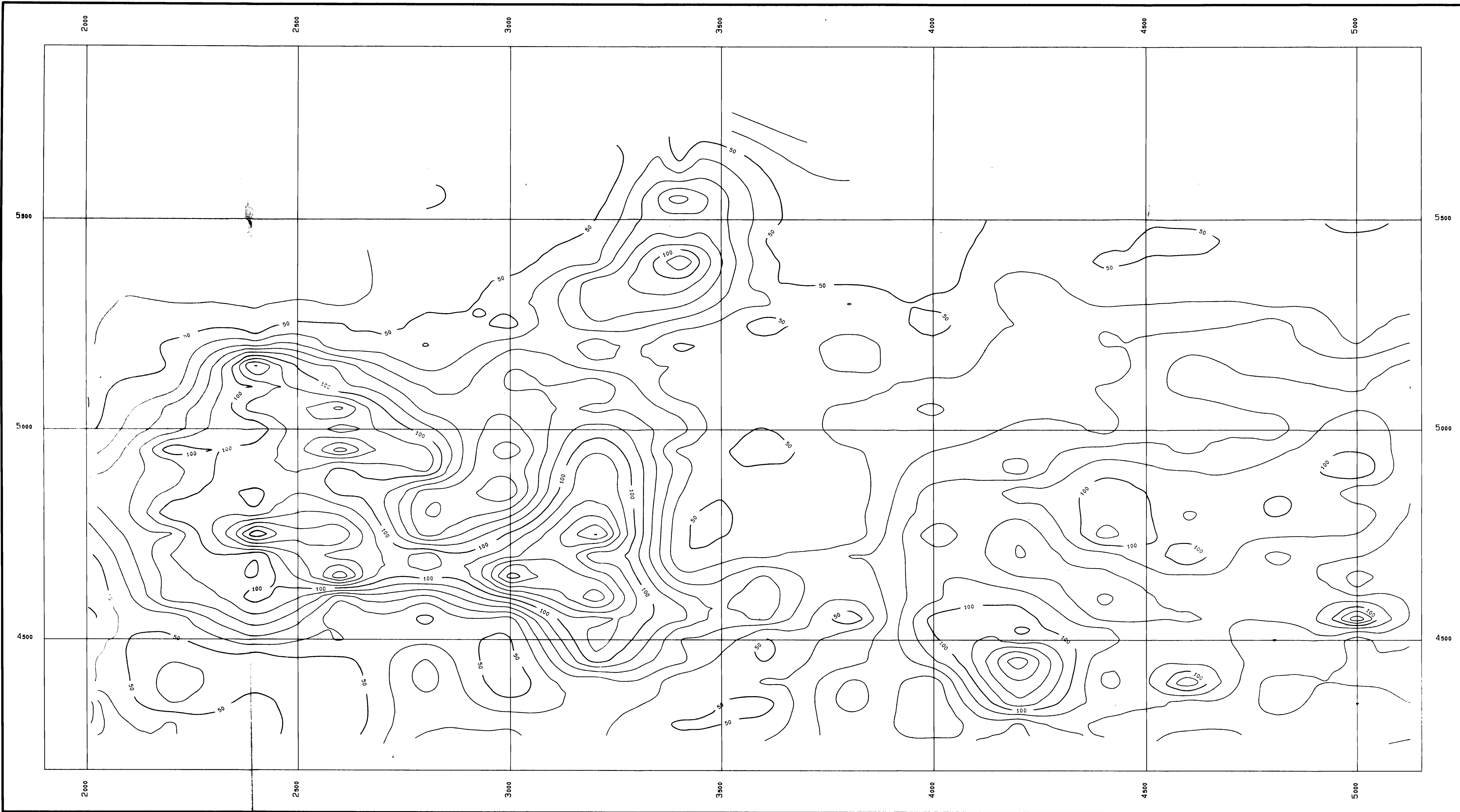
E.L. 1255

MALBOOMA GRID

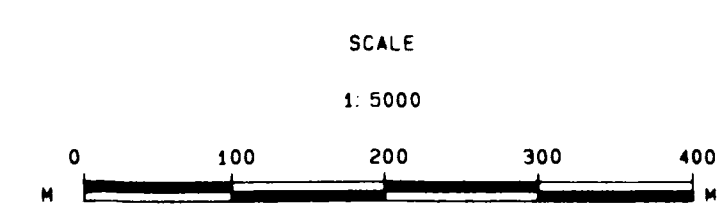
GEOLOGY & DRILL HOLE LOCATION

compiled by: M. Dunn	date: November 1984
drawn by: Surtex Geosurveys Pty Ltd	drawing no.:





NOTES
Horizontal Datum Local
Contour Interval 10 cps
Line Spacing 200 metres
Data Spacing 50 metres
Map Production P C M Computer Services
North is True at the centre of this map



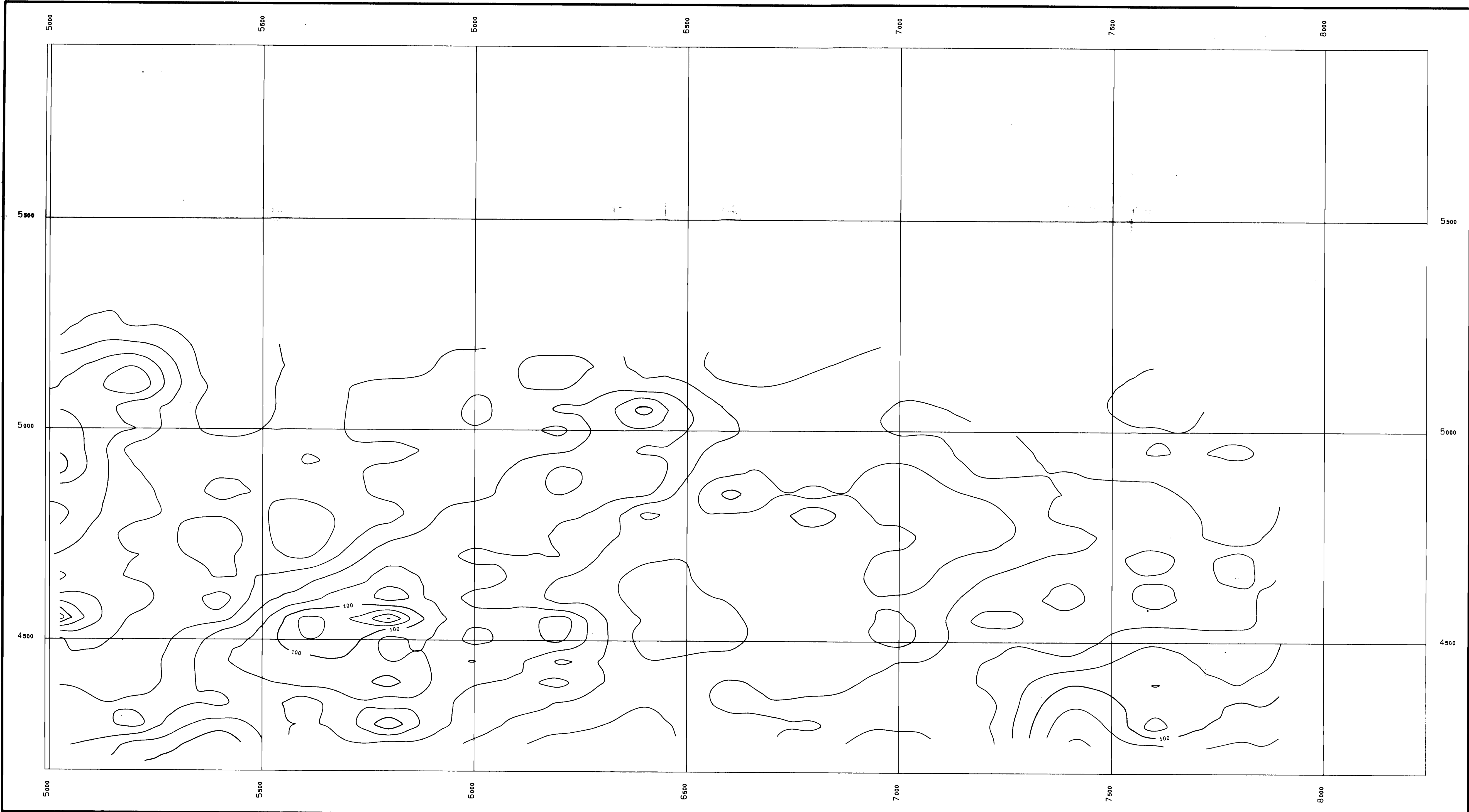
P N C EXPLORATION (AUSTRALIA) PTY LTD

MALBOOMA RADIOMETRIC SURVEY
SOUTH AUSTRALIA

TOTAL COUNT
CONTOURED

Western Sheet

Compiled by:	Date: 19-DEC-84
Drawn by: G.M.	Drawing No.:

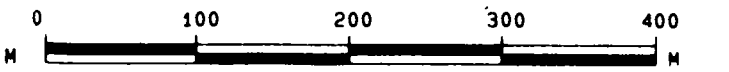


NOTES

Horizontal Datum: Local
Contour Interval: 10 cps
Line Spacing: 200 metres
Data Spacing: 50 metres
Map Production: P. C. M. Computer Services
North is True at the centre of this map

SCALE

1: 5000

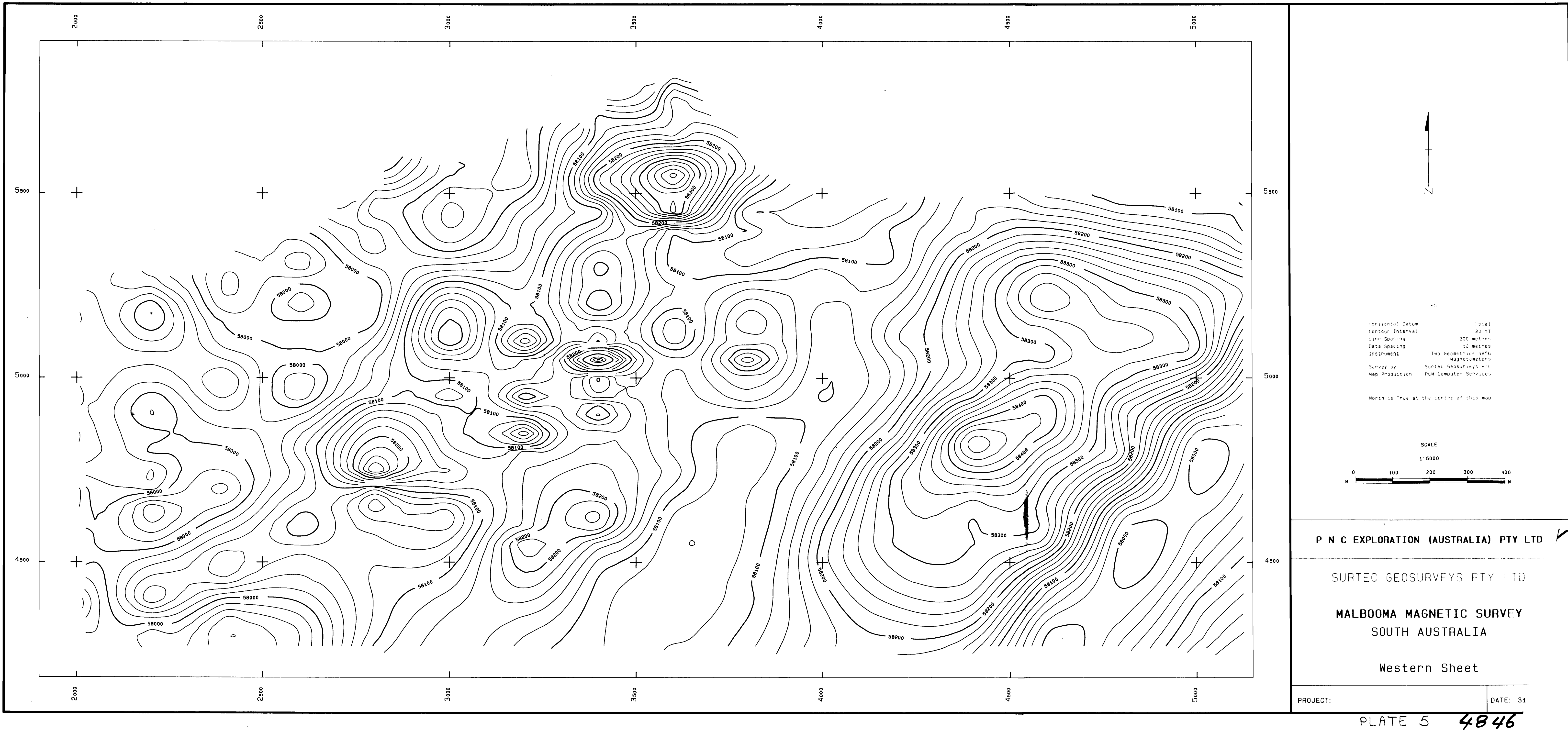


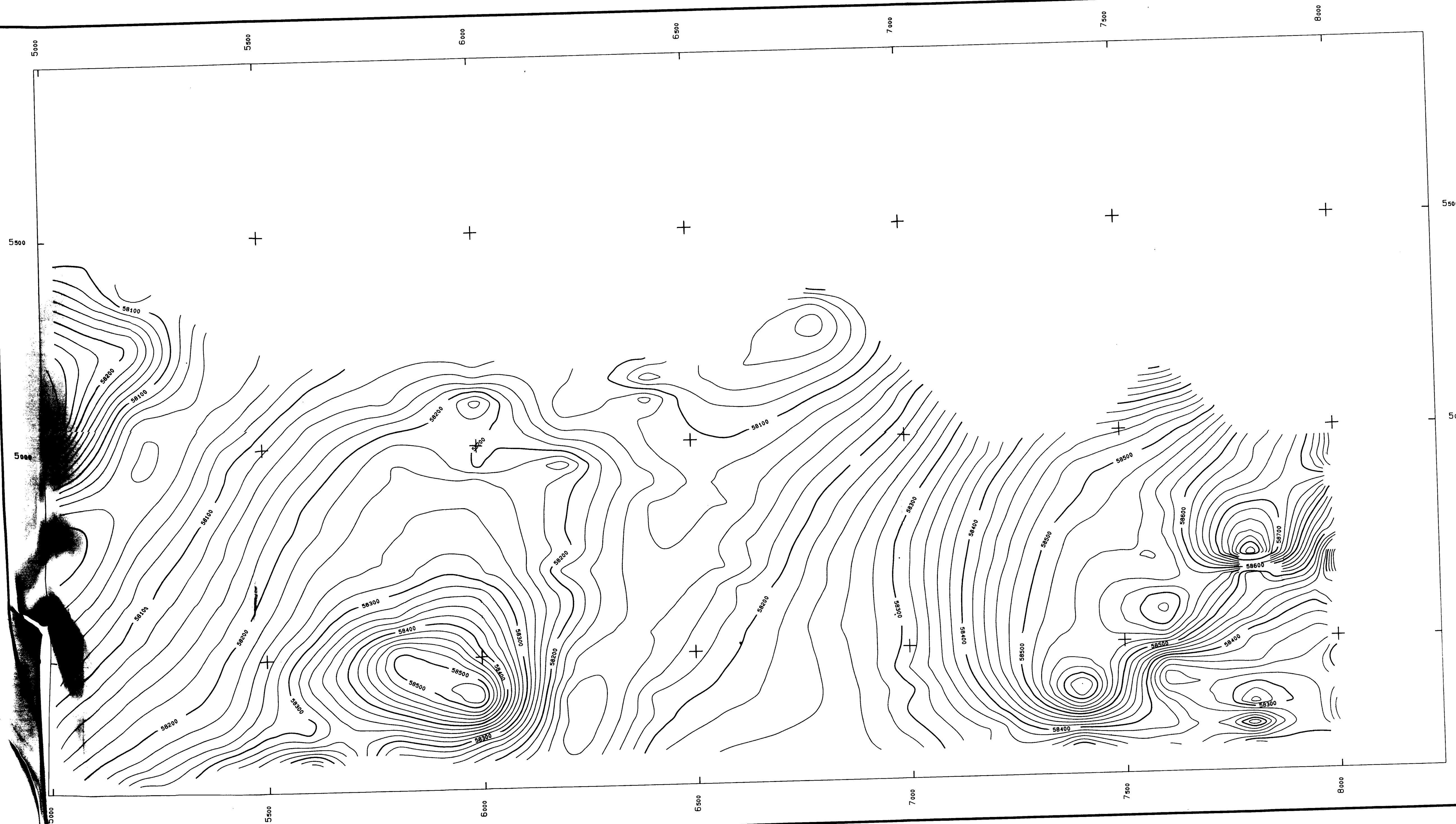
P N C EXPLORATION (AUSTRALIA) PTY LTD

MALBOOMA RADIOMETRIC SURVEY
SOUTH AUSTRALIA

TOTAL COUNT
CONTOURED
Eastern Sheet

Compiled by: Date: 19 DEC 84
Drawn by: G.M. Drawing No.:
PLATE 4 4846(11)-4





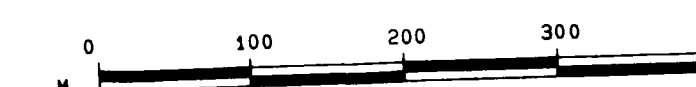
NOTES

Horizontal Datum:	Local
Contour Interval:	20 m
Line Spacing :	200 metres
Data Spacing :	10 metres
Instrument :	Two Geometrics 6856 Magnetometers
Survey by :	Surtec Geosurveys P/L
Map Production :	PCM Computer Services

North is True at the centre of this map

SCALE

1: 5000



P N C EXPLORATION (AUSTRALIA) PTY LTD

SURTEC GEOSURVEYS INC. LTD.

