Open File Envelope No. 2273

EL 50

PANDURRA

PROGRESS REPORTS FOR THE PERIOD 23/3/73 TO 22/3/75

Submitted by
Mount Gunson Mines Pty Ltd
1975

Enquiries: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

PRIMARY INDUSTRIES AND RESOURCES SA

CONTENTS ENVELOPE 2273

TENEMENT: E.L. 50 - Pandurra.

TENEMENT HOLDER: Mt. Gunson Mines Pty. Ltd.

2B

CSR LIMITED

MT. GUNSON - STUART SHELF TENEMENTS

SML 96 (A)
Env. 625, 674
39 sq. km.
1.12.65 - 30.11.66

SML 121 (A)
Env. 674
508 sq. km.
1.8.66 - 30.11.66

SML 139 (A)
Env. 868, 906
629 sq. km.
1.12.66 - 30.11.68

SML 139 A (A, M, P)
Env. 1101, 1399, 1490
699 sq. km.
1.12.68 - 30.11.70

SML 494 (P, U)
Env. 1523
2461 sq. km.
5.11.70 - 4.11.71

SML 527 (P, U)
Env. 1563
699 sq. km.
3.12.70 - 2.12.71

SML 641 (P)
Env. 1855
1067 sq. km.
4.11.71 - 3.11.72

EL 29 (P)
Env. 2187
1067 sq. km.
7.12.72 - 19.7.73

EL 81 (Page 2)

2 C

EL 29 (Page 1)

	EL 81 (M) Env. 2330, 2575 5631 sq. km. 20.7.73 - 19.7.75	EL 50 (M) Env. 2273 2215 sq. km. 23.3.73 - 22.3.75
	EL 199 (C) Env. 2627 4895 sq. km. 20.7.75 - 19.7.77	EL 186 (C) Env. 2564, 2720 2215 sq. km. 7.4.75 - 6.4.77
EL 338 (C) Env. 3025 1705 sq. km. 5.8.77 - 4.8.79	EL 339 (C) Env.3026 2107 sq. km. 5.8.77 - 4.8.79	EL 332 (C) Env. 3024 1480 sq. km. 7.6.77 - 6.6.79
EL 542 (C) Env. 3701 1705 sq. km. 25.10.79 - 24.10.81	EL 543 (C) Env. 3703 2107 sq. km. 25.10.79 - 24.10.81	EL 534 (C) Env. 3552 1480 sq. km. 18.9.79 - 17.9.81
EL 950 (C) Env. 3703 1705 sq. km. 21.12.81 - 20.12.85 "Charlinga" TORRENS	EL 951 (C) Env. 3703 2107 sq. km. 21.12.81 - 20.12.85 "Mt. Gunson" TORRENS	EL 952 (C) Env. 3703 1480 sq. km. 21.12.81 - 20.12.85 "Pandurra" PORT AUGUSTA

Legend

1. Tenement No. (Company)
2. Env. No.
3. Area of tenement
4. Period of tenure
5. Tenement Name
6. 1:250 000 Sheet

Company abbreviations

A	Austminex Pty. Ltd.
P	Pacminex Pty. Ltd.
M	Mount Gunson Mines Pty. Ltd.
U	United Uranium N.L.
C	CSR Limited

1

2D

Data relating to exploration described in this Envelope may be included in some of the Envelopes here listed.

DATA AND REPORTS

RECEIVED FROM

CSR LTD., 1986

- 'MT. GUNSON area'

D.J. Flint

2E

ENVELOPE	CLASSIFICATION	CONTENTS	
6591	Open	Index	(to be prepared)
6593	Open	Cattlegrid:	Geology.
6594	"	"	Drilling summary data & Drilling logs.
6595	"	"	Plans. (Includes flotation tests and concentrate grades)
6596	"	"	Mine Period Reports.
6597	"	"	Mill " "
6598	"	"	Shipping Data.
		Reports.	
6604	Open	Lagoon:	A) Reserves - East Lagoon & West Lagoon orebodies. B) Geophysical Surveys on East Lagoon orebody (Larson, 1970). C) Plans (face geology, geology, grade control, mining).
6605	"	MG14 Deposit:	Metallurgy
6606	"	Main Open Cut:	"
6607	"	Cattlegrid:	Metallurgy & Mineragraphy (1973 & 1974 studies).
6608	"	"	1975 Mineragraphy of Mill products & feed.
6609	"	"	Flotation testing of diamond drillholes.
6610	"	"	Mineragraphy of mill products 1975-1983 by Pontifex & Associates.
6611	"	PETROGRAPHIC STUDIES: Includes Cattlegrid Main Open Cut Lagoon Workings Powerline Embayment Pandurra Formation MG14 Gully	
6612	"	DRILL LOGS:	Main Open Cut Sheet and Main Open Cut deposit
		A) ABC GRID SERIES B) BGC (Biogeochem) GRID SERIES C) 3-4-XD series (9 holes) 3-13-XP series (Plateau area) MX GRID SERIES	

D) Rod E. Jones XXX/XXX SERIES, 1981/1982.
E) 3-4-XP SERIES, 1971/1972 where X=1 to 325.
F) Notes/memos on exploration and drilling at Main Open Cut deposit.

6613	Open	DRILL LOGS: A) HOUSE SHEET: ABC GRID SERIES 'R' SERIES MAIN OPEN CUT SHEET: 'N' to 'L' series (AUSTMINEX, 1966) B) HOUSE SHEET: 3-3-XP SERIES. (Mt. Gunson Mines Pty. Ltd., 1971/1972). C) BGC GRID SERIES for: HOUSE SHEET, Lines 4S to 30S South of TOWNSHEET. (Austminex, 1967). D) HOUSE SHEET - MN GRID (Austminex, 1967/1968). E) HOUSE TO MAIN SHEETS, Rod E. Jones XXX/XXX SERIES of 800-770 to 870-540 (1981/1982). F) MAIN OPEN CUT TO HOUSE SHEETS. 3-7-XP SERIES (Mt. Gunson Mines, 1970-1972). 3-7-1P to 3-7-173P.
6614	"	DRILL LOGS - GUNYOT SHEET. A) 1) Percussion drilling by Austminex, 1966-1967. Millsite area. 2) ABC Grid (1966). 3) BGC Grid (1967) from lines 94N to 22N. 4) RAMSAY No. 1. 5) WATERHOLE No. 1. B) Percussion drilling by Mt. Gunson Mines, 1971-72. 3-5-XP series where X=1 to 32.
6615	"	GUNYAH LAKE SHEET: Vol. 1) Report: Geochemical Test Survey, Gunyah Lake (PMR Report 7/73, K.J. Maiden 1973). Plans : Location of drillholes & I.P. traverses. : Location of drillholes - East Lagoon & eastern area. : IP surveys: proposed program. : Bedrock Lithology.
6616	"	GUNYAH LAKE SHEET - DRILL LOGS: Vol. 1A) MYSTERY AREA (1971). 3-6-XD series where X=1 to 7. B) GUNYAH LAKE (1971-1972). 3-8-XD series where X=1 to 8. Vol. 2A) MYSTERY AREA (1970-1972). 3-6-XP series where X-1 to 65. Note: Both GUNYAH Sheet & HOUSE Sheet. B) 3-12-XP series, (1971-1972) where X=1 to 12. South of HOUSE WORKINGS.

2 G

6617	Open	EAST LAGOON - DRILL LOGS: MT. GUNSON MINES PTY. LTD., 1970. 3-1-XP series where X=1 to 262.
6618	"	WEST LAGOON - DRILL LOGS: Mt. GUNSON MINES PTY. LTD., 1970-1972. 3-2-XP series where X=1 to 323.
6619	"	LAGOON AREA - DRILL LOGS: AUSTMINEX (1968) Diamond drillholes.
6620	"	LAGOON AREA - DRILL LOGS: AUSTMINEX (1966-1968) Auger drillholes. On grid: 6,520,000 to 6,521,000 mN and 707,000 to 709,000 mE.
6621	"	LAGOON AREA - DRILL LOGS: AUSTMINEX (1968). Vol. 1) Drilled on grid: 6,520,000 to 6,521,000 mN and all eastings up to 707,000 mE. Vol. 2) Drilled on grid: 6,521,000 to 6,522,000 mN and all eastings.
6622	"	LAGOON AREA - DRILL LOGS: AUSTMINEX (1967). Assorted drillholes.
6623	"	MAGAZINE HILL CLAY DEPOSIT: PACMINEX PTY. LTD., 1973-1974.
6624	"	PERNATTY LAGOON - DRILL LOGS: Western edge of Pernatty Lagoon. Regional Scout drilling by Pacminex in 1972, *5XX-XP series where *=F to L 5XX=505 to 520.
6625	"	MANGANESE WORKINGS (PERNATTY LAGOON): A) MT. GUNSON MINES PTY. LTD. memos of 1977. B) PACMINEX (1971-1972) percussion drilling of 3-10-XP series where X=1 to 20.
6626	"	WOOCALLA, IRONSTONE LAGOON, FAIR NELL MINE, SWEET NELL MINE, MONALENA: A) Geological plans and cross-sections. B) Pacminex, 1970. Drill logs - Sweet Nell Mine Fair Nell Mine 3-9-XP series where X=1 to 22. C) Pacminex, 1971. Drill logs - Woocalla area. 3-11-XP series where X=1 to 9. D) Pacminex, 1972. Drill logs - Monalena area (Woocalla). MONA XP series where X=1 to 16.

2 H

6627	Open	MG14 DEPOSIT: GEOLOGY AND DRILL LOGS, with plans and cross-sections. A) Pacminex (1973-1977) rotary percussion/hammer drilling of MG 1 to 21 29 to 41 82 to 100 B) Pacminex (1973-1975) rotary & diamond drilling of MG 14D to 93D (not inclusive). C) Pacminex (1983) drilling of MG501 to MG511. D) Relog of Woomera Bore and LY3.
6628	"	GULLY PROSPECT: Drilling and evaluation of copper resource. Drill logs of: GY1 to GY16 (1975) 3-7-127P to 3-7-129P 3-7-160P to 3-7-162P 3-7-165P 3-7-172P 3-7-173P.
6629	"	OAKDEN HILLS AND SELBY DAM: Pacminex (1973-1980). A) Regional rotary percussion, OK X series, i.e. OK1 to OK157. B) Geochemical drilling at: 1) OK3 Grid i.e. OK3-1 to OK3-86. 2) Selby Dam Grid i.e. holes 1 to 114. C) Diamond drilling - OK XD series i.e. OK36D "109-111D "113D "115D "119D.
6630	"	WINNIE PINNIE AREA: EL199 Pacminex (1976-1977). A) Interpretation of Input data. B) 1976 Rotary percussion drilling of 'input' anomalies, WP series, i.e. WP31 to WP88. C) Drill logs WP31 to WP88.
6631	"	LAKE WINDABOUT: EL199 Pacminex (1976). A) Drill testing of input targets in Lake Windabout district.. B) LW Series, Gamma ray logs. " " drillhole " .
6632	"	LAKE WINDABOUT: A) Drill logs - LW series, i.e. LW1 to LW97. B) Detailed diamond drill logs for: LW52,58,60-66 inclusive.
6633	"	LUCAS HILL: (=WEST LAKE WINDABOUT) Geophysical and Geological Logs.

6634	Open	POWERLINE EMBAYMENT: A) 1975 Summary report of exploration. B) 1977 Geophysical logging of PL32.
6635	"	POWERLINE EMBAYMENT: Drill logs, PL SERIES, i.e. PL1 to PL47 inclusive.
6636	"	BOOKALOO-LAKE DUTTON: Geophysical logging of drillholes, LD series BK series.
6637	"	BOOKALOO-LAKE DUTTON-LAKE MACFARLANE: Drill logs: Bookaloo BK1-BK22 Lake Dutton LD8-LD38 Lake MacFarlane MF1-MF13.
6638	"	LY SERIES DRILLING: A) LY2 (Cattlegrid) 1974 Geophysical logs. B) LY4-LY11 and 83/108 (East of Cattlegrid), 1983 Geological logs.
6639	"	BIOGEOCHEMISTRY: A) CATTLEGRID & MG14 AREAS (Pacminex 1978). B) PERNATTY LAGOON (Austminex, 1966).
6640	"	GROUNDWATER GEOCHEMISTRY - Stuart Shelf: Pacminex (1978) - Report PMR90/78.

6663	"	MT. WHYALLA BARITE DEPOSIT: Pacminex (1974) report - PMR 57/74.
6664	"	GEOLOGICAL MAPPING: Report: Elizabeth Creek area (Chisholm, 1974) Plans: Pernatty Lagoon Mt. Gunson Mines area Elizabeth Area Canegrass Dam area Wirrappa area.

6666 Open

DRILL LOGS - ELIZABETH CREEK & CANEGRASS AREAS:
EC23-EC54 (Elizabeth Creek)
TOC1-TOC4
SP1-SP19 (Snakepit)
3-14-19P to 3-14-41P (Canegrass Dam area)
3-14-1P to 3-14-46P (Canegrass field logs).

6667 "

DRILL LOGS-PANDURRA AREA (EL405):
Vol. 1. EX1-EX157
2. EX158-EX163 & YD1-YD15
3. EX164-EX184.
4.

Area	1:100 000	Drillholes
	6332	J12-J24
Roopena	"	P1-P4
"	"	J1-J11
"	"	I1
Cultana	6432	Q1, Q2
Cariewerloo	6333	Y1-Y6
"	"	T1-T5
"	"	X1-X3

6668 "

DRILL LOGS-WATER BORES in the MT. GUNSON area.

6669 "

DRILLING SUMMARIES:
3-1-X to 3-14-X series.

6670 "

DRILL LOGS-LAKE TORRENS AREA:
(see also ENV. 3769)
BDH1-BDH4
SLT101-SLT107
YAD1.

6674 "

ELECTROMAGNETIC SURVEYS:
A) Gunyah Lake, 1971 hand-held survey (1 plan only)
B) Cattlegrid & MG14 areas, airborne EM INPUT Test Survey by Geoterrex, 1973.
C) Winnie Pinnie area & Yudnapinna area, airborne electromagnetic survey, Barringer INPUT system, 1975. Geoterrex report 83-253 PMR Report 144/75.
D) Stuart Shelf (EL186, EL199), airborne EM INPUT survey by Geoterrex, 1975.
E) Mount Gunson Pulse Electromagnetic Test, 1977. (Ground Survey) PMR Report 58/77. Cattlegrid anomaly & Anomaly 'J' (margin of Pernatty Lagoon).
F) Pandurra & Cariewerloo, airborne EM INPUT Survey by Geoterrex, 1977.

6675 "

REFRACTION SURVEYS:
A) Austral Exploration (1967) Refraction Test Survey at Main Open Cut; West Lagoon; East Lagoon.
B) Austral Exploration (1973) Reconnaissance Seismic Refraction Survey - Mt. Gunson area.

2 K

6676	Open	GRAVITY SURVEYS: A) Gravity survey - Pandurra area, EL186. Survey by Solo Geophysics, PMR114/77. B) Gravity anomaly 'A' - Site for drillhole LH1. Notes (1978). C) Magnetic & gravity survey with levelling at Illeroo Grid (Pandurra area, EL534. Report by Solo Geophysics (1979), PMR87/79. D) Gravity Survey with barometric levelling at Yudnapinna Reconnaissance Line, EL534. Report by Solo Geophysics (1979), PMR88/79. E) Interpretation of Geophysics, Illeroo area, EL534. Report by Langron (1980) PMR10/80. F) Gravity survey - Pernatty Lagoon area, EL543. Survey by Solo Geophysics (1980). G) Gravity survey - Mt. Gunson area, 'Blue Mag' anomaly 1981.
6677	"	AEROMAGNETIC SURVEYS: A) Report on stage 1 on the interpretation of results of airborne magnetometer survey covering SML139, 152. B) Report on an aeromagnetic interpretation, Torrens map sheet, S.A. PMR80/75. C) Plan, EL186, April 1977. Magnetic Profiles. D) Geoex (1978) Survey. Plans of: Aeromagnetic total intensity : Profiles. E) Report on airborne magnetic surveys over an area East of Lake Dutton (Pernatty & Bookaloo 1:63 360 sheets). PMR10/78.
6678	"	RESISTIVITY SURVEYS: A) Resistivity Survey at Pandurra near Port Augusta for Pacminex Pty. Ltd. EL186. Report No. 265 by Murdoch Geophysics, 1977. PMR60/77. B) A resistivity survey at Mt. Gunson, S.A. for Pacminex. (Survey in June 1976) EL199. Report No. 266 by Murdoch Geophysics, 1977. PMR142/76. C) Evaluation of a resistivity survey at Mt. Gunson, June 1976. PMR173/76, EL199. (Localities: Cattlegrid; Oakden Hills; MG14). D) Geophysical Survey at Cattlegrid, July 1973. Survey by CGG; PMR report 133/73.
6679	"	MISCELLANEOUS GEOPHYSICAL SURVEYS - MT. GUNSON AREA: A) Report on a combined Induced Polarisation, Seismic and EM survey in the Mt. Gunson area. MacPhar Geophysics (1973). B) Gravity and magnetic surveys on the North Pernatty Grid. Lines 6,530,000N to 6,540,000N. Solo Geophysics (1981). C) Magnetic surveys of 'Blind Dyke', 1982-1983. Un-compiled plans and notes. Includes data of Solo Geophysics (1982).

2 L

6680 "

GEOPHYSICAL LOGGING OF DRILLHOLES-STUART SHELF:

A) Geophysical Logging of Drillhole PL32, Gunson area (i.e. Powerline Embayment). PMR138/77.

B) Geophysical logging of drillholes in the Mt. Gunson and Pandurra areas. PMR59/78.
i.e. OK117-OK120
OK128-OK129
WPB2-WPB4
WPB6
WOB10-WOB13
LW34, LW38, LW40
PL34
MG-11-3
PANDURRA AREA:
J12, J15, J16, J20, J21.

C) Geophysical logging of percussion drillholes, June-August 1978. PMR89/78. (EL332,338,339),
i.e. EC5
PL40
LD31
BK10-BK12
EX158-EX163

D) Geophysical logging in the lake Windabout, Powerline and Oakden Hills areas, EL339,
i.e. LW61-LW75
PL42-PL44
OK132-OK135
PMR Report 36/79.

F) Gamma logs - assorted drillholes.

6681 "

INDUCED POLARISATION SURVEYS:

1) IP Survey by Geoscience (1965) for Austminex, SML55.

2) IP and test resistivity survey by MacPhar Geophysics (1967-1968) for Austminex.

3) IP survey by Austral Exploration, 1971-1972, at: Main Open Cut
Gunyah Lake
East Lagoon
West Lagoon
Mystery
Sweet Nell areas.

4) Multi-mode I.P. survey by McPhar Geophysics, 1974 at: - Cattlegrid
- Gunyah Lake
PMR report 75/74.

6682 "

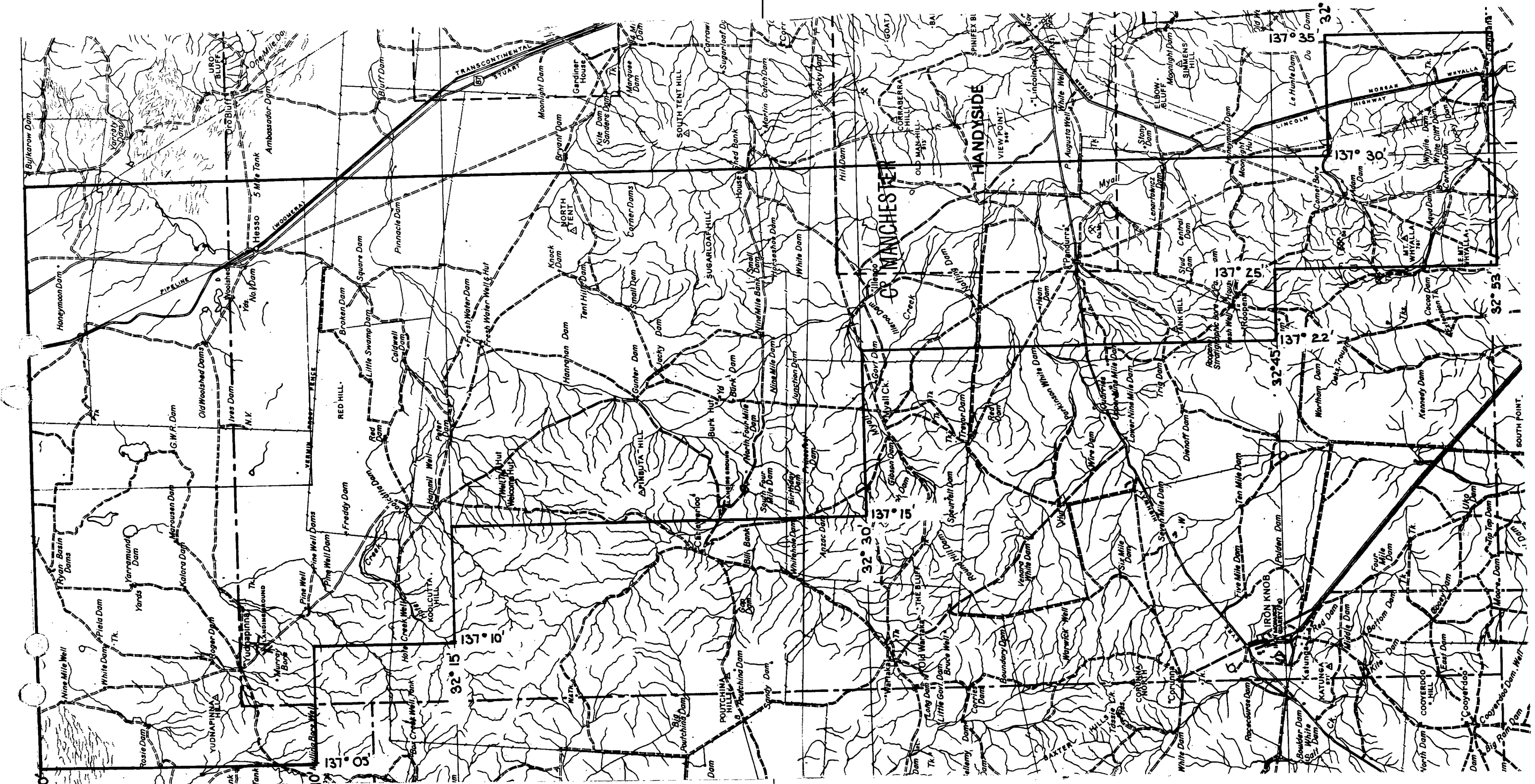
INDUCED POLARISATION SURVEY:
by SOLO GEOPHYSICS, 1983.
CATTLEGRID - MAIN OPEN CUT AREAS,
Includes: 'Haul Road' anomaly
'Dyke" anomaly.

2 M

6683	OPEN	'MOUNT GUNSON area' - regional plans and reports. Includes: A) Austminex (1966-1968) reports for SML 96, 121 and 139 - Pernatty Lagoon area. B) SADME articles on Mt. Gunson - extracted from Mining Reviews.
6714	"	MAIN OPEN CUT - plans
6715	"	CATTLEGRID - cross-sections.
6718	OPEN	HOUSE WORKINGS and GUNYOT workings. Plans only - sections, ore reserves, grade control and hole locations. Austminex Pty Ltd and Mount Gunson Mines Pty. Ltd.
6721	OPEN	CATTLEGRID: Surveying and engineering plans, pit development 1974-1986. Includes 1977 aerial survey.
6722	"	TOWN, CARAVAN PARK, SERVICES & TAILINGS DAM - surveying and engineering plans.
6723	"	CATTLEGRID - grade control for areas C2, C3 and Area IV. Predominantly plans - blasthole layout, top-of-ore, grade control plans and cross-sections.
6724	"	EAST LAGOON OREBODY - plans
6725	"	NORANDA AUSTRALIA Ltd (1967). Plans - Main Open Cut, House Workings, West Lagoon, East Lagoon, Mystery.
6726	OEPN	MAIN OPEN CUT - Cross-sections by Austminex Pty Ltd (1967-1968).
6727	"	WEST LAGOON - plans by Mount Gunson Mines and Austminex Pty Ltd. (Grade control, block plans, face geology, drillholes, cross-sections etc.)
6728	"	CATTLEGRID - Grade control plans for areas B2, B3 and B4 (east-northeast Cattlegrid). Plans of bottom-of-ore, top-of-ore, diamond drill-holes, diamond drilling influence areas as well as pit - and grade control - cross-sections.
6729	"	CATTLEGRID - End-of-period Survey Plans (1980-1982).

TOTAL: - 73 open file

SCHEDULE A



SCALE 1:250 000

MT. GUNSON MINES PTY. LIMITED

DOCKET DM 1261/72 AREA 2215 km²

1:250000 PLANS PORT AUGUSTA

LOCALITY PANDURRA – APPROX. 20 km. E of IRON KNOB

EL. No. 50 EXPIRY DATE ~~22-3-74~~

PACMINEX PTY. LIMITED

Telephone: 2 0515
Telegrams: "Pacminex" Sydney
Telex: AA 20285

15-19 Bent Street, Sydney, N.S.W.
Postal Address:
Box No. R221 Royal Exchange.
SYDNEY, N.S.W. 2000.

17th July, 1973.

RECEIVED
25 JUL 1973
DEPT. OF MINES
SECURITY
2273

CHIEF CLERK
19 JUL 1973
DEPT. OF MINES
ADELAIDE

Our Ref.: RWG/EMP
Your Ref.:

The Director of Mines,
Department of Mines,
Box 38, Rundle Street P.O.,
ADELAIDE, 5000.
South Australia.

Dear Sir,

Quarterly Report for period 23rd March to 22nd June, 1973, on E.L. 50, Pandurra Area, South Australia.

1. Summary

This report summarises work on E.L. 50 during the quarterly period ending 22nd June, 1973. A statement of expenditure for the period 1st April to 30th June, 1973, is included.

2. Preparation for Exploration

The first part of the period was devoted to preparatory work. This included research of previous work carried out in the area, visits to Mt. Gunson for familiarisation with recent field exploration, procurement of base plans and photographs and logistical planning.

3. Field Exploration

The initial phase of exploration is one of geological reconnaissance, combined with rock chip geochemistry. This programme will attempt to delineate the disconformity between the Pandurra Formation and the overlying Whyalla Sandstone. Further exploration will be designed to locate Mt. Gunson type mineralisation at this disconformity.

/....

Geological reconnaissance and geochemical sampling during this report period began at the southern end of the E.L. and has covered "Tregolana" and "Roopena" pastoral stations (see location map).

Data on this work has not yet been prepared for present action, as assays are still awaited from samples dispatched for analysis.

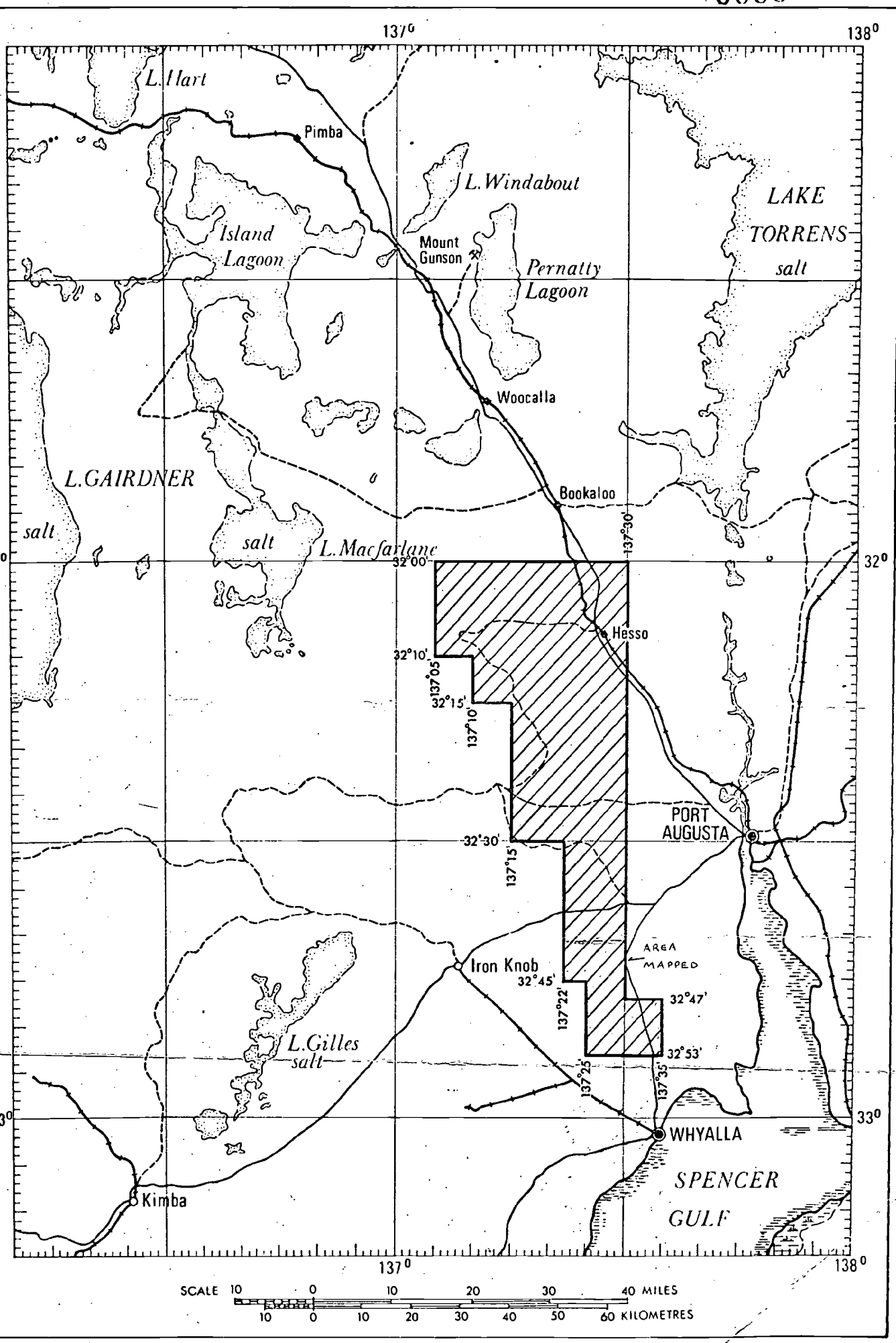
4. Expenditure

Expenditure for the period 1st April to 30th June, 1973, was as follows :-

		$
Geological		6,295
Geophysical		-
Geochemical		129
	Total	$ 6,424

Yours faithfully,

R.N. SELMAN,
Managing Director.



LOCATION MAP PANDURRA AREA SOUTH AUSTRALIA

PACMINEX PTY. LIMITED

Telephone: 2 0515
Telegrams: "Pacminex" Sydney
Telex: AA 20285

15-19 Bent Street, Sydney, NSW
Postal Address:
Box No. R221 Royal Exchange.
SYDNEY, N.S.W. 2000.

→ C G.
→ Sup Geol
Regional Mapping

Our Ref.: WAH/MP

8th October, 1973.

Your Ref.:

The Director of Mines,
Department of Mines,
Box 38, Rundle Street, P.O.
ADELAIDE. S.A. 5000

Dear Sir,

Re: Quarterly Report on E.L.50 Pandurra Area, South Australia, for the period 23rd June, 1973 to 22nd September, 1973.