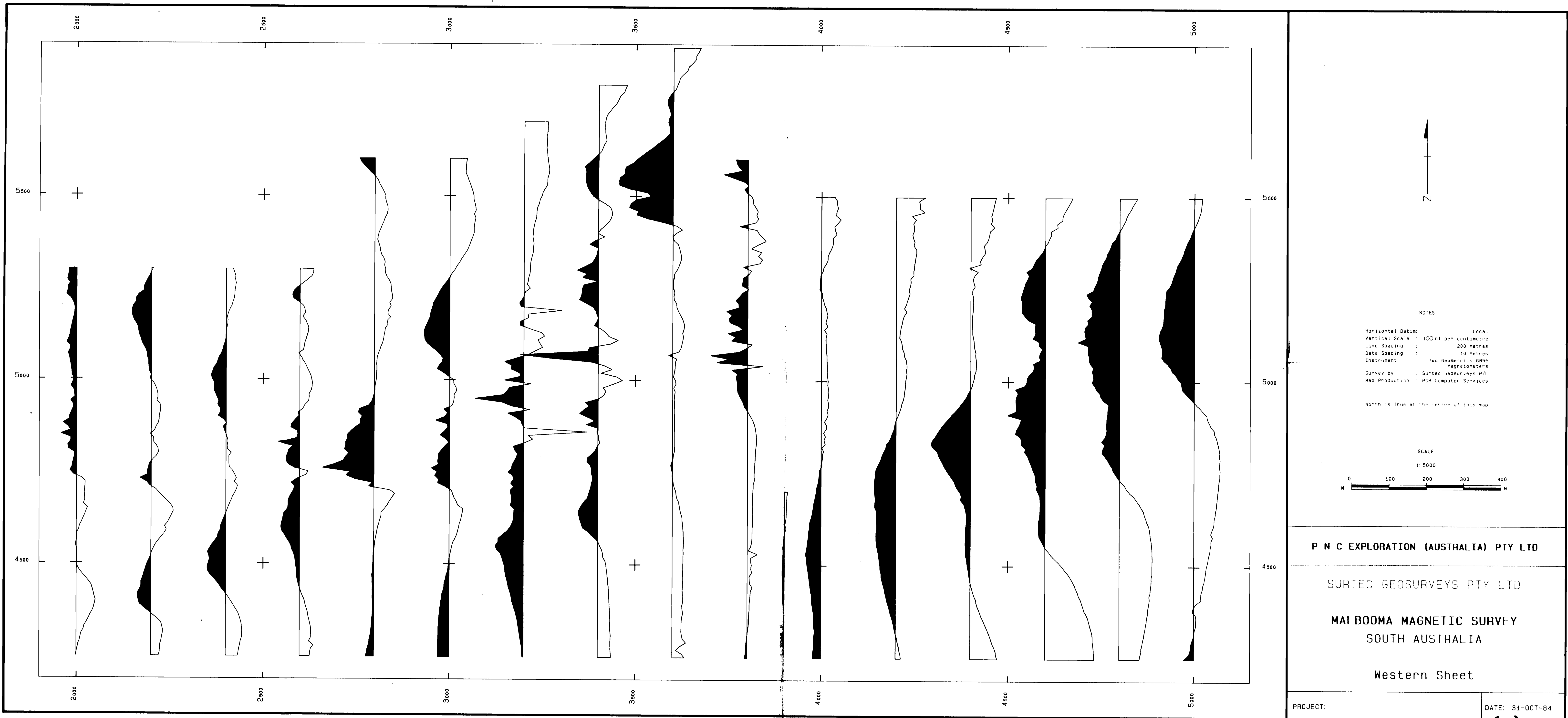
MALBOOMA MAGNETIC SURVEY
SOUTH AUSTRALIA

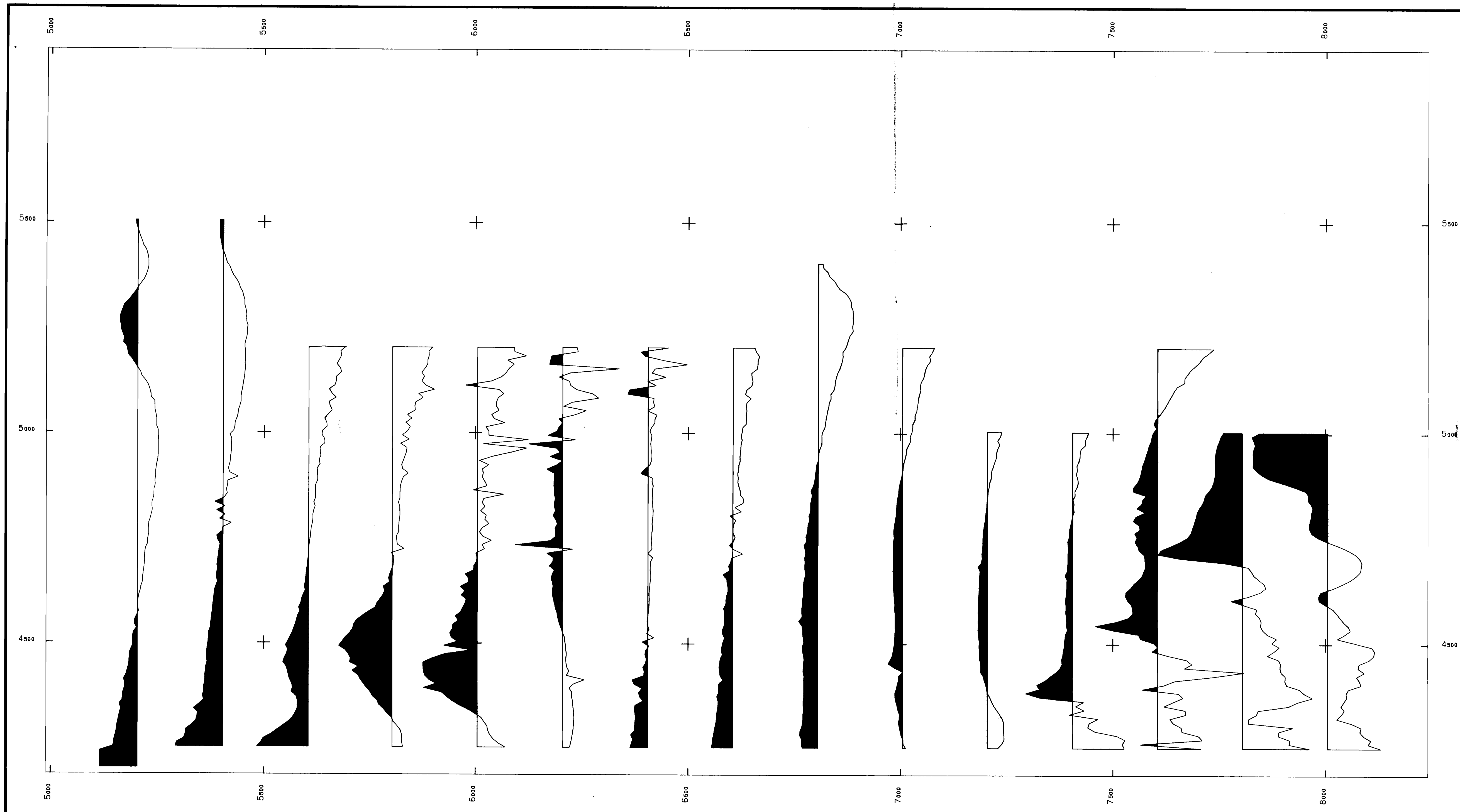
Eastern Sheet

PROJECT:

DATE: 01-NOV-84

PLATE 6 4846 (11)-6





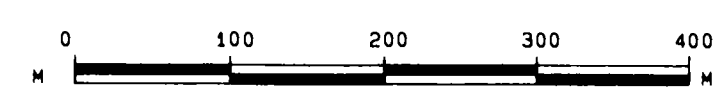
NOTES

Horizontal Datum: Local
 Vertical Scale: 100 m per centimetre
 Line Spacing: 200 metres
 Data Spacing: 10 metres
 Instrument: Two Geometrics G85B Magnetometers
 Survey by: Surtec Geosurveys Pty. Ltd.
 Map Production: PCM Computer Services

North is True at the centre of this map

SCALE

1:5000



P N C EXPLORATION (AUSTRALIA) PTY LTD

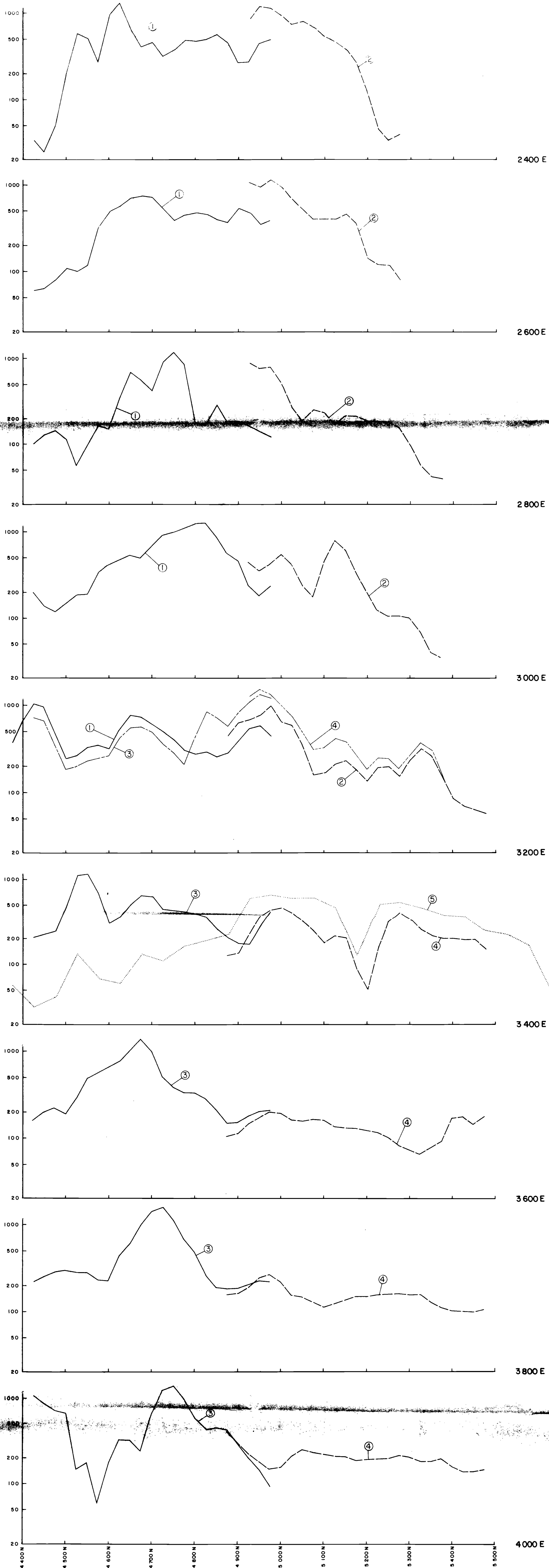
SURTEC GEOSURVEYS PTY LTD

MALBOOMA MAGNETIC SURVEY
 SOUTH AUSTRALIA

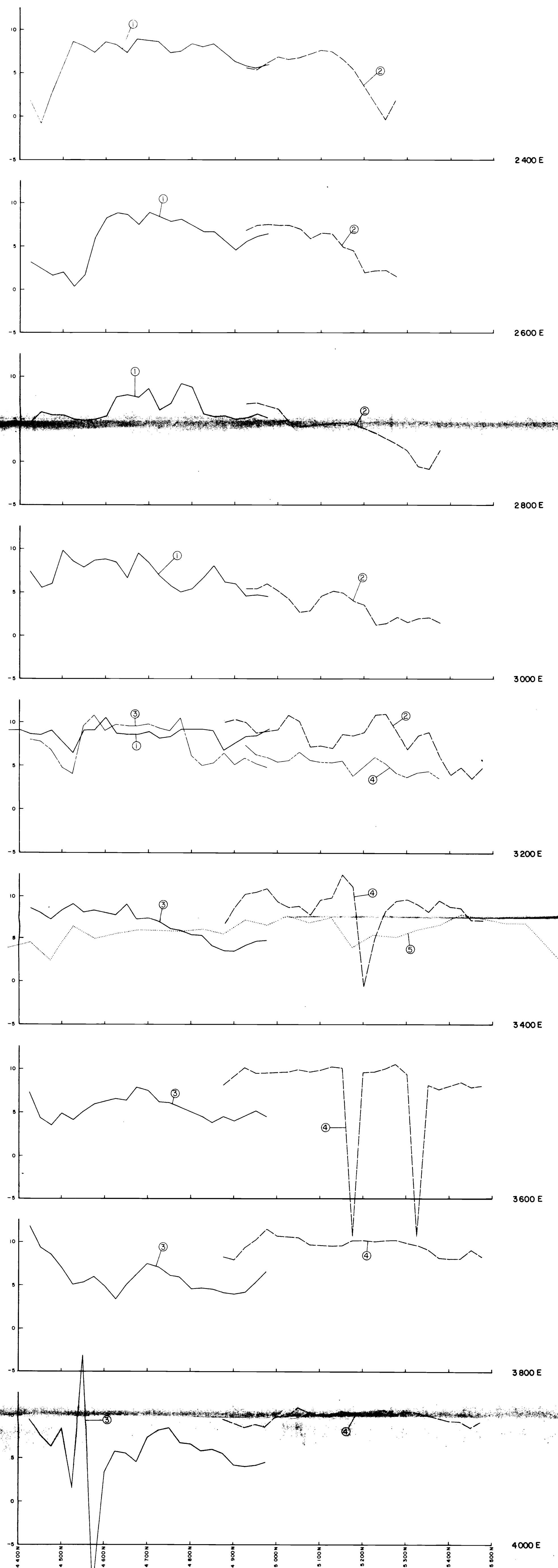
Eastern Sheet

PROJECT: DATE: 01-NOV-84

APPARENT RESISTIVITY Ωm



APPARENT CHARGEABILITY mV/V



- ① Current Electrodes 2800 E/3900 N—2800 E/5400 N
- ② " " 2800 E/4400 N—2800 E/5900 N
- ③ " " 3600 E/3900 N—3600 E/5400 N
- ④ " " 3600 E/4400 N—3600 E/5900 N
- ⑤ Wenner Array Data



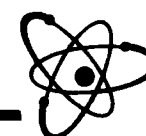
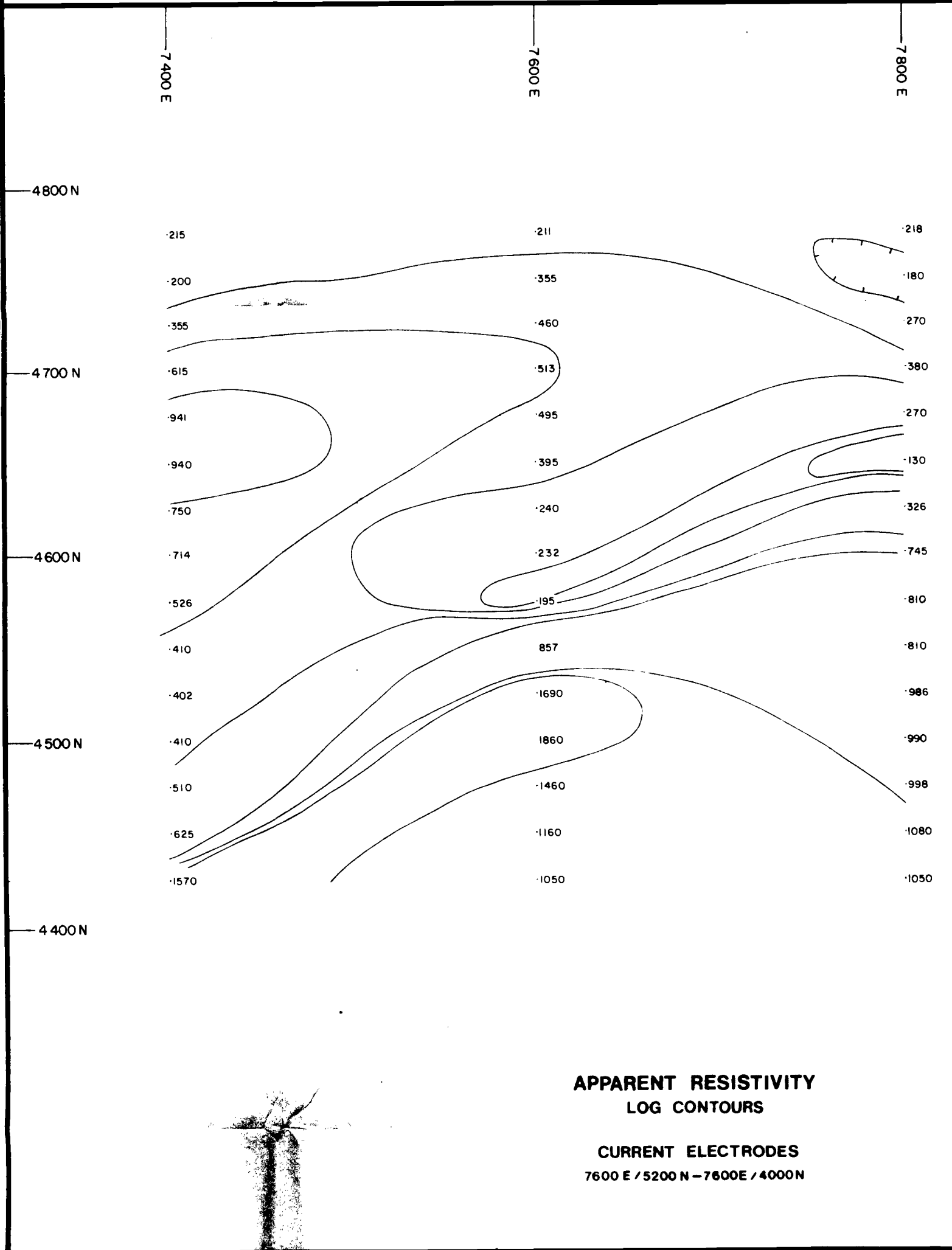
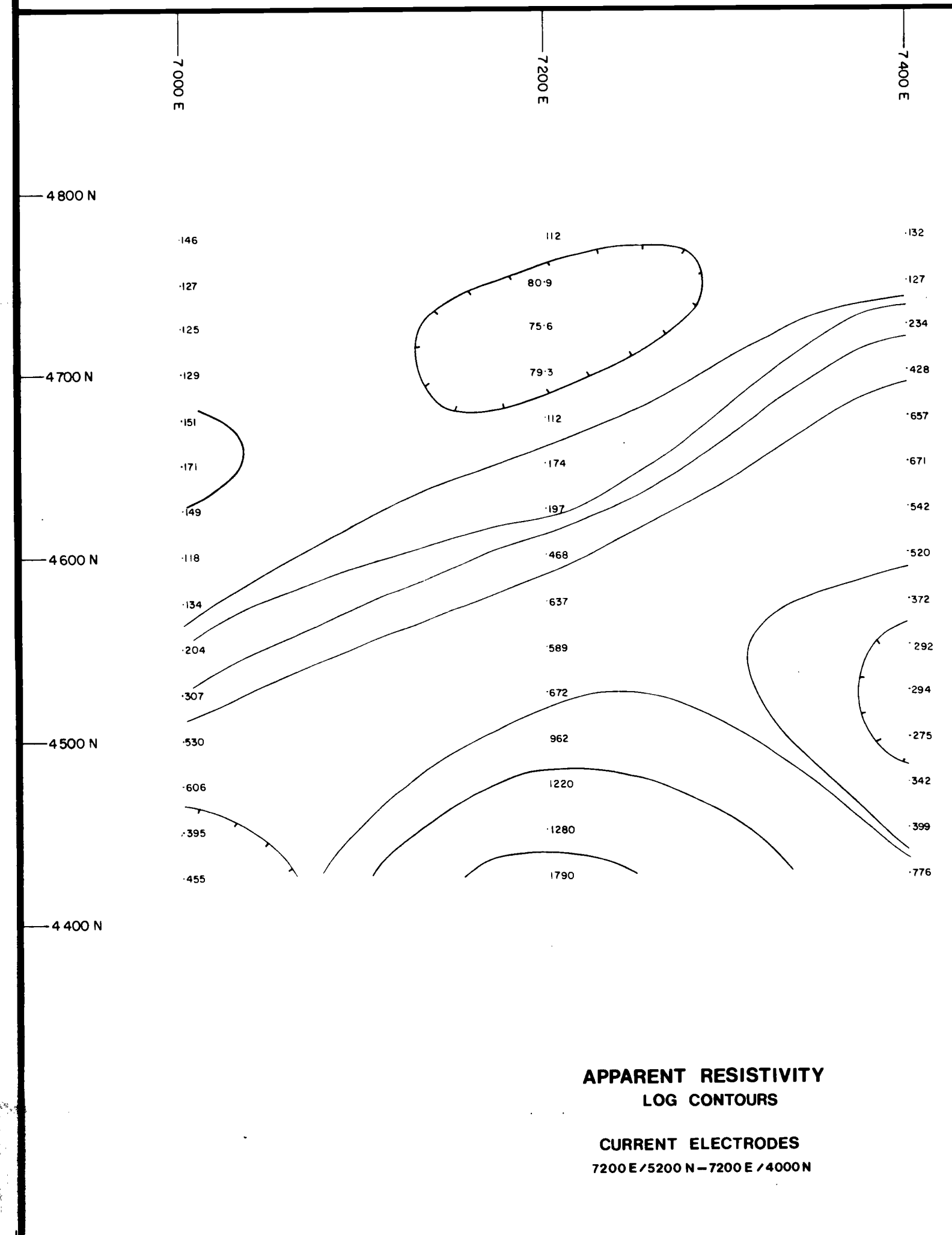
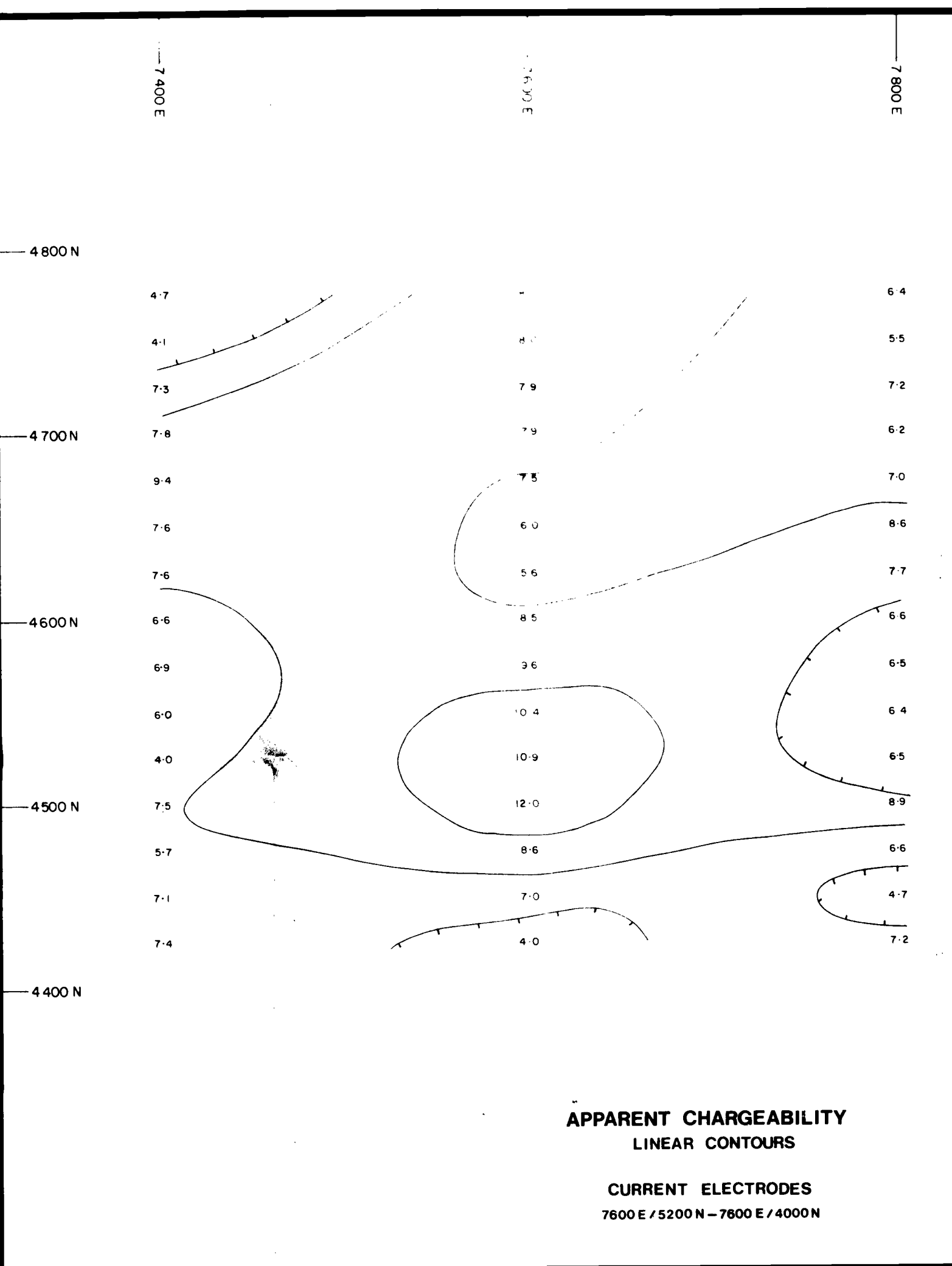
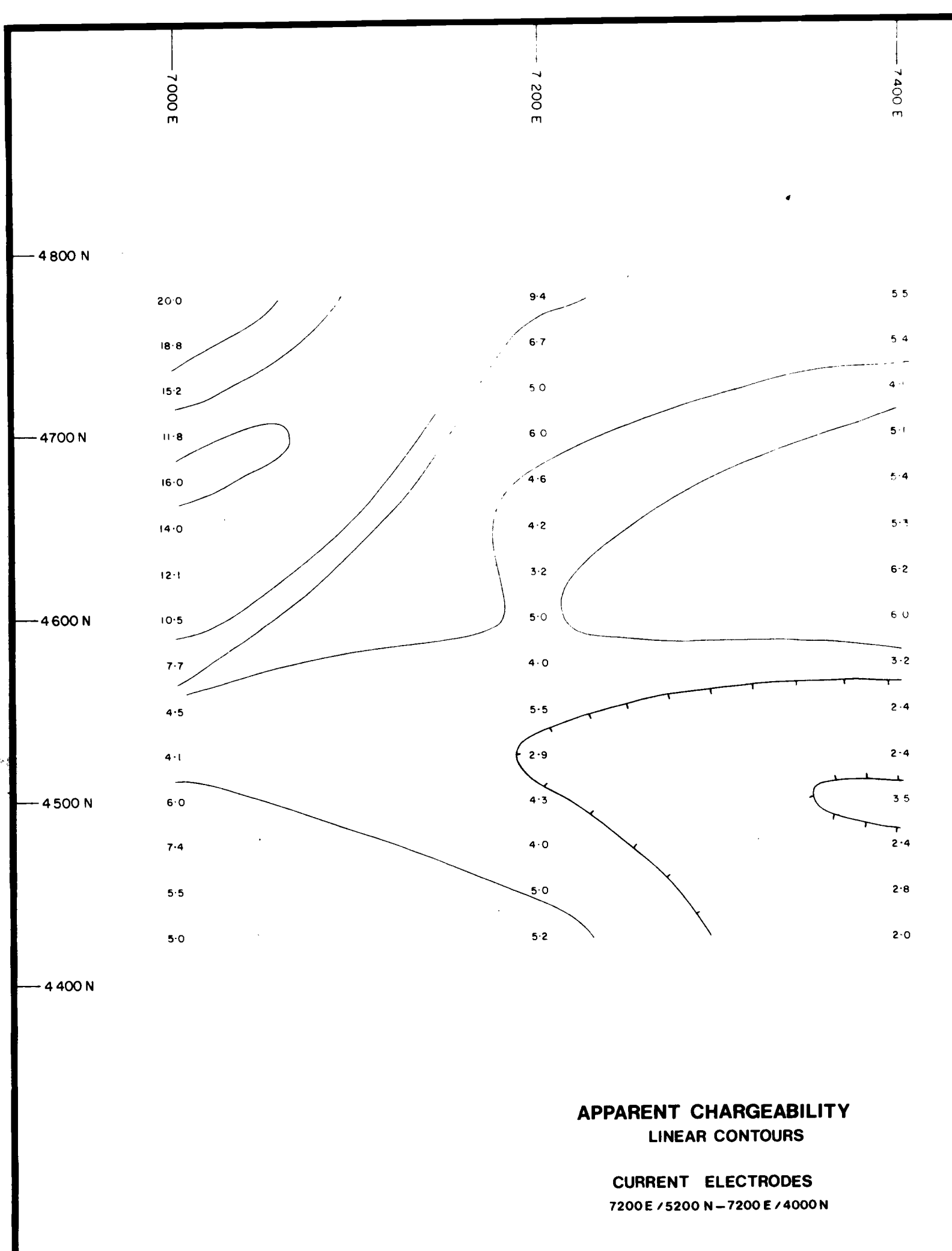
PNC EXPLORATION (AUSTRALIA) PTY LTD

E.L. 1255, SOUTH AUSTRALIA

WEST MALBOOMA GRID

INDUCED POLARITY SURVEY
GRADIENT ARRAY PROFILES

compiled by: Surtec Geosurveys Pty Ltd	date: Sept 1984
drawn by: Surtec Geosurveys Pty Ltd	drawing no.:



PNC EXPLORATION (AUSTRALIA) PTY LTD

E.L. 1255, SOUTH AUSTRALIA

EAST MALBOOMA GRID

**INDUCED POLARITY SURVEY
GRADIENT ARRAY**

compiled by: Surtec Geosurveys Pty Ltd

date: Sept 1984

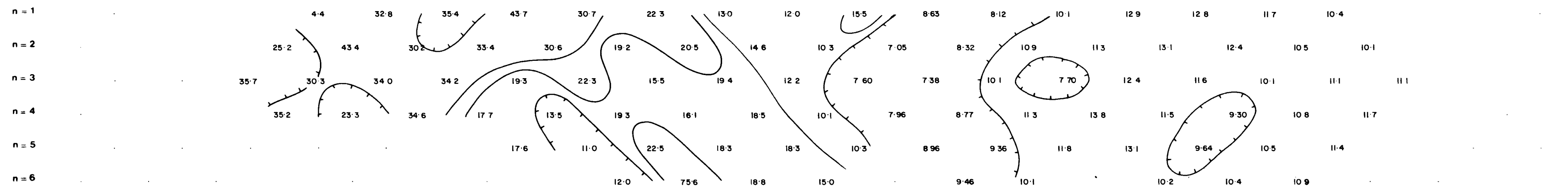
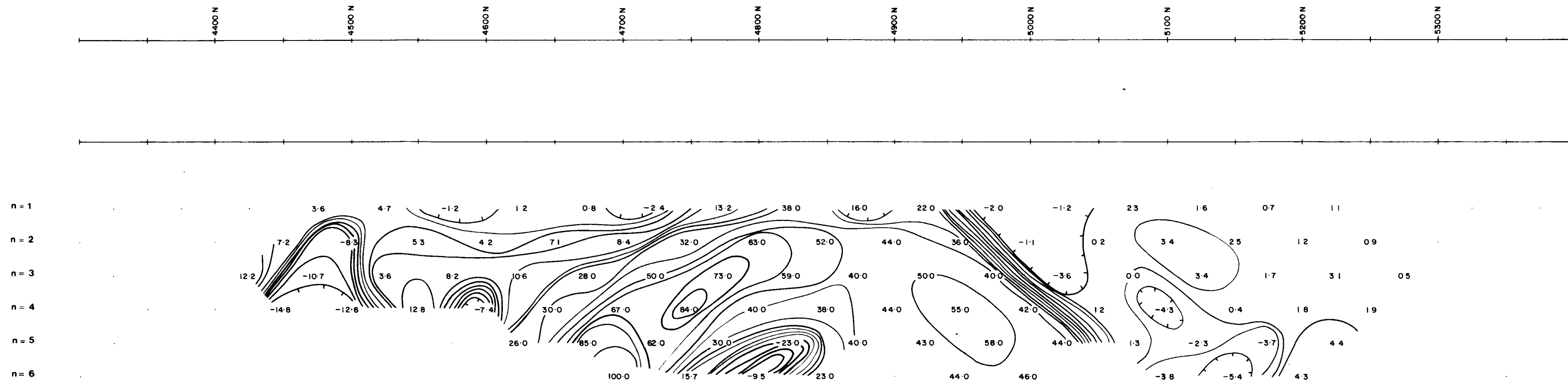
drawn by: Surtec Geosurveys Pty Ltd

drawing no.:

Culture Plan

Apparent Chargeability (msecs)

Apparent Resistivity (ohmm)



Transmitter type	Huntec 2.5kva
Timing sequence	2 sec on / 2 sec off
Receiver type	Scintrex IPR 8



Surveyed & Compiled
By
SURTEC GEOSURVEYS PTY LTD

INDUCED POLARISATION AND RESISTIVITY SURVEY
E.L.1255 SOUTH AUSTRALIA
EAST MALBOOMA GRID

LINE : 6800 E

Array: Dipole - Dipole	Dipole length
Date Sept 84	Job No. SG 69
Scale 1:2500	

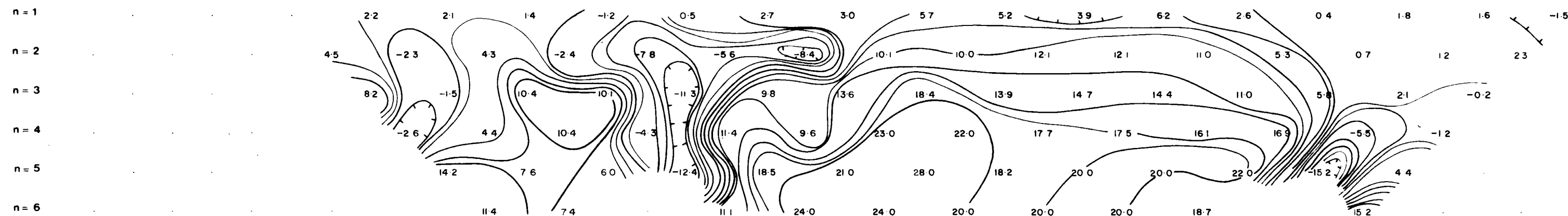
PLATE 11

4846(11)-11

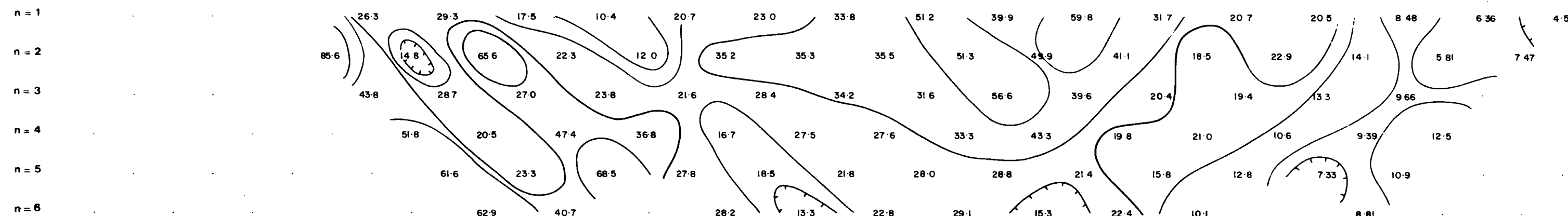
Culture Plan

Apparent Chargeability (msecs)

Apparent Resistivity (ohmm)



LINEAR CONTOURS



LOG CONTOURS



Surveyed & Compiled
By
SURTEC GEOSURVEYS PTY LTD

Transmitter type	Huntec 2.5kva
Timing sequence	2 sec on/2 sec off
Receiver type	Scintrex IPR 8

INDUCED POLARISATION AND RESISTIVITY SURVEY E.L.1255 SOUTH AUSTRALIA EAST MALBOOMA GRID		
LINE : 7000 E		
Array: Dipole - Dipole	Dipole length	
Date Sept 84	Job No. SG 69	Scale 1:2500

PLATE 12

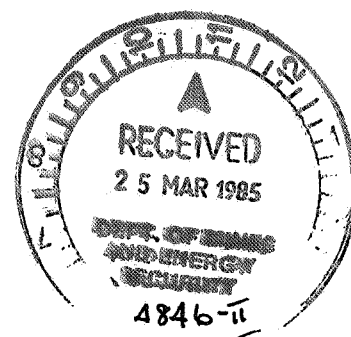
4846(11)-12

REPORT FOR QUARTER
ENDING 24TH MARCH, 1985
EXPLORATION LICENCE 1255
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.

SYDNEY OFFICE

MARCH, 1985



No field work was conducted in this quarter.

STATEMENT OF EXPENDITURE
FOR QUARTER ENDING 24TH MARCH, 1985

EXPLORATION LICENCE 1255

WARRIOR AREA

TARCOOLA 1:250,000 SHEET

SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY OFFICE
MARCH, 1985

No expenditure was incurred in this quarter.

REPORT FOR QUARTER ENDING
24TH JUNE, 1985
EXPLORATION LICENCE 1255
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JUNE, 1985



No field work was conducted during this quarter.

STATEMENT OF EXPENDITURE
FOR QUARTER ENDING
24TH JUNE, 1985
EXPLORATION LICENCE 1255
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JUNE, 1985

No expenditure was incurred during this quarter.

STATEMENT OF EXPENDITURE
QUARTER ENDING 24TH SEPTEMBER, 1985
EXPLORATION LICENCE 1255
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY OFFICE

SEPTEMBER, 1985



No expenditure was incurred during this quarter.

REPORT FOR QUARTER ENDING
6TH APRIL, 1986
~~8. FINAL REPORT~~
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY

APRIL, 1986

TABLE OF CONTENTS

1. INTRODUCTION
2. COMPLETED PROGRAMME
3. RESULTS
 - 3.1 MALBOOMA GRID
 - 3.2 TARCOOLA GOLD FIELD
4. CONCLUSIONS
5. RECOMMENDATION

LIST OF APPENDICE

- APPENDIX 1: ROCK ASSAY RESULTS
- APPENDIX 2: SOIL SAMPLE RESULTS
- APPENDIX 3: PETROGRAPHIC REPORTS

LIST OF ACCOMPANYING PLATES

- PLATE 1: GEOLOGY - EASTERN SHEET
- PLATE 2: GEOLOGY - WESTERN SHEET
- PLATE 3: RADIOMETRICS - EASTERN SHEET
- PLATE 4: RADIOMETRICS - WESTERN SHEET

1. INTRODUCTION

Exploration Licence 1313 was granted to PNC Exploration (Australia) Pty. Ltd. for a period of one year commencing 7th January, 1986, with an annual exploration commitment of \$40,000.

The tenement encompasses an area of 363 square kilometres and is situated approximately 40 kilometres west of Tarcoola, astride the Trans Australia Railway.

A Location Map is given in Figure 1.

EL 1313 covers the area of uranium mineralisation within Tertiary sediments located and defined under previous exploration titles. Exploration work within EL 1313 was aimed at investigating the gold/uranium potential of the Middle Proterozoic Fabian Quartzite Member in the Malbooma portion of the tenement.

2. COMPLETED PROGRAMME

A 1:5,000 scale mapping programme was completed within the tenement by the end of the first quarter. Approximately 22 line kilometres of gridding with 200 metre spaced tie lines, pegged at 50 metre intervals, was added as a southern extension to the existing Malbooma Grid.

62 rock samples, mostly from ferruginous milky quartz networks, were submitted to Comlabs for analysis of U, Th, Cu, Pb, Zn, Ba, Ce, La, Ag and Au (Sample No's 2401-2462). 73 soil samples from Ptf3 hornfels zones were also collected for assay. Soil samples were gathered on a 50m square grid basis (Sample No's 2701-2773). 13 rock samples were submitted to Pontifex for thin sectioning and brief petrographic reports (Samples No's 2321-2333).

Radiometric data were collected on a 50 metre by 200 metre basis using a Mount Sopris SC 132 scintillometer.

3. RESULTS

3.1 MALBOOMA GRID

All outcrops have been grouped within the Fabian Quartzite Member of the Tarcoola Formation. Lithologies consist of feldspathic quartzite and interbedded metasiltstone. The geology is presented at 1:5,000 scale as two sheets (Plates 1 & 2).

The sediments have been subjected to low grade regional

metamorphism although this is recognisable only in a few localities where the intrusion of Hiltaba Granite or Gawler Range Volcanic dykes have produced gentle hornfelsing of pelitic aluminous and graphitic horizons. Abundant 1cm long, acicular chiasolite crystals have been found across a bedding plane at 6,325E 3,875N, 100 metres from a small granite dome. Tremolite nodules located at 5,400 E 4,300 N are an unique contact response to an andesitic dyke.

Axial plane schistosity is very weakly developed within the pelitic horizons (e.g. Sample 2330).

Several small sub-outcrops of slightly hornfelsed Ptf3 were located in the southern grid extension. In this area sediments were mostly pyritic blue grey siltstone and fine sandstone. Experience has shown that the blue-grey colour in weathered hand specimen is due to original graphite content. A very strongly ferruginised brecciated quartz vein trending 150°M at 5,830E 3,620N, returned two samples with gold contents of 0.46 ppm and 0.08 ppm.

A prominent 2km long south-west trending ridge representing the northern arm of a syncline was mapped by establishing a grid originating at 2,000E 4,350N was established. A 2.2 km base line, pegged at 50 metres, was created on 220°M with grid positions and tie lines expressed as simple X,Y co-ordinates. The origin became 2,000X 4,000Y with the base line at 2,000X.

This new grid covers sediments of the basal Fabian Quartzite Member, Ptf₁. Lithologies range from coarse grained, occasionally pyritic, quartzo-feldspathic to sub-arkosic sandstone to pebble conglomerate.

The 1986 radiometric survey returned only normal background values.

Only four of the 62 rock samples assayed gold contents in excess of the 0.05 ppm detection limit (Appendix 1). Sample 2460 returned 2.1 ppm Au and 1200 ppm Cu from a milky quartz vein with pyrite and carbon inclusions and minor visible malachite.

73 soil samples were collected on a 50 metre grid basis from Ptf3 sub-outcrop. Samples were obtained from the -85 mesh fraction at a depth of 30 cm. No anomalous values were recorded (Appendix 2).