Geological Mapping

Systematic geological mapping continued northward from the area of Roopena Station to about Latitude 32° 15' S. Considerable modification to the previous 1:250,000 (Port Augusta sheet) mapping has been necessary. Most of the Whyalla Sandstone outcropping in the area was previously mapped as Pandurra formation. This is especially true between latitudes 32° 43' S and 32° 25' S where Whyalla Sandstone lies directly on Roopena Volcanics or Gawler Range Volcanics.
It has also been found that much of the area mapped as Pleistocene gravels is in fact the re-exposed Pandurra formation regolith of the pre-Whyalla Sandstone surface.

Needs checking

A preliminary edition of the revised geologic map of the southern part of E.L.50 (PMX Drawing No.1556) is attached to this report.

Drilling

A contract for rotary and core reconnaissance drilling has been let and drilling is due to commence on September 24th 1973.

Expenditure

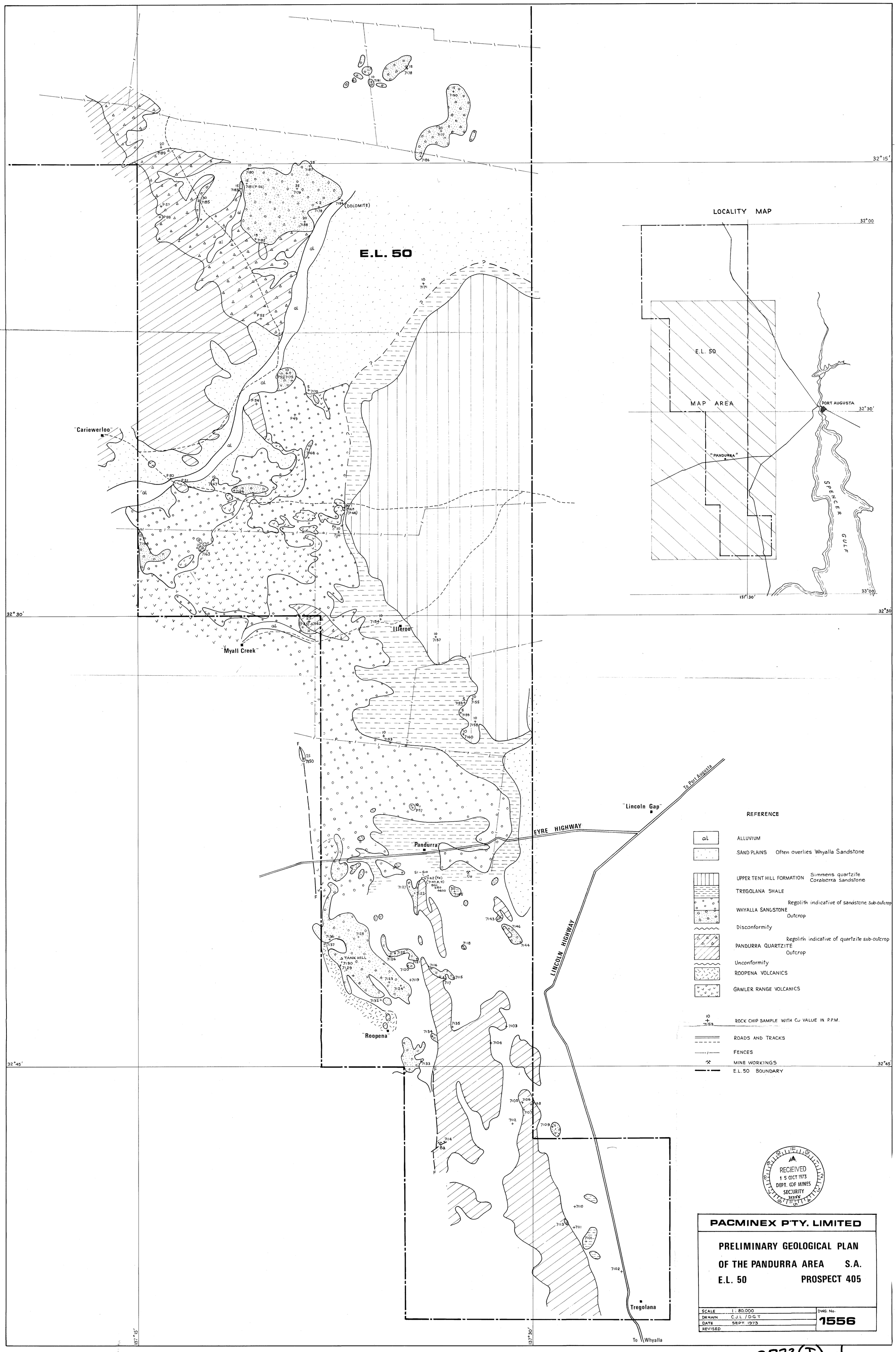
Expenditure for the period July 1st to August, 31st is as follows:-

...../2

Geological surveys $10,761.

Yours faithfully,

(R.N.Selman)
MANAGING DIRECTOR


E.L. 50
LOCALITY MAP
E.L. 50
MAP AREA
PORT AUGUSTA
"PANDURRA"
SPENCER GULF
32°15'
32°00
32°30'
33°00
137°30'
"Cariewerloo"
"Myall Creek"
"Illeroo"
"Pandurra"
"Lincoln Gap"
"Roopena"
Tregolana
EYRE HIGHWAY
LINCOLN HIGHWAY
To Port Augusta
To Whyalla
TANK HILL
(DOLOMITE)
32°45'
137°15'
137°30'
REFERENCE
al ALLUVIUM
SAND PLAINS Often overlies Whyalla Sandstone
UPPER TENT HILL FORMATION Simmens quartzite Coraberra sandstone
TREGOLANA SHALE
Regolith indicative of sandstone sub-outcrop
WHYALLA SANDSTONE
Outcrop
Disconformity
Regolith indicative of quartzite sub-outcrop
PANDURRA QUARTZITE
Outcrop
Unconformity
ROOPENA VOLCANICS
GAWLER RANGE VOLCANICS
ROCK CHIP SAMPLE WITH Cu VALUE IN P.P.M.
ROADS AND TRACKS
FENCES
MINE WORKINGS
E.L. 50 BOUNDARY
RECIEIVED
15 OCT 1973
DEPT. OF MINES
SECURITY
21255
PACMINEX P'TY. LIMITED
PRELIMINARY GEOLOGICAL PLAN
OF THE PANDURRA AREA S.A.
E.L. 50 PROSPECT 405
SCALE 1:80,000
DRAWN C.J.L. / D.G.T.
DATE SEPT. 1973
REVISED
DWG. No.
1556

2273(I)-1

PACMINEX PTY. LIMITED

Telephone: 2 0515
Telegrams: "Pacminex" Sydney
Telex: AA 20285

15-19 Bent Street, Sydney, NSW
Postal Address:
Box No. R221 Royal Exchange.
SYDNEY, N.S.W. 2000.

17th December, 1973.

Our Ref.: RWG/EMP

Your Ref.:

The Director of Mines,
Department of Mines,
Box 38, Rundle Street P.O.,
ADELAIDE, 5000.
South Australia.

Dear Sir,

Re : Quarterly Report on E.L. 50, Pandurra Area, S.A., for period ending 22nd December, 1973.

1. Summary

During the quarter, preliminary geological mapping was completed. A programme of stratigraphic drilling involving 61 rotary drill holes was carried out. Expenditure for the quarterly period ending 30th November, 1973, was $25,535.

2. Geological Mapping

Geological reconnaissance was completed in September and a preliminary geological plan was prepared which is included in this report (Drawing No. 1556A). Extensive revisions and additions to this plan are already inevitable as a result of the drill hole data that is currently being assessed

3. Geochemical Survey

In the course of the last six months' exploration a total of 216 rock chip geochemical samples were collected. These were analysed for Cu, Pb and Zn. All the results have now been received and are appended to this report.

/....

4. Stratigraphic Drilling

A comprehensive stratigraphic drilling programme commenced in the beginning of the quarterly period and to date a total of 61 rotary holes were completed. A total length of 3,570 metres was drilled. This included 2.6 metres of coring for diagnostic purposes. The maximum depth attained was 98 metres, with an average depth of approximately 60 metres. Drill hole locations are shown on Pacminex Drawing No. 1556A.

The drilling programme fulfilled its purpose in that it successfully revealed the stratigraphic relationships of an essentially flat lying succession of rocks, and in particular has shown up the hitherto unsuspected extent and development of Woocalla Shale. It also revealed the presence of considerable underground water reserves in the northern part of the area. In two holes the quality of water was quite good (9,000 and 5,000 ppm T.D.S. respectively). A flow rate estimated at 5,000 to 6,000 gallons per hour was encountered in one zone on "Yudnapinna" Station.

Topley →

As most of the time was taken up in attending to drilling and logging operations there has been little chance of evaluating the results to date. Geochemical analysis of the drill cuttings and compilation of drill hole logs is currently in progress. Logs for drill holes EX 1 to EX 10 are appended to this report.

5. Expenditure

Expenditure for the period 1st September to 30th November, 1973, was $25,535; and was incurred as follows :-

	$
Geology and Geochemistry	18,527
Drilling	7,008
OVERALL TOTAL	$ 25,535

Yours faithfully,

R.N. SELMAN,
Managing Director.

Encs.

APPENDIX I

ROCK CHIP GEOCHEMICAL ANALYSES

SYDNEY ADELAIDE MT. ISA

McPhar Geophysics Pty. Ltd.
48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

GEOCHEMICAL RESULTS

Samples from: PACMINEX PTY. LTD.
Area: TUMBY BAY
Samples of: ROCKS
Preparation: PULVERISED

Sheet No.: 1

Batch No.: CH 4916 (Batch P I.)Project Pandurra Date: 21.6.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm				
7101	15	<20	15				
2	5	<20	10				
3	10	<20	5				
4	10	<20	5				
5	20	<20	10				
6	5	<20	5				
7	5	<20	5				
8	10	<20	5				
9	25	<20	40				
10	10	<20	5				
11	5	<20	5				
7112	30	60	20				

GEOCHEMICAL RESULTS

48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

Samples from: PACMINEX PTY. LTD.
Area: S.A.
Samples of: ROCKS
Preparation: PULVERISED
Batch No.: CH 4932 (Project Pandurra) P.2.

Sheet No.: 1
Date: 28.6.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm				
7113	20	<20	<5				
4	15	<20	5				
5	10	<20	<5				
6	20	<20	5				
7	10	<20	5				
8	10	<20	5				
9	35	<20	10				
20	25	<20	10				
7121	15	<20	10				

ANALYTICAL METHODS: Cu Pb Zn by AAS following hot conc. HCl leach and HCl/HNO_3 leach in latter stages for 1 hour of 0.25 g sample.

NATA

SYDNEY ADELAIDE MT. ISA

McPhar Geophysics Pty. Ltd.
48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

GEOCHEMICAL RESULTS

Samples from: PACMINEX PTY. LTD.
Area:
Samples of: ROCKS
Preparation: PULVERISED
Batch No.: CH 4968 (Batch No. P3)

Sheet No.: 1
Date: 12.7.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm
7122	35	55	90
3	10	20	35
4	15	<20	45
5	10	35	25
6	15	20	65
7	10	<20	15
8	10	20	15
9	10	<20	55
30	5	<20	10
1	10	<20	55
2	5	20	10
3	25	<20	210 ✓
4	5	<20	15
5	15	<20	85
6	15	<20	15
7	25	30	260 ✓
8	10	<20	85
9	20	25	60
40	10	20	15
1	10	<20	35
7142	3400 ✓	200 ✓	290 ✓

GEOCHEMICAL RESULTS 0014

UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

Samples from: PACMINEX PTY. LTD.
Area:
Samples of: ROCK AND SOIL
Preparation: DRIED AND PULVERISED (10 SIEVED)
Batch No.: CH 5009 (FLD No. 8003) BATCH No. P4

Sheet No.: 1
Date: 27.7.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm				
7143	60	<20	20				
4	5	<20	5				
5	30	<20	10				
6	5	<20	10				
7	800	50	360				
8	680	110	190				
9	4600✓	1000	1600				
50	25	<20	20				
1	10	<20	10			P.5.	
2	1400✓	110	800				
3	10	<20	15				
4	10	20	10				
5	10	<20	10				
6	5	<20	5				
7	10	<20	10				
8	10	<20	10				
9	5	<20	10				
7160	10	<20	25				
S -1	35	<20	50				
2	35	20	85				
3	30	25	80				
4	35	60	95				
5	50	<20	60				
6	35	<20	40				
7	50	25	70				
8	45	25	75				
9	45	40	60				
S-10	50	40	95				

ANALYTICAL METHODS: Cu Pb Zn by AAS following hot conc. HCl leach and HCl/HNO_3 leach in latter stages for 1 hour of 0.25 g sample.

NATA

(Pacminex. Tumby Bay.

SYDNEY ADELAIDE MT. ISA

McPhar Geophysics Pty. Ltd.
48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

GEOCHEMICAL RESULTS

Samples from: PACMINEX PTY. LTD.
Area: PANDURRA
Samples of: ROCKS
Preparation: PULVERISED
Batch No.: CH 5049 (O/N FLD 8007) P.5

Sheet No.: 1
Date: 16.8.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm
7161	10	<20	50
2	25	<20	5
3	10	<20	5
4	10	<20	5
5	20 ✓	480 ✓	5 ✓
6	10	<20	5
7	10	<20	<2
8	10	<20	5
9	20	<20	5
70	5	<20	5
1	10	<20	20
2	15	<20	<2
3	390 ✓	<20 ✓	240 ✓
4	15	<20	10
5	10	<20	<2
7176	<2	<20	<2

SYDNEY ADELAIDE MT. ISA

McPhar Geophysics Pty. Ltd.
48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

GEOCHEMICAL RESULTS

Samples from: PACMINEX PTY. LTD.
Area: PANDURRA
Samples of: ROCKS
Preparation: PULVERISED
Batch No.: CH 5070 (O/N (0112) Batch No. P.G PG)

Sheet No.: 1
Date: 16.8.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm
7177	20	<20	35
8	15	<20	25
9	35	<20	20
80	10	<20	5
1	15	<20	10
2	15	<20	10
3	15	<20	15
4	5	<20	20
5	30	<20	15
6	15	<20	10
7	25	<20	10
8	20	<20	20
9	20	<20	60 ✓
90	15	<20	45
7191	10	<20	45

SYDNEY ADELAIDE MT. ISA

McPhar Geophysics Pty. Ltd.
48-52 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 42
UNLEY, S.A. 5061
PHONE: 72 2133
CABLE: "PHARGEO" ADELAIDE
TELEX: "PHARGEO" AA82623

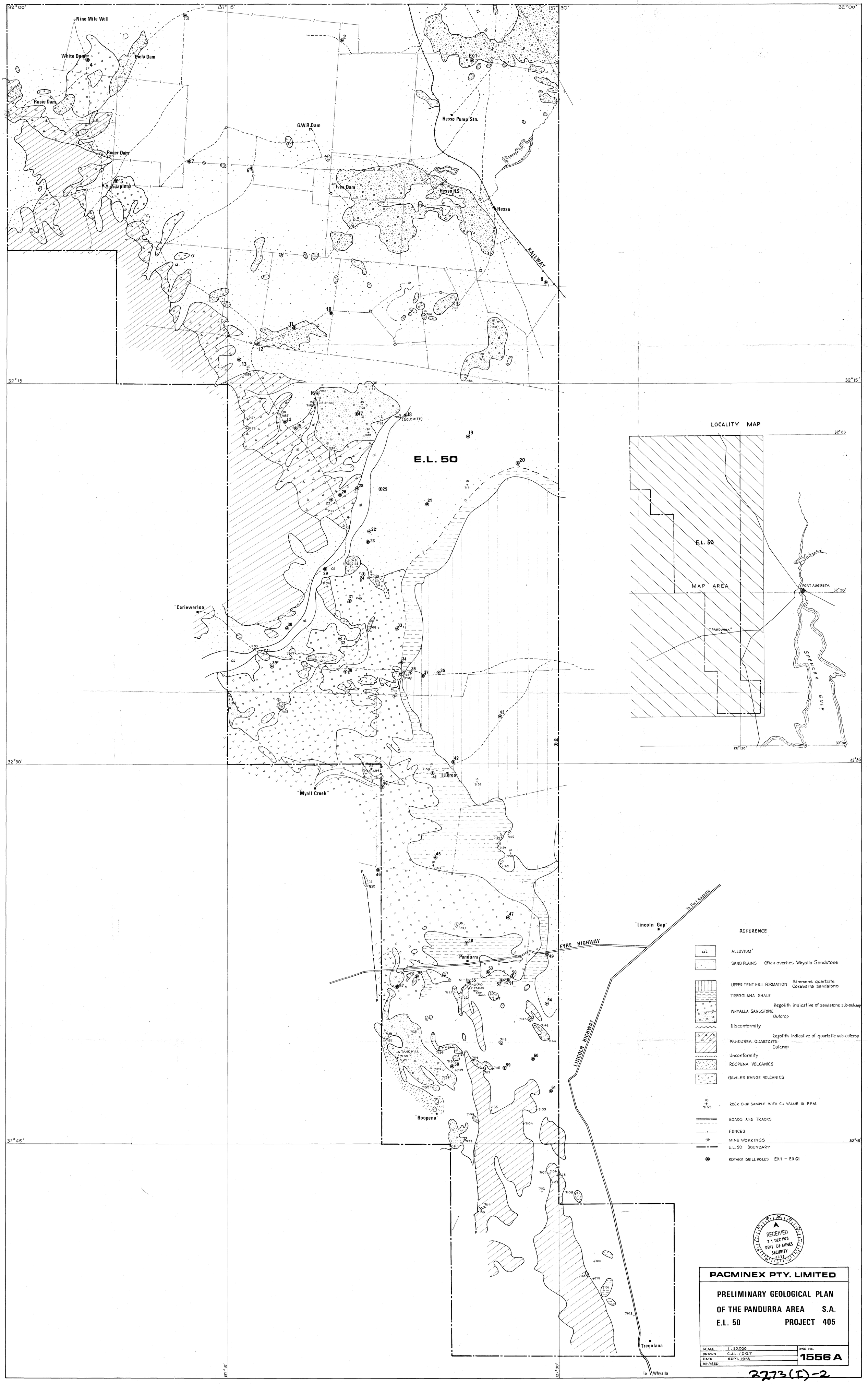
GEOCHEMICAL RESULTS

Samples from: PACMINEX PTY. LTD.
Area: TUMBY BAY.
Samples of: ROCKS
Preparation: PULVERISED
Batch No.: CH 5189 (O/N.FLD No. 8017) P.7.

Sheet No.: 1
Date: 1.10.73

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Cu, ppm	Pb, ppm	Zn, ppm
7192	60	<20	5
3	10	<20	5
4	10	<20	5
5	35	<20	5
6	10	<20	5
7	10	<20	<2
8	10	<20	5
9	5	<20	5
7200	10	<20	5
1	10	<20	40
2	5	<20	5
3	15	<20	5
4	10	<20	10
5	10	20	10
6	10	<20	15
7	10	<20	25
8	10	<20	10
9	10	<20	5
10	10	25	10
1	10	<20	5
2	10	<20	15
3	5	<20	5
4	5	<20	20
5	5	<20	<2
7216	10	<20	5



PACMINEX PTY. LIMITED

PRELIMINARY GEOLOGICAL PLAN

OF THE PANDURRA AREA S.A.

E.L. 50 PROJECT 405

SCALE	1 : 80,000	DWG. No.
DRAWN	C.J.L. / D.G.T	1556 A
DATE	SEPT. 1973	
REVISED		

2273(I)-2

PACMINEX PTY. LIMITED

15-19 BENT STREET
BOX 221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
CABLE "PACMINEX" SYDNEY
TELEX AA20285
TELEPHONE 2 0515

PACMINEX

Ref: DGT/SS

18th April, 1974.

The Director of Mines,
Department of Mines,
Box 38, Rundle St. P.O.,
ADELAIDE, S.A. 5000.

Dear Sir,

Quarterly Report on E.L. 50, Pandurra Area, S.A.
for period ending 22nd March, 1974

1. Summary

During the quarter, geochemical results for a previous drilling programme were received. A second programme of stratigraphic drilling was partly completed. Expenditure for the quarterly accounting period ending 28th February, 1974, was $16,939.

2. Stratigraphic Drilling

2.1 First Stage (Completed November, 1973)

Geochemical results for the first drilling programme were received and entered on the drill logs. These logs, for holes EX1 to EX61, are appended to this report. No strongly anomalous geochemical values were detected.

2.2 Second Stage (In progress)

A programme of follow-up drilling began on 4th March, 1974. To the end of March, 49 rotary drillholes, totalling 1,916 metres, were completed. Hole locations are shown on Drawing No. 1556B, which accompanies this report. This programme has not been completed and no geochemical assays or drillhole logs are available yet.

3. Results

As did the earlier programme, the drilling has continued to reveal the widespread development of Woocalla Shale. On "Pandurra", "Roopena" and "Tregolana" stations, weathered outcrop, previously mapped as Tregolana Shale, has been shown to be weathered, black, dolomitic shale of the Woocalla unit.

Tapley

4. Expenditure

Expenditure for the period 1st December, 1973, to 28th February, 1974, was $16,401, which was incurred as follows:-

Geology and Geochemistry	$ 11,337
Drilling	$ 5,602
Total	$ 16,939

Yours faithfully,

R.N. Selman,
Managing Director.

PACMINEX PTY. LIMITED

15-19 BENT STREET
BOX 221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
CABLE "PACMINEX" SYDNEY
TELEX AA20285
TELEPHONE 20515

PACMINEX

Ref : RWG/EMP

16th July, 1974.

The Director of Mines,
Department of Mines,
Box 38, Rundle Street P.O.,
ADELAIDE, 5000.
South Australia.

Dear Sir,

Quarterly Report on E.L. 50, Pandurra Area, S.A.
For the Period Ending 22nd June, 1974.

1. Summary

The stratigraphic drilling programme, commenced in the previous quarter, was continued. Geochemical assays from the drilling carried out during the previous quarter are now to hand. Expenditure for the period 1st March to 31st May, 1974, amounted to $28,738.

2. Stratigraphic Drilling

The second stage drilling programme which commenced in March, 1974, was interrupted by a break, during which bore hole logs were compiled and general drilling results were assessed. Drilling recommenced on 5th June and a further 17 rotary holes, totalling 602 metres were completed before the end of the period. Drill hole logs incorporating geochemical assays, for holes EX 62 to EX 110 are appended. Hole locations are shown on Drawing No. 1556C, which accompanies this report.

3. Results

Drilling continued to refine geological knowledge. The area considered to have a potential for mineralisation has been reduced to a narrow strip bordering Pandurra Formation outcrop. No obvious geochemical anomalies were detected, but a closer study currently underway is beginning to show up some interesting trends.

/....

4. Expenditure

Expenditure for the period 1st March to 31st May, 1974, was $28,738, and was incurred as follows :-

Geology and Geochemistry	18,029
Drilling	10,709
Overall Total	$ 28,738

Yours faithfully,

R.N. SELMAN,
Managing Director.

Encs.

2

PACMINEX PTY. LIMITED

15-19 BENT STREET
BOX R221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
CABLE "PACMINEX" SYDNEY
TELEX AA26175
TELEPHONE 20515

0022

PACMINEX

DWHS/IM

16th August, 1974

The Director of Mines,
Department of Mines,
Box 38. Rundle Street P.O.,
ADELAIDE. S.A. 5000

Dear Sir,

EXPLORATION LICENCE NO. 50 - PANDURRA

MOUNT GUNSON MINES PTY. LTD.

In compliance with clause 9 of the above licence, we hereby notify you of the occurrence of underground water of a quality acceptable for stock in drill holes as located on the enclosed sketch plan.

Samples of water from these holes were tested by A.C.S. Laboratories, Adelaide, to determine the total dissolved salts. Results are appended to the enclosed plan. The depth of the water table for each hole is also given. By way of interest we have included results from some holes where water is of no use for stock. The samples were collected and analysed in the course of geochemical investigations.

Hole Nos. 7 and 130 produced water judged to be of good quality, but samples were not tested. In many other holes in E.L. 50 water was encountered, but tests showed it to be highly saline.

Yours faithfully,

(R.N. Selman)
MANAGING DIRECTOR

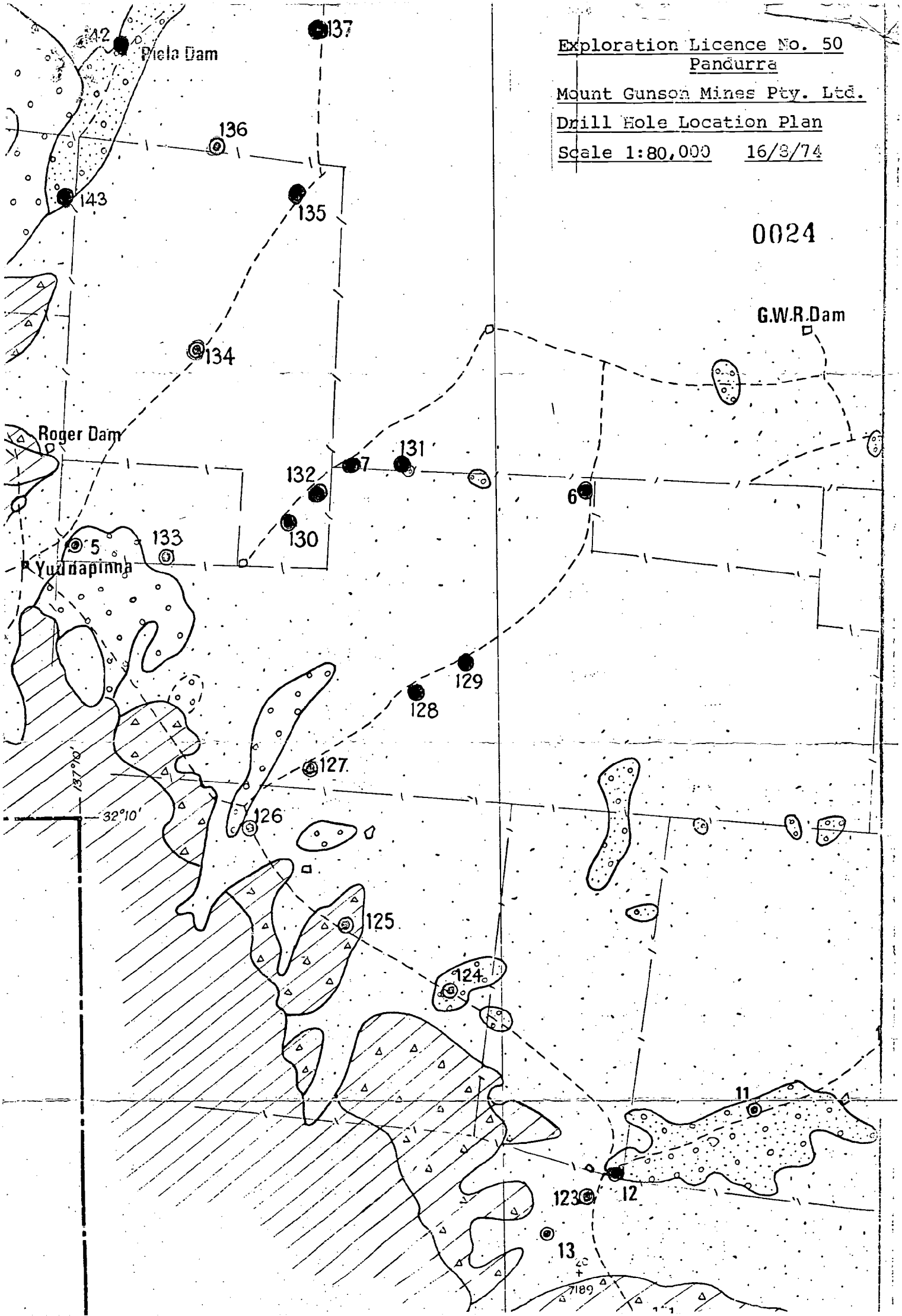
EXPLORATION LICENCE NO. 50 - PANDURRA

TABLE OF WATER TESTS

(refer sketch plan)

HOLE NO.	% T.D.S.	WATER TABLE DEPTH (METRES)
6	0.999	60
7	not tested	30
12	0.549	55
128	0.804	42
129	dry to 48m	
130	not tested	30
131	wet but no flow	42
132	0.468	21
135	0.82 0.819	45
137	1.8	-
142	1.8	-
143	.983	33

16th August, 1974


Exploration Licence No. 50
Pandurra
Mount Gunson Mines Pty. Ltd.
Drill Hole Location Plan
Scale 1:80,000 16/8/74
0024
Piela Dam
G.W.R.Dam
Roger Dam
Yuldapinna
137
142
136
143
135
134
131
132
7
6
133
5
130
129
128
127
126
125
124
11
12
123
13
32°10'
137°10'

PACMINEX PTY. LIMITED

15-19 BENT STREET
BOX 221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
CABLE "PACMINEX" SYDNEY
TELEX AA20285
TELEPHONE 2 0515

0025

PACMINEX

Ref: RWG/SS

22nd October, 1974.

Director of Mines,
Department of Mines,
Box 38, Rundle St. P.O.,
ADELAIDE, S.A. 5000.

Dear Sir,

Quarterly Report on E.L. 50, Pandurra Area, S.A., for the period ending 22/9/1974

Please find enclosed one copy of the above report, together with appendix. The maps accompanying this report are unfortunately still in preparation but will be forwarded on completion.

Expenditure for the period 1st June to 31st August, 1974, was $31,794. This was incurred as follows :-

Geology, Geochemistry and General Logistics	$20,314
Drilling and Sampling	$11,480
Total	$31,794

Please note that the report is for the period ending 22nd September, 1974, but the financial statement is for the three month period ending 31st August, 1974.

Yours faithfully,

R.N. Selman,
Managing Director.

RECEIVED
7 NOV 1974
DIR. OF MINES
REGISTRY
2273-II

2

Prospect No. 405

0026

PACMINEX PTY LIMITED

EXPLORATION LICENCE NO. 50

QUARTERLY REPORT ON EXPLORATION ACTIVITIES

FOR THE PERIOD

23RD JUNE, 1974 to 22ND SEPTEMBER, 1974

PMR 134/74

SYDNEY

October, 1974.

D.G. Tonkin

Copy No. ____

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CONTENTS

KEYWORDS

SOUTH AUSTRALIA
E.L. 50
EXPLORATION
GEOLOGY
GEOCHEMISTRY
DRILLING
STRATIGRAPHY
PETROLOGY
PANDURRA
SI 53-4

1. SUMMARY

The second stage of a comprehensive stratigraphic drilling programme has now been completed. Collation and interpretation of drill hole data that has been accumulated is underway and the results are being evaluated.

Stratigraphic problems have been discussed with geologists from the S.A. Department of Mines. Samples of rock chips and drill cuttings were selected for sectioning and petrological study. The existence of a potable water acquifer was reported to the Director of Mines.

2. STRATIGRAPHIC DRILLING

The second stage drilling programme which began in March, 1974, was completed on the 17th July. An additional 30 holes involving 1,321 metres of drilling were sunk during the period. An overall total of 157 holes involving 7,410 metres of drilling have now been completed. Drill hole locations are shown on DWG. NO. 1556D.