4. CONCLUSIONS

. Very minor gold mineralisation occurs in milky quartz veins within the Fabian Quartzite Member at Malbooma.

. Potential for gold mineralisation is limited to structurally controlled quartz vein and reef deposits near pyritic and graphitic metasiltsstones in anticlines.

. All outcrops of the Fabian Quartzite Member in the Malbooma area have now been gridded and mapped at 1:5,000 scale. No promising targets have been identified.

5. RECOMMENDATION

EL 1313 does not warrant further exploration and should be surrendered.



PNC Exploration (Australia) Pty Ltd

(Incorporated in New South Wales)

16th Floor, 56 Pitt Street, Sydney, N.S.W., Australia, 2000

086

PARENT CORPORATION:
POWER REACTOR &
NUCLEAR FUEL
DEVELOPMENT CORPORATION
TOKYO — JAPAN

Telephone: 241 3168, 241 1594-6

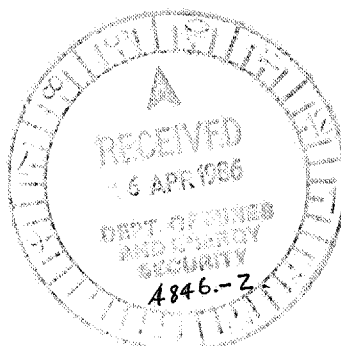
Telex: AA25912

Fac: 2511584

STATEMENT OF EXPENDITURE FOR QUARTER ENDING 6TH APRIL, 1986 EXPLORATION LICENCE 1313, WARRIOR AREA TARCOOLA 1:250,000 SHEET

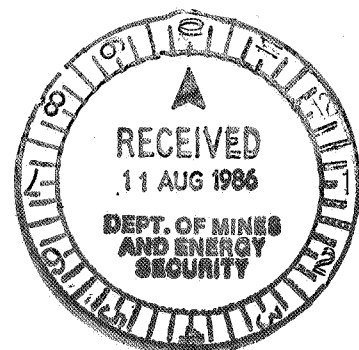
CLASSIFICATION	COST
<u>Geological</u>	0
<u>Drilling</u>	0
<u>Personnel</u>	
Technical Staff Salaries	6,260
Field Assistant Wages	1,235
<u>Logistics</u>	
Travel & Accommodation	749
Freight	56
Technical & Camp Supplies	734
Food & Provisions	392
Fuel	407
Repairs & Maintenance	35
<u>Technical Services</u>	
Chemical Assay & Petrography	3,258
Drafting & Computer	1,395
<u>Miscellaneous</u>	
Printing, Maps, Telephone, etc	825
<u>Depreciation</u>	
Vehicle	375
Survey Equipment	155

TOTAL	15,876



APPENDIX 1

ROCK ASSAY RESULTS



ROCK ASSAY RESULTS
WARRIOR AREA
MALBOOMA GRID

GRID REFERENCE	SAMPLE	U	Th	Ce	Ba	La	Cu _g	Pb _g	Zn _g	Ag _g	Au _g	COMMENTS
7400E 4190N	2401	12	130	90	135	70	6	12	10	-	-	Microgranite
7600E 4040N	2402	-	65	70	310	70	6	8	14	-	-	..
7700E 4000N	2403	-	40	80	360	60	4	8	22	-	-	Pegmatite
7360E 4390N	2404	-	-	20	1550	20	9	-	-	-	-	Pyritic qtzofelds sst.
7300E 4350N	2405	4	10	60	2900	40	7	-	-	-	-	
6325E 3875N	2406	4	18	80	990	30	30	12	9	-	-	
6290E 3850N	2407	-	28	70	650	50	6	10	7	-	-	
6305E 3855N	2408	12	38	30	65	30	6	6	10	-	0.05	
6125E 4250N	2409	-	-	20	590	-	6	-	-	-	-	
6050E 4230N	2410	-	-	30	240	-	8	-	-	-	-	
6075E 3960N	2411	6	-	50	610	30	4	-	-	-	-	
6010E 3925N	2412	4	8	60	580	40	6	6	2	-	-	
6020E 3675N	2413	8	8	40	690	20	10	28	3	-	-	
6040E 3665N	2414	4	10	50	620	20	8	12	5	-	-	
6120E 3730N	2415	4	6	50	760	30	10	20	4	-	-	
6150E 3715N	2416	8	6	70	950	50	20	4	55	-	-	Qtz network in hornfels
5800E 4250N	2417	4	-	20	45	20	5	-	2	-	-	
5790E 3740N	2418	4	20	50	560	40	8	18	6	-	-	
5800E 3650N	2419	4	12	40	210	20	6	10	5	-	-	
5825E 3625N	2420	-	-	30	1000	-	75	270	20	1	-	Ferruginised qtz breccia
.. ..	2421	-	6	30	2350	-	105	560	20	3	-	
5830E 3260N	2422	-	-	40	1150	20	570	195	620	4	-	
.. ..	2423	4	16	20	410	-	710	280	610	3	0.08	
5900E 3625N	2424	-	6	50	610	40	16	10	9	-	-	
5870E 3650N	2425	10	8	40	490	-	14	10	7	-	-	
5630E 4185N	2426	-	26	40	3100	40	12	12	-	-	-	Qtz pebble conglomerate
5345E 4215N	2427	4	-	20	100	-	8	-	-	-	-	

ROCK ASSAY RESULTS
WARRIOR AREA
MALBOOMA GRID
(continued)

GRID REFERENCE	SAMPLE	U	Th	Ce	Ba	La	Cu	Pb	Zn	Ag	Au	COMMENTS
5400E 4075N	2428	-	-	20	320	20	7	-	-	-	-	
5225E 4250N	2429	-	-	30	3000	30	10	18	2	-	-	Ferruginous pyritic qtzite.
5240E 4265N	2430	6	-	20	1600	-	8	12	-	-	-	
5201E 4198N	2431	-	-	-	200	-	12	4	-	-	-	
5225E 4175N	2432	-	-	20	430	-	7	-	-	-	-	
4990E 4205N	2433	-	-	20	800	20	10	-	-	-	-	
5000E 4550N	2434	4	18	30	130	-	9	8	4	-	-	
5025E 4575N	2435	6	10	20	200	-	7	6	-	-	-	
.. 4550N	2436	-	-	20	2250	-	7	-	-	-	-	Fe weathered breccia
4175E 4100N	2437	-	-	20	165	-	5	-	-	-	-	
4040E 4550N	2438	-	6	100	590	70	5	-	-	-	-	
4020E ..	2439	-	6	60	510	40	7	-	-	-	-	
4000E ..	2440	4	-	30	140	-	7	-	-	-	-	
3980E ..	2441	-	-	20	430	-	7	-	-	-	-	
3800E 4585N	2442	6	-	20	470	20	8	-	5	-	-	
3825E 4525N	2443	-	-	20	100	20	7	-	-	-	-	
4010E 4110N	2444	-	-	-	120	-	6	-	-	-	-	
.. ..	2445	-	-	-	240	-	8	-	125	-	-	Qtz breccia. Pyrite, carbon
4050E ..	2446	4	-	20	40	-	5	-	-	-	-	
3810E 4190N	2447	-	-	-	35	-	7	-	-	-	-	
3825E 4180N	2448	-	-	20	450	-	5	-	-	-	-	
3900E 4200N	2449	-	-	20	30	-	6	-	-	-	-	
2790E 4360N	2450	-	6	-	380	-	8	-	8	-	-	
2920E 4200N	2451	-	4	20	460	-	12	6	-	-	-	
2615E 4150N	2452	-	-	20	340	-	8	-	-	-	-	

ROCK ASSAY RESULTS
WARRIOR AREA
MALBOOMA GRID
(continued)

GRID REFERENCE	SAMPLE	U	Th	Ce	Ba	La	Cu	Pb	Zn	Ag	Au	COMMENTS
1965X 3525Y	2453	4	-	-	130	-	9	6	-	-	-	
2250X 3400Y	2454	-	-	20	5450	20	4	-	-	-	-	Pyritic qtzofelds grit
2000X 3100Y	2455	-	-	-	870	-	5	-	-	-	-	
1705X 2830Y	2456	-	-	-	20	-	5	-	-	-	-	
1950X 2600Y	2457	-	16	80	1500	60	7	-	2	-	-	'Shale'
P2330 1950X 2600Y	2458	4	4	40	550	20	7	-	12	-	-	
1850X 2600Y	2459	4	8	30	650	20	8	-	2	-	-	
1730X 2385Y	2460	-	-	-	105	-	1200	230	3	10	2.1	Pyrite, carbon inclusions in qtz blow
1995X 3880Y	2461	-	-	20	2250	20	16	8	-	1	0.15	Pyritic qtzofelds grit
5830E 3620N	2462	-	8	20	1400	20	540	250	340	6	0.46	Ferruginised qtz breccia
Tarcoola Mine	2463	80	10	70	290	30	120	220	4300	6	0.13	700cps altered fault zone with halite encrustations
.. ..	2464	4	20	100	580	70	32	24	200	1	-	Carbonaceous shale
.. ..	2465	-	20	110	410	50	430	1000	65	14	0.15	Argillised pyritic metasilt.
DETECTION LIMIT		4	4	20	10	20	2	4	2	1	0.05	
METHOD		XRF1	XRF1	XRF1	XRF1	XRF1	AAS1	AAS1	AAS1	AAS3	AAS5A	

All results in ppm

- Denotes below detection limit

2725 - 3050X 3260Y

APPENDIX 2

SOIL SAMPLE ASSAY RESULTS

SOIL SAMPLE ASSAY RESULTS
WARRIOR AREA
MALBOOMA GRID

GRID	REFERENCE	SAMPLE	U	Th	Ce	Ba	La	Cu	Pb	Zn	Ag	Au
5700E	3750N	2701	-	-	20	70	-	12	4	20	-	-
5750E	..	2702	-	-	30	115	-	10	-	30	-	-
5800E	..	2703	-	-	20	125	-	10	-	32	-	-
5850E	..	2704	-	-	30	85	-	7	6	18	-	-
5900E	..	2705	6	-	30	90	20	6	4	20	-	-
5950E	..	2706	4	4	20	115	20	8	4	-	-	-
..	3700N	2707	4	6	40	140	30	14	6	28	-	-
5900E	..	2708	-	8	20	120	20	10	6	28	-	-
5850E	..	2709	-	-	20	90	-	12	-	26	-	-
5800E	..	2710	-	-	30	135	20	9	6	28	-	-
5750E	..	2711	4	-	20	100	20	9	6	22	-	-
5700E	..	2712	4	-	20	75	-	8	8	28	-	-
..	3650N	2713	4	4	30	125	30	10	8	20	-	-
5750E	..	2714	4	4	20	95	20	9	4	18	-	-
5800E	..	2715	4	-	30	110	-	8	4	20	-	-
5850E	..	2716	-	-	40	145	20	9	-	20	-	-
5900E	..	2717	-	4	30	105	20	8	6	22	-	-
5950E	..	2718	-	6	30	135	30	10	6	24	-	-
..	3600N	2719	-	8	40	170	20	10	8	22	-	-
5900E	..	2720	4	8	30	130	20	10	12	24	-	-
5850E	..	2721	4	6	40	150	20	14	12	30	-	-
5800E	..	2722	4	8	20	165	20	8	6	14	-	-
5750E	..	2723	-	6	40	155	20	10	-	20	-	-
5700E	..	2724	4	-	20	90	-	12	4	24	-	-
5830E	3620N	2725	6	4	50	260	-	10	60	22	-	-
6000E	3750N	2726	-	-	30	100	-	6	6	16	-	-
6050E	..	2727	6	4	30	85	20	7	6	14	-	-
6100E	..	2728	-	4	30	130	20	12	10	22	-	-
6150E	..	2729	-	4	30	100	20	10	14	22	-	-
6200E	..	2730	4	6	30	145	20	10	10	20	-	-

SOIL SAMPLE ASSAY RESULTS (Continued).

GRID	REFERENCE	SAMPLE	U	Th	Ce	Ba	La	Cu	Pb	Zn	Ag	Au
6200E	3700N	2731	-	8	30	80	20	10	8	20	-	-
6150E	..	2732	-	16	60	165	40	12	34	28	-	0.05
6100E	..	2733	-	4	40	180	30	12	8	28	-	-
6050E	..	2734	-	10	40	240	20	9	12	18	-	-
6000E	..	2735	4	6	40	160	20	10	10	22	-	-
..	3650N	2736	4	8	40	135	20	10	8	20	-	-
6050E	..	2737	-	10	40	150	20	12	10	20	-	-
6100E	..	2738	4	8	30	330	-	12	10	22	-	-
6150E	..	2739	-	8	40	155	30	10	4	20	-	-
6200E	..	2740	-	12	50	185	30	12	6	28	-	-
1850X	2550Y	2741	-	6	50	210	20	14	8	24	-	-
..	2600Y	2742	4	6	30	180	30	14	10	24	-	-
..	2650Y	2743	4	12	40	240	30	14	6	26	-	-
1900X	..	2744	4	4	30	185	20	12	4	20	-	-
..	2600Y	2745	-	6	30	175	30	12	8	22	-	-
..	2550Y	2746	-	6	30	150	20	12	8	22	-	-
1950X	..	2747	-	6	50	185	20	16	6	24	-	-
..	2600Y	2748	4	8	40	210	20	18	12	32	-	-
1950X	2650Y	2749	4	-	50	200	-	12	8	24	-	-
2160X	2540Y	2750	-	6	20	95	-	8	4	20	-	-
6000E	3900N	2751	6	-	20	100	-	7	6	18	-	-
6050E	..	2752	-	4	30	150	-	8	8	20	-	-
6100E	..	2753	-	6	40	170	30	18	10	26	-	-
6150E	..	2754	-	14	30	180	30	9	12	22	-	-
..	3950N	2755	-	8	30	135	30	6	8	20	-	-
6100E	..	2756	-	6	40	175	30	14	8	36	-	-
6050E	..	2757	4	4	30	170	20	9	6	22	-	-
6000E	..	2758	-	-	40	160	20	10	10	22	-	-
..	4000N	2759	-	8	30	135	-	10	10	30	-	-

SOIL SAMPLE ASSAY RESULTS (Continued).

[illegible]

APPENDIX 3

PETROGRAPHIC REPORTS

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

WARRIOR PROJECT

MALBOOMA AREA

MINERALOGICAL REPORT NO. 4658

(By Alan Purvis PhD)

18th November, 1985

TO: Mr. Mark Dunn
PNC Exploration (Aust) Pty. Ltd.
16th Floor,
Royal Exchange Building,
56 Pitt St.,
SYDNEY NSW 2000

YOUR REFERENCE : Order No. 1369

MATERIAL : Rock samples

IDENTIFICATION : 2321 to 2340 (except 2337)

WORK REQUESTED: Thin section preparation and
description.

SAMPLES & SECTIONS : Returned to you with this report.



PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Each petrographic description includes a rock name, with comments on alteration or other genetic aspects, and comments on comparisons within the suite as appropriate.

The author (Alan Purvis) is familiar with the stratigraphy and different facies in Northern Eyre Peninsula, South Australia, and it is understood that these samples come from that general area. Accordingly the following summary comments, include some suggestions of the possible stratigraphic representation of the rocks. These are given for your consideration, but follow-up discussions may modify these suggestions.

The petrography indicates that the batch includes: 11 probable Mid-Proterozoic sediments (2326, 30-36, 38-40); and two igneous rocks (2321, 23); two possible Warrow Quartzite equivalents (2322, 29); which are more highly recrystallised than the Mid-Proterozoic sediments; and four possibly Cainozoic, poorly sorted lithified kaolinised quartz sands (2324, 25, 27, 28).

The "Warrow Quartzite" and the Mid Proterozoic sediments include low-grade metamorphosed felspathic quartz sandstones but those considered in this report to be Mid Proterozoic, contain some probably authigenic adularia, and detrital muscovite which are not present in the "Warrow Quartzite".

The Mid-Proterozoic sediments range to felspathic and locally graphitic pelitic siltstones also containing some authigenic adularia, excepting 2340. Pyrite is common in these sediments and they are commonly quartz-veined. Rare sphalerite occurs in 2336. Sample 2340 appears to consist

Summary Comments continued :

of retrogressed, close-packed metamorphic grains, similar to the retrogressed porphyroblasts known to the author in Wandearah Metasiltstone equivalents on Northern Eyre Peninsula.

The igneous samples are a lamprophyric, quartz-bearing hornblende monzonite (2321), and a potassic-leucogranite (2323).

The probable Cainozoic rocks are massive, with negligible evidence of bedding, and no evidence of metamorphic fabric.

They consist of minor to abundant, unsorted quartz detritus randomly disposed through a matrix of kaolin and irregular patches of extremely fine titaniferous material.

6,940E 4,200N

2321 : massive, recrystallised, lamprophyric (quartz-bearing), hornblende-micromonzonite; accessory fine magnetite and acicular apatite.

The texture of this rock is dominated by partly recrystallised prisms, and granular clusters of hornblende (40% of the rock), about 1 mm in size, with minor intergrown decussate (metamorphic) biotite (5 - 7%). These ferromagnesian minerals are randomly disposed through a diffuse, metamorphic microcrystalline aggregate of plagioclase (35%), alkali felspar (20%) and quartz (5%). The felspar grains are about 0.5 mm in size, but the quartz is finer grained, as is the accessory oxide (?magnetite). Accessory apatite occurs as acicular crystals about 0.5 mm long.

This rock has a hornblende-rich monzonitic composition, but the texture is recrystallised and weakly "lamprophyric".

This is possibly a post-tectonic "A type" intrusive rock (similar rocks occur in the Peake and Denison Ranges, for example).

2322 laminated, fine grained, quartzofelspathic graphitic metasediment with minor muscovite and tourmaline (probably a graphitic member of the Warrow Quartzite).

This is a finely layered metasediment with a metamorphic grain size of 0.1 - 0.3 mm. The layers are 1 - 4 mm thick and are defined by:

- (1) variations in the abundance of extremely fine graphite,
- (2) alternating layers with fresh and clouded feldspar grains.

The overall composition is arkosic with subequal amounts of quartz (30%), alkali feldspar (40%), and plagioclase. Some layers have about 5% post-tectonic (poikiloblastic) muscovite as flakes to 1 mm long. These layers are free of graphite, but have the alternately fresh and clouded feldspars. Rare orange-coloured tourmaline grains occur in the graphitic layers.

This is a strongly recrystallised metasediment conceivably from the Hutchison Group as part of the (upper) graphitic facies of the Warrow Quartzite.

6,305E 3,855N

2323 : leucocratic granite with minor biotite and myrmekite, (post-tectonic).

This is essentially an even grained, and completely undeformed potassic granite, with a grainsize of 0.5-2 mm. It has 30% quartz, 55% alkali felspar, 10-15% plagioclase, and 3-5% biotite; with minor myrmekite, and traces of muscovite around some of the biotite flakes.

The dominant mineral is a perthitic orthoclase and is quite fresh, whereas the plagioclase is weakly sericitised. The biotite is dark reddish-brown to brownish black, and is also quite fresh.

This is a post tectonic leucogranite.

2325 : weakly layered kaolinised, poorly sorted but mostly medium to coarse grained quartz sandstone, with patches of fine leucoxene; (apparently a much coarser more heterogeneous equivalent of 2324, of possible Cainozoic age).

This is a weakly layered but very poorly sorted sandstone composed of a loose to moderately tightly packed aggregate of subangular to subrounded quartz grains from siltsize (<0.05mm) to very coarse sandsize (>1 mm). Some lenses consist entirely of silt to very fine sand, but most are thoroughly mixed, with a ubiquitous but generally fairly sparse kaolin matrix.

Patches of diffuse to dense leucoxene are similar to those in 2324 but larger (to 10 x 3mm), and suggest a possible Cainozoic age for this sediment (cf. "Grey Billy" formation).

5,000E 4,550N

2324 : massive, kaolin-rich (kaolinised) fine grained quartz sandstone, with patches of leucoxene; (post tectonic possibly as young as Cainozoic.

This is a massive sandstone composed essentially of subangular quartz grains 0.05 to 0.2 mm in size (very fine to fine sand), crowded within a sparser matrix of massive unoriented kaolin. Localised lenses of relatively more concentrated kaolin to 10 x 4 mm, contain only minor quartz grains and accessory zircon.

Patches of dense ultrafine leucoxene are scattered and are similar to the fine leucoxene in ?Tertiary "grey billy" formations. Accessory abnormally coarse 0.5 mm to 1.2 mm angular quartz grains are randomly scattered.

Because of the degree of weathering it is not clear what stratigraphic level this rock represents. It is clearly post-Hutchison, and may be as young as Cainozoic.

2326 : metamorphosed, layered, fine grained/coarse grained, feldspathic quartz sandstone (?Middle Proterozoic).

This is a strongly layered metasandstone with beds 5 to 20mm thick. Sandy siltstone beds consist of low grade, metamorphically compacted grains of quartz and alkali feldspar grains mostly less than 0.15 mm in size with scattered quartz grains to 0.2 mm. The coarser layers have a strongly contrasting grain size, with subrounded to rounded, coarse sand-sized grains of quartz and minor alkali feldspar, 0.5 - 1.5 mm in size, in a finer grained matrix including some possibly authigenic adularia crystals. Adularia also occurs as overgrowths on detrital microcline grains. The coarser grains are elongate and commonly aligned at a high angle to the layering, and define a weak schistosity.

Zircon is a common accessory albeit <1%, in the siltstone layers, together with traces of detrital white mica. Some of the detrital grains in the siltstone layers consist of intergrowths of components which are not clearly resolvable, but maybe quartz + alkali feldspar(?).

Oxidised ?biotite is a common accessory in the coarse layer (3%), together with rare white mica. The general comment is made, that similar, but more equigranular sediments occur in the Northern Eyre Peninsula. The metamorphic grade appears to be similar to that of the Wandearah Meta-siltstone, but the sedimentary facies is different, and it is not clear whether this sample may be older or younger than the Wandearah metasiltstone or facies variants of it.

3,800E 4,585N

2327 : massive, kaolinitic, sandy siltstone; minor irregular carbonate-rich and leucoxenitic areas : (cf. 2324).

This is a very poorly sorted massive sediment without any evidence of sedimentary or tectonic structures, virtually the same as 2324.

Quartz grains (50%) from 0.01 mm to 0.6 mm in size, but mostly <0.1 mm, and mostly angular, are randomly disposed through a matrix of kaolin and diffuse leucoxene with irregular carbonate-rich areas. This veins of clouded carbonate occur locally.

This is probably a Cainozoic sediment.

3,825E 4,525N

2328 : massive, unsorted, kaolinitic and leucoxenitic, diamictitic sandstone, with clay lenses; (cf. 2325).

This sediment is similar to 2327, but the quartz grains are coarser and more poorly sorted. Indeed it compares with 2325, in the same way that 2327 compares with 2324.

Quartz grains (50%) 0.02 to 3 mm in size, are variably subrounded to angular, and have a chaotic distribution through a matrix of kaolin with diffuse areas of leucoxene. This matrix also incorporates several irregular lenses of clouded clay to >20 mm long x 10 mm wide.

Minor grains of silicified, quartzitic and cherty composition are present as well as single-crystal quartz grains.

It is probably a Cainozoic sediment.

2,050X 3,360Y

2329 : metamorphosed feldspathic sandstone with patches of barite partly after ?pyrite (?Warrow Quartzite).

This is a metamorphosed, thin bedded feldspathic sandstone with very coarse elliptical quartz grains to 2 mm long, and about 10% clear to clouded alkali feldspar grains to 0.2 to 1 mm in size. These grains occur within a recrystallised matrix, mostly composed of elongated quartz micromosaic, with a grain size of 0.2 mm. The common orientation of the long axis of the elliptical grains is oblique to the bedding as in 2326.

Several lenses of barite to 8 mm x 2 mm, and cubic patches of barite to 3 x 2 mm are scattered. The cubic patches are possible replicas after pyrite and are locally porous.

The feldspar grains are commonly stained by abundant limonite stringers.

1,950X 2,600Y

2330 : laminated, pelitic, felspathic very fine
 sandstone and siltstone, with a weak schistosity.

Each thin section made from the two rocks forming this sample are of the same lithology, i.e. a folded and weakly crenulated, laminated, fine metasediment, with an axial plane schistosity.

The sediment has thin (0.1 mm) mica-rich laminae, and thicker (0.1-0.5mm) laminae, with detrital quartz and alkali felspar grains up to 0.2 mm in size (very fine to fine sand size). Detrital mica flakes 0.2mm long occur in the coarser layers. Most of the mica is very fine and probably of metamorphic origin, and is aligned roughly parallel to the axial planes of the folds in the layering.

The metamorphic grade of this rock is quite low, and it may be a Wandearah Metasiltstone equivalent(?).

1,850X 2,600Y

2331 : layered coarser and finer grained feldspathic
 metasediment, with adularia and detrital
 white mica (cf. 2326).

This sample is very similar to 2326 with coarse and fine layers of micaceous and/or feldspathic quartz sandstone. As in 2326, the coarser grains are elongate at about 90° to the layering, defining a schistosity or foliation of tectonic origin.

The coarser layers have quartz grains up to 1 mm long with traces of feldspar (microcline and plagioclase) and rare lithic grains composed of fine grained quartz and /or sericite. A matrix of quartz and adularia is present. The adularia is probably of authigenic origin.

The finer grained layers have more abundant detrital white mica which is kinked, but broadly layer-parallel, as well as quartz, alkali feldspar (mostly adularia) and minor plagioclase. The average grain size is 0.1mm. Minor oxidised biotite is weakly aligned parallel to the coarser detrital grains.

6,000E 3,950N

2332 : massive to weakly thin bedded, fine grained, quartzofeldspathic metasediment, with minor white mica.

This sample has some similarities with the fine grained layers in 2326, and 2331, and indeed it appears to represent the same sedimentary unit as 2326 and 2331.

It has an average grain size of 0.1mm and consists largely of a low grade metamorphic micromosaic of quartz and alkali feldspar. Irregular patches with densely sericitised feldspar (?plagioclase) are common.

Accessories include leucoxene, detrital white mica and zircon.

6,100E 4,000N

2333 : massive, fine grained quartz-alkali felspar,
meta sediment.

Petrographically, this sample is similar to 2332, even though in hand specimen it appears to be more massive, "bleached" and indurated. It is also petrographically similar to 2322 but to a lesser degree, and certainly not as dark coloured in hand specimen.

It consists of a low grade metamorphic micromosaic of quartz and mostly unaltered alkali felspar grains in sub equal abundance, 0.1mm in size, with scattered sericitised plagioclase grains. Accessory fine white mica appears to be detrital.

TARCOOLA GOLD MINE

2334 : micaceous and schistose, sericitic (?sericitised)
fine (ex-felspathic) sandstone, with disseminated
pyrite and thin quartz veins.

This sample like 2333 has abundant detrital fine sand grains of quartz, about 0.1 mm in size.

However this rock contains far more abundant detrital white mica flakes to 0.4 mm long, defining a bedding foliation and an abundant matrix of compact, decussate, extremely fine sericite, most of which appears to represent altered felspar grains. Diffuse lenses of dense sericite are also scattered and are about 1 mm in diameter. (These are similar to spots in probably Wandearah Metasiltstone equivalents known to the author on the Northern Eyre Peninsular).

Pyrite is scattered to form up to 3% of the rock and is partly localised along vein like features which rarely contain lenses of vein quartz. There are two younger sets of thin quartz veins, including an older barren set, and a younger set with limonite, pyrite and crystal-lined cavities. The older veins are offset along the younger veins, which are parallel to the foliation.

2335 : laminated, pyritic, micaceous and sericitic,
 fine-grained feldspathic quartz sandstone.

This sample is very similar to 2334, except that it also contains moderately abundant fresh detrital alkali feldspar, and the pyrite (2 - 3%) is more evenly distributed as crystals and grains about 0.1 - 0.4 mm in size.

Several quartz veins to 1.5 mm wide are locally sinuous in outline, cutting across the bedding. Limonite-lined fractures are locally parallel to the bedding foliation.

TARCOOLA GOLD MINE

2336 interlayered graphitic and non-graphitic
micaceous quartzofelspathic and pelitic fine
sandstone; minor pyrite disseminated and in
veins, numerous quartz stringers and trace
sphalerite.

This sample has folded graphitic layers separated by a
non-graphitic layer from 10 to >20 mm thick.

The non-graphitic domains are very similar to 2335, but
have less detrital white mica and more alkali feldspar.
Much of this alkali feldspar is adularia, and is almost
certainly authigenic, but there is also some detrital
microcline.

The graphitic layers have more abundant detrital white
mica, as well as disseminated graphite, but have authigenic
adularia similar to that in the graphite-free areas.

In both layers the maximum grain size is 0.1 mm but there
are more abundant silt-sized grains in the graphitic layers.
Detrital alkali feldspar (microcline) is present in the
graphitic layers.

Accessory pyrite cubes are scattered and a single grain
of iron-poor sphalerite is present. Pyrite also occurs in
and adjacent to some of the numerous quartz stringers.
Most of these stringers also contain traces of adularia. A
late stage vein contains brown clay and scattered small
prisms of quartz about 0.1 mm long.

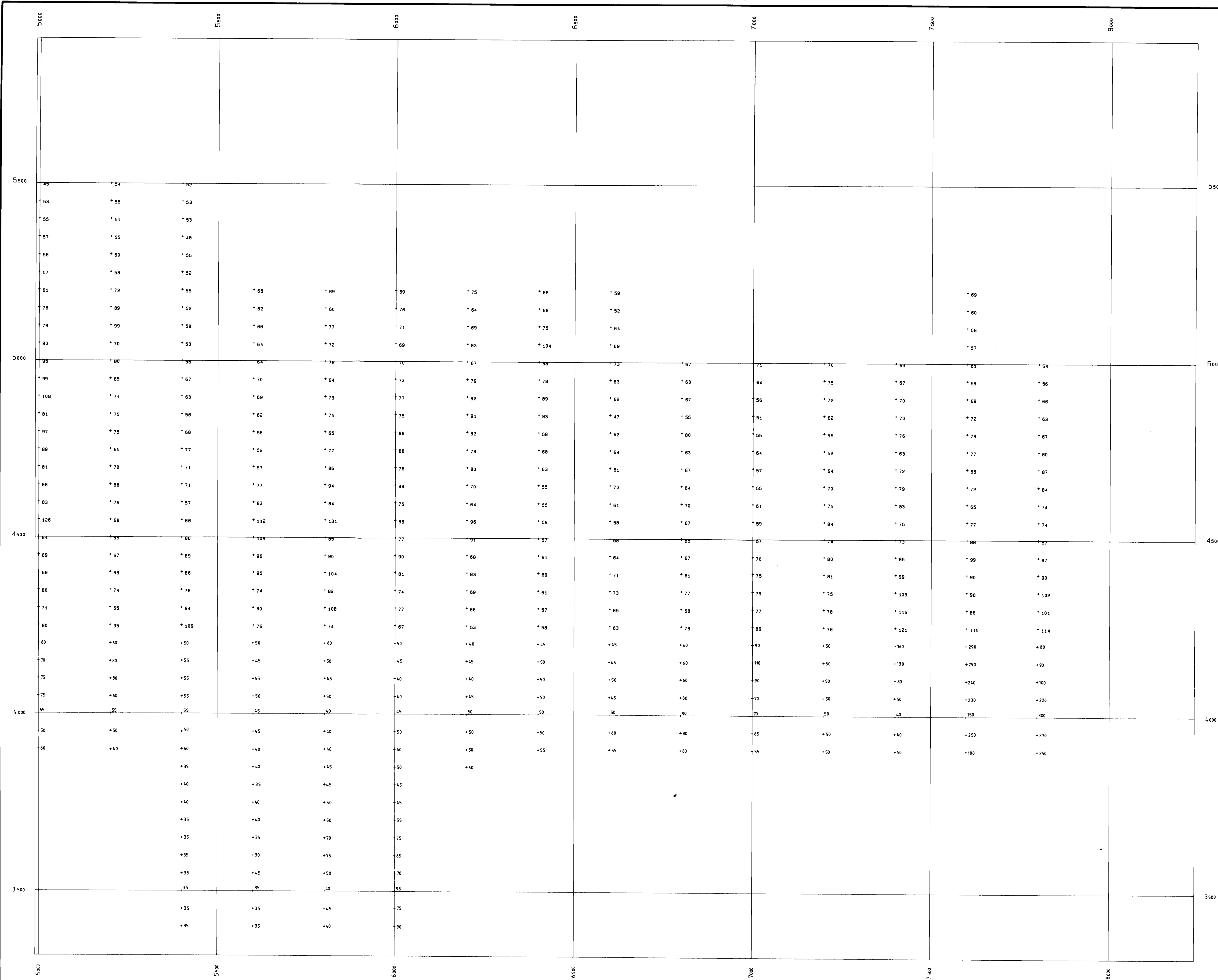
TARCOOLA GOLD MINE

2338

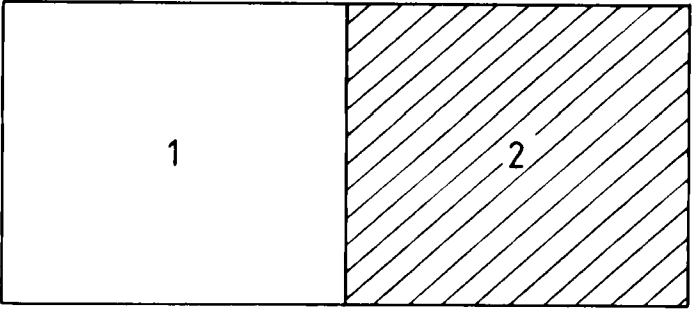
2339 : low-grade metamorphosed, micaceous, fine grained, feldspathic-sericitic (sericitised) quartz-sandstone, minor veinlets and stringers of quartz and adularia.

These are virtually identical rocks with a fairly homogeneous, low grade metamorphic mosaic texture, average grain size of 0.1mm. Detrital quartz and alkali feldspar, with patches of sericite which is probably largely derived from plagioclase, are the dominant minerals. Some of the alkali feldspar is in the form of euhedral rhomb-shaped crystals (of adularia) and is probably authigenic. Accessory detrital muscovite occurs in both samples as flakes to 0.4 mm long.

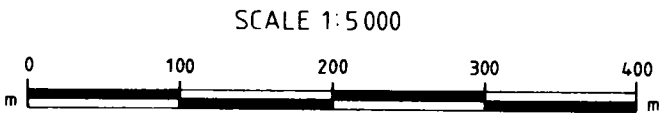
Limonite is in both rocks and is partly derived from sparse scattered pyrite but is coarser and more abundant in 2339. In this 2339 sample, the pyrite occurs along a bleached (limonite-free), extension of a thin discordant quartz vein, cut by a later concordant vein. Quartz veins in 2338 are all discordant and pyrite free.



NOTES
Horizontal Datum : Local
Line Spacing : 200 metres
Data Spacing : 50 metres
Map Production : P. C. M. Computer Services
North is True at the centre of this map



SHEET LAYOUT



P N C EXPLORATION (AUSTRALIA) PTY LTD

MALBOOMA RADIOMETRIC SURVEY
SOUTH AUSTRALIA

TOTAL COUNT

Eastern Sheet

plate 3

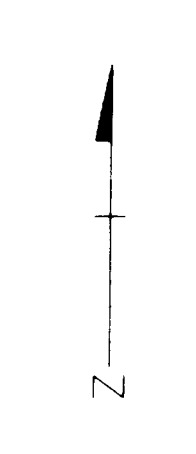
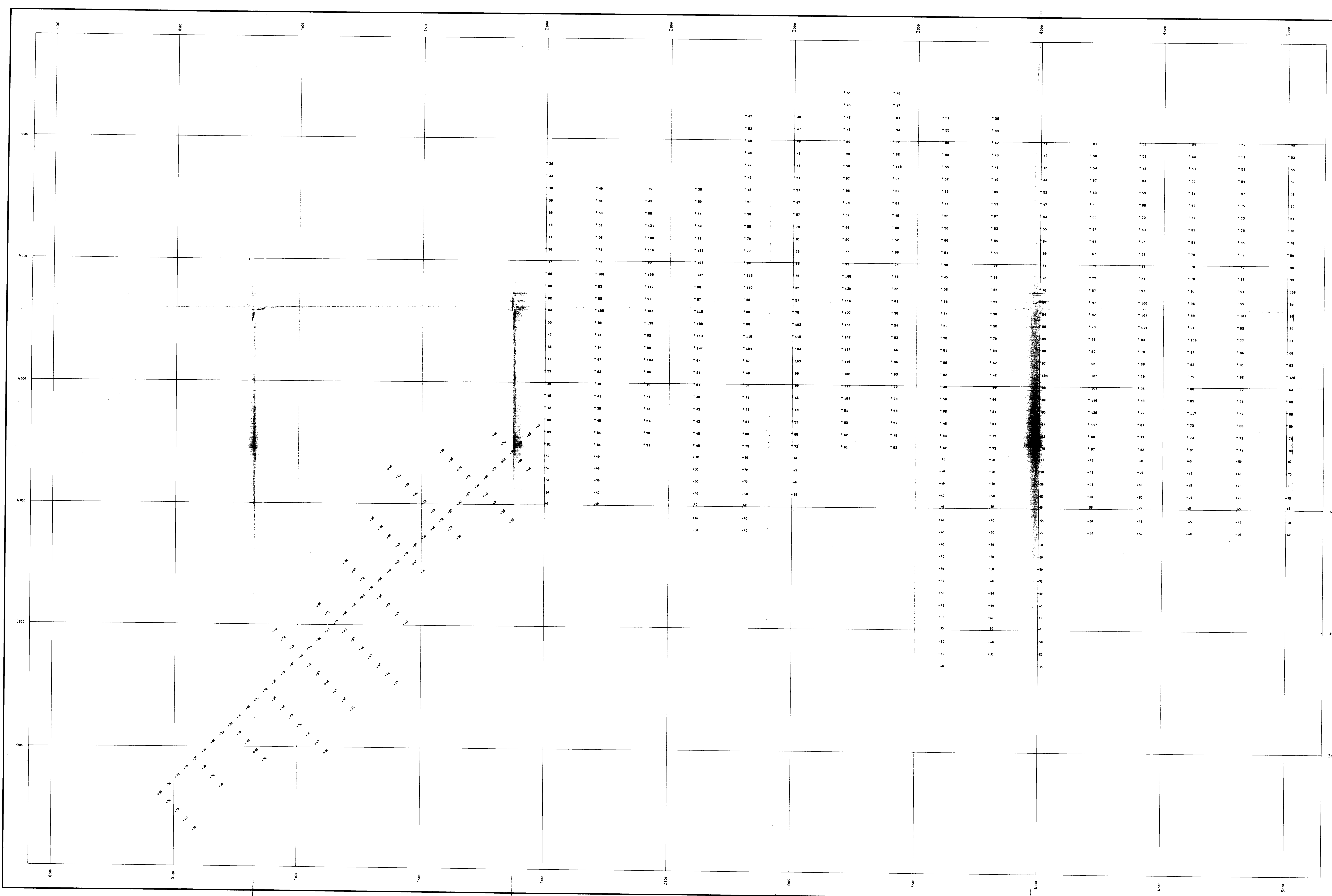
Author: M. Dunn

Date: Dec 84, revised April 85

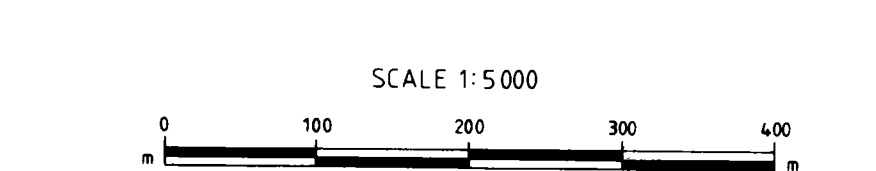
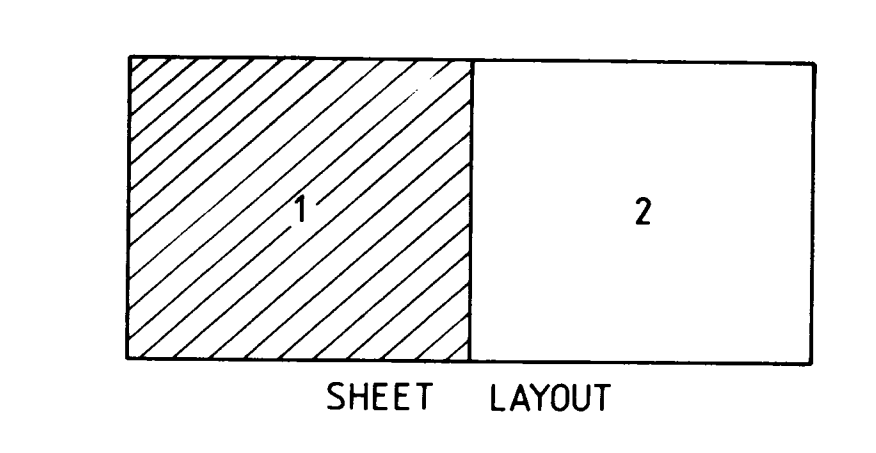
Drawn: G.M., G.L.C.