3. GEOCHEMISTRY

All drill cuttings collected during the report period (samples from holes EX 128 to EX 157) were analysed for Cu, Pb and Zn. No obvious geochemical anomalies were recognised in samples coming from E.L. 50. One anomalous geochemical assay was of a sample from EX 147, sited 1 km south of Magnacowie Wells in E.L. 81.

Water samples collected from drill holes carrying a significant flow of water were tested for T.D.S., Cu, Pb and Zn. None contained anomalous amounts of heavy metals. However, 7 holes located on the "Yudnapinna" Station showed up a potable water acquifer. As required by the terms of the Exploration Licence this discovery was detailed in a separate report to the Director of Mines, dated 16th August, 1974.

4. GEOLOGY

A much more detailed picture of the sub-surface geology is now emerging (DWG. NO. 1806). One main revelation is that the sand-covered plains are not underlain by Tregolana Shale, as previously thought, but by either Whyalla Sandstone or the shale facies of the Woocalla Dolomite.

A second important finding was the recognition of a new unit, referred to as the "Yudnapinna Beds". This unit immediately overlies the Woocalla Dolomite Formation and occupies a trough running from the north-west corner to the south-east corner of the lease (DWG. NO. 1556D). The beds consist of red, green and grey-green siltstone and fine sandstone with a carbonate-bearing matrix in most localities. Certain strata contain abundant sand-sized to small pebble-sized lithic grains. These are mostly orange-red in colour, and are probably derived from the Gawler Range Volcanics basement. The unit is up to 50 metres thick. Its contact with the overlying Whyalla Sandstone appears to be gradational.

A third important discovery was a conglomerate unit that lies immediately below the Woocalla Dolomite formation. This unit manifests itself in two different localities, one in

the northern part of the lease and one in the southern part of the lease. The conglomerate is thin and discontinuous, north of the Gawler Range Volcanics inlier that occupies the centre of E.L. 50. It consists of white quartz pebbles in a gritty matrix and contains characteristic angular red chips of jasper.

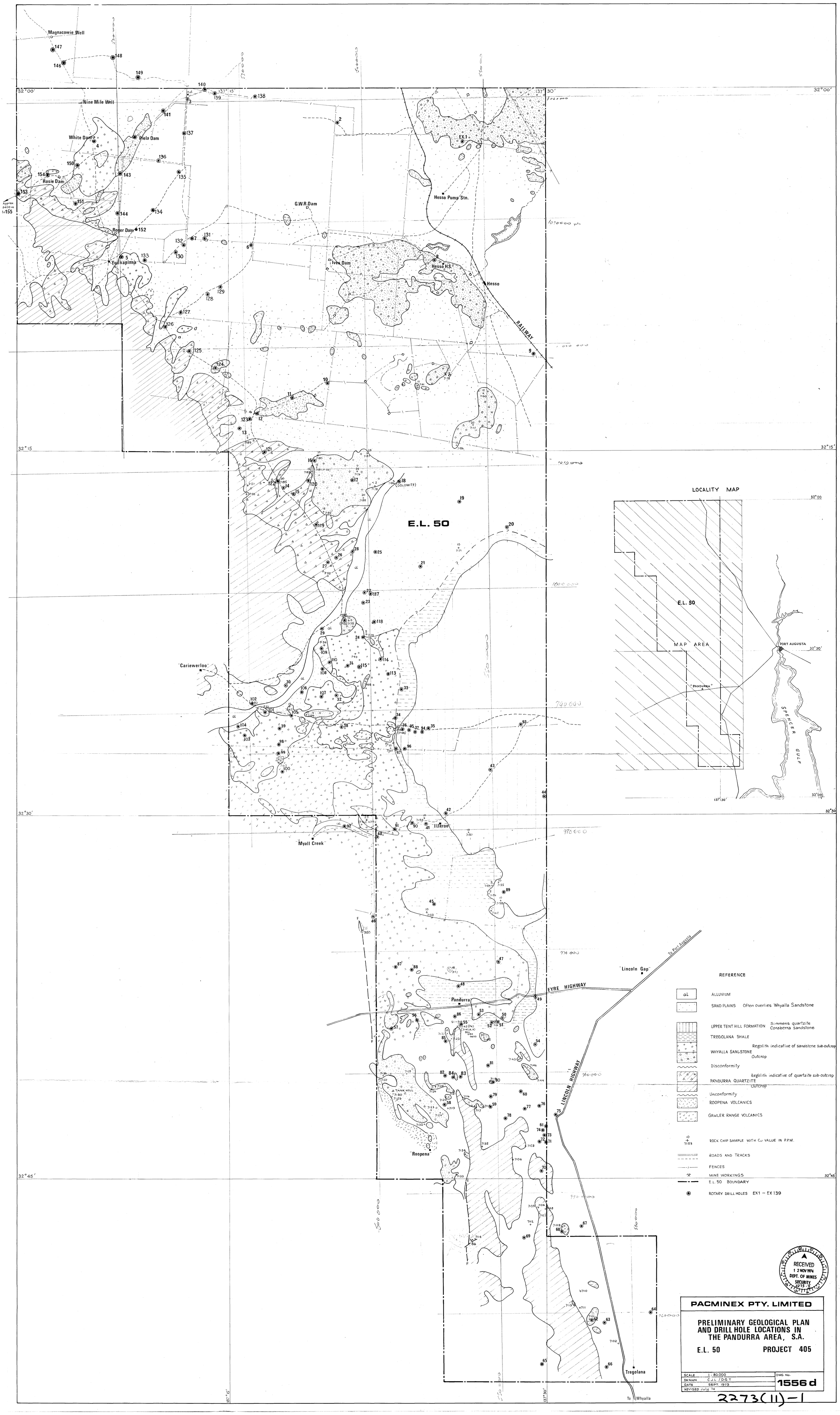
South of the Gawler Range Volcanics inlier, the conglomerate is better developed. It contains iron formation pebbles, Pandurra Formation pebbles and white quartz pebbles, in decreasing order of abundance and with an increasing degree of rounding. The matrix of the rock is sandy and unconsolidated. The constituents appear to be very poorly sorted. More than 50 metres thickness of conglomerate has been intersected beneath Woocalla Dolomite on "Pandurra" station.

Messrs. B.P. Thomson and R.P. Coats of the Regional Surveys Division visited Port Augusta in August. Field excursions to study outcrops in the Roopena and Whyalla area were made after examination of plans, sections, drill cuttings and cores from the Exploration Licence area. Attempts were made to sort out the confusion existing in mapping of the Pandurra Formation and the Whyalla Sandstone member. Problems involved in applying stratigraphic names to the Woocalla beds were discussed at length.

5. PETROLOGY

Thirty samples of rock chips and drill cuttings were selected and sent for preparation of thin and polished sections. Examples of the Yudnapinna siltstone beds were also included.

DGT/SS
22/10/74


Magnacowie Well
Nine Mile Well
White Dam
Piela Dam
Rosie Dam
Roger Dam
Yudnapinna
G.W.R.Dam
Hesso Pump Stn.
Ives Dam
Hesso H.S.
Hesso
RAILWAY
EX.1
E.L. 50
(DOLOMITE)
"Cariewerloo"
"Myall Creek"
"Illeroo"
"Pandurra"
"Roopena"
"Lincoln Gap"
EYRE HIGHWAY
LINCOLN HIGHWAY
To Port Augusta
Tregolana
To Whyalla
TANK HILL
LOCALITY MAP
MAP AREA
PORT AUGUSTA
"PANDURRA"
SPENCER GULF
REFERENCE
al ALLUVIUM
SAND PLAINS Often overlies Whyalla Sandstone
UPPER TENT HILL FORMATION Simmens quartzite Coraberra Sandstone
TREGOLANA SHALE
Regolith indicative of sandstone sub-outcrop
WHYALLA SANDSTONE
Outcrop
Disconformity
Regolith indicative of quartzite sub-outcrop
PANDURRA QUARTZITE
Outcrop
Unconformity
ROOPENA VOLCANICS
GAWLER RANGE VOLCANICS
ROCK CHIP SAMPLE WITH Cu VALUE IN P.P.M.
ROADS AND TRACKS
FENCES
MINE WORKINGS
E.L. 50 BOUNDARY
ROTARY DRILL HOLES EX1 – EX 139
RECEIVED 12 NOV 1974 DEPT. OF MINES SECURITY 2273-π
PACMINEX PTY. LIMITED
PRELIMINARY GEOLOGICAL PLAN AND DRILL HOLE LOCATIONS IN THE PANDURRA AREA, S.A.
E.L. 50
PROJECT 405
SCALE 1:80,000
DRAWN C.J.L. / D.G.T
DATE SEPT. 1973
REVISED July 74
DWG. No. 1556 d
2273(11)-1

PACMINEX PTY. LIMITED

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BOX 221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
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PACMINEX

Ref : DGT/EMP

20th December, 1974.

The Director of Mines,
Department of Mines,
Box 38 Rundle St P.O.,
ADELAIDE, 5000.
South Australia.

Dear Sir,

Quarterly Report on E.L. 50, Pandurra Area, S.A.
For the period ending 22nd December, 1974.

This period was spent in geological analysis and interpretation of the data collected during field programmes completed over the previous 18 months. Stratigraphic interpretations and correlations were the principal concern, and a close liason was maintained with the Geological Survey division of the Department of Mines.

A report titled "Progress Report on Exploration in the Pandurra Area E.L. 50, South Australia, from March 1973 to December 1974" is being prepared. It will sumarise exploration done during the currency of the exploration licence, details the results of that exploration and outlines proposed future work in the Pandurra area. This report will be submitted in January 1975.

Expenditure for the period 1st September to 30th November, 1974, was $15,246. This was incurred as follows :-

Geology, Geochemistry & General Logistics	14,108
Drilling & Sampling	1,138
	$ 15,246

Please note that the report is for the period ending 22nd December, 1974, but the financial statement is for the three month period ending 30th November, 1974.

Yours faithfully,

R.N. SELMAN,
Managing Director.

Prospect No. 405

0034

PACMINEX PTY LIMITED

PROGRESS REPORT ON EXPLORATION IN THE PANDURRA AREA, E.L. 50 SOUTH AUSTRALIA, FROM MARCH, 1973 TO DECEMBER, 1974.

PMR 160/74

SYDNEY

D.G. TONKIN

December, 1974.

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KEYWORDS

SOUTH AUSTRALIA
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4WOOCALLA DOLOMITE
4ELIZABETH CREEK CONGLOMERATE
4YUDNAPINNA BEDS
4TENT HILL
FORMATION
4WHYALLA SANDSTONE

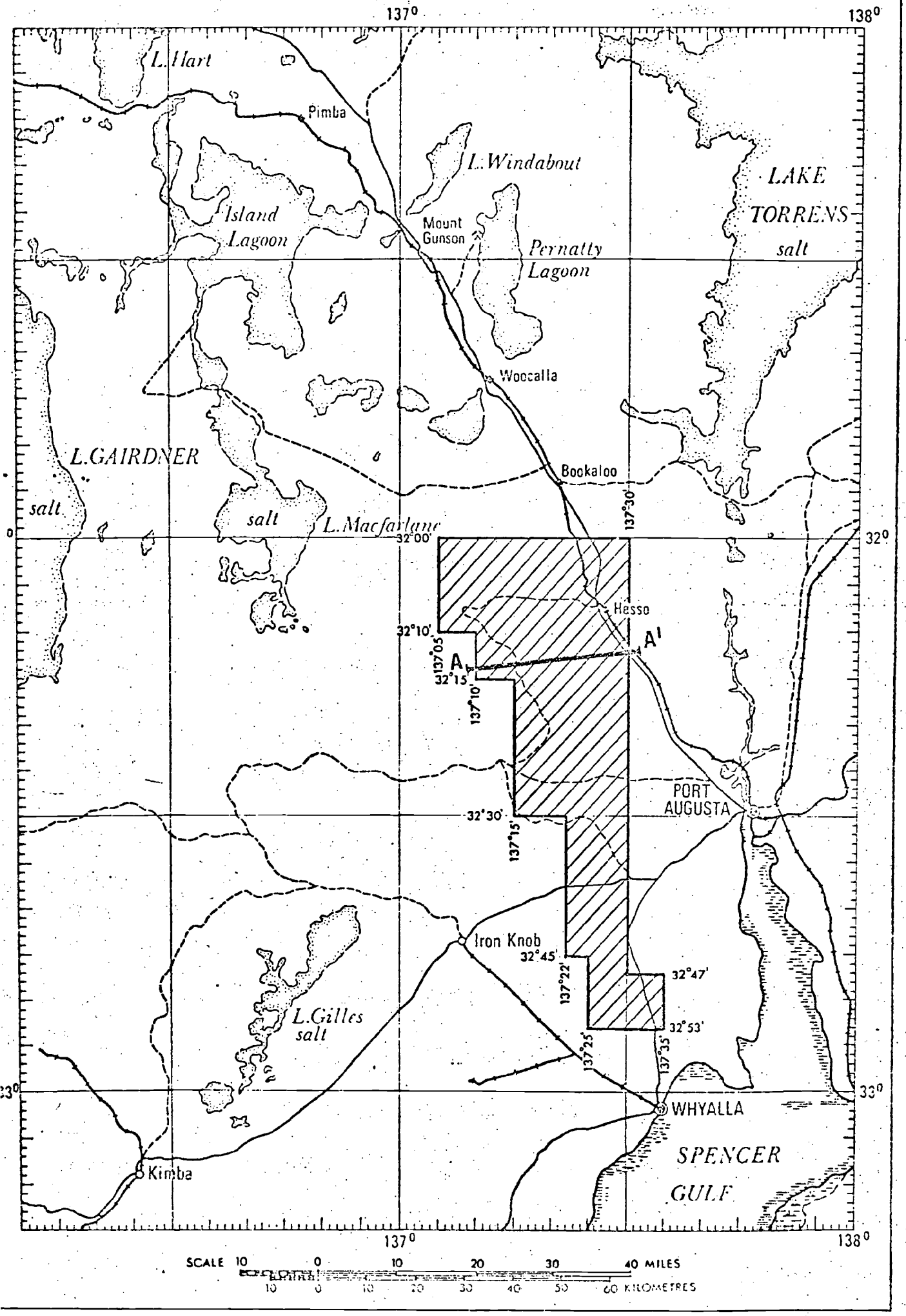


FIGURE 1 : LOCATION MAP PANDURRA AREA SOUTH AUSTRALIA

1. INTRODUCTION

This report, to the Director of Mines, South Australia, concerns the Pandurra Area, E.L. 50, during the period from its commencement on 23rd March, 1973, until 31st December, 1974. (see Figure 1).

The report summarises exploration done during this period, details the results of that exploration and outlines proposed future work in the Pandurra Area.

An Appendix contains amended drill logs for all stratigraphic drill holes. Alterations have been made to the classification of rock units in order to make them conform to the current interpretation.

2. SUMMARY

After an initial geological reconnaissance, two programmes of stratigraphic drilling were undertaken. The completion of these provided the sub-surface geological information required to select areas of greater potential for closer investigation.

Future work, contracted and planned, includes airborne geophysical surveys and exploratory drilling.

3. EXPLORATION PROGRAMMES

The Pandurra Area, which covers 2,215 square kilometres, was taken up in March, 1973. It was renewed for a twelve month period in March, 1974. The area was selected because it contains outcrops of Pandurra Formation, trending south-easterly from "Yudnapinna" station towards Whyalla, which is overlain by members of the Tent Hill Formation (see Figure 2).

It was assumed that if there were any areas where the basal unit of the Tent Hill Formation, the Whyalla Sandstone, was in contact with the Pandurra Formation, that these areas could have potential for the discovery of Mt. Gunson type mineral deposits.

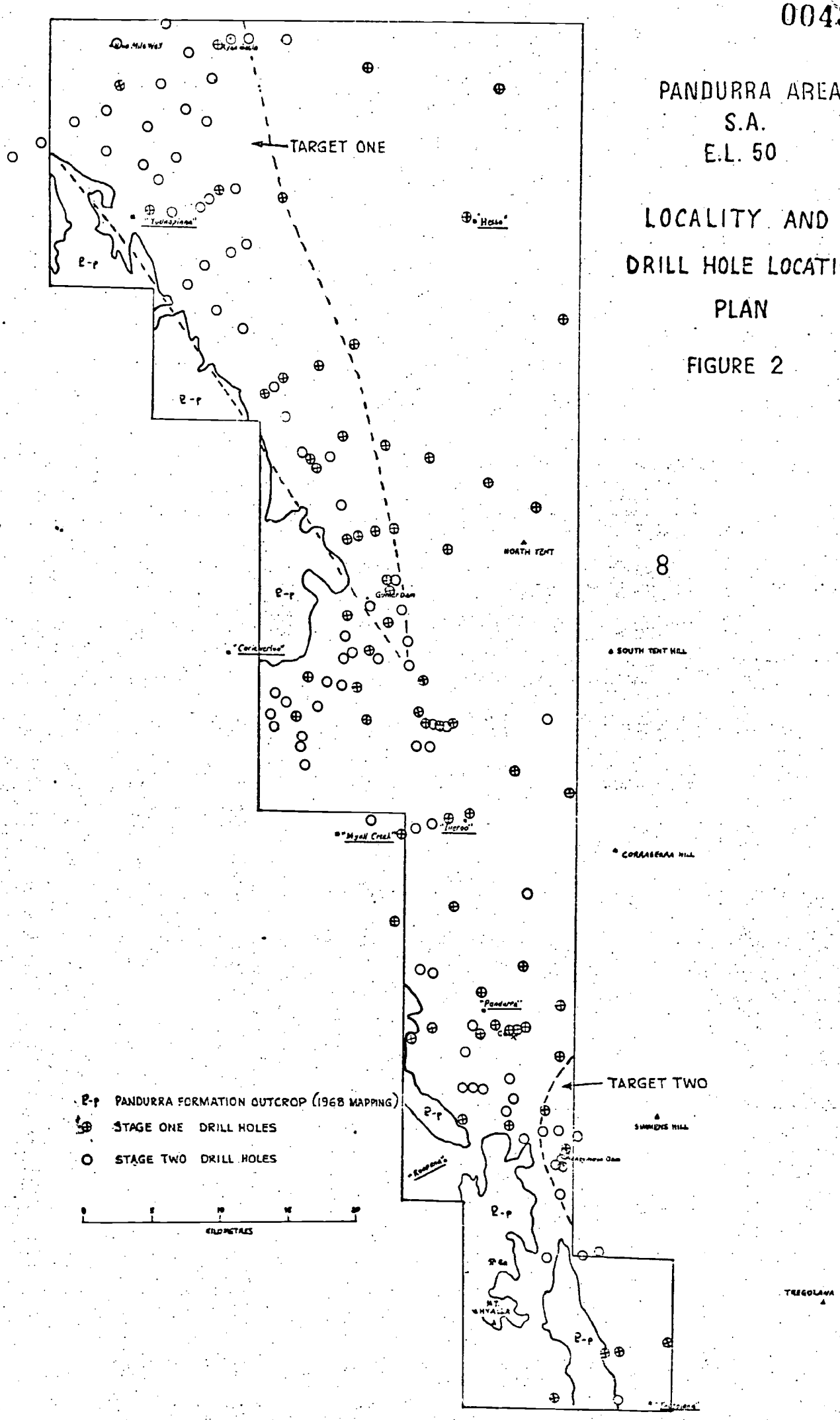
3.1 Geological Reconnaissance

The area lies on the Port Augusta 1:250,000 geological sheet, which was published in 1968 and considered to be fairly reliable. However, little outcrop was shown close to the top of the Pandurra Formation and no outcrop of Woocalla Dolomite was shown.

Geological reconnaissance was concentrated particularly along the outcropping upper surface of the Pandurra Formation. It was also aimed at interpreting the bedrock lithology beneath unconsolidated surface sediments. The resulting hypothetical bedrock lithological plan would then be tested by subsequent stratigraphic drilling.

3.2 Stratigraphic Drilling : Stage One

Widely spaced rotary holes were drilled to a maximum depth of 100 m. The distance between holes was as much as 15 km. The aims were :-


PANDURRA AREA
S.A.
E.L. 50
LOCALITY AND
DRILL HOLE LOCATION
PLAN
FIGURE 2
TARGET ONE
TARGET TWO
NORTH TENT
SOUTH TENT HILL
CORRABERRA HILL
SHANDYS HILL
TREGOLANA
"Pandurra"
"Myall Creek"
"Tiergoo"
"Hesse"
"Tuckaspinna"
Gunner Dam
PANDURRA FORMATION OUTCROP (1968 MAPPING)
STAGE ONE DRILL HOLES
STAGE TWO DRILL HOLES
KILOMETRES

8

(i) to find whether the depth to the top of the Pandurra Formation increased steadily to the east, or if irregularities of the Pandurra surface brought it close to surface beneath recent cover;

(ii) to build up a number of broad geological profiles.

Stage One involved 65 drill holes which totalled 3,773 metres. The mean depth of drill holes was 58 m. Cuttings were sampled in 3 metre intervals and geochemically assayed for Cu, Pb, Zn and in some cases Mn. Drill hole locations are shown on Figure 2 and on Drawing No. 2037.

3.3 Stratigraphic Drilling : Stage Two

The second stage drilling programme concentrated on :-

(i) tracing the western edge of the Woocalla Dolomite, and

(ii) delineating the prospective corridor which occurs between the margin of the Woocalla Dolomite and outcropping Pandurra Formation where Whyalla Sandstone directly overlies the Pandurra Formation.

A further 92 rotary holes were drilled, totalling 3,637 metres. Mean depth of drill holes was 40 m. Samples were again collected in 3 m intervals and geochemically assayed for Cu, Pb, and Zn. Drill hole locations are shown on Figure 2 and on Drawing No. 2037.

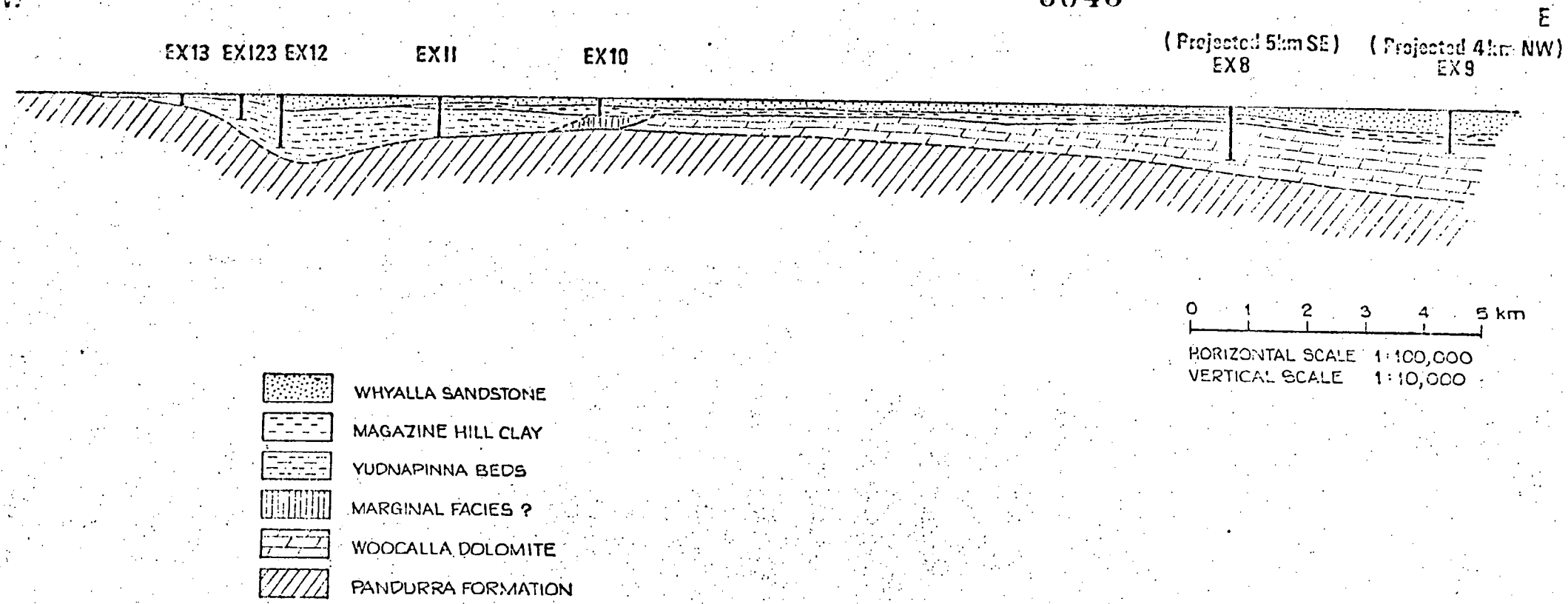


Figure 3. GEOLOGICAL SECTION OF PANDURRA AREA (UNLEVELLED)

4. RESULTS

Drill hole logs for all stratigraphic holes, EX1 to EX157, are appended to this report. These logs have been revised in the light of present knowledge of the area.

4.1 The Pandurra Formation Surface

Irregularity of the top of the Pandurra Formation was found in three areas :-

(i) Near "Yudnapinna" homestead, three, approximately 10 km long, troughs converge to form a larger trough which runs south-easterly parallel to the present day eastern edge of the Pandurra Formation outcrop.

(ii) Near "Pandurra" homestead converge two troughs which rise 5 km to the south-west and 10 km to the south-east respectively.

(iii) About 8 km south-east of "Roopena" homestead a north-east trending trough is exposed on the present day surface of the Pandurra Formation.

In all cases, these troughs appear to be paleo drainage channels, now largely filled by younger Proterozoic sediments. No evidence was found of major tectonic disturbances which might have raised locally the top of the Pandurra Formation during or after deposition of the Woocalla Dolomite, allowing deposition of Whyalla Sandstone directly onto the Pandurra Formation. The top of the Pandurra Formation appears to dip steadily eastwards and although there are probably erosional irregularities on this surface, the top of the Pandurra Formation does not seem to occur at shallow depth at any great distance from the present day outcrops. Figure 3 is a geological section through the northern portion of the lease.

AGE		ROCK SEQUENCE	
CAMBRIAN			
ADELAIDEAN	MARINOAN	TENT HILL FORMATION	SIMMENS QUARTZITE MEMBER CORRABERRA SANDSTONE MEMBER TREGOLANA SHALE MEMBER WHYALLA SANDSTONE MEMBER
	STURTIAN	'YUDNAPINNA BEDS'	Red bed dolomitic siltstones; discontinuous
		WOOCALLA DOLOMITE	Black dolomitic laminites, black shales Dolomite (stromatolitic, oolitic, arenaceous)
	? TORRENSIAN ?	'Mc LEAY BEDS'	Sandstones, quartzites and shales; discontinuous. Basal ('Elizabeth Creek') conglomerate; discontinuous.
	WILLOURAN	PANDURRA FORMATION	Gritty red sandstones, silicified near top, conglomeritic near base.
		ROOPENA VOLCANICS	Mafic lavas
CARPENT-ARIAN		GAWLER RANGE VOLCANICS CORUNNA CONGLOMERATE	

D.G.T. / SEPT. 1974

Figure 4. THE ADELAIDEAN SEQUENCE OF THE STUART SHELF

4.2 New Stratigraphic Units

The rocks of the Pandurra area are of Adelaidean age. The sequence is a little deformed shelf facies lying on the western margin of the Adelaide Geosyncline. It forms a cratonic cover of shallow water marine sediments on the Gawler Platform. Figure 4 depicts the sequence.

The sedimentary succession revealed by the stratigraphic drilling programmes contains two units previously unknown in the area. One of these units underlies and the other overlies the Woocalla Dolomite Formation.

4.2.1 "Elizabeth Creek Conglomerate"

Underlying the Woocalla Dolomite, is a thin, discontinuous basal conglomerate. North of the Gawler Range Volcanics inlier that bisects the Pandurra area into northern and southern portions, this conglomerate is poorly developed. It consists there of rounded white quartz pebbles in a gritty matrix and contains characteristic angular red chips of jasper.

South of the Gawler Range Volcanics inlier, the conglomerate is better developed. It contains angular iron-formation pebbles, less-angular Pandurra Formation pebbles and rounded, white quartz pebbles, in decreasing order of abundance. The matrix of the unit is sandy and unconsolidated. The constituents appear to be very poorly sorted. More than 50 metres thickness of this conglomerate was intersected beneath Woocalla Dolomite 6 km south of "Pandurra" homestead.

The poorly developed version of the conglomerate, as found in the northern portion of the area, is very similar to a conglomerate found at the Elizabeth Creek locality, 12 km north-east of Mt. Gunson and known colloquially as the "Elizabeth Creek Conglomerate". The "Elizabeth Creek Conglomerate directly overlies the Pandurra Formation, as does the conglomerate in the Pandurra area and so they are believed to be correlative.

The "McLeay Beds", shown on Figure 4, occupy a similar stratigraphic position to the "Elizabeth Creek Conglomerate", but have only been found in E.L. 81, to the north of E.L. 50.

4.2.2 "Yudnapinna Beds"

This unit immediately overlies the Woocalla Dolomite Formation and occupies a shallow trough running from the north-west corner to the south-east corner of the lease. The trough appears to broaden southwards (see Figure 5).

The beds consist of red, green and grey-green siltstone and fine-grained sandstone with a carbonate-bearing matrix in most localities. Certain strata contain abundant sand-sized to small pebble-sized lithic grains. These grains are mostly orange-red in colour and are probably derived from the Gawler Range Volcanics. The unit is up to 50 m thick. Its contact with the overlying Whyalla Sandstone appears to be gradational in most places. The limited drill information suggests a lateral intertonguing between the "Yudnapinna Beds" and the Whyalla Sandstone. The "Yudnapinna Beds" could be a facies of the Whyalla Sandstone. The contact with the

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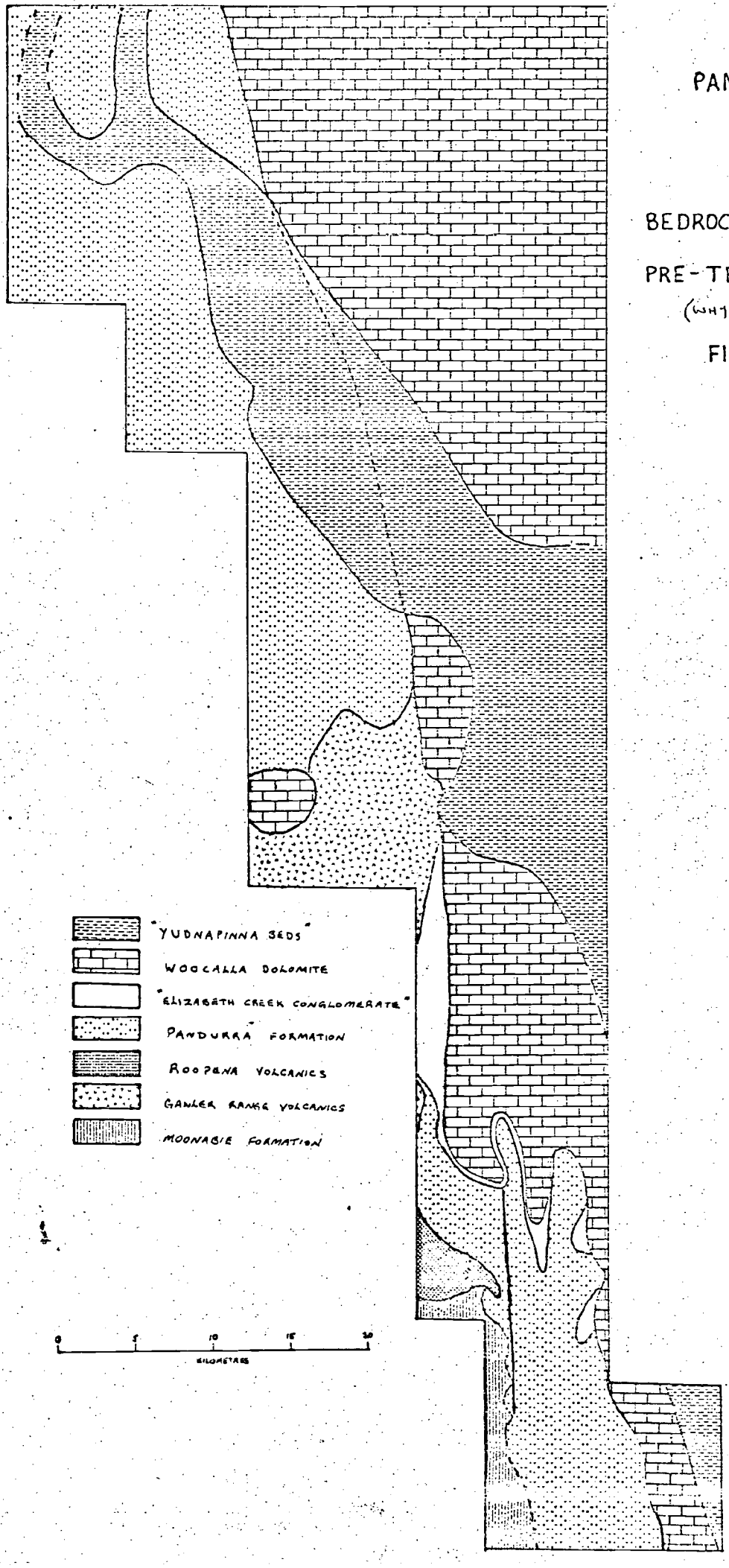


PANDURRA AREA
S.A.
E.L. 50

BEDROCK LITHOLOGY

PRE-TENT HILL FM.
(WHYALLA SET)

FIGURE 5

the underlying Woocalla Dolomite Formation is geochemically sharp; 5 to 10 ppm Cu as against 100+ ppm Cu.

Because this unit, previously unknown, was first encountered on "Yudnapinna" station, the name "Yudnapinna Beds" has been applied. These beds occupy the trough which runs south-eastwards from near "Yudnapinna" homestead and two of its three tributaries (Figure 5).

4.3 Lateral Extent of Woocalla Dolomite

The Woocalla Dolomite Formation was found to be present in the sequence throughout the Pandurra area. This would not have been expected from a study of the Port Augusta 1:250,000 geological sheet, which does not record the presence of the Woocalla Dolomite. Its extent is shown on Figure 5.

The Woocalla Dolomite Formation is represented in the area mainly by black shales, with minor small lenses of dolomite which occur at the base in most places. The shales are easily weathered and seldom outcrop in recognisable form. Weak outcrops south of the homestead on "Pandurra" station were previously mapped as Tregolana Shale, in spite of their khaki weathered-dolomite colour.

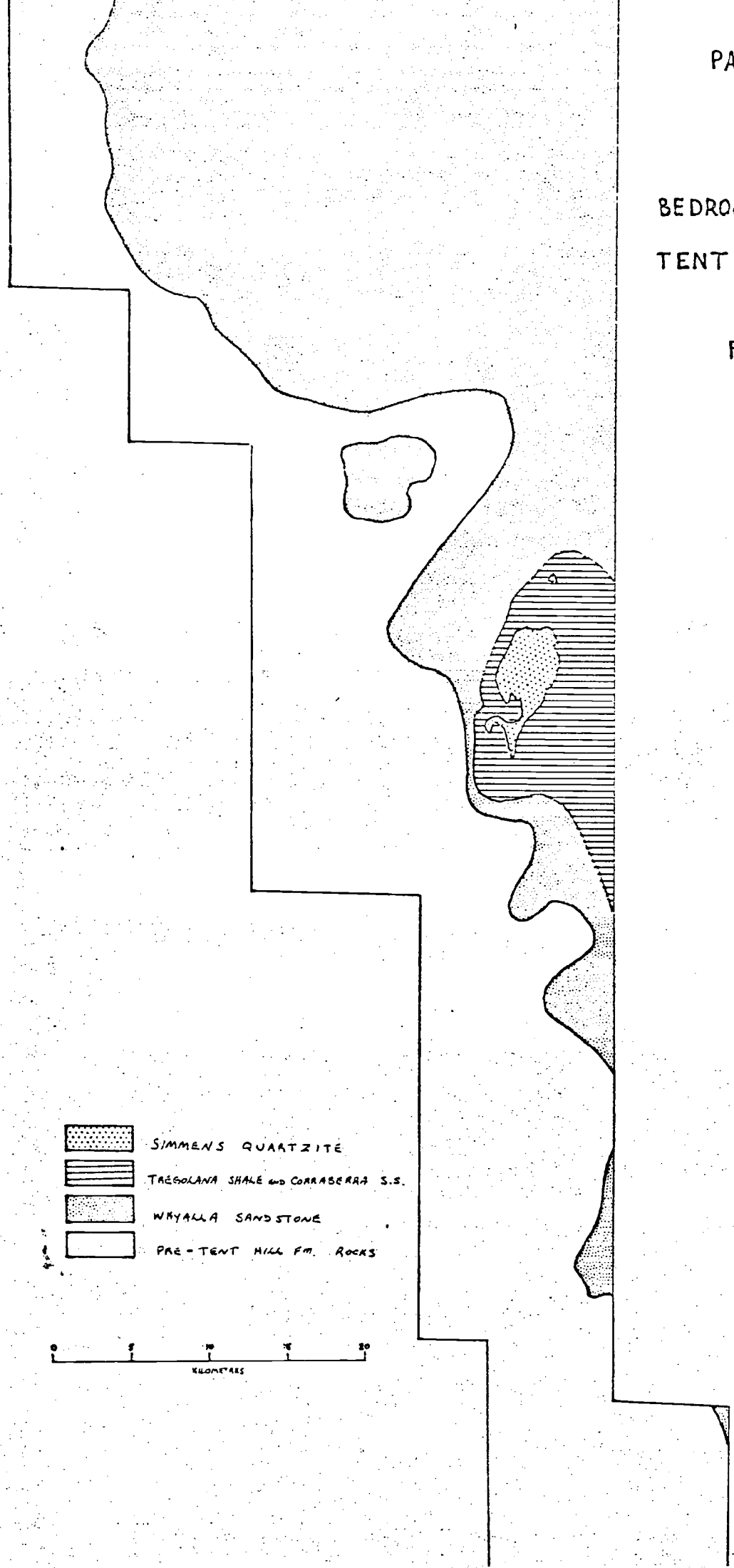
In most localities the top of the black shale was found to be leached to form a white kaolinitic clay. The thickness of this clay layer ranged up to 25 metres. At "Hesso" homestead at the northern end of the area and near "Tregolana" homestead at the southern end, this clay has been quarried, for refractory and ceramic uses. These clays were previously thought to have been derived from the Tregolana Shale. Similar clay has been quarried

PANBURRA AREA
S.A. 0052
E.L. 50

BEDROCK LITHOLOGY

TENT HILL FORMATION

FIGURE 6



at Magazine Hill, near Woocalla and the name "Magazine Hill Clay is now applied to this stratum. It is shown on Figure 3.

weath top Tapley

4.4 Prospective Corridor Delineation

The prospective corridor, formed where the Woocalla Dolomite pinches out beneath Whyalla Sandstone at some distance from the outcropping of the underlying Pandurra Formation, was found in two localities. These are shown on Figure 2. The general distribution of the major lithologic units is shown on Figures 5 and 6, and on Drawings No. 1806 and No. 2036.

4.4.1 Target No. 1

The larger locality is wedge-shaped being 15 km wide at the north-west corner of the lease and tapering to a point 50 km to the south-east, against the Gawler Range Volcanics inlier.

Only a portion of this area is prospective however, because much of the corridor between the western edge of the Woocalla Dolomite and the eastern edge of the Pandurra Formation outcrop is occupied by the "Yudnapinna Beds" (see Figure 3). These largely red siltstones underlie the Whyalla Sandstone and occupy what appear to be paleo drainage channels within the corridor. These beds do not seem to be generally prospective for base metals.

After elimination of the area occupied by "Yudnapinna Beds", four prospective segments remain in target one. These are :-

(i) The Nine Mile Well segment, of about 6 x 6 km.

(ii) The Ryan Basin segment, of about 4 x 8 km.

/....

(iii) The "Yudnapinna" homestead segment, of about 5 x 10 km.

(iv) The Gunter Dam segment, of about 4 x 2 km.

4.4.2 Target No. 2

The smaller prospective locality forms a 10 x 1 km strip just inside the eastern boundary of the lease on "Pandurra" and Roopena" stations. Like Target 1, this corridor seems to be related to a paleo drainage channel on the surface of the Pandurra Formation. This channel appears to rise 3 km north-east of Mt. Whyalla and to trend north-easterly towards Honeymoon Dam, where it apparently dips beneath Whyalla Sandstone.

4.5 Other Prospective Areas

4.5.1 The Woocalla Dolomite

This formation includes dolomite, dolomite/shale laminite and black shale facies. As such, it should be considered prospective for stratiform base metal deposits. In certain drill holes, the unit contained higher than normal amounts of base metals. An area of about 5 x 10 km south of "Pandurra" homestead contains anomalous amounts of base metals. Values of up to 3,300 ppm Cu, 2,200 ppm Pb and 2,100 ppm Zn were recorded in this area.

4.5.2 The "Elizabeth Creek Conglomerate"

Where this unit is well developed, south of the Gawler Range Volcanics inlier, it could be considered an ideal host for mineralisation.

4.5.3 The "Yudnapinna Beds"

Pyritic siltstones were intersected overlying the Woocalla Dolomite in three drill holes 7 km

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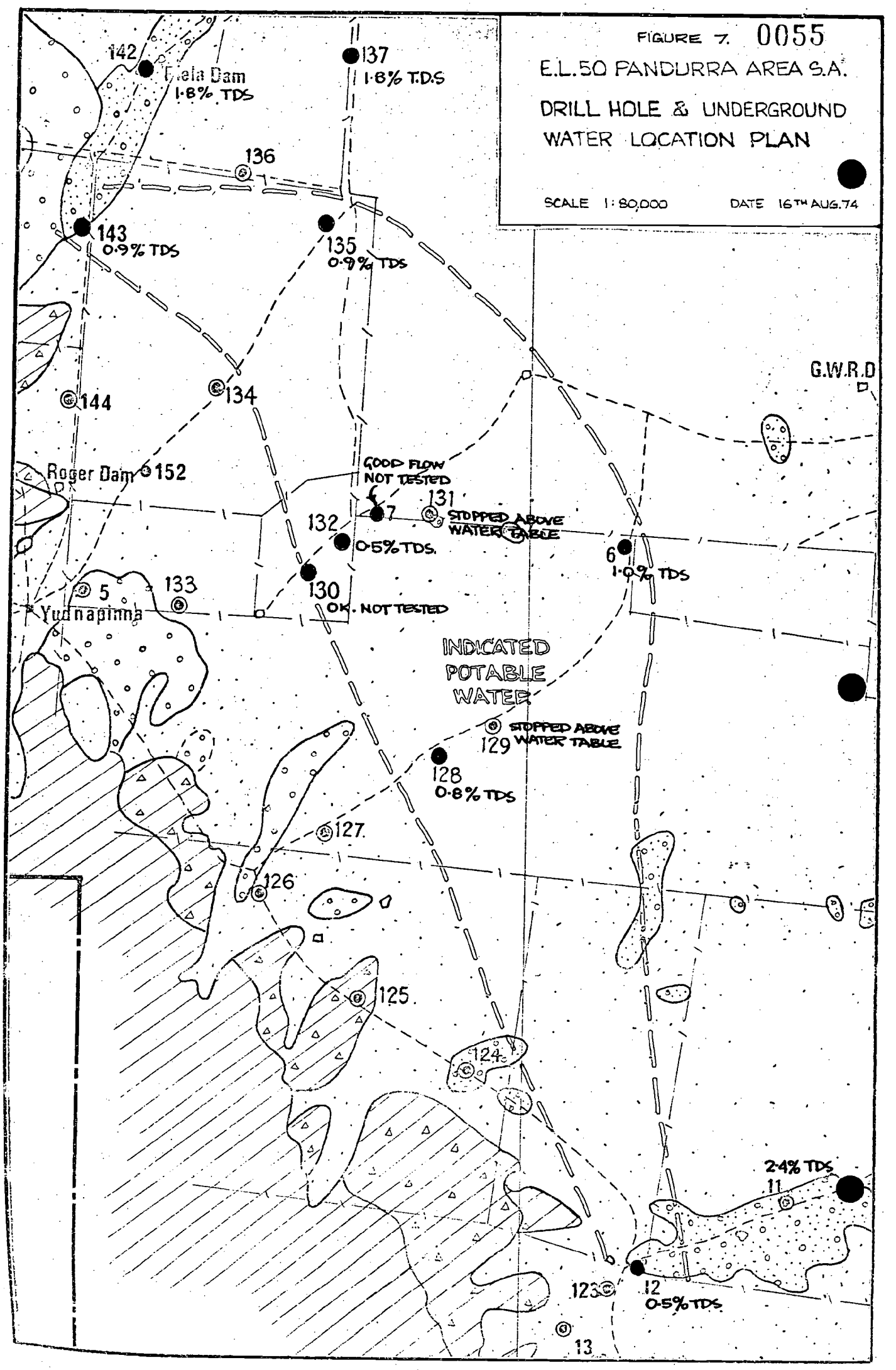


FIGURE 7. 0055
E.L.50 PANDURRA AREA S.A.
DRILL HOLE & UNDERGROUND WATER LOCATION PLAN
SCALE 1:80,000
DATE 16TH AUG.74
142
Dela Dam
1·8% TDS
137
1·8% T.D.S
136
143
0·9% TDS
135
0·9% TDS
144
134
G.W.R.D
Roger Dam
152
GOOD FLOW
NOT TESTED
7
131
STOPPED ABOVE WATER TABLE
132
0·5% TDS.
6
1·0% TDS
5
133
Yudnapinna
130
OK. NOT TESTED
INDICATED POTABLE WATER
STOPPED ABOVE WATER TABLE
129
128
0·8% TDS
127
126
125
124
2·4% TDS
11
123
12
0·5% TDS
13

north of "Illeroo" homestead, and in one drill hole 5 km north-east of "Illeroo" homestead. Up to 1,200 ppm Cu was found associated with the pyritic sections. These siltstones are believed to be of a grey facies of the "Yudnapinna Beds". There is evidence of minor faulting of the beds of the lower Tent Hill Formation in one of these areas.

4.6 Underground Water

Water samples were collected from rotary drill holes that encountered a good flow of underground water. Most of these samples were tested for content of copper, lead, zinc and total dissolved solids. The geochemical results are shown on the drill hole logs (see Appendix).

Several holes in the "Yudnapinna" station homestead area produced water of a quality acceptable to stock. Flows of potable water estimated to be greater than 1,000 gallons per hour were encountered by many of these holes; all of which were drilled in sediments occupying a paleo drainage channel on the surface of the Pandurra Formation (see Figure 3). The presence of an aquifer containing potable water is suggested. It is indicated extent is shown on Figure 7. Salinities of individual samples are listed in the following Table.

TABLE OF WATER TESTS
(refer sketch plan)

Hole No.	% T.D.S.	Water Table Depth (m)
6	0.999	60
7	not tested	30
12	0.549	55
128	0.804	42
129	dry to 48 m	
130	not tested	30
131	wet but no flow	42
132	0.468	21
135	0.82	
	0.819	45
137	1.8	-
142	1.8	-
143	.983	33

/....

5. FUTURE WORK

5.1 INPUT Survey

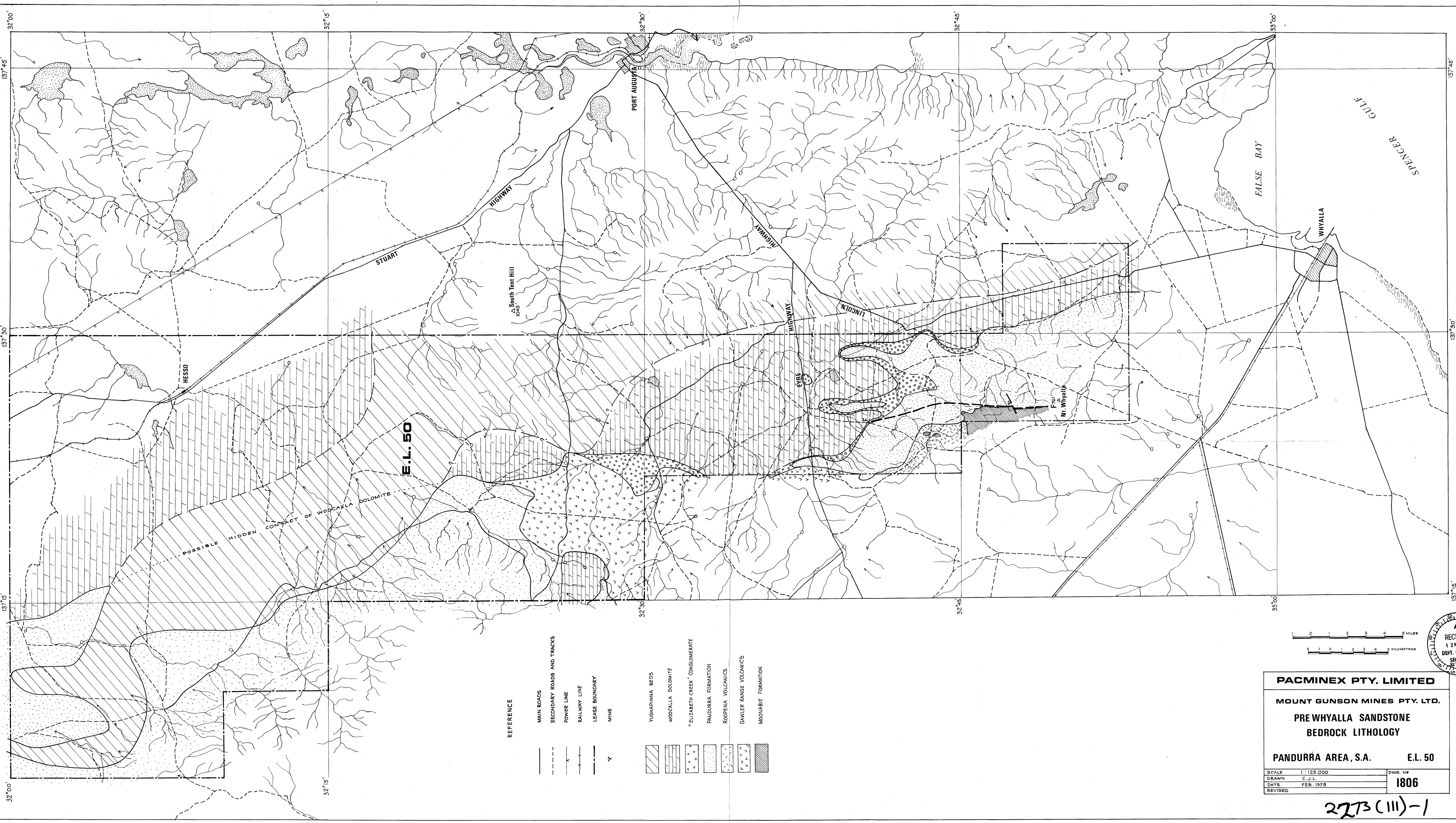
Airborne INPUT geophysical surveying proved to be a useful mapping tool in the Cattle Grid area, at Mt. Gunson. Where there was no Tregolana Shale present, it was able to outline sub-outcrops of Pandurra Formation and to indicate depressions in the surface of the Pandurra Formation beneath Whyalla Sandstone.

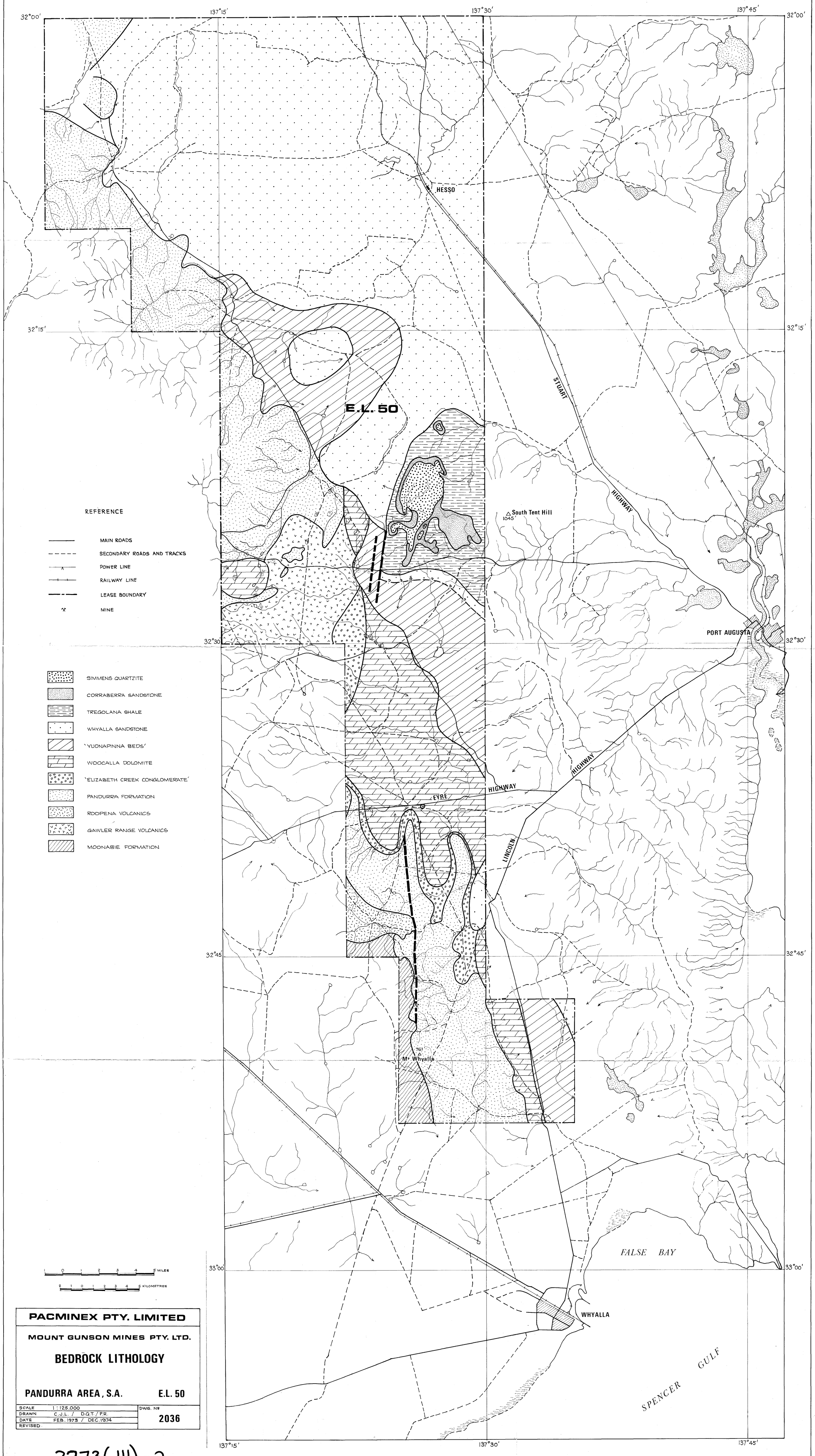
An INPUT survey is scheduled for January, 1975. It will cover the Nine Mile Well, Ryan Basin and "Yudnapinna" homestead segments of target one and will involve 1,206 line km of geophysics.

5.2 Drilling

Final testing of favourable localitites suggested by the INPUT survey and of the smaller localities already indicated by stratigraphic work, will be done by drilling.

DGT/SS
6/1/75


32°00'
32°15'
32°30'
32°45'
33°00'
137°45'
137°30'
137°15'
PORT AUGUSTA
STUART HIGHWAY
HIGHWAY
LINCOLN
HESSO
South Tent Hill
E.L. 50
POSSIBLE HIDDEN CONTACT OF WOOCALLA DOLOMITE
E.L. 48
Mt. Whyalla
WHYALLA
FALSE BAY
SPENCER GULF
REFERENCE
MAIN ROADS
SECONDARY ROADS AND TRACKS
POWER LINE
RAILWAY LINE
LEASE BOUNDARY
MINE
YUNDAPINNA BEDS
WOOCALLA DOLOMITE
"ELIZABETH CREEK" CONGLOMERATE
PANDURRA FORMATION
RODPENA VOLCANICS
GAWLER RANGE VOLCANICS
MOONABIE FORMATION
1 0 1 2 3 4 5 MILES
2 1 0 1 2 3 4 5 KILOMETRES
RECEIVED
12 NOV 1974
DEPT. OF MINES
SECURITY
PACMINEX PTY. LIMITED
MOUNT GUNSON MINES PTY. LTD.
PRE WHYALLA SANDSTONE
BEDROCK LITHOLOGY
PANDURRA AREA, S.A.
E.L. 50
SCALE 1:125,000
DRAWN C.J.L.
DATE FEB. 1973
REVISED
DWG. No
1806
2273(III)-1



PACMINEX PTY. LIMITED

MOUNT GUNSON MINES PTY. LTD.

BEDROCK LITHOLOGY

PANDURRA AREA, S.A. **E.L. 50**

SCALE	1 : 125,000	DWG. Nº
DRAWN	C.J.L. / D.G.T. / P.R.	2036
DATE	FEB. 1973 / DEC. 1974	
REVISED		

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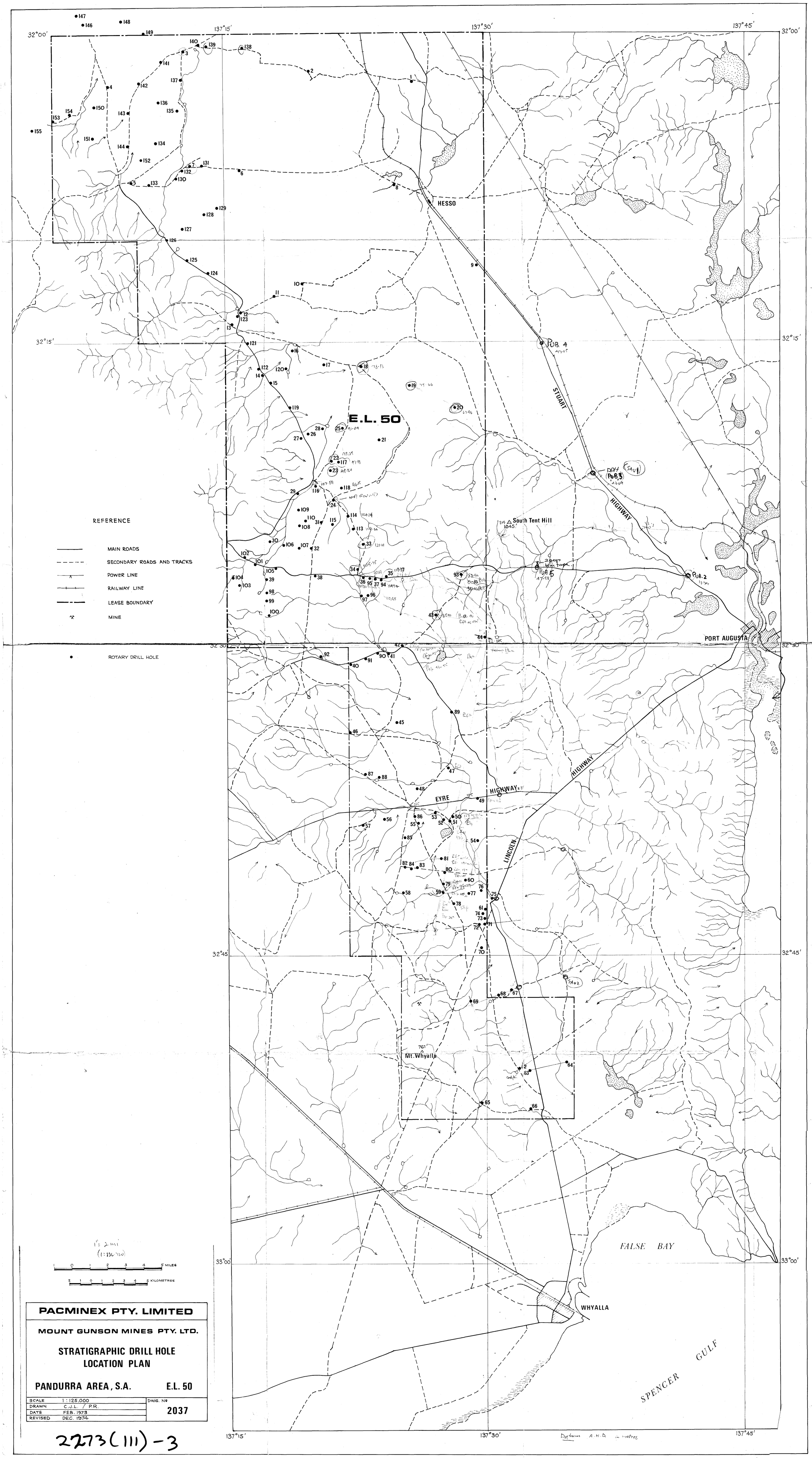
32°00'
137°15'
137°30'
137°45'
32°15'
32°30'
32°45'
33°00'
E.L. 50
HESSO
STUART
HIGHWAY
PORT AUGUSTA
EYRE
HIGHWAY
LINCOLN
HIGHWAY
South Tent Hill
Mt. Whyalla
FALSE BAY
WHYALLA
SPENCER GULF
REFERENCE
MAIN ROADS
SECONDARY ROADS AND TRACKS
POWER LINE
RAILWAY LINE
LEASE BOUNDARY
MINE
ROTARY DRILL HOLE
1" = 2 mi
(1:126,720)
5 MILES
5 KILOMETRES
PACMINEX PTY. LIMITED
MOUNT GUNSON MINES PTY. LTD.
STRATIGRAPHIC DRILL HOLE
LOCATION PLAN
PANDURRA AREA, S.A.
E.L. 50
SCALE 1:125,000
DRAWN C.J.L. / P.R.
DATE FEB. 1973
REVISED DEC. 1974
DWG. Nº
2037
2273(111)-3
Datum A.H.D. in metres

APPENDIX

Stratigraphic Drill Hole Logs

EX 1 to EX 157

With amendments and corrections
made in December, 1974.

PACMINEX PTY. LTD.