File No:

4846 (11) 45



Horizontal Datum: GDA 1984
Vertical Datum: AHD 1984
Scale: 1:5000
Map Production: G.M. Computer Services
North is True at the Centre of this Map



REPORT FOR QUARTER
ENDING 7TH JULY, 1986
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA



PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JULY, 1986

1. INTRODUCTION

Exploration Licence 1313 was granted to PNC Exploration (Australia) Pty. Ltd. for a term of one year commencing on 7th January, 1986; and with an exploration expenditure commitment of \$40,000.

The tenement encompasses an area of 363 square kilometres and is situated approximately 50 km west of Tarcoola, S.A.

A Location Map is given in Figure 1.

2. COMPLETED PROGRAMME

No field work was conducted during this quarter.

2. PROPOSED PROGRAMME

Access track construction and percussion drilling.

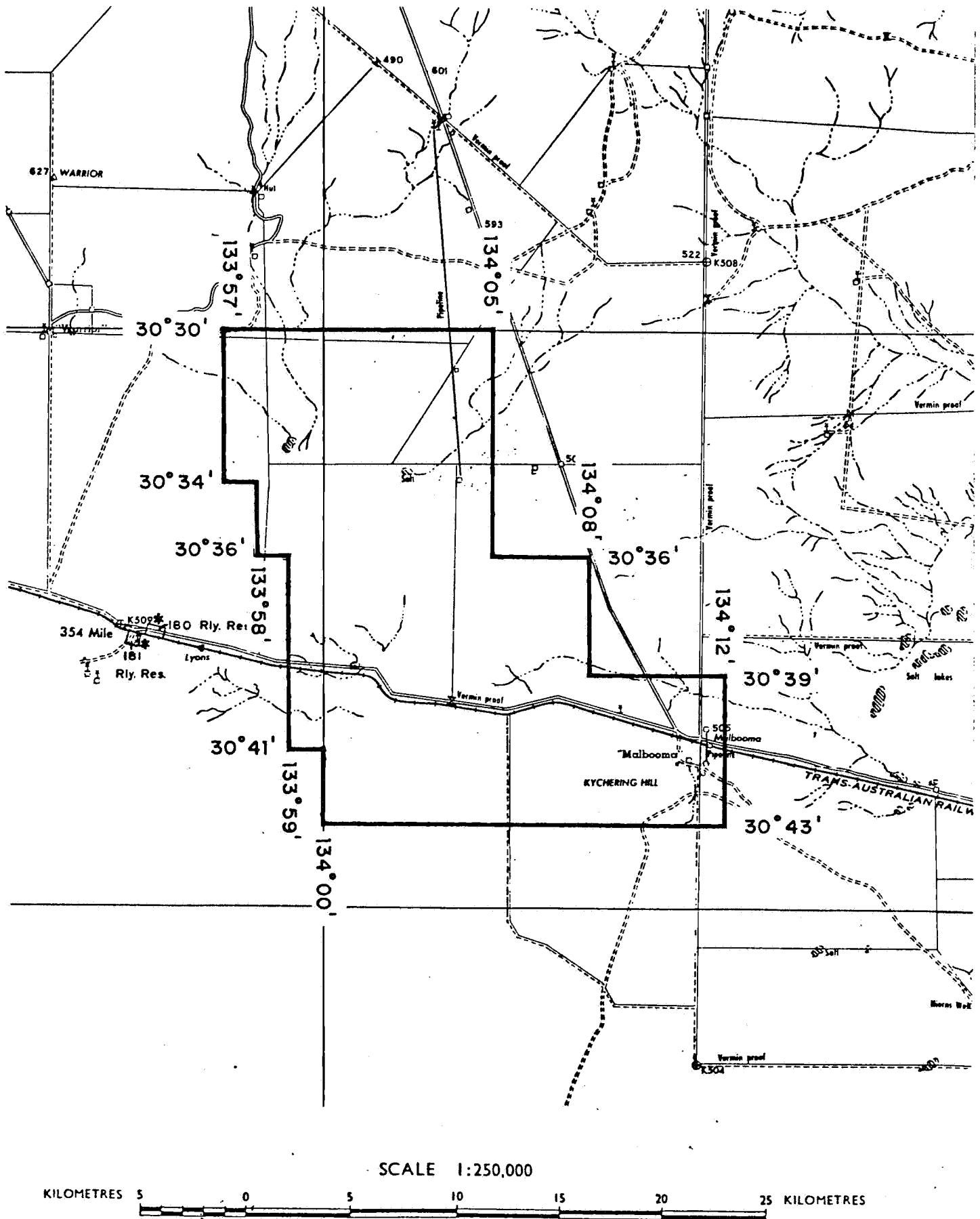


Figure 1: Location Map, EL 1313

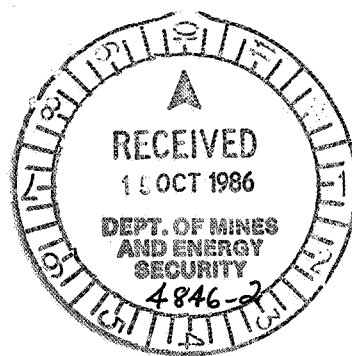
NOTE There is no warranty that the boundary of this Exploration Licence is correct in relation to other features on the map. The boundary is to be ascertained by reference to the Australian Geodetic Datum.

STATEMENT OF EXPENDITURE
QUARTER ENDING 7TH JULY, 1986
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JULY, 1986

No field expenditure was incurred during this quarter.

REPORT FOR QUARTER
ENDING 7TH OCTOBER, 1986
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA



PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
OCTOBER, 1986

No field work was conducted during this quarter.

STATEMENT OF EXPENDITURE
QUARTER ENDING 7TH OCTOBER, 1986
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
OCTOBER, 1986

No expenditure was incurred during this quarter.

REPORT FOR
QUARTER ENDING 6TH JANUARY, 1987
EXPLORATION LICENCE 1313
WARRIOR AREA
TARCOOLA 1:250,000 SHEET
SOUTH AUSTRALIA

PNC EXPLORATION (AUSTRALIA) PTY. LTD.
SYDNEY
JANUARY, 1987



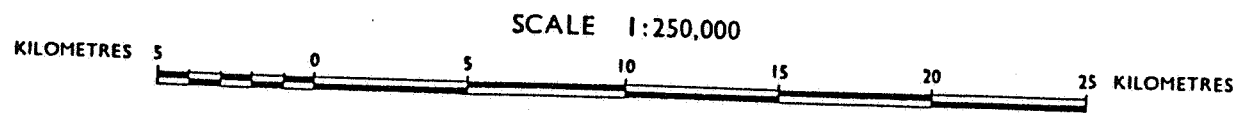


FIGURE 1 : LOCATION MAP EL 1313

NOTE There is no warranty that the boundary of this Exploration Licence is correct in relation to other features on the map. The boundary is to be ascertained by reference to the Australian G.D.M. 1:250,000.

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2. COMPLETED PROGRAMME
3. RESULTS
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 - 3.2 PERCUSSION DRILLING
 - 3.3 ANALYTICAL RESULTS
4. FUTURE PROGRAMME

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FIGURE 1: LOCATION MAP

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APPENDIX 2: ANALYTICAL RESULTS

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PLATE 1: MALBOOMA GRID, PROTEROZOIC GEOLOGY

1. INTRODUCTION

Exploration Licence 1313 was granted to PNC Exploration (Australia) Pty. Ltd. for a period of one year commencing 7th January, 1986, with an annual exploration commitment of \$40,000.

The tenement encompasses an area of 363 square kilometres and is situated approximately 40 kilometres west of Tarcoola, astride the Trans Australia Railway. A location map is given in Figure 1.

EL 1313 covers the area of uranium mineralisation within Tertiary sediments located and defined under previous exploration titles. Exploration work within EL 1313 was aimed at investigating the gold/uranium potential of the Middle Proterozoic Fabian Quartzite Member in the Malbooma portion of the tenement.

2. COMPLETED PROGRAMME

A small programme of percussion drilling was completed in October, 1986. Four (4) kilometres of access track were constructed on 22nd October using a John Deer Bulldozer from Mulgathing Station.

John Nitsckhe Drilling Pty. Ltd. completed seven vertical percussion drillholes for a total of 450 metres (W4 to W10). An Ingersoll Rand T4 rig was employed.

Two hundred and ten (210) drill chip samples were assayed for Au and base metals by Comlabs Services Pty. Ltd. using AAS. (Comlabs Mixermill preparation enables accurate gold determination with AAS.)

Given the very siliceous nature of the meta-sediments it was decided that normal percussion drilling would have maximum cost efficiency. Drill chips were collected over two metre intervals but did not undergo sample splitting. However assay samples were systematically collected from throughout the sample interval by hand and approximately 500 grams of material were bagged in each sample. It

is thought that this technique will give acceptable sampling error.

An additional ten samples from minor radiometric anomalies (maximum value of 425 cps) in three drillholes were analysed for U and Th. The anomalies in W4 and W8 are considered to be due to heavy minerals, probably monazite, in medium grained quartz sandstones. The anomaly in W7 occurs within a chilled, biotite poor, granite sill.

3. RESULTS

3.1 GEOLOGY

The Fabian Quartzite Member consists of a basal clastic unit of quartzo-feldspathic grit to sub-arkosic pebble conglomerate. This is overlain by well sorted medium grained quartzo-feldspathic sandstone, quartz sandstone and subordinate graphitic siltstone.

The distribution of the above Proterozoic units is given in Plate 1.

3.2 PERCUSSION DRILLING

Drillhole location and depths are given below:

Drillhole	Number	Location (G.R.)	Depth (metres)

W4		5,150E 4,150N	100
W5		5,842E 3,618N	20
W6		5,786E 3,646N	50
W7		5,853E 3,680N	40
W8		5,367E 4,114N	70
W9		3,750E 4,150N	100
W10		3,965E 4,151N	70

Drillholes W4, W8, W9 and W10 were designed to test areas of intense quartz veining and brecciation near anticlinal axes.

A series of three shallow holes (W5, W6 and W7) tested strongly jointed, broken ground composed of fine grained pyritic and carbonaceous siltstone/sandstone intruded by Middle Proterozoic granite and chilled dyking.

All drillholes intersected silicified, medium grained, well sorted and rounded quartz sandstone. Heavy mineral bearing sub units were found in W4, W8, W9 and W10.

Figure 2 is a schematic section through W8, situated down-plunge from the numerous pits of the "East Malbooma Field". An horizon of greenish, chloritic and tremolitic schist/sandstone exposed at P850 was intersected at 32m depth indicating an apparent dip of 30°. This is consistent with structural data obtained from surface mapping.

Drillhole Log Sheets are presented in Appendix 1.

3.3 ANALYTICAL RESULTS

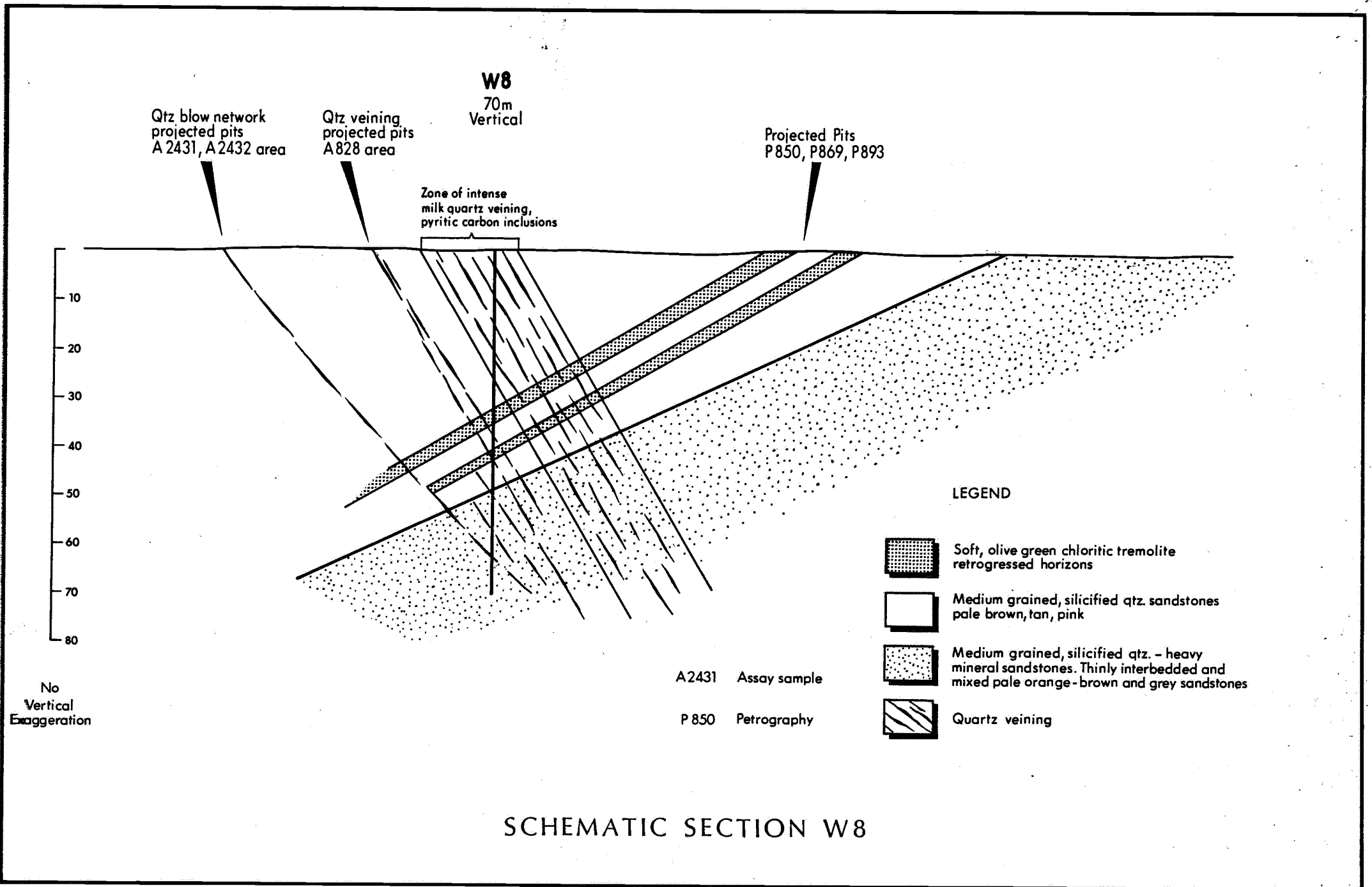
No significant assay results were obtained. Maximum values for uranium, copper and gold are 34 ppm, 55 ppm and 0.13 ppm respectively.

70% of samples were below the detection limit for gold which was 0.05ppm. Drillholes W4, W5, W6 and W7 were completely barren. Minimal gold contents of 0.05 to 0.10 ppm were routinely detected in areas of intense quartz veining.

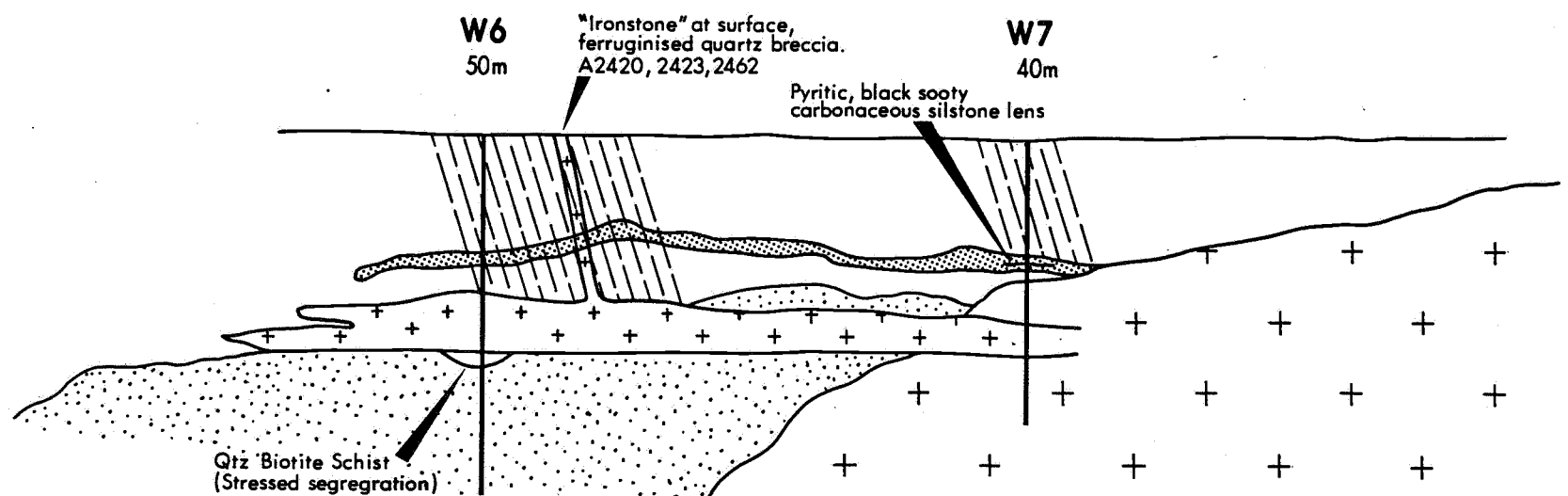
Analytical results are included as Appendix 2 to this report.

4. FUTURE PROGRAMME

A future programme of exploration will be decided upon after the results from the above drilling programme have been fully appraised.



SCHEMATIC SECTION W6-W7



-  Fine to medium grained silicified qtz sandstones
-  Silicified grey pyritic sandstone with dark grey (carbonaceous) horizons containing much ubiquitous pyrite
-  Biotite granite
Chilled biotite poor granitic sill
-  "Broken Ground" strongly jointed and ferruginised (hematite, limonite).
-  Soft greenish chloritic schist/sandstone.