0059

HOLE Nº. EX 1
PAGE 1 OF 1

PROJECT AREA: PANDURRA E.L. 50 PROJECT Nº. 405
SPUDDED: 28 - 9 - 73 COMPLETED: 1 - 10 - 73
LOCATION: "KOOTABERRA" COORDS X Y
ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 91 m
HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (R. TAYLOR)
LOGGED BY: D.G. TOWNIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE Nº	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0			0						
	3	SAND, RED CLAY + CALCRETE 0 - 7.5 m		3	85001	3.0	13	<20	14	
	6			7.5	85002	4.5	23	<20	16	
	9	WHYALLA S.S. : 7.5 m to 7.5 - 9.0 m Silicified		9	85003	1.5	21	<20	13	
	12			12	85004	3.0	14	<20	11	
	15			15	85005	3.0	16	<20	24	
				18	85006	3.0	27	<20	66	
				21	85007	3.0	13	<20	33	
				24	85008	3.0	15	<20	17	
				27	85009	3.0	39	31	24	
	30			30	85010	3.0	14	<20	20	
				33	85011	3.0	17	<20	19	
				36	85012	3.0	11	<20	18	
		36 - 60 m Calcareous matrix		39	85013	3.0	25	24	24	
		(= YUDNAPINNA BEDS ?)		42	85014	3.0	9	<20	18	
	45			45	85015	3.0	12	<20	24	1000
				48	85016	3.0	25	24	28	1000
				51	85017	3.0	12	<20	24	1600
				54	85018	3.0	11	<20	24	2100
				57	85019	3.0	22	<20	31	2500
	60	WOOCALLA DOLOMITE 60 - 91 m		60	85020	3.0	11	<20	25	1300
		60 - 66 m Grey-blue calcareous shale		63	85021	3.0	18	24	41	1600
		66 - 69 m Grey-white weakly calc. sandstone		66	85022	3.0	280	<20	39	1200
				69	85023	3.0	34	<20	41	1100
		69 - 91 m Black calcareous, carbonaceous shale		72	85024	3.0	100	66	90	113
	75			75	85025	3.0	80	430	720	20
				78	85026	3.0	47	240	750	
				81	85027	3.0	47	240	650	
				84	85028	3.0	38	82	280	
				87	85029	3.0	38	93	210	
	90			90	85030	3.0	41	176	430	
				END HOLE. 91.4 m.						

PACMINEX PTY. LTD.

HOLE No. EX 2

PAGE 1 OF 1

PROJECT AREA: PANDURRA E.L. 50 PROJECT No. 405

SPUDDED: 1 - 10 - 73 COMPLETED: 2 - 10 - 73 0060

LOCATION: "KOOTABORRA" COORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 65 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (R. TAYLOR)

LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0	SAND & RED CLAY : 0 - 19.5 m		0						
		0 - 4.5 m - calcrete		3	85031	3.0	19	20	19	
				6	85032	3.0	14	<20	12	
				9	85033	3.0	17	<20	12	
				12	85034	3.0	13	<20	12	
	15			15	85035	3.0	11	<20	12	
				19.5	85036	4.5	13	<20	12	
		SILCRETE : 19.5 - 21 m.		21	85037	1.5	12	<20	10	
		WHYALLA S.S. : 21 - 26 m.		24	85038	3.0	13	<20	11	
		White, friable lithic s.s.		27	85039	3.0	21	<20	11	
		MAGAZINE HILL CLAY : 26 - 36 m		30	85040	3.0	12	74	11	
	30	Green, mustard & khaki, sectile		34	85041	3.0	140	85	110	
				37	85042	3.0	74	430	840	
		WOOCALLA DOLOMITE : 36 m - 64 m.		40	85043	3.0	44	300	810	1.55%
				43	85044	3.0	37	290	480	1400
		Black, calcareous, carbonaceous		47	85045	4.5	42	230	460	86
	45	shale.		47						
				52	85046	4.5	38	192	760	
		55 m Water ; 400 gal/hr.		55	85047	3.0	34	240	780	
				58	85048	3.0	37	900	780	
	60			61	85049	3.0	310	880	410	
	63	PANDURRA FM. : 64 - 65 m.		64	85050	3.0	1330	148	200	
	65	Hard red quartzite to		65	85051	1.0	70	50	34	
		end of hole.		END HOLE 65 m.						
							PH	T.D.S	Cu	Pb	Zn
				60 m.	WATER SAMPLE		7.4	25,400	<5	5	210
								p.p.m	p.p.b.	p.p.b.	p.p.b.

HOLE Nº GXDA

PAGE 1 OF 1

0061

PROJECT AREA: PANDURRA E.L. 50 PROJECT Nº: 405

SPUDDED: 2 - 10 - 73 COMPLETED: 3 - 10 - 73

LOCATION: "YUDNA PINNA" COORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 42.5 m.

HOLE TYPE: ROTARY & CORE DRILLING CONTRACTOR: AFRAC (R. TAYLOR)

LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE Nº	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0			0						
	3	SAND & RED CLAY & CALCRETE : 0-6 m		3	85052	3.0	17	20	14	
	6	WHYALLA S.S. : 6 - 42 m		6	85053	3.0	13	20	17	
	9			9	85054	3.0	11	<20	10	
	12			12	85055	3.0	11	<20	6	
	15	15-24 m clay-rich s.s. & pink lithic grains		15	85066	3.0	9	<20	6	
				18	85067	3.0	12	20	9	
				21	85068	3.0	41	24	23	
				24	85069	3.0	8	<20	4	12
				27	85070	3.0	9	<20	5	12
	30	30 - 42 m Coarser, rounded grains		30	85071	3.0	7	<20	3	15
	33			33	85072	3.0	8	<20	3	10
	36			36	85073	3.0	8	<20	3	10
	39			39	85074	3.0	8	<20	2	10
	42	PANDURRA FM : 42.4 - 42.5 m (Diamond cored) Hard red quartzite with liesegang bands, minor pyrite		42	85075	3.0	11	<20	6	16
				END HOLE 42.5 m.						

PACMINEX PTY. LTD.

HOLE No. EX 4

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0062

PROJECT AREA: PANDURRA E.L. 50 PROJECT No. 405

SPUDDED: 3 - 10 - 73 COMPLETED: 3 - 10 - 73

LOCATION: "YUDNAPINNA" COORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 24 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (A. TAYLOR)

LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	SAND & CLAY, calcrete.		3	85077	3.0	12	<20	12
	6	WHYALLA SS.:		6	85078	3.0	7	<20	5
	9	PANDURRA FM. REGOLITH: 9 - 12 m		9	85079	3.0	8	<20	5
	12	Red shale chips & white clay		12	85080	3.0	10	20	10
	15	PANDURRA FM: 12 m - 24 m.		15	85081	3.0	12	<20	10
	18	(15-18 m Faint tr. FeS)		18	85082	3.0	13	<20	15
	21	Hard red quartzite.		21	85083	3.0	8	24	43
	24			24	85084	3.0	13	<20	67
				END HOLE 24 m.					

PACIMINEX PTY. LTD.

HOLE No. EX 5

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0063

PROJECT AREA: PANDURRA E.L. 50 PROJECT Nº: 405

SPUDDED: 3 - 10 - 73 COMPLETED: 3 - 10 - 73

LOCATION: "YUDNAPINNA" CO-ORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 33 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFAAC (R. TAYLOR)

LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE Nº	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0								
	3	SAND & CLAY : 0 - 3 m.			85085	3·0	15	24	24
	6	GRAVEL & CLAY : 3 - 6 m			85086	3·0	12	<20	10
	9	WINNALLA S.S. : 6 - 23 m			85087	3·0	8	<20	6
	12	Multicoloured friable s.s. &			85088	3·0	8	<20	8
	15	rounded qz. grains			85089	3·0	5	<20	6
	18				85090	3·0	8	20	5
	21				85091	3·0	5	<20	6
	24	FERRICRETE : 23 - 24 m. Very hard.			85092	3·0	11	<20	15
	27	? FOSSIL SOIL : 24 - 27 m. Yellow mud			85093	3·0	12	20	12
	30	PANDURRA FM. RESOLITH : 27 - 30 m.			85094	3·0	10	<20	6
	33	Red & white qtzite fragments			85095	3·0	5	<20	4
		PANDURRA FM. : 30 - 33 m.							
		Hard red quartzite							
				END HOLE 33m.					

PACMINEX PTY. LTD.

HOLE No. EX 6
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0064

PROJECT AREA: PANDURRA E.L. 50 PROJECT No. 405
SPUDDED: 4 - 10 - 73 COMPLETED: 4 - 10 - 73
LOCATION: "YUDNAPINNA" CO-ORDS X Y
ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 84 m.
HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (R. TAYLOR)
LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600
	0			
	3	CLAY - gypsum: 0 - 3 m		
	6	CLAY & SAND: 3 - 6 m		
	9	SAND: 6 - 12 m		
	12	WHYALLA S.S.: 12 - 24 m		
	15			
	18			
	21			
	24	MAGAZINE HILL CLAY: 24 - 47 m.		
	27	21 - 34 m: White clay		
	30	34 - 40 m: Grey clay		
	34			
	37	40 - 43 m: Khaki/fawn clay		
	40	43 - 47 m: Lt. greenish-grey kaolin		
	43	& minor sand grains.		
	45	? YUDNAPINNA BEDS: 47 - 84 m.		
	49			
	52	Light green siltstone with minor		
	55	1mm. rounded qz. grains		
	58	(Not carbonate-bearing)		
	61			
	64			
	67			
	70			
	73			
	76			
	79	79 - 84 m: High % of surface		
	82	sand contamination		
	84			
		Hole Abandoned at 84 m		
		∵ air pressure insufficient to lift water		
		Water flow > 1000 gals/hour.		

Depth	SAMPLE No	ASSAYED LENGTH	Cu	Pb	Zn	Mo
3	85096	3.0	13	20	13	
6	85097	3.0	11	<20	5	
9	85098	3.0	9	<20	8	
12	85099	3.0	8	<20	6	
15	85100	3.0	7	<20	13	
18	85101	3.0	8	<20	11	
21	85102	3.0	5	<20	11	
24	85103	3.0	8	<20	12	
27	85104	3.0	5	<20	9	
30	85105	3.0	5	<20	6	
34	85106	3.0	9	<20	8	
37	85107	3.0	9	<20	11	850
40	85108	3.0	10	<20	11	530
43	85109	3.0	12	<20	14	72
46	85110	3.0	9	<20	780	52
49	85111	3.0	13	20	620	100
52	85112	3.0	8	<20	47	300
55	85113	3.0	8	<20	27	900
58	85114	3.0	9	<20	12	
61	85115	3.0	8	<20	14	
64	85116	3.0	7	<20	14	
67	85117	3.0	8	<20	18	
70	85118	3.0	7	<20	20	
73	85119	3.0	8	<20	18	
76	85120	3.0	9	<20	15	
79	85121	3.0	8	<20	16	
82	85122	3.0	8	<20	6	
84	85123	2.0	8	<20	10	
END HOLE 84 m.						

		pH	T.D.S.	Cu	Pb	Zn
80 m	WATER SAMPLE	8.0	9,940	15	<5	35
			p.p.m.	ppb	ppb	ppb

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HOLE No. EX 7

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PROJECT AREA: PANDURRA E.L. 50 PROJECT No. 405

SPUDDED: 4 - 10 - 73 COMPLETED: 4 - 10 - 73

0065

LOCATION: "YUDNAPINNA" COORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 79 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AERAC (R. TAYLOR)

LOGGED BY: D.G. TENNANT BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0	SAND & RED CLAY: 0 - 9 m		0	850124	3	11	<20	13	
					850125	3	44	48	9	
					850126	3	11	<20	6	
		WHYALLA S.S. 9 - 79 m		9	850127	3	9	<20	5	
		9 - 18 m clayey sandstone			850128	3	9	<20	4	
	15	21 - 30 m friable sandstone		15	850129	3	7	<20	6	
					850130	3	11	<20	6	
					850131	3	7	<20	6	
					850132	3	6	<20	3	
					850133	3	6	<20	3	
	30			30	850134	3	5	<20	2	
					850135	3	17	<20	5	
		30 - 61 m Pink-brown, fine gr. sandstone,			850136	3	17	37	5	
		round qtz & pink lithic grains			850137	3	6	<20	5	
		of 1 - 3 mm diameter form a			850138	3	12	<20	5	
	45	minor constituent			850139	3	9	<20	8	
					850140	3	8	<20	10	
					850141	3	9	<20	22	
					850142	3	8	<20	22	
		Coarse (1-3mm) S.S. & round, frosted			850143	3	8	<20	29	
	60	qtz & lithic grains + minor chips		61	850144	3	13	<20	29	
		61 - 79 m of Brown & green siltstone			850145	3	32	22	20	
		from thin siltstone bands			850146	3	7	<20	18	
		Between 73 & 79 m, brown			850147	3	7	<20	15	220
		siltst. chips are weakly			850148	3	5	<20	10	200
	75	effervescent in HCl. (Poss. = Yudnapinna beds)			850149	3	9	<20	9	160
		Hole abandoned at 79 metres		79 END HOLE 79 m.						
		∵ air pressure insufficient to								
		lift water. Water flow ≈ 4000 gal/hr.								

PACMINEX PTY. LTD.

HOLE No. EX 8

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PROJECT AREA: PANDURRA E.L. 50 PROJECT Nº 405

SPUDDED: 5 - 10 - 73 COMPLETED: 5 - 10 - 73

LOCATION: "Hesso" COORDS X Y

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 89 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (R. TAYLOR)

LOGGED BY: D.A. TONKIN BIT SIZE: 114mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angle & joint spacing	LOG SCALE 1:600	SAMPLE Nº	ASSAYED LENGTH	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0	SAND & SOIL : 0 - 3 m		0						
		WHYALLA S.S. : 3 - 9 m		3	85150	3	14	<20	11	
		3 - 6 m Silicified, white		6	85151	3	6	<20	4	
		6 - 9 m Pink s.s. Rounded lithics silicified		9	85152	3	5	<20	8	
		MAGAZINE HILL CLAY : 9 - 24 m		12	85153	3	3	<20	5	
		9 - 18 m Greenish clay		15	85154	3	5	<20	4	
		21 - 24 m Khaki clay		18	85155	3	11	30	9	
				21	85156	3	240	63	100	
				24	85157	3	130	74	150	
		WOOCALLA DOLOMITE - 24 - 89		27	85158	3	38	370	260	430
	30			30	85159	3	30	166	460	1200
		24 - 28.5 m ÷ Khaki-green clay		34	85160	3	72	200	390	1700
		& soft shale		37	85161	3	43	138	540	2300
				40	85162	3	37	89	340	
		28.5 m ÷ Water table		43	85163	3	32	70	230	
				46	85164	3	36	56	150	
		28.5 m - 89 m ÷ Black,		49	85165	3	32	44	110	
		calcareous, carbonaceous shale		52	85166	3	32	48	110	
				55	85167	3	40	70	90	
				58	85168	3	33	119	270	
	61			61	85169	3	34	127	460	
				64	85170	3	40	138	190	
				67	85171	3	34	96	290	
				70	85172	3	45	70	350	
				73	85173	3	27	33	82	
				76	85174	3	31	56	110	
				79	85175	3	40	85	390	
				82	85176	3	39	56	150	
				85	85177	3	33	48	120	
	89			88	85178	3	43	52	76	
		END OF HOLE		89	85179	1	34	47	85	

PACMINEX PTY. LTD.

HOLE No. EX 9

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0066

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 5 - 10 - 73 | COMPLETED: 5 - 10 - 73

LOCATION: "HESSO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 70.1m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 114 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0	SAND & RED CLAY 0 - 15 m		0	8 180	3.05	9	<20	11	
		0 - 3 Sand & soil			181	"	12	<20	14	
		3 - 6 Sand & calcrete			182	"	10	<20	13	
		6 - 15 Decomposed Whyalla sandstone			183	"	7	<20	9	
					184	"	5	<20	8	
	15	WHYALLA SANDSTONE 15-37 m		15	185	"	9	<20	8	
		15 - 18 Decomposed s.s., fawn			186	"	8	<20	8	
		18 - 24 Greenish, clayey s.s.			187	"	9	<20	10	
					188	"	6	<20	17	
		26 - 37 Silicified s.s., pinkish		30	189	"	5	<20	32	
	30				190	"	5	<20	4	
					191	"	7	<20	7	
		MAGAZINE HILL CLAY 37 - 49 m			192	"	6	<20	6	
		34 - 40 Violet & greenish/white clay			193	"	9	<20	6	
		40 - 43 Pale green & violet clay			194	"	30	22	52	113
	46	43 - 49 Khaki clay		46	195	"	33	25	120	188
		WOOCALLA DOLOMITE 49 - 70.1 m			196	"	30	31	79	1400
					197	"	29	34	71	
		Black dolomitic shale facies			198	"	32	31	180	
	61			61	199	"	34	34	85	
					200	"	30	31	54	
					201	N.A.	-	-	-	
	70			70.1	85 202	N.A.	-	-	-	
		END OF HOLE								

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HOLE No. EX 10

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PROJECT AREA: PANDURRA PROJECT Nº 405

SPUDDED: 6 - 10 - 73 COMPLETED: 7 - 10 - 73

LOCATION: COORDS X Y

0067

ELEVATION: DIRECTION: INCLINATION: V TOTAL DEPTH: 61 m.

HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC (A. TAYLOR)

LOGGED BY: D.G. TONKIN BIT SIZE: 114 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedding angles & joint spacing	LOG SCALE 1: 600	SAMPLE Nº	ASSAYED LENGTH	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0	SAND & RED CLAY : 0 - 7 m.		0						
				3	85203	3	13	<20	17	
				6	85204	3	16	22	14	
		SILCRETE : 7 - 15 m								
				9	85205	3	5	<20	8	
				12	85206	3	8	<20	10	
				15	85207	3	6	<20	17	
		MAGAZINE HILL CLAY : 15 - 34 m								
		15-18 - White (c.f. Magazine Hill Quarry)		18	85208	3	7	<20	6	
		18-21 - Pale green & pink		21	85209	3	5	<20	4	
		21-24 - Buff. Minor round sand grains		24	85210	3	5	<20	4	
		24-27 - Pale green. " " " "		27	85211	3	8	<20	9	
	30	27-34 - Grey. " " " "		30	85212	3	5	<20	52	
				34	85213	3	4	<20	116	
		YUDNAPINNA BEDS : ? - 34 - 55		37	85214	3	6	<20	52	
		34 - 55 m - Grey siltstone &		40	85215	3	6	<20	34	
		fine grained sandstone		43	85216	3	6	<20	37	
				46	85217	3	4	<20	57	23
				49	85218	3	8	<20	67	23
				52	85219	3	7	<20	59	19
				55	85220	3	6	<20	106	15
		WOOCALLA DOLOMITE : 55 - 59		58	85221	3	450	47	90	8000
		Massive grey dolomitic limestone		59	85222	1	58	22	52	
		Hard.								
	61	PANDURRA FM : 59 - 61 m.		61	85223	2	54	<20	120	
				END HOLE 61 m.						
		Hard red quartzite & pyrite								
		veins. FeS ≈ ½% by volume.								

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HOLE No. EX 11

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0068

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 7 - 10 - 73 | COMPLETED: 8 - 10 - 73

LOCATION: "MYALL CREEK" NORTHERN BLOCK | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 68.6 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0									
	3	WHYALLA S.S. : 0 - 12 m			85224	3	16	<20	10	
	6				85225	3	5	<20	4	
	9				85226	3	15	<20	7	
	12				85227	3	3	<20	7	
	15	MAGAZINE HILL CLAY 12 m - 24 m			85228	3	5	<20	7	
	18	12 to 15m - greenish white, minor sandy			85229	3	5	<20	7	
	21	15 to 18m - Yellow & minor sand grains			85230	3	4	<20	11	
	24	18 to 24m - Pink then grey. Sandy.			85231	3	5	<20	50	
	27	"YUDNAPINNA BEDS" 24m - 67 m			85232	3	6	<20	67	
	30	24 to 27 - red & green siltstone			85233	3	6	<20	47	
	34				85234	3	6	<20	35	
	37	27 to 67m - red & green calcareous			85235	3	5	<20	26	1340
	40	siltstone. Effervescent in			85236	3	6	<20	26	1630
	43	dil. HCl			85237	3	6	<20	29	1430
	46				85238	3	4	<20	22	
	49				85239	3	5	<20	18	
	52				85240	3	5	<20	20	
	55				85241	3	5	<20	22	
	58				85242	3	4	<20	18	
	61	60 m: Water table			85243	3	5	<20	20	
	64				85244	3	7	<20	16	
	67				85245	3	35	22	29	
	68.6	PANDURRA FORMATION 67m - 68.6 m			85246	1.5	11	<20	12	
		67m - 67.7 m regolith								
		67.7 - 68.6 m: Red quartzite.								
		68.6 m : END HOLE.								
						pH	T.D.S	Cu	Pb	Zn
				67m	WATER SAMPLE	7.6	26,140	100	<5	75
							P.P.M.	P.P.b.	P.P.b.	P.P.b.

PACMINEX PTY. LTD.

HOLE No. EX 12

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0069

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8 - 10 - 73 | COMPLETED: 8 - 10 - 73

LOCATION: "MYALL CREEK" NORTHERN BLOCK | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 93 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0	SOIL : 0 - 1.5 m		0	85247	3	12	<20	7	
		WILYAKKA S.S. : 1.5m to 40 m.		3	85248	3	7	<20	2	
				6	85249	3	12	32	4	
		1.5m to 6m - Silcrete derived from Whyalla S.S.		9	85250	3	12	<20	11	
				12	85251	3	6	<20	17	
		6m to 30m - Friable S.S. Grades through white, buff, yellow/khaki to green/khaki.		15	85252	3	9	<20	47	
				18	85253	3	9	<20	55	
				21	85254	3	5	<20	38	
				24	85255	3	6	<20	35	
				27	85256	3	11	<20	24	
	30	30m - 40m - Pink S.S. interbedded c̄ green siltstone		30	85257	3	7	<20	20	
		37m - Water table.		34	85258	3	10	<20	20	
		40m Grades into Yudnapinna from 30m.		37	85259	3	5	<20	19	
		YUDNAPINNA BEDS : 40m to 93 m		40	85260	3	5	<20	13	
				43	85261	3				
		40m to 46m - Green siltstone c̄ $CO_3^=$		46	85262	3	9	<20	18	
		46m to 55m - Green & brown siltstone Calcareous.		49	85263	3				
				52	85264	3	5	<20	20	
		55m - Water table.		55	85265	3				
		55m to 73m - Red/brown calcareous siltstone		58	85266	3	6	<20	19	
	61			61	85267	3				
				64	85268	3	6	<20	16	
				67	85269	3				
				70	85270	3	9	<20	17	
		73m to 93 m - Red/brown & green calcareous siltstone		73	85271	3				
				76	85272	3	7	<20	17	
				79	85273	3				
				82	85274	3	10	<20	22	
				85	85275	3				
				88	85276	3	7	<20	12	
	91			91	85277	2	6	<20	11	
	93	93 m : END HOLE		93						

	PH	T.D.S.	Cu	Pb	Zn
WATER SAMPLE	7.9	5,490	<5	<5	10
		P.P.M.	P.P.b.	P.P.b.	P.P.b.

PACMINEX PTY. LTD.

HOLE No. EX 13

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8 - 10 - 73 | COMPLETED: 9 - 10 - 73 | 0070

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 19.8 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0			0						
	3	SOIL : 0 - 3m		3	85278	3	10	<20	10	
	6	GRAVEL : 3m to 6m		6	85279	3	7	<20	3	
	9	SILCRETE : 6m to 9m		9	85280	3	11	<20	7	
	12	SANDSTONE : 9m to 15 m		12	85281	3	5	<20	3	
	15	Friable greyish ō chips green clay		15	85282	3	10	<20	3	
	18	CLAY : 15m to 17.7 m. Greenish		18	85283	3	11	<20	4	
	21	PANDURRA FM. : 17.7m to 19.8m		19.8	85284	2	12	<20	9	
	24	(White qtz. pebbles at top may represent Elizabeth Conglom.) 18m to 19.8m - Red Quartzite								
		19.8m : END HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 14

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0071

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9 - 10 - 73 | COMPLETED: 9 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 9.1m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE Cu	Pb	Zn		
	0										
	3	SAND : 0 - 6m			85285						
	6				85286						
	9	GRAVEL : 6m - 9m									
		6m to 9m - Caving gravel									
		9m: HOLE ABANDONED									

PACMINEX PTY. LTD.

HOLE No. EX 15

PAGE 1 OF 1

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9 - 10 - 73 | COMPLETED: 9 - 10 - 73 | 0072

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 34·1 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 :	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0	GRAVEL : 0 to 3 m + clay + gypsum		0						
		SANDSTONE : 3 m to 15 m		3	85287	3	19	<20	17	
		3 m to 15 m - Soft, pink + brown s.s.		6	85288	3	7	<20	2	
				9	85289	3	8	<20	5	
				12	85290	3	11	<20	6	
		15 m - silcrete + laterite band.		15	85291	3	18	<20	9	
	15	SILTSTONE : 15 m to 33 m		18	85292	3	9	<20	5	
		15 to 21 m - fine s.s. + silt		21	85293	3	12	<20	9	
		21 m to 33 m - Sandy clay		24	85294	3	9	<20	6	<10
				27	85295	3	11	<20	13	<10
	30			30	85296	3	12	<20	33	<10
				33	85299	3	14	<20	127	<10
		PANDURRA FM : 33 m to 34·1 m.		34	85298	1	24	<20	17	
		V. hard red quartzite								
		34·1 m : END HOLE								

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HOLE No. EX 16

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0073

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10 - 10 - 73 | COMPLETED: 10 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 68 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0	SAND & CLAY 0 - 3m		0	85299	3	35	23	22	
		WHYALLA SANDSTONE : 3m to 34 m		3	85300	3	23	<20	8	
		3m to 6m - silcrete formed from Whyalla Ss.		6	85301	3	17	<20	19	
		6m to 18m - Buff, friable s.s. c. round		9	85302	3	26	<20	24	
	15	qtz. grains & pink lithic grains		12	85303	3	15	<20	13	
		18m to 21m - Coarser grained		15	85304	3	14	<20	22	
				18	85305	3	37	<20	16	
		21m to 34m - grey/brown lithic s.s.		21	85306	3	17	<20	20	
				24	85307	3	15	<20	79	
	30			27	85308	3	29	<20	54	
				30	85309	3	12	<20	37	
		"YUDWAPINNA BEDS" : 34m to 64 m		34	85310	3	20	<20	27	
				37	85311	3	18	<20	28	
		34m to 37m - grey-brown siltstone		40	85312	3	18	<20	28	
	46			43	85313	3	50	<20	40	
		37m to 43 m - red/brown calcareous siltst.		46	85314	3	19	<20	25	
				49	85315	3	25	<20	36	
		43m to 49 m - brown/green calc. siltst.		52	85316	3	24	23	24	
				55	85317	3	31	<20	30	2600
		49m to 64 m - brown calcareous siltstone		58	85318	3	28	<20	25	3500
	61			61	85319	3	21	62	25	3400
		PANDURRA FORMATION REGOLITH : 64m		64	85320	3	27	<20	25	
		PANDURRA FORMATION : 64m to 68m		67	85321	1	19	27	11	
		Hard red quartzite		68						
		68m : END HOLE								

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HOLE No. EX17

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0074

PROJECT AREA: PANDURRA		PROJECT No. 405	
SPUDDED: 10 - 10 - 73		COMPLETED: 10 - 10 - 73	
LOCATION: "CARIEWERLOO"		CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 79.2 m
HOLE TYPE: ROTARY		DRILLING CONTRACTOR: AFRAC	DRILLER: R. TAYLOR
LOGGED BY: D.G.T.	DATE:	BIT SIZE: TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0	CLAY : 0 - 3m		
		WHYALLA SANDSTONE : 3m to 9m		
		3m to 9m - Silicified lithic sandstone		
		MAGAZINE CLAY : 9m to 18m		
		9m to 15m - straw colour		
	15	15m to 18m - pale grey colour		
		"YUDNAPINNA BEDS" : 18m to 64m		
		18m to 21m - red/brown siltstone		
		21m to 24m - greenish sandy siltstone		
		c̄ lithic grains		
	30	24m to 27m - greenish siltstone c̄ some		
		round qtz. grains. Harder		
		27m to 58m - red calcareous siltst.		
	46			
		52m - Water Table		
		58m - 61m - green-red calc. siltst.		
		61m - 64m - green-grey calc. siltst.		
	61	WOOCALLA DOLOMITE 64 - 76		
		64m to 76m - Black dolomitic shale		
		76m - Grey dolomite lens c̄ pyrite		
	76	PANDURRA FM: 76m to 79m		
		76m : minor regolith		
		76m to 79m : Hard red quartzite, pyritic.		
		79.2m : END HOLE		

SAMPLE No.	Assayed length	Cu	Pb	Zn
85322	3	40	<20	70
85323	3	10	<20	20
85324	3	10	<20	15
85325	3	5	<20	10
85326	3	10	<20	15
85327	3	15	20	30
85328	3	5	<20	110
85329	3	10	<20	75
85330	3	10	<20	50
85331	3	5	<20	35
85332	3	5	<20	35
85333	3			
85334	3	5	<20	30
85335	3			
85336	3	<2	<20	30
85337	3			
85338	3	5	<20	25
85339	3			
85340	3	15	<20	45
85341	3			
85342	3	5	<20	30
85343	3	370	95	280
85344	3	130	55	140
85345	3	100	590	95
85346	3	510	85	120
85347	3	280	50	35

		PH	T.D.S.	Cu	Pb	Zn
76m	WATER SAMPLE	7.6	21,500	<5	<5	25
			ppm.	ppb	ppb	ppb.

PACMINEX PTY. LTD.

HOLE No. EX 18

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0075

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10 – 10 – 73 | COMPLETED: 11 – 10 – 73

LOCATION: "CARIEWIERALOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 74·7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: J.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0	SAND : 0 to 6 m		0						
				3	85348	3	30	20	30	
				6	85349	3	20	<20	20	
		MAGAZINE CLAY : 6m to 9m pale greenish		9	85350	3	5	<20	15	
		"YUDNAPINNA BEDS": 9m to 25.5 m		12	85351	3	5	20	75	
		9m to 12 m – S.fl, yellowish brown		15	85352	3	5	<20	110	
		12m to 18 m – Khaki & brown, calcareous		18	85353	3	5	<20	50	
		18m to 21m – Khaki & yellow, calcareous		21	85354	3	20	<20	50	
		21m to 25.5m – R/brown & yellow calcareous		24	85355	3	10	30	40	
		WOOCAILLA DOLOMITE 25.5 to 71.6		27	85356	3	210	25	100	
		25.5m to 67m – Black, dolomitic shale		30	85357	3	290	110	260	
	30			34	85358	3	55	50	160	
				37	85359	3	45	60	120	
				40	85360	3	40	40	110	
				43	85361	3	45	35	110	
				46	85362	3	45	55	100	
				49	85363	3	50	50	100	
				52	85364	3	45	35	70	
				55	85365	3	50	50	90	
				58	85366	3	45	60	85	
	61			61	85367	3	40	50	95	
		67m to 71.6m – Hard, grey dolomite. Pyritic.		64	85368	3	110	180	180	3900
				67	85369	3	430	550	300	5200
				70	85370	3	620	290	250	1·0%
				73	85371	3	860	45	50	4300
		PANDURRA FORMATION: 71.6m to 74.7m		74·7	85372	1·7	1600	30	60	1900
		• Hard, red quartzite c. 0·1% pyrite								
		Poss. trace ccpy.								
		(Much contamination of sample from top of hole.).								
		74.7m END HOLE.								

PACMINEX PTY. LTD.

HOLE No. EX19

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11 - 10 - 73 | COMPLETED: 12 - 10 - 73 | 0076

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 97.5 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0	SAND : 0 - 3m		0						
		GRAVEL : 3m - 6m		3	85373	3	30	30	30	
		CLAY : 6m - 15m		6	85374	3	15	<20	25	
		Red clay		9	85375	3	20	<20	45	
				12	85376	3	15	<20	35	
	15			15	85377	3	20	<20	30	
		SAND : 15m - 18m. loose, fine, red/brown		18	85378	3	15	<20	25	
		WHYALLA SANDSTONE : 18m to 30m		21	85379	3	10	<20	20	
		18m to 21m : medium grained, rounded quartz		24	85380	3	10	<20	10	
		21m to 27m : fine grain, white & pink grains		27	85381	3	10	<20	10	
		27m to 30m : S.S., pink/brown, clayey.		30	85382	3	20	20	20	
	30	MAGAZINE HILL CLAY 30m to 49 m		34	85383	3				
		30m to 34m - Soft, greenish		37	85384	3	40	20	25	
		34m to 37m - Sandy, yellow & grey		40	85385	3				
		37m to 49m - Grey clay, sandy.		43	85386	3	15	<20	70	
	46			46	85387	3				
				49	85388	3	690	55	230	270
		WOOCALLA DOLOMITE 49m to 97.5m		52	85389	3	170	55	120	1100
		49m to 52m - Grey mudstone		55	85390	3	130	50	100	150
		52m to 89.5m - Black, calcareous		58	85391	3	65	50	85	2100
	61	(dolomitic) shale		61	85392	3	50	50	95	
				64	85393	3				
				67	85394	3	55	50	140	
				70	85395	3				
				73	85396	3	45	60	200	
	76			76	85397	3				
	79			79	85398	3	45	55	130	
	82			82	85399	3				
	85			85	85400	3	50	45	90	
	88	89.5m to 91 m - Hard, grey dolomite		89.5	85401	4.5				
	91			91	85402	3	210	210	70	
	94	91m to 97.5m - Black dolomitic		94	85403	3				
	98	shale.		97.5	85404	3	160	30	110	
		97.5m END HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 20

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0077

PROJECT AREA: PANDURRA		PROJECT No. 405	
SPUDDED: 12 - 10 - 73		COMPLETED: 12 - 10 - 73	
LOCATION: "CARIEWERLOO"		CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 96 m.
HOLE TYPE: ROTARY	DRILLING CONTRACTOR: AFARC		DRILLER: R. TAYLOR
LOGGED BY: D. G. T.	DATE:	BIT SIZE:	TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0									
	3	SAND : Red sand & soil			85405	3	40	25	55	
	6	SAND & GRAVEL : (+ gypsum & silcrete)			406	3	30	35	45	
	9	CLAY : Sandy, red & white, & pink lithic grains			407	3	30	20	50	
	12	TREGOLANA SHALE : Hard red & light			408	3	45	30	50	
	15	green mudstone			409	3	35	20	55	
	18	WHYALLA SANDSTONE : 15m to 52m			410	3	15	20	20	
	21	15 m to 18m - Hard, white & fine grained			411	3	25	25	35	
	24	& rounded qtz & pink lithics			412	3	20	<20	30	
	27	18m to 21m - Green/white. 1mm round			413	3	30	25	40	
	30	qtz. & pink lithics in fine g'mass.			414	3	10	<20	30	
	34	21m to 34m - off white, as above			415	3	10	<20	35	
	37	34m to 40m - Grey, as above.			416	3	20	<20	50	
	40	40 m to 46 m - D.grey, coarser grained			417	3	15	<20	60	
	43	46 m to 49m - Olive, f.g. ss. & 1mm lithics			418	3	30	20	50	
	46	49m to 52m - Grey/green, clayey			419	3	15	<20	30	
	49	52m - Water table.			420	3	10	<20	35	
	52				421	3	10	<20	45	
	55	"YUDNAPINNA BEDS" : 52m to 96m			422	3	20	30	55	
	58	52m to 55m : Grey, sandy, calcareous			423	3	20	20	45	
	61	55m to 64m : Green & brown calc. siltst.			424	3	10	25	45	890
	64	WOOCALLA DOLOMITE 64 to 96		64	425	3	15	<20	40	1800
	67	64 to 68.5m : Hard, grey dolomite & tr. FeS		67	426	3	850	160	70	4200
	70	68.5 m to 96m : Black dolomitic			427	3	95	50	85	3200
	73	shale			428	3	40	40	85	1600
	76				429	3				
	79	(70 m to 96m - contamination			430	3				
	82	of sample from top of hole.			431	3				
	85	82m to 91m - Contam. 75%			432	3				
	88	91m to 96m - Contam. 90%)			433	3				
	91				434	3				
	94				85435	4.5				
	96									
		96m : END HOLE								

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HOLE No. EX21
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PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	12 - 10 - 73	COMPLETED:	13 - 10 - 73
LOCATION:	"CARIEWERLOO"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 97.5 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: AFRAC	DRILLER: R. TAYLOR
LOGGED BY:	D.G.T. DATE:	BIT SIZE: TO	TO TO

AA78

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0									
	3	SAND & CLAY : 0 - 3m : Orange sand + clay gypsum			85436	3	15	20	30	
	6	3m to 6m : Sandy red clay & gypsum			85437	3	15	<20	40	
	9	9m to 12m : Orange sand & clay			85438	3	20	20	40	
	12				85439	3	20	<20	35	
	15	WHYALLA SANDSTONE : 12m to 52 m.			85440	3	10	<20	25	
	18	12m to 18m - yellow/brown, friable, rounded			85441	3	15	<20	30	
	21	18m to 30m - white, fine grained, pink lithics			85442	3	20	<20	15	
	24				85443	3	15	<20	20	
	27				85444	3	60	<20	55	
	30	30m to 34m - very fine grained		30	85445	3	40	35	40	
	34			34	85446	3	130	<20	35	
	37	siltstone : 34m to 52m		37	85447	3	110	<20	40	
	40	light grey, hard. Minor			85448	3	55	<20	40	
	43	grains of sand & pink lithics.			85449	3				
	46	(transition to Whyalla SS?)			85450	3	15	<20	30	
	49	52m : Water table.			85451	3				
	52				85452	3	35	<20	60	
	55	"YUDNAPINNA BEDS" : 52m to 76 m.			85453	3				
	58	52m to 55m : lt. green siltst. & pink lithics			85454	3	25	25	45	
	61	55m to 58m : As above, calcareous			85455	3				
	64	58m to 70m : Green & brown, calcareous			85456	3	15	<20	40	
	67	siltstone.			85457	3				
	70				85458	3	15	20	35	750
	73	70m - 76m : Fine, green S.S. & smooth			85459	3				
	76	pebbles of volcanic up to 7mm.			85460	3	15	<20	35	640
	79	WOOCARRA DOLOMITE 76 to 97.5		79	85461	3	85	<20	40	630
	82			82	85462	3	560	30	70	1200
	85	(minor dolomite lens between 76 & 79 m)		85	85463	3	290	30	110	
	88	76 to 97.5 : Black dolomitic shale.			85464	3	50	40	90	
	91				85465	3	45	30	85	
	94				85466	3	40	30	130	
	98	97.5 m : END HOLE.			85467	4.5	45	35	65	

PACMINEX PTY. LTD.

HOLE No. EX 22

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0079

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 10 - 73 | COMPLETED: 13 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 51.8 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0			0						
	3	SAND, CLAY & GRAVEL: 0-3m: Sand.			85468	3				
	6	3m to 6m: Sand, clay & gypsum			85469	3				
	9	6m to 9m: Sand, silcrete & gravel			85470	3				
	12	WHYALLA SANDSTONE: 9m to 51.8m			85471	3				
	15	9m to 12m - Friable, brown/white, rounded			85472	3				
	18	12m to 15m - Brickred, finer			85473	3				
	21	15m to 18m - Orange/red, friable, rounded			85474	3				
	24	18m to 24m - White & red, clayey. Pink lithics			85475	3				
	27	24m to 27m - Qtz & lithic grains in lt. grey clay matrix			85476	3				
	30	27m to 34m - Orange/pink, friable			85477	3				
	34	34m to 37m - Pink. Coarse. Smooth qtz. to 7mm.			85478	3				
	37	37m to 40m - Brown. Finer. Angular grains			85479	3				
	40	40m to 43m - Red/brown. 5mm yellow qtz.			85480	3				
	43	43m to 46m - Conglom. 5mm qtz. in s.s. matrix			85481	3				
	46	46m to 49m - Brown s.s. & 10mm lithic chips			85482	3				
	49	49m to 50.5m - Black clay			85483	3				
	52	50.5m to 51.8m - Conglom. Pea size qtz in sand matrix		51.8	85484	3				
		51.8 m.: END HOLE.								
		N.B. Hole abandoned because of caving at depth. Medpump U/S.								

PACMINEX PTY. LTD.

HOLE No. EX 23

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 10 - 73 | COMPLETED: 13 - 10 - 73 | 0080

LOCATION: "CARIEWERHOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 42.7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
	0						-			
	3	SAND & GRAVEL			85485	3	35	20	50	
	6	0 - 6m: Sand & soil. Orange & brown			85486	3	15	20	40	
	9	6m - 9m: Clay & gravel.			85487	3	25	30	30	
	12	9m - 21m: Sand & gravel.			85488	3	10	<20	20	
	15			15	85489	3	20	25	25	
	18				85490	3	5	20	10	
	21				85491	3	10	20	10	
	24	WHYALLA SANDSTONE: 21m to 42.7m			85492	3	45	25	25	
	27	21m to 30m: white, fine grain s.s. c̄			85493	3	25	20	20	
	30	pink lithic grains. Much		30	85494	3	30	40	30	
	34	contamination from above.			85495	3	25	20	20	
	37	30m to 42.7m: Sample consists			85496	3	25	20	20	
	40	entirely of sand & gravel			85497	3	25	20	25	
	43	contamination from top of hole		42.7	85498	3	20	20	20	
		42.7m: END HOLE								
		N.B. Hole abandoned because of caving at top.								

PACMINEX PTY. LTD.

HOLE No. EX24

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0081

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	14 - 10 - 73	COMPLETED:	14 - 10 - 73
LOCATION:	"CARIEWERLOO"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 97.5 m.
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: AFRAC	DRILLER: R. TAYLOR
LOGGED BY:	D.G.T. DATE:	BIT SIZE:	TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0			0						
	3	CLAY : Red clay topsoil			85499	3	25	45	60	
	6	SILCRETE 3m to 7.5m			85500	3	25	20	30	
					85501	3	20	25	20	
	9	PANDURRA FORMATION: 7.5m to 88m			85502	3	15	<20	15	
	12	7.5m to 9m – Silicified ss. Hard.			85503	3	10	<20	20	
	15	9m to 12m – white, friable, rounded grains			85504	3	20	<20	20	
	18	12m to 15m – off-white, friable			85505	3	10	<20	20	
	21	15m to 18m – Pink, friable. Not well rounded			85506	3	25	20	20	
	24	18m to 90m – Purpleish, friable ss.			85507	3	15	<20	20	
	27				85508	3	10	<20	20	
	30	30–34m ÷ Coarser grained			85509	3	10	<20	20	
	34				85510	3	15	<20	25	
	37				85511	3				
	40				85512	3	15	<20	20	
	43				85513	3				
	46				85514	3	10	<20	20	
	49				85515	3				
	52				85516	3	10	20	20	
	55				85517	3				
	58				85518	3	10	<20	20	
	61				85519	3				
	64	64–67m: Trace ?Ilmenite			85520	3	10	<20	20	
	67				85521	3				
	70				85522	3	5	<20	20	
	73				85523	3				
	76				85524	3	10	<20	30	
	79	Siltstone : 81m to 88m			85525	3	10	30	35	
	82	81m to 85m ÷ Red/brown/green silt: (+ Abundant ?Ilmenite)			85526	3	10	45	45	
	85	85m – 88m ÷ Red/brown siltstone			85527	3	15	25	35	
	88	GAWLER VOLCANICS : 88m to 97.5m			85528	3	10	35	25	
	91	Purple f.g. irregularly fractured		91	85529	3	10	<20	40	
	94	chips.		94	85530	3	5	<20	40	
	98	97.5 m : END HOLE.		97.5						

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HOLE No. EX25

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14 - 10 - 73 | COMPLETED: 14 - 10 - 73 | 0082

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 89.3 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
	0			0						
	3	SANDY SOIL : orange			85531	3	20	35	40	
	6	CLAY : 3 to 6m – Pale green, Sandy, Gypsum			85532	3	25	20	45	
		6 to 9m – Brown. Sandy			85533	3	35	25	75	
	9	SAND : 9 to 12m – orange qtz. grains			85534	3	20	<20	20	
	12	12 to 15 m – orange & white grains			85535	3	15	<20	30	
	15	15 to 18m – white & orange grains			85536	3	15	<20	15	
	18	SILCRETE : 18m to 21m – Yellow silcrete, whib silc. ss.			85537	3	20	<20	25	
	21	CLAY : 21 to 30 m.			85538	3	10	<20	15	
	24	21 to 24 m – greenish, & pink lithic gr.			85539	3				
	27	24 to 30m – Buff. sand & lithic grains			85540	3	10	<20	15	
	30	"YUDNAPINNA BEDS" : 30 to 43 m			85541	3				
	33	30 to 34 m – straw, v fine grained			85542	3	15	20	10	
	37	34 to 37 m – Coarse lithic S.S. Pebbles to 7mm			85543	3				
	40	37 to 43m – Green, fine grain, friable Pink lithic			85544	3	10	<20	10	
	43	MAGAZINE CLAY : 43 to 49 m.			85545	3				
	46	Grey clay.		46	85546	3	160	55	180	
	49	WOOCALLA DOLOMITE: 49 m to 87.5 m		49	85547	3	85	60	110	
	52				85548	3	45	40	95	
	55	Black dolomitic shale			85549	3	60	50	95	
	58				85550	3	45	45	80	
	61				85551	3	60	90	80	
	64				85552	3	50	100	80	1800
	67				85553	3	60	60	80	2400
	70				85554	3	60	95	80	1500
	73			73	85555	3	70	410	110	2500
	76				85556	3	55	860	150	3900
	79				85557	3	60	690	1300	3800
	82	85m to 87.5m – Hard grey dolomite			85558	3	65	1200	1600	5000
	85	Trace Pyrite			85559	3	140	520	410	
	88	PANDURRA FORMATION : 87.5 to 89.3 m		88	85560	1	40	75	140	
		Pink, hard quartzite. Tr. Pyrite.								
		89.3m : END HOLE								

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HOLE No. Ex 26

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14 - 10 - 73 | COMPLETED: 15 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y: 0083

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 15.2 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
	0			0							
	3	SOIL : 0 - 1.5m			85561	3	20	25	40		
	6	GRAVEL : 1.5 to 6 m, Pandurra Fm. Cobbles			85562	3	15	30	25		
	9	CLAY : 6m to 12 m			85563	3	10	<20	5		
	12	Pale green, sandy or silty			85564	3	10	<20	10		
	15	PANDURRA FORMATION : 12 m to 15.2 m.			85565	3	10	20	10		
		Pink, hard quartzite									
		15.2 m : END HOLE.									

PACMINEX PTY. LTD.

HOLE No. EX27

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0084

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 15-10-73 | COMPLETED: 15-10-73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 6·1 m

HOLE TYPE: ROTARY | DRILLING CONTRAGTOR: AFAAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	GRAVEL & CLAY: Pandurra silicate cobbles		3	85566	3	30	20	55
	6	PANDURRA FM: 4m to 6·1 m		6	85567	3	25	30	20
		Red, hard quartzite							
		6·1 m: END HOLE							

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0085

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	15 - 10 - 73	COMPLETED:	15 - 10 - 73
LOCATION:	"CARIEWERLOO"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: v	INCLINATION: v	TOTAL DEPTH: 21 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: AFRAC	DRILLER: R. TAYLOR
LOGGED BY: D.G.T.	DATE:	BIT SIZE:	TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	CLAY, SAND & GRAVEL : 0 - 3m		3	85568	3	20	<20	40
	6	SAND : 3 - 9m - orange sand		6	85569	3	10	<20	10
	9	GRAVEL : (Pandurra & silcrete pebbles) 9 - 10m		9	85570	3	10	<20	15
	12	SANDSTONE & SILTSTONE : 10m to 19.5m		12	85571	3	10	<20	10
	15	Buff s.s. & pale green siltstone interbeds		15	85572	3	10	20	10
	18	(Pandurra chips poss. = contamination)		18	85573	3	10	<20	10
				19.5	85574	1.5	10	25	10
	21	PANDURRA FM : 19.5m to 21 m.		21	85575	1.5	20	<20	15
		Pink, v. hard quartzite							

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HOLE No. EX 29

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0086

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 15 - 10 - 73 | COMPLETED: 15 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 45·7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
	0								
	3	SAND & CLAY: 0 - 6m			85576	3	10	<20	20
	6				85577	3	15	<20	30
	9	SAND & GRAVEL: 6m - 10·5 m			85578	3	20	<20	35
	12				85579	3	15	<20	20
	15	? PANDURRA FM.: 10·5m to 24m			85580	3	15	<20	20
	18	10·5 to 15m: Buff clayey S.S. Friable. Pink lithics			85581	3	10	<20	10
	21	15m to 21m: Pink S.S.			85582	3	10	20	10
	24	21m to 24m: Coarse, c̄ white angular & round qtz.			85583	3	10	<20	10
	27	PANDURRA FM: 24m to 45·7m			85584	3	5	<20	10
	30	24 to 27m - Coarse S.S. of 4mm. qtz. grains			85585	3	10	<20	10
	34	27 to 30m - As above, pinks & white grains			85586	3	<2	20	10
	37	30m to 45·7m - Hard, coarse S.S. white c̄			85587	3	<2	20	10
	40	some pink qtz. grains.			85588	3	<2	<20	10
	43				85589	3	<2	<20	5
	46	45·7m: END HOLE			85590	3	5	<20	10

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HOLE No. EX 30

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16 - 10 - 73 | COMPLETED: 16 - 10 - 73 | 0087

LOCATION: "CARIENERRDO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 24.4 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.A.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn			
	0											
	3	SAND + CLAY : 0 - 9m			85591	3	15	<20	25			
	6	0 - 6m : Orange - red			85592	3	20	<20	40			
	9	6 - 9 m : Grey - red sand ; greenish clay			85593	3	15	<20	30			
	12	SAND + GRAVEL : 9 - 15 m.			85594	3	10	<20	15			
	15	12 - 15m : Coarse brown sand, some pebbles			85595	3	10	<20	15			
	18	PANDURRA FM: 15m to 24.4 m.			85596	3	10	<20	10			
	21	15m to 21 m : Red s.s.			85597	3	5	<20	10			
	24	21m to 24.4m : Hard, deep red			85598	3	10	<20	10			
		24.4m : END HOLE										

PACMINEX PTY. LTD.

HOLE No. EX 31

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16 - 10 - 73 | COMPLETED: 16 - 10 - 73 | 0088

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 54.9 M.

HOLE TYPE: ROTARY & DIAMOND CORE | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0								
	3	CLAY : M/orange 0 - 3m			85599	3	20	30	45
	6	SILCRETE : 3 - 6m - Brown / Pink			85600	3	10	35	15
	9	PANDURRA FM. : 6m - 53.6 m			85601	3	15	<20	10
	12	6 - 9 m : white, slight silic, poorly rounded			85602	3	10	<20	10
	15	9 - 12 m : straw colour, friable			85603	3	5	<20	5
	18	12 - 53.6m Purple-white S.S. : equidimensional			85604	3	10	<20	10
	21	qtz. grains			85605	3	90	85	10
	24				85606	3	10	<20	15
	27				85607	3	10	20	10
	30				85608	3	10	<20	10
	34				85609	3	10	<20	10
	37				85610	3	5	<20	35
	40				85611	3	5	<20	10
	43	41.8 - 43.3 m : CORED			85612	3.7	5	<20	10
	46				85613	2.4	25	30	15
	49				85614	3	20	25	15
	52				85615	3	5	<20	10
	55	GAWLER VOLCANICS : 53.6m to 54.9 m			85616	3	5	35	15
		54.9 m : END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 32

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0089

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16 - 10 - 73 | COMPLETED: 16 - 10 - 73

LOCATION: "CARISWERROO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 42.7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
	0										
	3	SAND SOIL + GRAVEL : 0 - 3m			85617	3	30	50	60		
	6	CLAY & GYPSUM : 3m - 6m : Pink clay			85618	3	15	20	50		
	9	CLAY-RICH SANDSTONE : 6m to 18m			85619	3	10	<20	15		
	12	6 - 9m : Green/grey clayey s.s.			85620	3	20	20	15		
	15	9 - 15m : Hard greenish clay			85621	3	20	20	30		
	18	15 - 18m : Yellow/green clayey s.s.			85622	3	15	<20	40		
	21	GAWLER VOLCANICS : 18m to 42.7m		21	85623	3	15	25	70		
	24	Dark purple/brown volcanic			85624	3	10	50	170		
	27				85625	3	10	60	120		
	30				85626	3	10	55	120		
	34				85627	3	10	75	160		
	37				85628	3	10	80	35		
	40			40	85629	3	5	90	190		
	43	42.7m : END HOLE			85630	3	10	110	55		

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HOLE No. EX 33

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16 - 10 - 73 | COMPLETED: 18 - 10 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y: 0090

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 89.9 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0								
	3	SOIL + GRAVEL : 0 - 3m			85631	3	10	<20	20
	6	SILTSTONE & SHALE : 3m to 30m			85632	3	25	<20	20
	9	6 - 9m : Fawn/pink fine clayey siltstone			85633	3	45	45	30
	12	9 - 18m : Applegreen clayey siltstone			85634	3	25	25	10
	15	18 - 21m : Lt pink/brown clayey siltstone			85635	3	15	190	10
	18	21-24m : Reddish/brown mudstone			85636	3	30	340	15
	21	24 - 27m : Khaki ; harder shale			85637	3	60	2300	15
	24	27 - 30m : Khaki-grey, hard &			85638	3	50	1100	20
	27	siliceous shale. Calcareous			85639	3	190	2700	170
	30	(Weathered Woocalla or Yudnapinna?)			85640	3	530	700	140
	34	PANDURRA FM. : 30m to 78m.			85641	3	20	35	25
	37	30m : Thin v.hard quartz band			85642	3	15	20	15
	40	30 - 55m : Purple s.s.			85643	3			
	43				85644	3	15	25	15
	46				85645	3			
	49				85646	3	25	25	10
	52				85647	3			
	55				85648	3	15	50	10
	58	55m - 76m : Purple & white s.s.			85649	3			
	61	Hard. Contains ? Ilmenite			85650	3	20	50	5
	64	Angular qtz. grains			85651	3			
	67				85652	3	10	45	10
	70				85653	3			
	73				85654	3	15	20	10
	76	76 - 78m : Purple s.s.			85655	3	10	40	15
	79				85656	3	10	<20	15
	82	GANKER RANGE VOLCANICS : 78m to 89.9m.			85657	3	10	30	20
	85	78 - 79 m : Purple fine grain volcanic			85658	3	10	<20	25
	88	79 - 89.9m : Purple volcanic c. green phenocrysts			85659	4.5	20	40	25
		89.9 m : END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 34

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 18-10-73 | COMPLETED: 18-10-73 | 0091

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 38.1 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0								
	3	SOIL & SILCRETE : 0 – 3m			85660	3	35	70	20
	6	MAGAZINE HILL CLAY : 3m to 21m			85661	3	35	970	15
	9	3m to 20m – Greenish hard clay & fawn siltstone			85662	3	145	1500	15
	12				85663	3	145	810	10
	15				85664	3	40	440	20
	18				85665	3	60	160	15
		20 – 21m – Yellow siltstone			85666	3	230	70	55
	21	GAWLER VOLC: 21 – 24m – Khaki ? shale			85667	3	1000	60	1600
	24	24 – 27m – Brown & green ? shale			85668	3	50	50	520
	27	27 – 30m – Brown ? shale & f.g. s.s.			85669	3	10	45	160
	30	30 – 34m : Red/brown shale or fine volcanic?			85670	3	10	70	150
	34	GAWLER RANGE VOLCANICS : 34m to 38.1m			85671	3	15	100	140
	37	34 – 37m : Dk. green phenocryst in purple groundmass.			85672	1.5	20	80	180
		37 – 38.1m : Purple – brown							
		38.1m END HOLE.							

PACMINEX PTY. LTD.

HOLE No. EX35

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 30 - 10 - 73 | COMPLETED: 31 - 10 - 73 | 0092

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 93 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AERAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600
	0			
	3	SOIL: Orange soil & calcrete		
	6	GRAVEL: 3 m to 7.5 m		
	9			
	12	TREGOLANA SHALE: 7.5 m to 64 m		
	15			
	18	7.5 to 34 m: Red/brown chocolatelike		
	21	micaceous mudstone.		
		Non-calcareous.		
	24			
	27			
	30			
	34			
	37	34 m to 64 m: As above, but		
	40	harder & a steely		
	43	cleavage face (mica).		
	46			
	49			
	52			
	55			
	58			
	61			
	64			
	67	? WHYALLA S.S.: 64 m to 93 m		
	70	64 - 93 m: Green fine grain s.s.		
	73	& siltstone		
	76	67 m: Water table (300 gal/hr)		
	79			
	82	N.B. Mudstone chips in samples are		
	85	probably contamination.		
	88			
	93			

SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
85673	3	35	<20	60
85674	3	15	<20	30
85675	3	15	<20	30
85676	3	5	<20	45
85677	3	10	<20	45
85678	3	10	<20	50
85679	3	5	<20	45
85680	3	20	<20	80
85681	3	10	<20	60
85682	3	40	<20	60
85683	3	10	<20	65
85684	3	15	<20	60
85685	3	10	<20	60
85686	3	5	<20	55
85687	3	10	<20	55
85688	3	15	<20	60
85689	3	15	25	55
85690	3	10	<20	60
85691	3	10	<20	55
85692	3	5	<20	60
85693	3	5	<20	60
85694	3	65	<20	50
85695	3	30	<20	50
85696	3	10	<20	50
85697	3	50	<20	40
85698	3	15	20	45
85699	3	15	30	40
85700	3	10	40	85
85701	3	10	<20	80
85702	4.5	10	45	60

PACMINEX PTY. LTD.

HOLE No. EX36

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 31 - 10 - 73 | COMPLETED: 31 - 10 - 73 | 0093

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 50·3 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0			0
	3	SOIL + CALCRETE : Orange.		
	6	SILCRETE : white silcrete + silicified S.S.		
	9	"YUDNAPINNA BEDS": ? 6m to 37·2 m.		
	12	6 - 12m : Pale yellow s.s. c round qtz + pink lithics		
	15	12 - 15m : Pink S.S.		
	18	15 - 18m : white + orange, v. fine grained		
	21	18 - 21m : Pink/orange, fine grained		
	24	21 - 24m : Orange/pink S.S.		24
	27	24 - 27m : Buff S.S.		
	30	27 - 30m : Grey to grey/brown S.S. Pyritic	sulphide	30
	34	30 - 34m : Dark grey s.s. H_2S. Pyritic		34
	37	34 - 37·2m : Grey/brown. Pyritic.		
	40	GAWLER RANGE VOLCANICS : 37·2m to 50·3m		
	43	Purple/brown volcanic		
	46			
	49			
		50·3 m : END HOLE		50·3

SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
85703	3	25	<20	55
85704	3	10	<20	30
85705	3	15	<20	10
85706	3	25	<20	15
85707	3	40	30	15
85708	3	50	260	20
85709	3	60	95	25
85710	3	75	25	20
85711	3	230	<20	40
85712	3	1200	<20	65
85713	3	170	<20	140
85714	3	40	<20	220
85715	3	40	<20	65
85716	3	10	<20	70
85717	3	15	<20	230
85718	4·5	20	<20	210

PACMINEX PTY. LTD.

HOLE No. EX 37

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 31 - 10 - 73 | COMPLETED: 1 - 11 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: | Y: 0094

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 97.5 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFARC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0			
	3	SOIL		
	6	SILCRETE GYPSUM & RED CLAY		
	9	CLAY (WEATHERED YUDNAPINNA BEDS ?)		
	12	6m to 40 m		
	15	6 - 9m : white, Sandy clay. Gypsum xstls.		
	18	9 - 12m : white clay. Gypseous		
	21	12 - 27m : Off-white, putty-like clay		
	24			
	27	27 - 30m : Sandy clay		
	30	30 - 34 m : Greyish clay		
	34	34 - 37 m : Grey clay		
	37	37 - 40 m : Grey/brown sandy clay		
	40			
	43	"YUDNAPINNA BEDS" ? : 40 - 97.5		
	46	40 - 46m : Grey & minor brown shale		
	49	46 - 49m : Purple/brown & grey shale		
	52	49 - 52 m : white clay band. Poor recovery		
	55	52 - 58m : Grey sandy shale 2mm Pyrite chips		
	58	58 - 61 m : Soft grey shale. Sand grains		
	61	61 - 64m : As above. Pyrite chips to 8mm (0.5%)		
	64	64 - 67m : grey siltst. sft. pyrite 0.25%		
	67	67 - 73 m : As above, harder, 2mm py. grains		
	70	73 - 76 m : grey siltst. ē 2mm red lithics. Tr. py.		
	73	76 - 79m : grey, green & brown siltst. 0.5% py		
	76	79 - 82 m : green & grey, hard siltst. Tr. py.		
	79	82 - 85m : green, brown & grey siltst. Tr. py.		
	82	85 - 88m : as above + minor 2mm Gawler pebb.		
	85	88 - 91 m : as above + 5mm Gawler pebbles		
	88	91 - 94 m : brown & green siltst. ±2mm Gawlers		
	91	94 - 97.5 m : Mainly brown siltst. ē orange		
	94	Gawler Volcanic pebbles up to 7mm		
	97.5	comprising 30% of sample.		
		97.5 : END HOLE		

Pyritic

SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
85719	3	25	<20	55
85720	3	10	<20	20
85721	3	10	<20	25
85722	3	10	<20	20
85723	3	5	<20	20
85724	3	5	<20	25
85725	3	5	20	20
85726	3	10	<20	20
85727	3	10	35	30
85728	3	10	<20	25
85729	3	10	20	30
85730	3	10	20	35
85731	3	5	<20	30
85732	3	5	<20	35
85733	3	10	45	110
85734	3	5	<20	45
85735	3	15	<20	85
85736	3	10	<20	40
85737	3	5	<20	30
85738	3	10	<20	40
85739	3	25	<20	50
85740	3	10	<20	25
85741	3	10	<20	30
85742	3	20	<20	30
85743	3	50	<20	40
85744	3	15	<20	30
85745	3	20	<20	45
85746	3	10	<20	35
85747	3	10	<20	30
85748	3	10	<20	45
85749	3	10	<20	30
85750	3	10	<20	40

PACMINEX PTY. LTD.