APPENDIX 1

DRILLHOLE LOG SHEETS

DRILL HOLE LOG SHEET

135

PROJECT WARRIOR (Malbooma) EL 1313

METHOD Open hole percussion

LOGGING INSTRUMENT Austral Middlelogger L300

HOLE NO. W4

PROBE 38mm diam No 2-02

LOCATION S.150E 4.150N

LOGGING SPEED 4m/min

TOTAL DEPTH 100m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE

DATE Drilled 22/10 Probed 24/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					OPEN HOLE COUNT RATE	300CPS
4				Weathered Quartzite		
5				Qtzite.		
6				light brown silicified fine grn qtz sandstone (thin horizon of coarse arkose)		
10				colour freshening to orange brown		
14				Fe oxides, hematite on joint planes, with epidote.		
15						
16						
20				Interbedded orange-brown med grn silicified qtz sandstone and fine grn dark grey qtz sandst. dark grey horizons, lamellae with heavy mins.		
25						
30				strongly limonitic		
32				Trace pyrite ~2% 2mm average but to 1mm		
35						
38				50% horizons are dark gray 50% limonitic		
40				Oxidized tan limonitic silicified qtz sandstone. heavy minerals to limonite.		
43				80% dark blue grey-black fine grn. 20% brown med. grn.		
45				Very Siliceous light grey qtzite and quartz veining		
46				80% grey interbeds.		
48						
50						

DRILL HOLE LOG SHEET

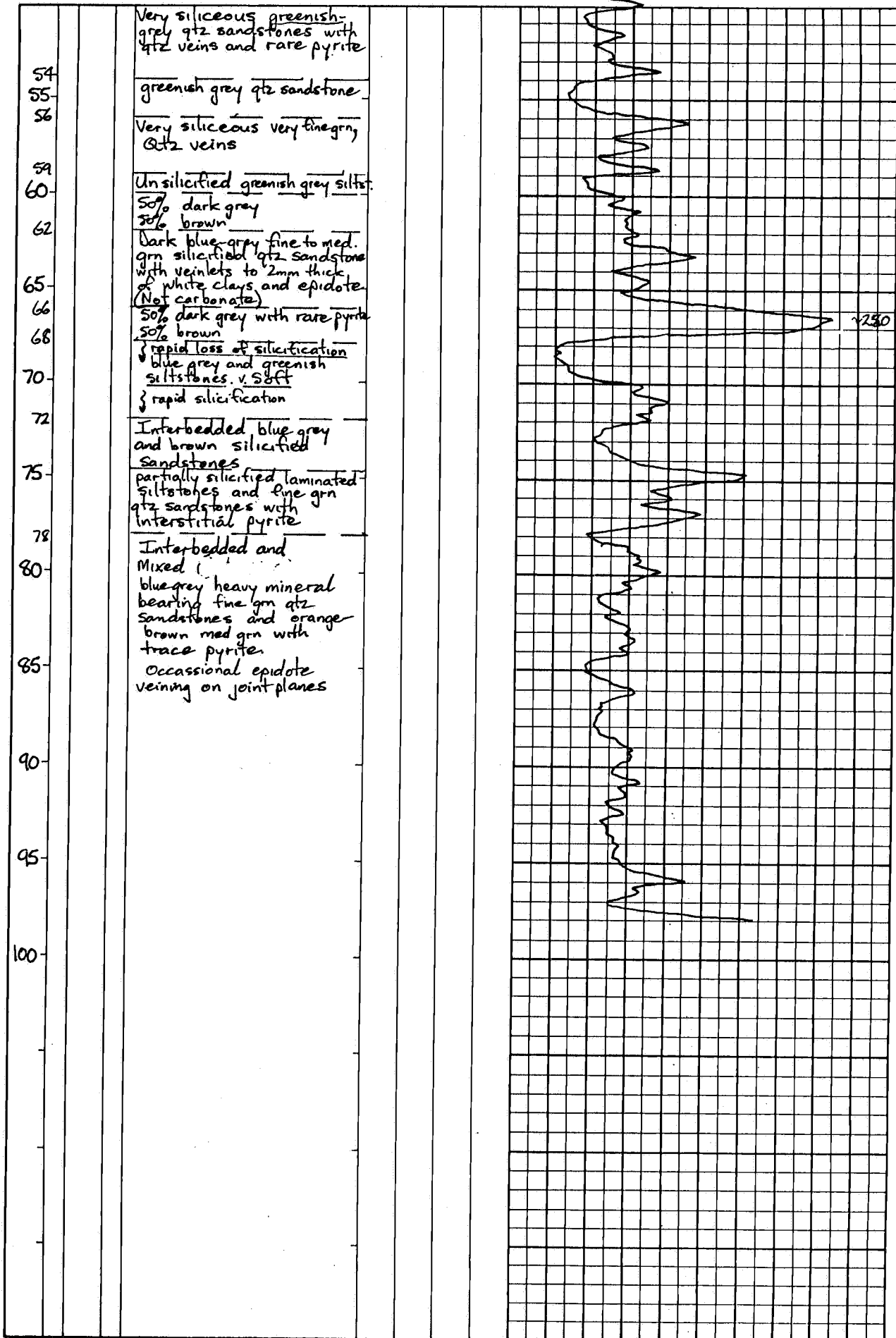
Continuation

136

HOLE NO. W4

OPEN HOLE

300 CPS



DRILL HOLE LOG SHEET

137

PROJECT WARRIOR (Malbooma) EL1313

METHOD Open hole percussion

LOGGING INSTRUMENT Hand-held Mount Sopris

HOLE NO. W5

PROBE Scintillometer SC-132

LOCATION 5,842E 3,618N

LOGGING SPEED

TOTAL DEPTH 20m

CHART SPEED

INCLINATION Vertical

TIME CONSTANT

BIT SIZE

DATE 22/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					Background: 80 cps Scint.	COUNT RATE CPS
4				Quartzites and silicified pale tan, fine grain qtz sandstone. Much limonite, hematite on joint planes with trace muscovite.	80	
5				Dark blue-grey silicified fine grn qtz sandstone rare pyrite	80	
6				pale tan quartzites and silicified fine grain sandstones	90	
10					90	
15				Granite - Biot. Granite. Biot ~ 5% 3-feldspars. crystals to 5mm orthoclase, albite, and greenish microcline(?) freshening. each ~ 20% ~ 10% biot. perthritic white feldspar.	100	
20					90	
				Hole caved-in Strongly jointed, broken ground 6-4m.		

DRILL HOLE LOG SHEET

138

PROJECT WARRIOR (Malbooma) EL1313

METHOD Open Hole Percussion

LOGGING INSTRUMENT Austral Midlogger L300
No 827

HOLE NO. W6

PROBE 38mm diam No 2-02

LOCATION 5786E 3646N

LOGGING SPEED 4m/min

TOTAL DEPTH 50m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE

DATE Drilled 29/10 Probed 24/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					OPEN HOLE COUNT RATE	300 CPS
5				laminated silicified blue-grey fine-grn sandstone with abundant cherry red hematite and lesser limonite mottles. Horizons of red hematitic med-grn sandstone		
6				fawn, pale brown silicified fine-grn qtz sandstone. minor laminated olive horizons. Soft white clays on joint planes. (not carbonate)		
10						
14				med-grn silicified sandstone olive and blue-grey horizons		
15				Soft unsilicified olive green fine to med-grn qtz sandstone		
16				pale brown, fawn silicified fine-grn qtz sandstone and quartzites.		
18						
20						
22				Weathered, bleached Granitic Sill		
25				2-3mm grainsize minor biotite ~2% ↓ freshening.		
30				Black, hard Biot-Qtz Schist. epidote and trace pyrite		
34				pale brown, fawn silicified fine-grn qtz sandst/qtzite		
35				light grey silicified fine to med-grn qtz sandstones pyrite to limonite.		
40				↓ freshening. dark grey horizons Pyritic		
45				grey pyritic sandstone (silicified) with dark grey horizons containing ubiquitous pyrite		
50						

DRILL HOLE LOG SHEET

139

PROJECT WARRIOR (Malbauma) EL 1313

METHOD Open hole percussion

LOGGING INSTRUMENT Mount Sopris Scintillometer
SC-132

HOLE NO. W7

PROBE.....

LOCATION 5,853E 3,680N

LOGGING SPEED.....

TOTAL DEPTH 40m

CHART SPEED.....

INCLINATION Vertical

TIME CONSTANT.....

BIT SIZE.....

DATE 23/10/86

CORE RECOVERY.....

LOGGING BY Mark Dunn

ELEVATION.....

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG									
					Background: 70cps COUNT RATE CPS									
5				Broken ground. Angular qtzite debris from grit to cobble size	70									
6					70									
				Pale brown fawn fine grn qtz sandstones and qtzites.	80									
10				Thin horizons of red hematitic silicified sandstone.	80									
					70									
15					70									
				16-18 Thin horizon of black sooty and pyritic siltstone. (carbonaceous)	80									
20					70									
				Biotite-Muscovite Granite 2mm-5mm.	80									
25				10% biotite 5% muscovite	80									
26				2m first greenish feldspars negligible musc.	80									
				Bleached leucocratic granite Biot ~2%	120									
30					100									
				Biotite rich granite with Trace Pyrite.	80									
35				{ freshening biot. granite green feldspars	90									
				biot ~15%	100									
				pyrite ~2%	100									
40					80									
				Hole caved-in. Very strongly jointed and broken ground to 6m.										

DRILL HOLE LOG SHEET

140

PROJECT WARRIOR (Malbooma) EL1313

METHOD Open Hole Percussion

LOGGING INSTRUMENT Austral Middellogger L300
No 827

HOLE NO. W8

PROBE 38mm diam. No 2-02

LOCATION 5.367E 4.114N

LOGGING SPEED 4m/min

TOTAL DEPTH 70m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE

DATE Drilled 23/10 Probed 24/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION Nearby Outcrop: Intense milk qtz veining with pyritic black carbon inclusions.

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					OPEN HOLE COUNT RATE	300 CPS
4				red brown qtzites with qtz veining.		
5				Pale brown, tan fine to med grn qtz sandstones with abundant qtz veins carrying trace pyrite		
10						
15						
20						
23				Tan-yellow med. grn qtz sandstones (silicified) med. grn silicified qtz sandst. with minor qtz veining. (far less than in 4-23m) brown, tan, pink		
25						
30						
32				Soft, un silicified olive-green med grn qtz sandstone in clay matrix. epidote veinlets		
35				Silicified med grn qtz sandstones with much qtz veining and rare pyrite brown, tan, pink		
40				partially silicified, olive green med grn (harder than 32) brown and dk. olive grey sandst. with much qtz veining and common pyrite		270
42						
44				trace pyrite		
45						
46				rare pyrite		
48						
50				Thinly inter-bedded fine grn orange-brown and slightly coarser blue-grey sandstones.		

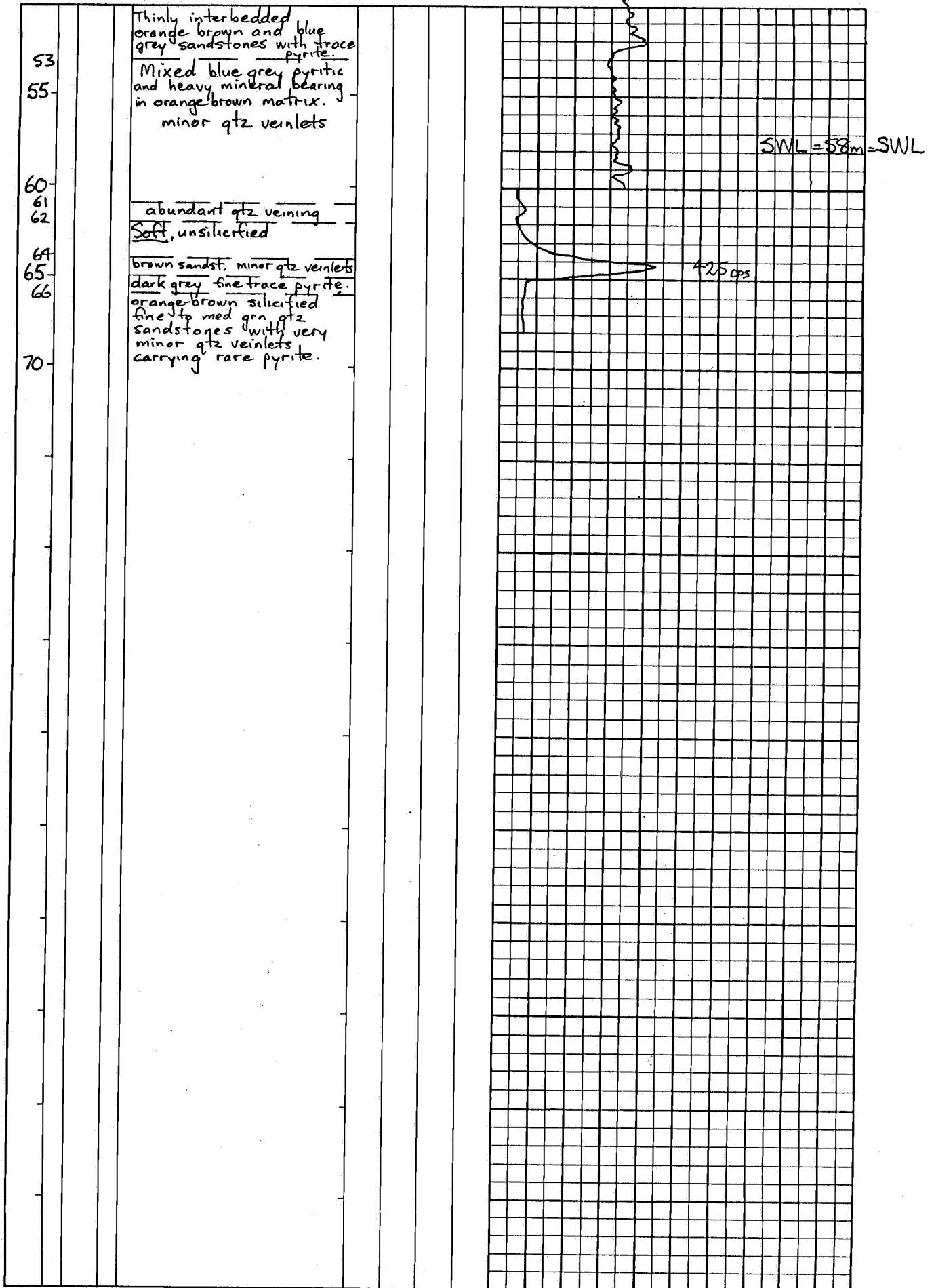
DRILL HOLE LOG SHEET

Continuation

141

HOLE NO. W 8

300 cps to 60m
then 1,000 cps



DRILL HOLE LOG SHEET

142

PROJECT WARRIOR (Malbooma) EL1313

METHOD Open Hole Percussion

LOGGING INSTRUMENT Austral Mdd logger L300

HOLE NO. W9

PROBE 38mm diam No 2-02 JJ No 827

LOCATION 3.750E 4.150N

LOGGING SPEED 4m/min

TOTAL DEPTH 100m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE

DATE Drilled 23/10 Probed 24/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					OPEN HOLE	COUNT RATE
						300 CPS
4				Silicified coarse grain qtz sandstone in clay matrix. coarse, angular, poorly sorted. gritty horizons		
5				Partially silicified med. to coarse grn qtz sandstone in clay matrix moderate sorting, sub rounded minor qtz veinlets		
9				Very soft, unsilicified fine grn qtz sandstone in clay matrix. Cream. silty.		
15				silty		
20				silty		
25				fine grn.		
30				basal med to coarse. qtz grains to 1mm		
32				Very hard, silicified fine to med grn qtz sandst. pale brown, light grey.		
35				Soft, tan limonitic fine grn qtz sandstone in clay matrix		
37				hard, silicified med grn qtz sandstones well sorted and rounded.		
38.5				pale brown, tan, light grey occasional rare pyrite occ. limonitic mottles.		
40						
45						
50						

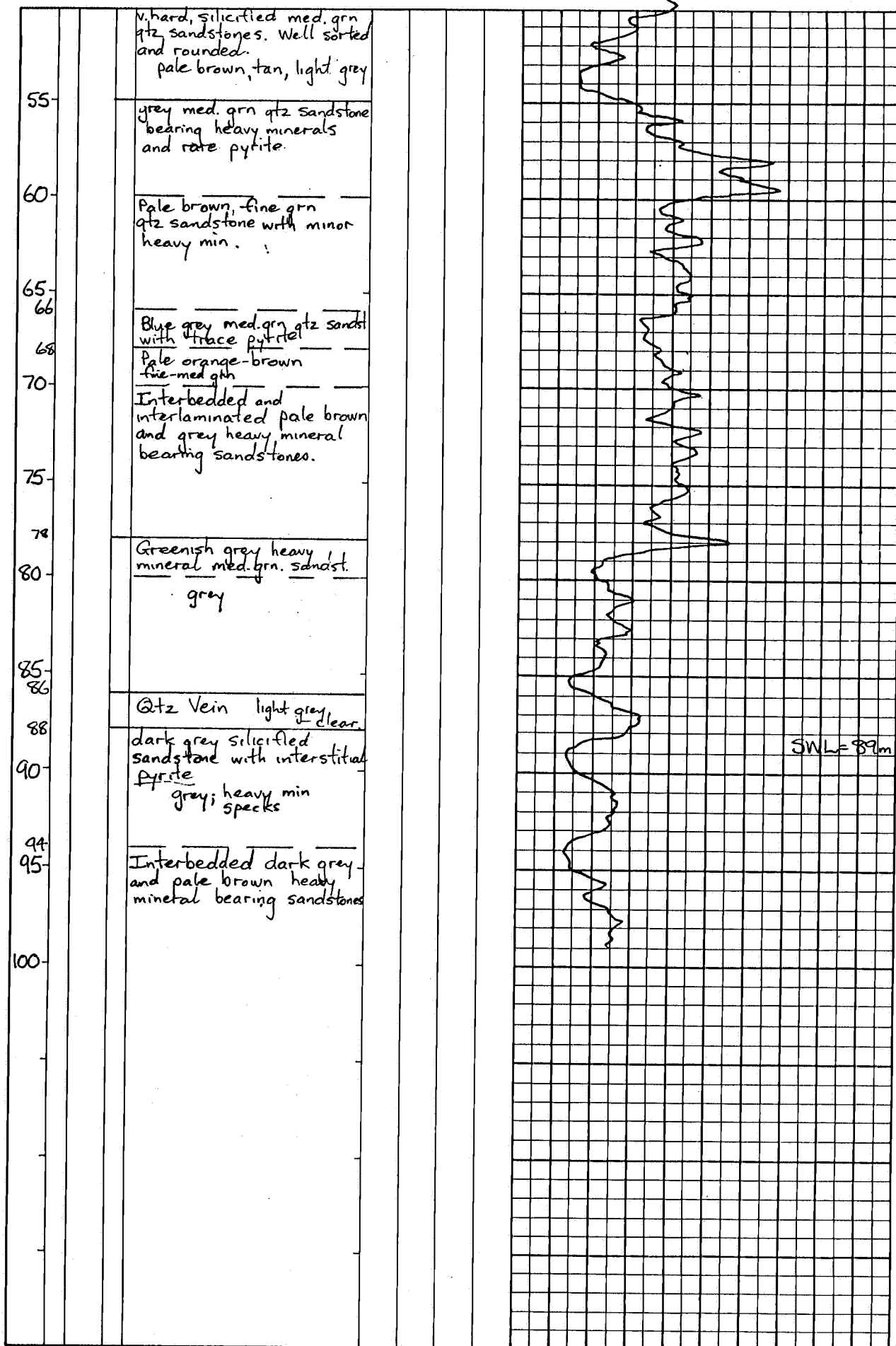
DRILL HOLE LOG SHEET

Continuation

143

HOLE NO. W9

300 CPS



DRILL HOLE LOG SHEET

144

PROJECT WARRIOR (Malbooma) EL1313

METHOD Open Hole Percussion

LOGGING INSTRUMENT Austral Muddilogger L300

HOLE NO. W10

PROBE 38mm diam No 2-02 JN 827

LOCATION 3,965E 4,151N

LOGGING SPEED 4 m/min

TOTAL DEPTH 70m

CHART SPEED 2m/10cm

INCLINATION Vertical

TIME CONSTANT 5 sec

BIT SIZE

DATE Drilled 23/10 Probed 24/10

CORE RECOVERY

LOGGING BY Mark Dunn

ELEVATION

GEOLOGY BY Mark Dunn

DEPTH (m)	RECOVERY	COLUMNAR SECTION	STRATIGRAPHY	DESCRIPTION	RADIOACTIVITY LOG	
					OPEN HOLE	COUNT RATE
						300 CPS
4				Strongly jointed, coarse gritty, thin bedded qtz in clay matrix (silicified) with limonite cross sets (after heavy minerals)		
5				Silicified coarse grn qtz sandstone in clay matrix, moderate sorting, sub rounded to sub angular mostly light grey with red brown and tan horizons		
10				Partially silicified above		
14				pale tan		
15				very weakly silicified (S)		
16				limonitic med grn sandstone		
18				Partially silicified above		
20				v. hard, silicified coarse grn qtz sandstone, moderate sorting, limonitic tan		
22				trace heavy mins to limonite		
24				silicified med grn, black heavy min. specks, brown		
25				dark grey of above with dark tan		
26				trace pyrite		
30				Interbedded grey med grn qtz sandstones and pale brown sandstones, both with heavy minerals		
35				thin interbeds, interlaminated.		
40				trace pyrite		
45						
48						
50				48-50 with minor qtz veinlets 2mm - 5mm.		