HOLE No. EX 38

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0095

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 1 - 11 - 73 | COMPLETED: 1 - 11 - 73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 56·4 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0								
	3	SOIL : 0 - 3m			85751	3	20	30	60
	6	CLAY : 3 m to 24 m (weathered volcanic?)			85752	3	25	<20	50
	9	3-6m : Red, gypseous			85753	3	30	<20	85
	12	6-9m : Pink/red, calcareous			85754	3	30	<20	200
	15	9-15m : Red, ?lateritic, sandy			85755	3	25	<20	290
	18	15-18m : Brown & yellow clay			85756	3	25	35	420
	21	18-24m : Yellow/khaki sandy clay			85757	3	30	130	270
	24				85758	3	45	25	280
	27	GAWLER RANGE VOLCANICS : 24m to 56·4m			85759	3	35	30	330
	30	24-27m : Khaki clay			85760	3	40	<20	160
	34	27-34m : Khaki, soft clay, speckled opaques			85761	3	30	<20	140
	37	34-37m : Apple green clay & speckled opaques			85762	3	40	25	120
	40	37-40m : Olive green clay			85763	3	35	<20	120
	43	40-43m Dk. grey-green clay			85764	3	30	<20	130
	46	43-49m : Lt. grey green weathered			85765	3	30	<20	85
	49	porphyritic volcanic			85766	3	25	<20	85
	52	49-52m : Blue-grey volcanic			85767	3	35	20	130
	55	52-56·4m : Blue ?andesitic volcanic			85768	4·5	30	<20	100
		56·4 m : END HOLE.							

PACMINEX PTY. LTD.

HOLE No. EX39

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 1-11-73 | COMPLETED: 2-11-73

LOCATION: "CARIEWERLOO" | CO-ORDS: X: Y: 0096

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 50.3 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
	0	SOIL: Orange 0-3m		0	85769	3	20	<20	45		
	3	LATERITE & SILCRETE: 3-6m - clay & laterite			85770	3	20	<20	20		
	6	6-9m - clay, silcrete & laterite			85771	3	25	<20	35		
	9	MAGAZINE CLAY: 9-12m - varicoloured			85772	3	50	<20	60		
	12	12-15m - Brown clay			85773	3	45	<20	70		
	15	WOOCALLA DOLOMITE: 15m to 48.8m			85774	3	20	<20	130		
	18	Black Shale Facies:			85775	3	15	<20	90		
	21	18-21m: Grey, soft shale			85776	3	70	<20	80		
	24	20m: Water Table			85777	3	70	20	45		
	27	21-34m: Grey shale, soft & darker			85778	3	55	60	60		
	30	calcareous bands.			85779	3	20	85	65		
	34	34-48.8m: Dark grey, calcareous		34	85780	3	140	130	95		
	37	shale		37	85781	3	90	55	30		
	40	48.8m: Thin band dolomite.			85782	3	45	85	80		
	43	Water flow 500 gal/hr.		43	85783	3	100	55	85		
	46	48.8m - 49.4m: Red shale			85784	3	220	80	120		
	49	PANDURRA FM: 49.4m to 50.3m		47	85785	1.5	55	<20	20		
		Red quartzite		50.3							
		50.3m: END HOLE									
						PH	% T.D.S.	Cu	Pb	Zn	
				WATER SAMPLE		7.2	4.19	5	<5	35	
								PPB	PPB	PPB	

PACMINEX PTY. LTD.

HOLE No. EX 40

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 2-11-73 | COMPLETED: 2-11-73

LOCATION: "ILKEROO" | CO-ORDS: X: Y:

0097

ELEVATION: - | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 42.9 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AERAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0						1		
	3	SOIL: Red. 0 - 3m			85786	3	20	<20	60
	6	LATERITE + SILCRETE: 3 - 6m : ∃ clay		///	85787	3	10	20	20
		6 - 9.5m : silcrete white clay			85788	3	15	<20	20
	9	CLAY : 7.5m to 24 m			85789	3	15	20	35
	12	9 - 15m : white clay chips			85790	3	10	40	130
	15	15 - 21m : yellow ochre clay chips			85791	3	10	35	510
	18	21 - 24m : khaki, weathered rock			85792	3	10	45	530
	21	chips. (? volcanic).			85793	3	10	30	320
	24	GAWLER RANGE VOLCANICS: 24 to 43.7m			85794	3	5	35	320
	27	24 - 30m : Red/Brown weathered rock			85795	3	10	35	260
	30	(volcanic)			85796	3	5	30	250
	34	30 - 37m : Red/grey, fresher volcanic rocks			85797	3	10	35	260
	37				85798	3	10	25	260
	40	37 - 43.3m : Volcanic : purple matrix			85799	3	10	20	240
	43	+ greenish phenocrysts.							
		43.3 m : END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 41

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 3 - 10 - 73 | COMPLETED: 3 - 10 - 73

LOCATION: "ILLAROO" | CO-ORDS: X: | Y: 0098

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 65.5 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
	0			0	85800	3.05	20	<20	30
	3	SOIL: 0 - 3			801	"	10	<20	30
	6	SANDY CLAY: 3 - 9			802	"	20	<20	45
	9	Gypsum			803	"	15	40	20
	12	SILCRETE & GRAVEL: 9 - 12		W.L.	804	"	20	120	15
	15	MAGAZINE CLAY: 12 - 24m			805	"	30	150	25
	18	15 - 12 white chips: 15 - 18 wet			806	"	45	230	35
	21	Doggy clay: Water table 15: 18 - 21		24	807	"	150	530	120
	24	Soft yellow white: 21 - 24 Yellow soft.			808	"	65	620	130
	27	WOOCALLA DOLOMITE 24 - 34			809	"	75	560	120
	30	Light grey weakly calcareous			810	"	960	360	40
	34				811	"	55	<20	25
	37	ELIZABETH CONGLOMERATE: 34 - 41m			812	"	20	<20	25
	40	Red rounded Quartz volcanic pebbles to 4 cm			813	"	65	<20	30
	43	White quartz pebbles to 3 cm. Gravel			814	"	10	20	20
	46	PANDURRA FM: 41 - 65.5			815	"	15	20	25
	49	41 Water flow 1200 Gals/hr.			816	"	20	40	30
	52	41 - 43 Red S.S. & Quartz pebbles 5mm &			817	"	35	<20	30
	55	large chips pyrite			818	"	35	<20	30
	58	% Quartz white chips mixed see table			819	"	30	20	30
	61	Volc. chips vesc. centre & pyrite			85820	"	60	<20	30
	64	52 - 65.5 Quartzite as above.		64					
		64 - 65.5 Sample lost down hole.							
		END OF HOLE							

	pH	T.D.S.	Cu	Pb	Zn
WATER SAMPLE	6.6	3.49	5	<5	50
		%	PPb	PPb	PPb

PACMINEX PTY. LTD.

HOLE No. EX 42

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 4-11-73 | COMPLETED: 4-11-73

LOCATION: "ILLEROO" | CO-ORDS: X: Y: 0099

ELEVATION: | DIRECTION: ✓ | INCLINATION: ✓ | TOTAL DEPTH: 54.9 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AF RAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0			0					
	3	SOIL, GRAVEL, SILCRETE 0-3			85821	3.05	50	45	45
	6	MAGAZINE CLAY 3-15			822	"	25	35	35
	9	3-7 Hard white & Fe staining		9	823	"	60	35	30
	12	7-15 White & yellow chips			824	"	170	55	70
	15			15	825	"	120	35	210
	18	WOOCARRA (BLACK SHALE) 15-42			826	"	35	55	140
	21	15-18 Grey & soft			829	"	45	140	120
	24	18-21 V. weakly calcareous, Grey soft			828	"	50	65	110
	27	21-34 Grey, soft weakly calcareous			829	"	50	45	95
	30	34 Water table			830	"	30	50	110
	34	34-40 Grey shale, hard		34	831	"	45	40	110
	37			37	832	"	40	160	40
	40	40-42 Dolomite			833	"	1100	130	60
	43			43	834	"	420	50	50
	46	ELIZABETH CONGLOMERATE 42-52.7			835	"	35	<20	25
	49	Unconsolidated pebbles to 3cm of B.I.F.,			836	3.05	20	30	25
	52	milky qtz., Pandurra S.S., & pyrite coatings			837	3.96	10	<20	20
	55	PANDURRA FM 52.7-54.9			85838	2.13	40	20	20
		Hard red quartzite		54.9					
		END OF HOLE							

	pH	FOS	Cu	Pb	Zn
WATER SAMPLE	8.6	3.50	5	<5	30
		%	ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX43

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 4-11-73 | COMPLETED: 5-11-73 | 0100

LOCATION: "ILLEROO" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 97.5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AERAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0								
	3	SOIL 0 – 1			85839	3.05	15	<20	25
	6	SILCRETE 1 – 6			840	"	5	<20	15
	9	"YUDNAPINNA BEDS"? 6 – 46			841	"	5	<20	15
		6 – 12 Silicified s.s. white			842	"	10	<20	10
	12	12 – 18 S.S. lithic, white. Fine & pink grain			843	"	10	<20	10
	15	18 – 21 S.S., clayey, lithic, lt. grey			844	"	10	<20	10
	18	21 – 27 Siltstone, sandy, grey, sulphide			845	"	10	<20	15
	21	bearing (3 – 5 %).			846	"	10	<20	10
	24	27 – 30 As above & trace only 5%			847	"	10	<20	20
	27	30 – 34 Siltstone, sandy, lt. grey. Pink lithic			848	"	10	<20	25
	30	34 – 40 Siltstone, sandy, lt. green & pink			849	"	5	<20	30
	34	lithic grains & volcanic pebbles 5mm			850	"	20	<20	30
	37	40 – 46 As above & brecciated volcanic pebbles			851	"	10	<20	35
	40	≈ 40 or 50% by vol of rock.			852	"	10	<20	40
	43			43	853	"	140	<20	50
	46	WOOCALLA (BLACK SHALE) 46 – 97.5			854	"	340	20	110
	49	46 – 52 Shale, green/grey, soft		49	855	"	45	<20	90
	52	52 – 55 As above, calcareous			856	"	55	<20	85
	55	55 – 58 As above + minor dolomite & Tr. FeS			857	"	45	25	80
	58	58 – 73 Shale, grey/green, calcareous			858	"	45	30	80
	61				859	"	35	20	85
	64				860	"	25	35	60
	67				861	"	40	<20	85
	70				862	"	55	20	45
	73	73 – 97.5 Shale, grey, laminated,			863	"	20	20	90
	76	calcareous.			864	"	40	<20	85
	79				865	"	40	25	85
	82	(N.B. Shale section samples			866	"	20	25	75
	85	contaminated & sanded pebble			867	"	20	20	75
	88	fallback.)			868	"	45	25	80
	91				869	"	50	20	80
	94				870	"	40	<20	85
	97	END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 44
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PROJECT AREA: PANDURRA | PROJECT No. 405
SPUDDED: 5-11-73 | COMPLETED: 8-11-73 | 0101
LOCATION: "ILLEROO" | CO-ORDS: X: | Y:
ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 79.9 m.
HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR
LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
	0			0							
	3	SOIL 0-3			85871	3.05	20	<20	40		
	6	CLAY 3-21			872	"	20	<20	40		
	9	3-6 sticky, hard, red.			873	"	15	25	30		
	12	6-12 Brittle, green/white			874	"	5	20	25		
	15	12-18 Khaki chips			875	"	10	20	30		
	18	18-21 Mustard chips			876	"	5	<20	30		
	21				877	"	15	20	40		
	24	YUDNAPINNA BEDS?: 21 - 79.9			878	"	10	<20	30		
	27	21-30 Siltst., shaley, micaceous, brown & green.			879	"	10	20	65		
	30				880	"	10	<20	70		
	34	30-37 Sandst., green/grey, fine c pink lithics			881	"	10	<20	25		
	37	37-46 Siltst., shaley, brown & green			882	"	10	<20	35		
	40	46-49 Sandst., green, fine grained			883	"	5	<20	40		
	43	49-58 Siltst., grey. Sandy red lithic grains			884	"	5	<20	35		
	46				885	"	10	<20	35		
	49	58-79.9 Siltstone, sandy, grey & green, hard.			886	"	10	20	25		
	52				887	"	30	<20	25		
	55				888	"	25	35	35		
	58				889	"	10	<20	30		
	61				890	"	15	<20	20		
	64				891	"	15	<20	30		
	67				892	"	15	<20	10		
	70	(Hole abandoned ∵ slow penetration (3m/hr))			893	"	15	<20	20		
	73				894	"	20	<20	30		
	76				895	"	20	20	25		
	79			79.9	896	3.66	10	<20	20		
		END HOLE.									

PACMINEX PTY. LTD.

HOLE No. EX45

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0102

PROJECT AREA: PANDURRA		PROJECT No. 405	
SPUDDED: 8-11-73		COMPLETED: 8-11-73	
LOCATION: "ILLEROO"		CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 56.4 m
HOLE TYPE: ROTARY	DRILLING CONTRACTOR: AFRAC		DRILLER: R. TAYLOR
LOGGED BY: D.G.T.	DATE:	BIT SIZE: TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600
	0	SOIL, CLAY & GYPSUM 0 - 3		0
	3	SILCRETE, LATERITE, CLAY 3 - 6		
	6	MAGAZINE CLAY 6 - 27		
	9	6 - 12 White		
	12	12 - 15 Buff		15
	15	15 - 21 Yellow ochre		
	18	21 - 24 Green/Yellow ochre		
	21	24 - 27 Khaki - green		
	24			
	27	WOOCALLA (BLACK SHALE) 27 - 43		
	30	27 - 42 Shale, grey, Calcareous, laminated		
	34	37 Water Table		34
	37			37
	40	42 - 43 Shale, red		43
	43	ELIZABETH CONGLOMERATE 43 - 52		
	46	43 - 52 Conglomeratic S.S. ≤ 5mm rounded quartz		
	49	volc. pebbles in red S.S. matrix (Pyrite 46 - 49)		
	52	PANDURRA FORMATION 52 - 56.4		
	55	52 - 56.4 SS/quartzite, red, ≥ 40%		56.4
		Rounded Volcanic pebbles. Hard.		
		END HOLE		

SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
858897	3.05	15	<20	40		
898	"	10	<20	30		
899	"	10	<20	15		
900	"	5	<20	15		
901	"	20	30	25		
902	"	90	140	100		
903	"	65	340	320		
904	"	75	220	330		
905	"	80	280	310		
906	"	30	180	160		
907	"	40	260	120		
908	"	130	1000	140		
909	"	170	220	110		
910	"	520	65	85		
911	"	25	35	45		
912	"	10	20	40		
913	"	15	20	35		
914	4.57	20	30	40		
	pH.	T.D.S.	Cu	Pb	Zn	
WATER SAMPLES	6.6	3.89	5	<5	20	
		%	ppb	ppb	ppb	

PACMINEX PTY. LTD.

HOLE No. EX 46

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9 - 11 - 73 | COMPLETED: 9 - 11 - 73 | 0103

LOCATION: "PANDURRA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: Y | INCLINATION: Y | TOTAL DEPTH: 80.8 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	SOIL, GRAVEL, GYPSUM & SILCRETE			915	3.05	25	<20	65
	6	0 - 6			916	"	10	<20	20
	9	MAGAZINE HILL CLAY 6 - 30			917	"	<20	<20	55
	12	6 - 9 Clay, crisp, white			918	"	<20	<20	25
	15	9 - 12 Clay, silty, greenish-white			919	"	10	<20	15
	18	12 - 15 Clay, silty, greenish			920	"	10	<20	20
	21	15 - 18 Clay, crisp, lt green			921	"	15	<20	20
	24	18 - 21 Clay & siltstone pale greenish-white			922	"	20	35	20
	27				923	"	55	<20	25
	30	SS, buff, pink lithics & c̄ green clay		27 30	924	"	390	35	25
	34	WOOCARRA DOLOMITE (Shale) 30 - 40			925	"	270	40	90
	37	30 - 37 Khaki, ? Manganiferous		33	926	"	50	30	60
	40	37 - 40 Grey-brownish, sandy, c̄ chips of Gawler volc.		36 39	927	"	150	<20	50
	43	"ELIZABETH CK. CONGLOM." 40 - 70			928	"	15	<20	35
	46	40 - 65.5 S.S., strongly calcareous. Abundant			929	"	10	<20	35
	49	chips of Gawler volcanics up to 10mm			930	"	10	<20	45
	52	43 - 46 Purplish S.S.			931	"	5	<20	45
	55	46 - 49 Greenish S.S.			932	"	10	25	40
	58	49 - 58 Volcanics 2 40% of rock S.S.			933	"	15	25	40
	61	58 - 65.5 As above, Purple S.S.			934	"	10	20	35
	64				935	"	15	<20	45
	67	65.5 - 70 : Shale :			936	"	30	<20	55
	70	Calcareous, grey/purple, c̄ 2mm volcanic grains			937	"	75	35	55
	73	GAWLER RANGE VOLCANICS 70 - 80.8			938	"	50	30	60
	76	70 - 73 Porphyritic volcanic, purple/brown			939	"	35	20	50
	80.8	73 - 80.8 Aphanitic volcanic, purple grey hard.		80.8	940	4.57	25	35	50
		END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 47

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9-11-73 | COMPLETED: 10-11-73 | 0104

LOCATION: "PANDURRA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 97.5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0			0
	3	SOIL & GYPSUM 0 - 3		
	6	MAGAZINE CLAY 3 - 18		
	9			
	12	3-6 Sandy clay, greenish, soft.		
	15	6 - 12 Pale green & soft		
	18	12 - 18 Pale green & firm		18
	21	WOOCALLA (BLACK SHALE) 18 - 97.5		
	24	18-24 Shale, grey & khaki, soft		
	27	24-30 Shaley clay, Grey.		
	30	30 m Water Table.		
	30	30 - 49 Shale, calcareous, grey		
	34			
	37			
	40			
	43			
	46			
	49			
	52	49 - 97.5 Shale, strongly calcareous		
	55	dark grey.		
	58			
	61			
	64			
	67			
	70			
	73			
	76			
	79			
	82			
	85			
	88			
	91			
	94			
	97.5			
		END HOLE		

SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
859 41	3.05	25	25	45		
942	"	10	<20	15		
943	"	15	<20	10		
944	"	20	<20	20		
945	"	10	30	25		
946	"	15	30	15		
947	"	80	20	120		
948	"	40	20	230		
949	"	45	<20	100		
950	"	35	20	110		
951	"	45	20	95		
952	"	55	40	100		
953	"	35	25	90		
954	"	30	25	90		
955	"	40	25	80		
956	"	30	20	90		
957	"	35	20	80		
958	"	30	20	90		
959	"	25	55	95		
960	"	30	40	90		
961	"	30	20	90		
962	"	35	20	70		
963	"	25	30	60		
964	"	30	20	75		
965	"	30	30	70		
966	"	25	30	75		
967	"	35	20	80		
968	"	30	25	80		
969	"	30	30	75		
970	"	25	<20	65		
971	"	25	20	80		
972	"	25	25	70		
	pH	TDS	Cu	Pb	Zn	
WATER SAMPLE	6.8	400	<5	<5	10	
		%	PPB	PPB	PPB	

PACMINEX PTY. LTD.

HOLE No. EX 48

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10 - 11 - 73 | COMPLETED: 11 - 11 - 73

LOCATION: "PANDURRA" | CO-ORDS: X: Y: 0105

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 79.3 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	SOIL, SAND & GRAVEL 0 - 9			85973	3.05	15	<20	30
	6				974	"	15	<20	30
	9				975	"	15	35	20
	12	MAGAZINE CLAY 9 - 18			976	"	25	25	55
	15	Red (Fe) Shale & white clay (soft)			977	"	20	<20	30
	18				978	"	40	20	30
	21	WOOCANNA (BLACK SHALE) 18 - 79.3			979	"	30	40	70
	24	18 - 21 Clay, khaki, then soft grey shale			980	"	30	35	90
	27	21 - 24 Shale, laminated, soft, khaki			981	"	40	45	80
	30	24 - 27 Khaki/grey shale.			982	"	45	40	85
	34	27 - 73 Shale, calcareous (strongly) &			983	"	35	40	75
	37	grey.			984	"	30	25	80
	40	37m Water table			985	"	50	25	90
	43				986	"	35	<20	80
	46				987	"	30	20	70
	49				988	"	40	55	60
	52				989	"	30	20	80
	55				990	"	30	<20	75
	58				991	"	35	40	75
	61				992	"	35	20	80
	64				993	"	35	25	85
	67				994	"	30	20	80
	70				995	"	35	30	90
	73	73 - 79.3 Shale, calcareous, &			996	"	35	30	85
	76	dark grey.			997	"	35	35	70
	79			79.3	998	"	35	20	85
		END HOLE							
						Pit	TDS	Cu	Pb	Zn
					WATER SAMPLE	6.8	6.14	<5	<5	10
							%	ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX 49

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0106

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11 – 11 – 73 | COMPLETED: 11 – 11 – 73

LOCATION: EYRE HIGHWAY | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 91·4 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0	UNCONSOLIDATED SEDIMENTS 0–7·5		
	3			
	6			
	9	MAGAZINE CLAY 7·5 – 18		
	12	7·5 – 12 Crisp clay – off white		
	15	12 – 18 Puggy clay – grey, yellow, white		
	18	WOCCAKKA (BLACK SHALE) 18 – 91·4		
	21	18 – 21 Clay, dk. grey		
	24	21 – 24 Shale, grey, soft		
	27	24 – 91·4 Shale, calcareous, grey		
	30			
	33			
	36			
	39			
	42			
	45			
	48			
	51			
	54			
	57			
	60			
	63	67 m – Water Table		
	66			
	69			
	72			
	75			
	78			
	81			
	84			
	87			
	90			
	93	END HOLE		

SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
85999	3·05	20	<20	20
86000	"	10	<20	10
01	"	15	25	15
02	"	50	<20	15
03	"	95	<20	25
04	"	55	<20	75
05	"	440	<20	160
06	"	35	<20	25
07	"	35	20	35
08	"	30	<20	80
09	"	60	<20	75
10	"	40	<20	75
11	"	30	<20	65
12	"	35	<20	75
13	"	30	<20	70
14	"	35	<20	75
15	"	30	<20	70
16	"	40	<20	75
17	"	40	20	70
18	"	40	25	70
19	"	40	40	85
20	"	40	65	130
21	"	35	70	260
22	"	30	80	340
23	"	40	60	120
24	"	30	45	160
25	"	30	25	130
26	"	25	40	95
27	"	35	30	65
28	"	30	50	70

0 18 21 57 90 91·4

PACMINEX PTY. LTD.

HOLE No. EX 50

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PROJECT AREA: PANDURRA | PROJECT No. 4605

SPUDDED: 11 - 11 - 73 | COMPLETED: 11 - 11 - 73 | 0107

LOCATION: "PANDURRA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 36.6 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFMAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 620	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0	SOIL, GRAVEL & WHITE CLAY 0 - 3		0	860229	3.05	10	80	30
	3	MAGAZINE CLAY 3 - 9			30	"	10	75	30
	6	White then brown & pugsy		6	31	"	45	40	170
	9	WOOCALLA (BLACK SHALE) 9 - 35.5			32	"	40	40	150
	12	9 - 12 Brown ochre, oxidised			33	"	50	50	170
	15	12 - 35.5 Grey, calcareous, laminated		15	34	"	30	335	870
	18	19.8 - 20.7 CORED SAMPLE TAKEN			35	"	45	1200	1100
	21	24 m Water table.			36	"	45	840	550
	24			27	37	"	60	1800	360
	27				38	"	140	1200	340
	30				39	"	420	150	260
	34	PANDURRA FM. 33.5 - 36.6		34	40	"	90	590	230
	37	Quartzite, pink & hard.		36.6					
		END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX51

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11 - 11 - 73 | COMPLETED: 11 - 11 - 73

LOCATION: "PANDURRA" East of Cu Prospect 30 metres | CO-ORDS: X: Y: 0108

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 18.6 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0			0					
	3	SOIL & GYPSEOUS CLAY 0 - 3			86041	3.05	30	380	30
	6	CLAY 3 - 6 White, soft chips			42	"	50	1200	30
	9	ELIZABETH CONGLOMERATE 6 - 12			43	"	35	130	20
	12	Quartz - pebble conglomerate. Authigenic			44	"	140	60	45
	15	PANDURRA FM. 12 - 18.6			45	"	130	35	95
	18.6	Decomposed, fawn, soft. water.			46	3.35	25	50	35
		END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 52

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0109

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 - 11 - 73 | COMPLETED: 12 - 11 - 73

LOCATION: "PANDURRA" 45 metres West of Cu Prospect | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: ° V | TOTAL DEPTH: 18.3 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AERAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0	WOOCALLA (BLACK SHALE) 0 - 9			86047	3.05	150	180	540
	3	0 - 6 Shale, khaki, (oxidised)			48	"	680	95	230
	6	6 - 9 Shale, calcareous, grey			49	"	3000	220	600
	9	ELIZABETH CONGLOMERATE 9 - 9.3 FeS			50	"	55	20	45
	12	PANDURRA FM. 9.3 - 18.3			51	"	25	20	25
	15	9.3 - 12 S.S. pink, friable			52	"	40	<20	40
	18	12 - 15 S.S. pink, friable & gritty							
		a muddy bands & Pyrite veins							
		Pyrite 7 0.4% of rock							
		15 - 18.3 S.S. Pink							
		Water Table							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX53

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0110

PROJECT AREA: PANDURRA		PROJECT No. 405	
SPUDDED: 12 - 11 - 73		COMPLETED: 12 - 11 - 73	
LOCATION: "PANDURRA"		CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 61 m
HOLE TYPE: ROTARY	DRILLING CONTRACTOR: AFRAC		DRILLER: R. TAYLOR
LOGGED BY: D.G.T. DATE:	BIT SIZE:	TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600
	0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61	SOIL 0 - 0.6		
		CLAY 0.6 - 3 Khaki, + gypsum		
		WOOCAMMA (BLACK SHALE) 3 - 49		
		3-6 Clay, khaki/brown, + gypsum		
		6-9 Shale, khaki/green, + gypsum		
		9-12 Shale, khaki/green/grey		
		12-49 Shale, grey, calcareous.		
		15m. Water Table. (Salt)		
		ELIZABETH CONGLOMERATE 49 - 55.5		
		White qtz, red quartzite, jasper & B.I.F. Red		
		PANDURRA FM: 55.5 - 61		
		Fine grained, brick red		
		Water 2 - 200 gal/hr.		
		END OF HOLE		

SAMPLE No.	Assayed length	Cu	Pb	Zn
Sample 53	3.05	60	420	140
54	"	95	20	60
55	"	55	45	160
56	"	35	25	75
57	"	20	20	65
58	"	55	40	80
59	"	40	45	130
60	"	35	50	240
61	"	35	170	450
62	"	35	170	560
63	"	40	300	440
64	"	30	230	760
65	"	35	1100	640
66	"	45	1600	300
67	"	85	770	270
68	"	1000	220	160
69	"	55	20	40
70	"	20	20	45
71	"	40	45	45
72	"	40	50	40

ASSAY VALUE P.P.M.

	pH	TDS	Cu	Pb	Zn
WATER SAMPLE	7.0	5.50	<5	<5	15
		%	ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX 54

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PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	12 - 11 - 73	COMPLETED:	13 - 11 - 73
LOCATION:	"PANDURRA"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 85.3 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: AFRAC	DRILLER: R. TAYLOR
LOGGED BY: D.G.T.	DATE:	BIT SIZE: TO	TO TO

0111

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0								
	3	SOIL 0 - 1.5			86073	3.05	25	35	50
	6	SILCRETE 1.5 - 6			74	"	10	20	20
	9	MAGAZINE CLAY 6 - 21			75	"	10	35	10
	12	6 - 12 Clay chips, light green			76	"	5	30	10
	15	12 - 18 clay chips, lt green & violet			77	"	15	40	15
	18	18 - 21 clay, puggy, ochre			78	"	20	35	15
	21				79	"	75	60	55
	24	WOOLALLA (BLACK SHALE) 21 - 83.8			80	"	40	150	210
	27	21 - 24 Shale, oxidised, khaki/green			81	"	50	360	220
	30	24 - 27 Shale, khaki & grey & calcareous			82	"	30	470	360
	34	27 - 40.2 Shale, grey, calcareous			83	"	40	150	85
	37				84	"	40	40	70
	40	41.2 m water table			85	"	45	50	90
	43	40.2 - 42.7 Dolomite, hard, ∑ pyrite Tr.			86	"	55	40	85
	46	42.7 - 76 Shale, grey, calcareous			87	"	70	35	80
	49				88	"	55	30	80
	52			52	89	"	45	40	70
	55				90	"	30	410	80
	58				91	"	35	340	480
	61				92	"	40	440	470
	64				93	"	45	640	120
	67			67	94	"	75	430	330
	70				95	"	140	760	610
	73				96	"	820	380	180
	76	76 - 83.8 Shale, grey, calcareous. Highly			97	"	1000	130	140
	79	Carbonaceous.			98	"	2100	120	120
	82				99	"	3300	80	80
	85	PANDURRA FM. 83.8 - 85.3		85	100	"	2200	65	75
		Red quartzite, hard. Trace of green							
		translucent mineral. Good trace pyrite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX55

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0112

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 11 - 73 | COMPLETED: 13 - 11 - 73

LOCATION: "PANDURRA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 13·7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: A. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0								
	3	SOIL & CALCRETE 0 - 3			86101	3·05	50	130	45
	6	SILCRETE 3 - 7			102	"	25	350	20
	9	PANDURRA FM. 7 - 13·7			103	"	25	120	20
	12	7 - 9 S.S. pink (decomposed rock)			104	4·57	35	95	20
	15	9 - 13·7 Quartzite pink							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 56
PAGE 1 OF 1 0113

PROJECT AREA: PANDURRA AREA		PROJECT No. 405	
SPUDDED: 13 - 11 - 73		COMPLETED: 13 - 11 - 73	
LOCATION: "PANDURRA"		CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 45·7 m
HOLE TYPE: ROTARY	DRILLING CONTRACTOR: AFRAC		DRILLER: A. TAYLOR
LOGGED BY: D.G.T.	DATE:	BIT SIZE:	TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0								
	3	SOIL & CALCRETE 0 - 3			86105	3·05	25	30	40
	6	MAGAZINE CLAY 3 - 9		6	106	"	15	50	30
	9	3 - 6 [illegible] 6 - 9 Lt. Brown			107	"	40	420	100
	12	WOOCARRA (BLACK SHALE) 9 - 37			108	"	50	25	140
	15	9 - 12 Shale [illegible] ochre			109	"	25	30	130
	18	12 - 15 Shale, Khaki		18	110	"	35	40	170
	21	15 - 37 Shale, grey, calcareous			111	"	40	170	630
	24				112	"	35	330	640
	27				113	"	45	340	400
	30	30 m water table			114	"	45	510	2100
	34				115	"	50	330	680
	37				116	"	50	310	300
	40	ELIZABETH CONGLOMERATE 37 - 43			117	"	25	270	120
	43	Small round [illegible] in [illegible] [illegible]		42	118	"	70	130	410
	46	PANDURRA FM. 43 - 45·7		45	119	"	340	20	120
		Red quartzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 57

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0114

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 11 - 73 | COMPLETED: 14 - 11 - 73

LOCATION: "PANDURRA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 61 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600
	0			
	3	SOIL 0 - 3		
	6	SILCRETE 3 - 6		
	9	PANDURRA FORMATION: 6 - 49		
	12	6 - 18 S.S. white & pink lithic grains, soft,		
	15	fine grained.		
	18			
	21	18 - 21 Siltstone, soft, yellow chips		
	24	21 - 24 S.S., grey, brown & red.		
	27	24 - 27 S.S. coarse, & lithic grains, varicoloured		
	30	27 - 32 S.S., grey, & 5mm volc. chips & pebbles 0.1%		
	34	32 - 46 S.S., Purple & white, hard, & minor		
	37	7mm rounded qtz. grains		
	42			
	43			
	46	46 - 49 S.S. coarse, purple-red, & rounded		
	49	qtz. & lithic pebbles, 5mm.		
	52	SHALE 49 - 52		
	55	Red + minor green shale as siltstone		
	58	CONGLOMERATE 52 - 53 white 5mm qtz pebbles		
	61	GAWLER RANGE VOLCANICS 53 - 61		
	64	53 - 55 Red/brown decomp: volc. Clasts		
		55 - 58 Red/brown chips volcanic.		
		57 m water table (salt)		
		58 - 61 Red/brown volcanic & green		
		phenocrysts		
		END OF HOLE		

SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
0				
86120	3.05	30	<20	80
121	"	15	<20	30
122	"	10	40	15
123	"	5	70	15
124	"	5	90	15
125	"	15	45	15
126	"	45	70	20
127	"	40	<20	15
128	"	40	60	30
129	"	10	20	40
130	"	10	<20	30
131	"	5	<20	20
132	"	5	<20	25
133	"	5	<20	30
134	"	5	<20	15
135	"	<2	<20	20
136	"	5	<20	70
137	"	5	<20	45
138	"	10	20	50
139	"	5	<20	35
61				

PACMINEX PTY. LTD.

HOLE No. EX 58

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0115

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14 - 11 - 73 | COMPLETED: 14 - 11 - 73

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 64 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.A.T. DATE: 14-11-73 BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0								
	3	Soil : 0 - 3 m		0	86140	3.05	20	<20	45
	6	PANDURRA FORMATION : 3 - 64			141	"	10	<20	25
	9	3 - 6 Purple-grey s.s.			142	"	10	<20	35
	12	6 - 12 Red/brown (+green) fine s.s. chips			143	"	5	<20	25
	15	12 - 15 As above + minor Gawler volcanic pebbles			144	"	10	<20	30
	18	15 - 18 Purple & white s.s. Spherical qtz. Abundant volcanics			145	"	10	<20	30
	21	18 - 21 As above & fewer Gawler volcanic pebbles			146	"	10	<20	60
	24	21 - 24 Red/brown coarse s.s. & round volcanic & qtz pebbles			147	"	15	<20	85
	27	24 - 25.5 Purple & white s.s.			148	"	10	<20	65
	30	25.5 - 41.5 Shaley siltstone, red &			149	"	10	<20	50
	34	green, micaceous.			150	"	10	<20	50
	37				151	"	5	<20	30
	40	41.5 - 43 Conglomerate, fine gr., qtz pebb			152	"	10	<20	35
	43	43 - 64 Sandy siltstone			153	"	10	<20	30
	46	43 - 58 Purple & white			154	"	10	<20	30
	49				155	"	15	<20	25
	52				156	"	10	<20	40
	55				157	"	15	<20	45
	58	58 - 61 Purpleish s.s. & siltst. chips			158	"	10	<20	20
	61				159	"	5	<20	10
	64	61 - 64 Purple/brown glauc s.s.		61	86160	"	10	<20	15

END OF HOLE

N.B. Very hard drilling from 24 m.

PACMINEX PTY. LTD.

HOLE No. EX 59

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14 - 11 - 73 | COMPLETED: 15 - 11 - 74 | 0116

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 24.7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFMC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. DATE: 15-11-73 BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	GRAVEL SAND & CLAY 0 - 12 m			86161	3.05	40	55	55
	6				162	"	10	<20	20
	9				163	"	15	<20	20
	12				164	"	10	20	25
	15	"ELIZABETH CK. CONG."? 12 - 22 m			165	"	10	<20	30
	18	12 - 18 Green-yellowish lithic s.s.			166	"	15	<20	30
	21	18 - 22 Yellow/green siltstone			167	"	10	<20	40
	24	PANDURRA FM. 22 - 24.7 m		24.7	86168	3.35	10	<20	15
		Pink quartzite.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 60
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PROJECT AREA: PANDURRA
PROJECT No. 405
SPUDDED: 15-11-73
COMPLETED: 15-11-73
0117
LOCATION: "ROOFENA"
CO-ORDS: X: Y:
ELEVATION: DIRECTION: √ INCLINATION: √ TOTAL DEPTH: 15.8 m
HOLE TYPE: ROTARY DRILLING CONTRACTOR: AFRAC DRILLER: R. TAYLOR
LOGGED BY: D.G.T. DATE: BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0			0					
	3	SAND & GRAVEL 0 - 6 m			86169	3.05	30	25	40
	6				170	"	10	<20	20
	9	SILCRETE 6 - 9 m			171	"	10	<20	20
	12	PANDURRA FM. 9 - 15.8 m			172	"	15	<20	15
	15	Hard red qtzite.		15.8	86173	3.66	10	<20	20
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 61

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 15 - 11 - 73 | COMPLETED: 16 - 11 - 73 | 0118

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 33·5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: AFRAC | DRILLER: R. TAYLOR

LOGGED BY: D.G.T. | DATE: | BIT SIZE: TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	SOIL & GRAVEL 0 - 3			86174	3·05	10	20	25
	6	CLAY 3 - 6			175	"	10	20	50
	9	WHYALLA SANDSTONE 6 - 33·5			176	"	10	<20	30
	12	6 - 12 Decomposed. Brown clayey S.S.			177	"	5	<20	20
	15	12 - 15 Pale green clayey S.S.			178	"	5	<20	20
	18	15 - 18 Bone clayey S.S.			179	"	10	<20	20
	21	18 - 21 Bone clayey S.S. & pink lithic grains			180	"	10	<20	20
	24	21 - 24 Bone S.S. coarse grained			181	"	10	<20	10
	27	24 - 33·5 As above, harder drilling.			182	"	5	<20	15
	30				183	"	10	<20	15
	34			33·5	86184	"	15	<20	20
		END OF HOLE.							
		N.B. Hole Abandoned because of drill breakdown.							

PACMINEX PTY. LTD.

HOLE No. EX 62

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0119

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 4 - 3 - 74 | COMPLETED: 7 - 3 - 74

LOCATION: "TREGALANA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 35 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 35 m. BLADE TO 33 m, ROLLER TO 35 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0	MAGAZINE CLAY 0 – 9.14		0					
		0-3 Siltstone, white, soft, micaceous.		3.05	86185	3.05	45	20	10
		3-9 Siltstone, S.S. & clay, buff & brown/mustard		6.10	186	"	45	30	20
		WOOCALLA DOLOMITE 9.14 – 33.53		9.14	187	"	120	40	40
		9 – 12 m Shale, brown-khaki, oxidised.		12.19	188	"	280	20	110
		12 – 18 m Shale, brown-khaki, calcareous.		15.24	189	"	100	40	95
		18 – 21 m Shale, grey, calcareous.		18.29	190	"	120	70	60
		21 m – Water table.		21.34	191	"	80	40	60
		21-24 m Shale, grey, calc.		24.38	192	"	25	30	50
		24-27 m S.S. grey, fine grain.		27.43	193	"	20	40	55
		27-33 m Shale, grey, calc. Dolomite at 33 m		30.48	194	"	85	40	40
		PANDURRA FM. 33.53 – 35		33.53	86195	"	230	40	75
		Quartzite hard, red.		35.0	86282	1.47	700	60	85

PACMINEX PTY. LTD.

HOLE No. EX63

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 5-3-74 | COMPLETED: 5-3-74

LOCATION: "TREGALANA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 38m 0120

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 38m. BLADE TO 38m. TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	Soil 0-1		3.05	86196	3.05	45	30	70
	6	WOOCARRA DOLOMITE 1-38		6.1	199	"	35	60	80
	9	1-3 Shale, khaki, soft.		9.14	198	"	40	70	85
	12	3-9 Shale, khaki, soft, weakly calcareous		12.19	199	"	55	60	90
	15	9-38 Shale, grey, calcareous.		15.24	200	"	25	40	90
	18	(WOOCARRA BLACK SHALE FACIES)		18.29	86251	"	40	70	75
	21			21.34	252	"	45	60	90
	24			24.38	253	"	40	70	60
	27	24 m Water table		27.43	254	"	60	60	75
	30	27-30 m Oily scum on water.		30.48	255	"	40	60	80
	33			33.53	256	"	45	80	70
	36			36.58	257	"	50	80	140
	38			38	258	1.42	40	80	310
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 64

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 6 - 3 - 74 | COMPLETED: 6 - 3 - 74 | 0121

LOCATION: "TREGALANA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 70.1 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121.4mm TO 70.1 m. BLADE TO 70.1 m. TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND 0 - 6		0					
				3.05	86259	3.05	20	30	30
				6.10	260	"	15	30	30
		WHYALLA S.S.? 6 - 12		9.14	261	"	10	40	20
		S.S., decomposed, red+white, clayey, angular grains		12.19	262	"	10	20	20
		MAGAZINE CLAY 12 - 36		15.24	263	"	15	30	25
		12 - 18 Clay, sandy, white		18.29	264	"	15	<20	20
		18 - 24 Clay, less sandy, whiter		21.34	265	"	10	20	10
		24 - 27 Clay, puggy, white.		24.38	266	"	10	<20	15
		27 - 30 Clay, yellow & grey		27.43	267	"	10	30	10
		30 - 36 Clay, grey.		30.48	268	"	10	40	15
				33.53	269	"	10	40	20
		"YUDNAPINNA BEDS" 36 - 56		36.58	270	"	10	40	30
		Shale, fawn, weakly calcareous		39.62	271	"	10	40	30
				42.67	272	"	10	20	40
				45.72	273	"	10	40	30
				48.77	274	"	10	40	30
				51.82	275	"	10	30	30
				54.86	276	"	20	30	30
				57.91	277	"	60	20	35
		WOOCALLA DOLOMITE		60.96	278	"	280	70	90
		56-60 56 - 70		64.01	279	"	60	40	75
		Shale, grey, calcareous + minor dolomite		67.06	280	"	40	50	50
		60-70 Shale, black, dolomitic		70.10	86281	"	20	60	60
		END OF HOLE							
		N.B. Water flow at 66 m ≈ 4000 gal/hr. Very salty water.							

PACMINEX PTY. LTD.

HOLE No. EX 65

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8-3-74 | COMPLETED: 8-3-74 | 0122

LOCATION: "MIDDLEBACK" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 61 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 21 mm TO 61 m. BLADE TO 41 m. ROLLER TO 61 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600		SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
					0					
		SOIL 0 - 3			3.05	86283	3.05	20	40	50
		GRAVEL & CLAY 3 - 6			6.10	284	"	20	60	30
		PANDURRA FM. ? 6 - 61			9.14	285	"	10	40	20
		6 - 9 Decomp. S.S. pinkish sand & white clay			12.19	286	"	10	20	15
		9 - 12 Decomp. S.S. Beige sand & clay			15.24	287	"	10	30	15
		12 - 15 Decomp. S.S. Pinkish sand & clay			18.29	288	"	10	20	30
		15 - 18 Silcrete.			21.34	289	"	15	20	15
		18 - 21 S.S., clayey, rounded grains 2-5 mm			24.38	290	"	10	30	15
		21 - 24 S.S., clayey, white, coarse.			27.43	291	"	10	<20	10
		24 - 27 S.S., soft & white, c̄ pink grains			30.48	292	"	10	30	15
		27 - 30 S.S., soft & white, c̄ pink grains			33.53	293	"	10	40	15
		30 - 36 S.S., quartzose, pink, rounded, coarse.			36.58	294	"	10	<20	10
		36 - 42 S.S. 5mm milky qtz + 1-2mm clear qtz.			39.62	295	"	10	<20	10
		42 - 52 S.S. pink, grains as above. Large grains rounded, small not rounded.			42.67	296	"	10	20	10
					45.72	297	"	5	<20	10
		52 - 55 S.S. pink. Round qtz up to 8mm. Minor red shale chips.			48.77	298	"	5	40	10
					51.82	299	"	10	40	15
		55 - 61 As above. V. red sample, poss. because of red shale bands. V. hard.			54.86	300	"	10	30	20
					57.91	301	"	10	20	15
					60.96	302	"	10	30	10
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 66

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8-3-74 | COMPLETED: 8-3-74 | 0123

LOCATION: "TREGARANA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 30 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 30m. BLADE TO 30 m. TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0	SAND GRAVEL & CLAY 0 - 6		0	86303	3.05	20	30	35
		Gravel pebbles to 4 cm.		3.05	304	"	10	30	20
		MAGAZINE CLAY 6 - 21		6.10	305	"	60	40	15
		6-9 Clay, white & sandy		9.14	306	"	35	70	20
	15	9-14 Silcrete (hard, white).		12.19	307	"	90	140	15
		14-18 Clay, ochre		15.24	308	"	95	190	30
		18-21 Clay, yellow, brown & dark grey		18.29	309	"	1600	220	65
		WOCCARRA (BLACK SHALE) 21 -27.		21.34	310	"	2400	420	2100
		Clay, laminated, dl. grey (weathered shale)		24.38	311	"	3400	2200	4000
		PANDURRA REGOLITH Tr. Pyrite.		27.43	86 312	"	420	100	100
	30	PANDURRA FM. Red shale. Tr. pyrite		30.48					
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX67

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0124

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9-3-74 | COMPLETED: 9-3-74

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 56 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO 56 m. BLADE TO 42 m. ROLLER TO 56 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0	Calcrete							
		RECENT 0 – 4 Gypsum & gravel			86313	3	25	50	25
		MAGAZINE CLAY 4 – 12			314	3	40	70	100
		4 – 9 Clay, white (some fe stain) & lt. grey			315	3	15	30	10
		9 – 12 Clay, lt. grey & yellow			316	3	80	80	10
	15	WOOCALLA (BLACK SHALE) 12 – 56			317	3	230	110	70
		12 – 15 Shale, khaki			318	3	110	70	200
		15 – 18 Shale, khaki & grey			319	3	25	50	90
		18 – 33 Shale, grey, calcareous			320	3	25	60	90
					321	3	50	60	85
	30				322	3	30	60	80
					323	3	40	60	80
		33 m Water table			324	3	30	60	80
					325	3	35	40	80
		33 – 56 Shale, grey, calcareous.			326	3	25	60	80
	45				327	3	35	40	85
					328	3	45	70	75
					329	3	40	80	80
					330	3	45	60	80
					86331	2	35	80	75
	60	END OF HOLE							

0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 56

PACMINEX PTY. LTD.

HOLE No. EX 68

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 9-3-74 | COMPLETED: 11-3-74 | 0125

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 28.5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO 28.5 m. | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
	0	WOOCALLA (BLACK SHALE) 0-28.5		0							
		0-3 Dolomite, Sandy, Khaki		3	86332	3	40	40	70		
		3-15 Shale, dolomitic, khaki.		6	333	3	30	20	55		
		6 metres Water table		9	334	3	45	40	80		
		12 metres H2O 700 gal/hr. flow. Good quality		12	335	3	50	50	60		
	15	15-18 Shale, dolomitic, khaki & grey		15	336	3	65	100	55		
		18-28.5 Shale, dolomitic, grey		18	337	3	45	80	60		
		21 metres H2O flow ~ 1000 gal/hr. slightly salty		21	338	3	45	110	55		
		24-27 Failback of khaki shale.		24	339	3	40	110	50		
		27-28.5 75% failback. Not sampled		27	340	3	50	260	50		
				28.5	NO SAMPLE	0	-	-	-		
		END OF HOLE									
		N.B Hole abandoned because of cave-in, caused by water.									
							P.P.b. U_3O_8	P.P.b. Cu	ppb. Zn	% T.D.S.	pH
		WATER SAMPLE 68A 12-15 m			68A		30	<10	<10	1.09	7.4
		WATER SAMPLE 68B 21-24 m			68B		30	<10	<10	1.74	7.3

PACMINEX PTY. LTD.

HOLE No. EX 69
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PROJECT AREA: PANDURRA
PROJECT No. 405
SPUDDED: 11-3-74
COMPLETED: 11-3-74
LOCATION: "ROOPENA"
CO-ORDS: X: Y: 0126
ELEVATION: DIRECTION: V INCLINATION: V TOTAL DEPTH: 37.5 m
HOLE TYPE: ROTARY DRILLING CONTRACTOR: THOMSON DRILLER: G. SCANLON
LOGGED BY: D.G.T. DATE: BIT SIZE: 121 mm TO 37.5 m. TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0	RECENT 0 - 13.5		0					
		0-3 Alluvium		3	86341	3	15	30	35
		3-6 Gravel		6	342	3	10	20	20
		6-13.5 Gravel, Sand & clay.		9	343	3	10	30	30
				12	344	3	10	40	20
	15	PANDURRA FM. 13.5 - 37.5		15	345	3	10	20	20
		12-18: Sand, loose, pink, brown & yellow		18	346	3	10	30	20
		18-24: S.S. soft, friable, white & pink. Angular qtz.		21	347	3	10	20	20
		24-37.5 S.S., pink, ~~fawn & orange,~~ friable, glauc, & angular qtz. grains.		24	348	3	10	20	15
				27	349	3	10	<20	20
	30			30	86 350	3	15	<20	20
				33	86 201	3	10	<20	15
				36	86 202	3	15	20	20
		37.5 Water Table.		37.5	NO SAMPLE	0	-	-	-
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX70

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0127

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11 - 3 - 74 | COMPLETED: 11 - 3 - 74

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 33·3 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO 33·3 m. | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		GRAVEL 0 - 9		0					
		Pandurra Fm. Qzte Pebbles in sand matrix		3	86203	3	15	30	25
		3-6 Silcreted		6	204	"	10	30	10
		MAGAZINE CLAY 9 - 15		9	205	"	10	20	20
		Soft, greenish chips of clay		12	206	"	20	40	30
		ELIZABETH CONGLOMERATE 15 - 30		15	207	"	15	50	35
		15 - 24 Well rounded pebbles up to 2 cm.		18	208	"	10	60	15
		of Pandurra quartzite in yellow &		21	209	"	10	20	15
		white sand matrix.		24	210	"	10	10	20
		24 - 30 Clayey sandst. yellowish & grey.	Tr. Py.	27	211	"	10	20	40
		PANDURRA FM. 30 - 33·3	5% Py	30	212	"	20	30	55
		V. hard, pink quartzite up to 5% Pyrite	1% Py	33	213	"	15	20	60
				33·3	214	0·3	20	60	20
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX71

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11-3-74 | COMPLETED: 11-3-74 | 0128

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 9 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO 9 m | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0			0					
	3	SOIL 0-3		3	86215	3	20	50	45
	6	GRAVEL & RED CLAY 3-6		6	216	3	15	20	30
	9	PANDURRA FM.? 6-9		9	86217	3	15	30	20
		V. hard yellow/brown quartzite							
		END OF HOLE							
		N.B. Hole abandoned because drill could not penetrate any further.							

PACMINEX PTY. LTD.

HOLE No. EX 72

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 - 3 - 74 | COMPLETED: 12 - 3 - 74

LOCATION: " ROOPENA " | CO-ORDS: X: Y: 0129

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 7 m. | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL, SAND, CLAY, GRAVEL 0 - 3		0	86218	3	15	30	40
		WITYARRA S.S. ? 3 - 6		3	219	3	20	40	20
		Quite well rounded qtz. + lithic		6	86220	1	15	40	20
		grains (med. - coarse) in green matrix		7					
		PANDURRA FM. 6 - 7							
		Pink q'tzite, v. hard + white q'tzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 73

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 - 3 - 74 | COMPLETED: 12 - 3 - 74

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 24 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. DATE: | BIT SIZE: BLADE TO 20.5 : ROLLER TO 24 m. (121mm TO 24m.)

0130

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
	0	SOIL, GRAVEL, CLAY & GYPSUM 0 - 3		0	86221	3	80	20	75
		RED CLAY 3 - 6		3	222	"	20	30	50
		WHYALLA S.S. 6 - 20.5		6	223	"	15	20	20
		6 - 18 S.S., clayey, c̄ rounded qtz &		9	224	"	10	<20	30
		pink lithic grains in a white to green		12	225	"	10	<20	20
	15	clay matrix.		15	226	"	20	30	25
		18 - 20.5 Coarser grained & varicoloured.		18	227	"	15	20	10
	20.5	PANDURRA FM. 20.5 - 24		20.5	86 228	"	10	<20	10
		Red c̄ tzite. Hard. (Water table 20.5)		24					
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 74

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 - 3 - 74 | COMPLETED: 12 - 3 - 74 | 0131

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 48 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 48 m. | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SOIL, CLAY, GRAVEL & GYPSUM 0 - 3		0					
		WHYALLA SANDSTONE 3 - 32		3	86229	3	10	20	40
		3-6 S.S., decomposed, pink/red		6	230	"	15	30	30
		6-9 clayey S.S., pink, decomposed.		9	231	"	10	20	20
		9-12 clayey S.S., qtz & pink lithic gr., greenish		12	232	"	<2	<20	20
		12-24 clayey S.S., lt grey, yellow & khaki		15	233	"	5	20	25
				18	234	"	10	20	20
				21	235	"	10	20	20
		24-32 clayey S.S., white & yellow qtz grains		24	236	"	30	100	45
		c "birdseed" texture. Minor dolomite		27	237	"	90	90	65
		chips from 27 - 32.		30	238	"	180	90	75
				33	239	"	900	70	220
		WOOCALLA (SHALE) 32 - 34		36	240	"	320	60	130
		Black shale & grey dolomite. Good		39	241	"	280	70	110
		trace of pyrite, trace chalcopyrite		42	242	"	170	40	60
		PANDURRA FM. 34 - 48		45	243	"	120	20	80
		34-39 Red qtzite / S.S. Trace py.		48	86244	"	100	40	50
		39-42 S.S., pink & yellowish. Hard.							
		42-45 S.S./QTZTE, Pink. Hard.							
		45-48 QTZTE. Pink.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 75

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12-3-74 | COMPLETED: 12-3-74 | 0132

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 36 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 36 m. (BLADE TO 36 m.) TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SANDY SOIL & CALCRETE 0-3		0					
		SAND & GRAVEL 3-14		3	86245	3	20	40	40
				6	246	"	10	20	25
				9	247	"	10	40	10
				12	248	"	10	20	15
		MAGAZINE CLAY 14-18		15	249	"	15	50	20
		Sandy grey clay		18	86250	"	20	30	15
		WOODCARRA (BLACK SHALE) 18-36		21	86351	"	40	60	40
		18-21 Clay, grey & shale, black		24	352	"	50	100	65
		21-36 Shale, dk. grey, calcareous		27	353	"	20	50	40
		(+ Sand & gravel fallback from		30	354	"	15	40	35
		top of hole, about 60% sample)		33	355	"	20	30	35
				36	86356	"	20	40	40
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 76

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 3 - 74 | COMPLETED: 13 - 3 - 74 | 0133

LOCATION: "ROOPENA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 37.5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 37.5 m. BLADE TO 27m : ROLLER TO 37.5m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	V	
	0	RECENT Sandy soil 0-3		0							
		Red clay, minor pebbles 3-6		3	86357	3	15	30	35		
		WITYARRA S.S. 6 - 24		6	358	"	15	40	50		
		6 - 12 S.S., clayey, ofa lithic gr. in grey/		9	359	"	10	20	25		
		green matrix.		12	360	"	20	30	20		
	15	Clay, sandy. White		15	361	"	75	20	20		
		S.S. clayey, coarse, white		18	362	"	160	20	20		
		CLAY, sandy, varicoloured to grey		21	363	"	130	200	30		
		WOOCARRA DOLOMITE 24 - 30		24	364	"	120	100	50		
		Dolomite, grey & hard. Pyritic.		27	365	"	950	110	800		
	30			30	366	"	2000	70	240		
				33	367	"	390	60	90	100	
		ELIZABETH R. CONGLOMERATE 30 - 33		36	368	"	240	30	60		
		Pebbles of jasp. lite & R-P to 5cm in sand. Minor red shale		37.5	86369	1.5	230	30	75		
		PANDURRA FM. 33 - 37.5									
		Hard red quartzite.									
		END OF HOLE									
							ppb U_3O_8	ppb Cu	ppb Zn	% TDS	pH
		WATER SAMPLE 30 - 33 m			EX76		5	<10	<10	3.09	6.9
		N.B. Water flow at 33 m approx. 1000 gallons/hr. Very salty.									

PACMINEX PTY. LTD.

HOLE No.: EX 71

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PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	13 - 3 - 74	COMPLETED:	13 - 3 - 74
LOCATION:	"ROOPENA"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 19 m.
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm. TO BLADE TO 17 m. ROLLER TO 19 m.	

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
	0	RECENT 0-3 Sandy soil, calcrete & clay		0	86370	3.0	25	40	50	
		3-4 Gravel & Sand		3	371	"	20	30	35	
		WAYMARA S.S. 4-13		6	372	"	40	20	20	
		4-6 Lithic S.S.		9	373	"	15	20	15	
		6-13 Clayey S.S., white yellow & pink		12	374	"	10	20	15	100
	15	ELIZABETA R. CONGLOMERATE 13-17		15	375	"	20	20	20	100
		Pebbles of Pandurra & jaspilite in clayey		18	86376	1.0	15	20	20	
		Sand matrix. Also white qtz pebbles ~ 1cm.		19						
		PANDURRA FM. 17-19								
		V. hard pink quartzite								
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 78

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0135

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 - 3 - 74 | COMPLETED: 13 - 3 - 74

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 3.15 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
	0			0					
	3	RECENT Sand soil gravel 0 - 3		3	86377	3.0	20	40	40
		PANDURRA FM. 3 - 3.15		3.15	86378	0.15	30	20	35
		Hard pink qtzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX79

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PROJECT AREA: PANDURAA | PROJECT No. 405

SPUDDED: 13-3-74 | COMPLETED: 13-3-74

LOCATION: "ROOPENA" | CO-ORDS: X: Y: 0136

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 46 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
	0	GRAVEL & CLAY 0-3		0	86379	3.0	20	40	35	
		SILCRETE 3-5		3	380	"	20	800	20	
		MAGAZINE HILL CLAY 5-12.5		6	381	"	25	1600	25	
		5-9 Clay, crisp greenish		9	382	"	25	1200	30	
		9-12.5 clay, soft, brittle, greenish		12	383	"	20	360	25	300
	15	ELIZABETH CONGLOMERATE		15	384	"	20	320	30	200
		12.5 - 45.8		18	385	"	60	120	40	200
		12.5-21 Clayey sand & gravel, Mainly		21	386	"	90	40	50	300
		Pandurra pebbles, minor chert & jaspel, in		24	387	"	90	70	70	300
		Pink sand & white clay matrix.		27	388	"	20	260	90	100
	30	21-30 As above, but mainly jaspilite		30	389	"	15	120	65	200
		pebbles, 1-3 cm. Red, yellow & brown.		33	390	"	10	60	100	100
		30-36 Gravel of Pandurra, qtz & chert		36	391	"	15	70	60	50
		< 1cm pebble size. Green/brown		39	392	"	15	60	50	100
		36-45.85 As above, but includes grey-		42	393	"	10	40	50	50
	45	green micaceous shale fragments.		45	86394	1.0	15	60	50	80
		PANDURRA FM. 45.8-46 m.		46						
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 80

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0137

PROJECT AREA: PANDURRA | PROJECT No. 405-

SPUDDED: 13-3-74 | COMPLETED: 14-3-74

LOCATION: "ROOPENA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 72 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO BLADE TO 40 m : ROLLER TO 72 m

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V		
	0	CLAY & GRAVEL 0 – 3		0								
		SILCRETE & FERRICRETE 3 – 6		3	86395	3.0	30	30	25			
		MAGAZINE HILL CLAY 6 – 18		6	396	"	140	80	15			
		6 – 12 Clay, crisp, pale green		9	397	"	40	900	20			
		12 – 15 Clay, pale green		12	398	"	130	2600	30			
	15	15 – 18 Clay, white, yellow & red		15	399	"	200	1700	30			
		ELIZABETH RIVER CONGLOM. 18 – 72		18	400	"	360	2000	140			
		Clayey Sand & gravel, poorly consolidated		21	401	"	120	100	120	200		
		18 – 27 Khaki. Gravel of glaite		24	402	"	75	40	100	300		
	30	27 – 72 Red. Pebbles of red quartzite,		27	403	"	30	35	40	100		
		jaspilite & chert, all v. angular.		30	404	"	15	30	40	200		
		Pebble size 0.5 – 3.0 cm		33	405	"	20	20	30	200		
				36	406	"	20	40	40	200		
				39	407	"	10	40	30	200		
				42	408	"	15	80	35	200		
	45			45	409	"	20	120	30	300		
				48	410	"	10	50	30	200		
				51	411	"	10	40	30	30		
				54	412	"	15	60	35	100		
				57	413	"	20	80	35	200		
	60			60	414	"	20	160	30	200		
				63	415	"	25	50	35	100		
		Water Flow ~ 750 gals/hr. Salty.		66	416	"	10	80	30	100		
				69	417	"	20	80	40	300		
				72	86418	"	35	60	30	100		
		END OF HOLE										
		Hole abandoned because of cave-in at surface.										
							ppb U_3O_8	ppb Cu	ppb Zn	% TDS	PH	
		WATER SAMPLE FROM 72 m			Ex 80		75	10	<10	3.11	7.1	

PACMINEX PTY. LTD.

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0138

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14-3-74 | COMPLETED: 14-3-74

LOCATION: "PANDURRA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 48 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO 48m. | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600
	0	SOIL 0 - 1.5		
		MAGAZINE HILL CLAY 1.5 - 3		
		Crisp pale green		
		WOOCARRA (BLACK SHALE) 3 - 15.5		
	15	3 - 6 Shale, oxidised red & yellow		
		6 - 10 Shale, oxidised Khaki		
		10 - 15.5 Shale, grey, calcareous.		
		ELIZABETH R. CONGLOM. 15.5 - 48		
		15 - 18 Gravel. Jasplite & qtz. pebbles to 3 cm	Fe S	
	30	18-21 Gravel & Sand. Poorly consolidated.		
		21-24 Shale & SS. Soft red shale & grey SS.		
		24-48 Gravel & Sand, poorly consolidated.		
		Red colour. Pebbles of jasplite & qtz.		
		from 1-3 cm. Also Pandurra Fm. pebbles		
		Qtz pebbles smaller, more rounded		
	45	than B.I.F. & Pandurra Fm.		
		END OF HOLE		

SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	V
86419	3.0	