Continuation

145

300 CPS

55-

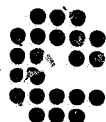
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65-

70-

APPENDIX 2

ANALYTICAL RESULTS



WARRIOR ELI313 , MALBOOMA COMLABS SERVICES PTY. LTD.



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ANALYTICAL REPORT

JOB COM862037
O/N : 1764

Hole	Interval(mi)	SAMPLE	Cu	Pb	Zn	Co	Au	Lithology
W4	30-32	3801	8	26	8	<4	<0.05	limonitic silic glc soil
	32-34	3802	4	<4	16	<4	<0.05	grey, trace pyrite
	34-36	3803	5	<4	120	<4	<0.05	" "
	36-38	3804	6	4	14	<4	<0.05	" "
	38-40	3805	6	<4	8	<4	<0.05	limonitic
	40-42	3806	8	4	36	4	<0.05	"
	42-44	3807	7	22	42	12	<0.05	"
	44-46	3808	6	10	28	6	<0.05	blue grey to black
	46-48	3809	6	42	55	4	<0.05	glz veining
	48-50	3810	6	4	30	4	<0.05	grey med grn glc soil
	50-52	3811	8	4	20	<4	<0.05	silic greenish soil
	52-54	3812	9	8	18	4	<0.05	"
	54-56	3813	20	14	14	<4	<0.05	"
	56-58	3814	10	8	65	<4	<0.05	Qtz veining
	58-60	3815	22	8	28	6	<0.05	"
	60-62	3816	7	8	10	<4	<0.05	grey med grn glc soil
	62-64	3817	9	10	28	8	<0.05	"
	64-66	3818	7	8	22	6	<0.05	"
	66-68	3819	42	8	30	10	<0.05	"
	68-70	3820	75	12	36	20	<0.05	soil greenish silic
	70-72	3821	26	6	26	10	<0.05	grey glc soil
	72-74	3822	10	6	22	6	<0.05	"
	74-76	3823	12	6	10	<4	<0.05	"
	76-78	3824	16	8	20	8	<0.05	trace pyrite
	78-80	3825	14	10	10	6	<0.05	"
UNITS			ppm	ppm	ppm	ppm	ppm	
SCHEME			AAS1	AAS1	AAS1	AAS1	AAS5A	

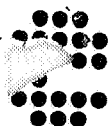


ANALYTICAL REPORT

JOB COM862037

O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W4	80-82	3826	5	4	18	4	<0.05	Interbedded and
	82-84	3827	4	4	10	<4	<0.05	blue-grey heavy
	84-86	3828	12	6	12	<4	<0.05	bearing fine gr
	86-88	3829	26	8	16	10	<0.05	qtz sd and
	88-90	3830	36	12	75	16	<0.05	brown pyritic
	90-92	3831	24	12	44	12	<0.05	med gr sd
	92-94	3832	9	6	12	<4	<0.05	
	94-96	3833	16	10	24	6	<0.05	
	96-98	3834	20	10	34	10	<0.05	
	98-100	3835	26	10	26	4	<0.05	
W5	0-2	3836	12	95	60	<4	<0.05	Fe weathered
	2-4	3837	10	42	34	<4	<0.05	glauconite
	4-6	3838	16	26	115	6	<0.05	strongly jointed
	6-8	3839	12	36	55	<4	<0.05	grey fine gr
	8-10	3840	7	20	38	<4	<0.05	pale tan, rare pyrite
	10-12	3841	4	18	44	<4	<0.05	Biotite Grains
	12-14	3842	3	12	40	<4	<0.05	5mm orthoclase, plaq
	14-16	3843	4	12	42	<4	<0.05	and greenish
	16-18	3844	3	10	185	<4	<0.05	microcline
	18-20	3845	3	12	60	<4	<0.05	some pyrite
W6	0-2	3846	14	85	28	4	<0.05	hematite
	2-4	3847	12	70	22	<4	<0.05	fine gr al. sd
	4-6	3848	42	70	165	10	0.05	" "
	6-8	3849	18	50	130	4	<0.05	pale brown fine gr
	8-10	3850	16	65	165	<4	<0.05	
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	

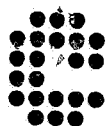


ANALYTICAL REPORT

JOB COM862037

O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W6	10-12	3851	10	46	70	<4	<0.05	
	12-14	3852	10	48	70	<4	<0.05	
	14-16	3853	18	26	145	4	<0.05	med grey silty
	16-18	3854	16	70	290	8	<0.05	soft green silty
	18-20	3855	16	44	430	44	<0.05	pale brown fine gr
	20-22	3856	7	26	230	<4	<0.05	
	22-24	3857	5	12	34	<4	<0.05	Granitic Gill
	24-26	3858	5	14	110	<4	<0.05	
	26-28	3859	<2	14	42	<4	<0.05	
	28-30	3860	4	14	40	<4	<0.05	
	30-32	3861	12	30	140	22	<0.05	Brk. Ok schist mgn
	32-34	3862	16	44	220	18	<0.05	pale brown
	34-36	3863	12	26	28	<4	<0.05	pyritic med grey silty sandst. g. silty
	36-38	3864	12	22	30	<4	<0.05	
	38-40	3865	16	20	38	4	<0.05	
	40-42	3866	16	18	50	4	<0.05	
W7	42-44	3867	16	22	30	4	<0.05	
	44-46	3868	10	22	20	<4	<0.05	
	46-48	3869	20	24	40	6	<0.05	
	48-50	3870	22	26	60	8	<0.05	
	0-2	3871	9	16	24	6	<0.05	Broken Gneiss
	2-4	3872	8	12	14	<4	<0.05	
	4-6	3873	20	20	50	12	<0.05	
	6-8	3874	5	14	12	<4	<0.05	pale brown silty
	8-10	3875	5	12	12	<4	<0.05	med silty g. silty
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



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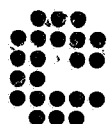
- 4 -

ANALYTICAL REPORT

JOB COM862037

O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W7	10-12	3876	8	10	18	<4	<0.05	
	12-14	3877	8	12	14	<4	<0.05	
	14-16	3878	5	18	32	<4	<0.05	
	16-18	3879	12	36	140	<4	<0.05	with horizon of black sooty pyritic material
	18-20	3880	8	38	55	<4	<0.05	
	20-22	3881	7	55	48	<4	<0.05	Biotite Granite
	22-24	3882	4	48	48	<4	<0.05	
	24-26	3883	4	16	50	<4	<0.05	
	26-28	3884	5	12	65	4	<0.05	Bleached siliceous zone
	28-30	3885	5	16	50	12	<0.05	
	30-32	3886	4	26	60	4	<0.05	biot ~ 10% greenish
	32-34	3887	2	46	115	<4	<0.05	
	34-36	3888	5	20	60	<4	<0.05	
	36-38	3889	7	10	55	<4	<0.05	
	38-40	3890	6	10	38	<4	<0.05	
W8	0-2	3891	9	12	24	6	0.05	red brown gld
	2-4	3892	8	8	20	4	0.07	
	4-6	3893	9	8	6	4	0.05	pale brown, fine grained
	6-8	3894	9	6	5	<4	<0.05	fine grained
	8-10	3895	7	4	28	<4	0.06	with abundant
	10-12	3896	7	6	14	<4	<0.05	qtz veining.
	12-14	3897	12	<4	7	<4	<0.05	trace pyrite
	14-16	3898	14	6	9	<4	<0.05	
	16-18	3899	12	6	42	4	<0.05	
	18-20	3900	8	6	9	<4	<0.05	
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



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O/N : 1764

	SAMPLE	Cu	Pb	Zn	Co	Au	
W8	20-22	3901	12	24	18	20	<0.05
	22-24	3902	18	4	18	<4	<0.05
	24-26	3903	20	6	50	8	0.06 tan med grn spl
	26-28	3904	9	4	16	4	<0.05
	28-30	3905	6	6	10	4	0.06
	30-32	3906	14	6	18	4	<0.05
	32-34	3907	55	12	60	34	0.06 soft, green sand
	34-36	3908	26	6	32	26	0.05 " "
	36-38	3909	7	4	14	4	<0.05 med grn spl
	38-40	3910	26	8	14	8	<0.05 much grn spl
	40-42	3911	85	10	60	22	0.09 green sst.
	42-44	3912	7	6	10	<4	<0.05 interbedded brown
	44-46	3913	10	6	12	4	<0.05 and grey med grn
	46-48	3914	18	6	14	4	0.07 trace pyrite
	48-50	3915	24	6	28	<4	<0.05
	50-52	3916	22	4	20	6	0.08
	52-54	3917	24	6	34	10	<0.05
	54-56	3918	36	8	44	16	0.05
	56-58	3919	42	14	60	20	<0.05
	58-60	3920	38	14	40	18	<0.05
	60-62	3921	10	4	5	<4	0.06 Qtz vein
	62-64	3922	9	<4	5	<4	0.07 soft green
	64-66	3923	48	60	55	6	<0.05 brown med grn
	66-68	3924	10	8	14	<4	<0.05
	68-70	3925	12	<4	6	<4	0.09 minor grn spl
	UNITS	ppm	ppm	ppm	ppm	ppm	
	SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



ANALYTICAL REPORT

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O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W9	0-2	3926	10	6	50	<4	<0.05	coarse gr. soil in clay matrix
	2-4	3927	7	6	4	<4	0.07	
	4-6	3928	6	6	3	<4	0.07	
	6-8	3929	6	4	16	<4	<0.05	
	8-10	3930	7	4	22	<4	0.06	Soft, fine gr. silty sandstone in clay matrix, green
	10-12	3931	5	6	4	<4	<0.05	
	12-14	3932	7	8	2	<4	0.08	"
	14-16	3933	7	4	3	<4	<0.05	
	16-18	3934	4	4	46	<4	0.06	
	18-20	3935	5	4	8	<4	<0.05	
	20-22	3936	4	6	8	<4	0.06	
	22-24	3937	5	4	7	<4	0.12	
	24-26	3938	4	8	26	<4	0.07	
	26-28	3939	4	14	36	<4	0.07	
	28-30	3940	6	14	9	<4	<0.05	
	30-32	3941	5	12	12	<4	<0.05	
	32-34	3942	5	18	44	<4	0.05	Silic. pale brown med gr. gr. sandst
	34-36	3943	6	6	8	<4	<0.05	"
	36-38	3944	6	14	4	<4	0.08	Soft limonitic med gr. silic
	38-40	3945	8	10	8	<4	0.11	silic med gr. gr. soil, occ pyrite
	40-42	3946	4	6	80	<4	0.05	"
	42-44	3947	5	4	9	<4	<0.05	"
	44-46	3948	5	6	5	<4	<0.05	"
	46-48	3949	6	6	3	<4	<0.05	"
	48-50	3950	4	4	30	<4	<0.05	"
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



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		SAMPLE	Cu	Pb	Zn	Co	Au	
W9	50-52	3951	3	55	16	<4	<0.05	silic med gen qtz sst
	52-54	3952	4	8	4	4	<0.05	"
	54-56	3953	4	6	9	<4	0.10	" with heavy med and rare pyrite
	56-58	3954	2	4	75	4	<0.05	"
	58-60	3955	3	4	16	4	<0.05	"
	60-62	3956	3	10	7	<4	<0.05	minor heavy med
	62-64	3957	3	4	18	4	0.05	"
	64-66	3958	4	4	44	<4	<0.05	"
	66-68	3959	2	4	24	4	0.08	blue grey base pm
	68-70	3960	3	4	3	<4	0.08	orange brown
	70-72	3961	5	16	6	4	<0.05	interbedded / fine pale brown and grey
	72-74	3962	3	10	28	4	<0.05	"
	74-76	3963	5	18	10	<4	0.07	"
	76-78	3964	4	20	5	4	0.06	"
	78-80	3965	3	10	14	4	0.06	(greenish)
	80-82	3966	4	4	22	4	0.05	"
	82-84	3967	4	<4	7	4	<0.05	"
	84-86	3968	6	4	2	4	<0.05	"
	86-88	3969	4	<4	4	<4	<0.05	qtz med
	88-90	3970	6	4	40	6	<0.05	dark grey silic qtz sst, heavy med and interstitial pyrite
	90-92	3971	4	<4	6	4	<0.05	"
	92-94	3972	4	<4	5	4	0.13	"
	94-96	3973	5	4	10	<4	0.06	pale brown sst
	96-98	3974	5	<4	16	4	<0.05	"
	98-100	3975	5	<4	7	4	<0.05	"
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



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O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W10	0-2	3976	10	8	900	8	<0.05	Strongly silty coarse grained sandstone
	2-4	3977	20	4	60	4	<0.05	
	4-6	3978	5	<4	9	<4	<0.05	
	6-8	3979	4	<4	2	<4	<0.05	coarse grained medium silty sandstone
	8-10	3980	6	6	14	4	<0.05	
	10-12	3981	6	12	16	4	0.07	partially silty
	12-14	3982	4	12	5	4	<0.05	
	14-16	3983	4	12	6	4	<0.05	
	16-18	3984	7	12	46	4	<0.05	
	18-20	3985	7	4	24	<4	0.09	fine brown pale
	20-22	3986	4	<4	7	4	0.07	
	22-24	3987	6	6	10	4	0.11	
	24-26	3988	6	6	34	4	0.06	
	26-28	3989	6	4	20	<4	0.06	interbedded brown and grey and green brown muds, fine pale
	28-30	3990	8	4	8	4	0.07	
	30-32	3991	5	<4	18	<4	0.10	
	32-34	3992	5	<4	65	<4	0.06	
	34-36	3993	5	4	<2	<4	<0.05	
	36-38	3994	6	4	6	4	0.09	
	38-40	3995	7	4	5	4	<0.05	
	40-42	3996	5	4	22	4	0.05	
	42-44	3997	5	4	8	<4	0.07	
	44-46	3998	4	4	5	6	0.07	
	46-48	3999	7	4	6	4	0.05	
	48-50	4000	6	4	26	4	0.06	+ minor
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



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O/N : 1764

		SAMPLE	Cu	Pb	Zn	Co	Au	
W10	50-52	4001	5	4	12	<4	0.11	Interbedded thin mixed pale brown and grey heavy massive bedding red greenish grey
	52-54	4002	6	6	14	4	0.07	
	54-56	4003	7	6	10	<4	0.05	
	56-58	4004	6	6	55	4	0.05	
	58-60	4005	6	4	10	4	0.07	
	60-62	4006	9	4	4	<4	<0.05	common ph. ...
	62-64	4007	7	4	10	4	<0.05	
	64-66	4008	30	8	42	16	0.10	
	66-68	4009	10	14	28	8	<0.05	
	68-70	4010	12	12	7	16	<0.05	abundant also ...
		UNITS	ppm	ppm	ppm	ppm	ppm	
		SCHEME	AAS1	AAS1	AAS1	AAS1	AAS5A	



ANALYTICAL REPORT

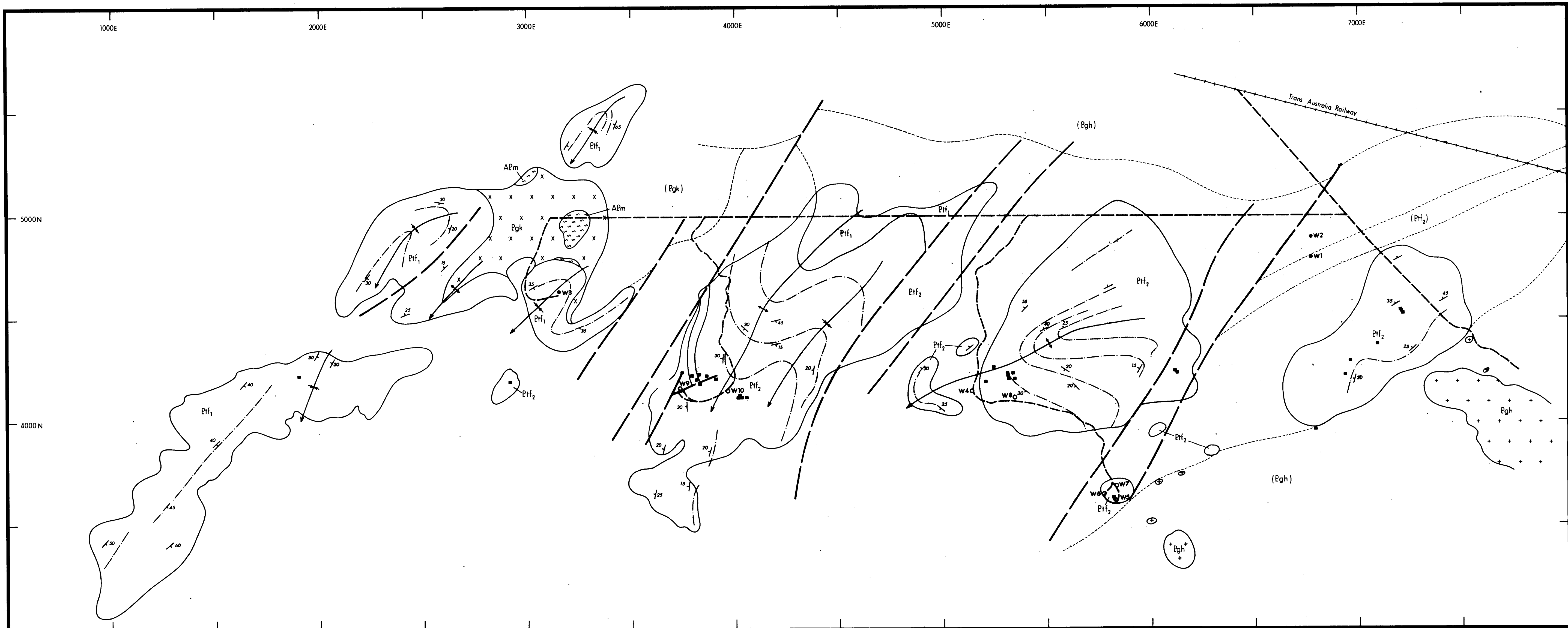
JOB COM862037

O/N : 1764

WARRIOR EL1313

MALBOOMA Area

Hole No	Sample Interval (m)	SAMPLE	U	Th	Lithology	Radiometric
W4	38-40	4011	<4	4	lim. med. grn qtz sandst	
	40-42	4012	6	<4	Limonitic heavy min. qtz sst	
	42-44	4013	34	18	blue gray to black fine qtz sst	380
	44-46	4014	4	10	" "	
W7	26-28	4015	<4	28	} Bleached leucocratic chilled granite Biot. ~2%	
	28-30	4016	<4	18		
W8	62-64	4017	<4	<4	soft greenish sst	
	64-66	4018	4	26	gray silicified sst trace 425 ppm	
	66-68	4019	<4	6	} orange-brown silicified fine to med grn qtz sandst	
	68-70	4020	<4	8		
UNITS			ppm	ppm		
SCHEME			XRF1	XRF1		

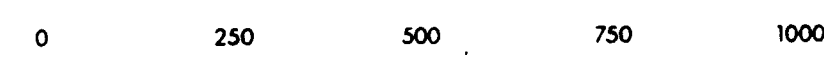


REFERENCE

Pgh	Pink granite (Hillaba Granite)
Ptf₂	Quartz-feldspathic sandstone, subordinate siltstone and graphitic siltstone
Ptf₁	Sub-arkosic conglomerate
Pgk	Porphyritic biotite granite (Kimban Granite)
APm	Quartz feldspar gneiss and chloritic schist

	Antiform
	Synform
	Pre 1986 drillhole
	1986 drillhole
	Existing access track
	Lithological boundary (based on sub-outcrop)
	Interpreted lithological boundary
	Interpreted fault
	Bedding surface trend line
	Strike / dip
	Pit

SCALE IN METRES



PNC EXPLORATION(AUSTRALIA)PTY LTD

EL 1313
MALBOOMA GRID
PROTEROZOIC GEOLOGY

compiled: S.V.Williams

date: November, 1986

drawn: V.M.Russell

drawing no:

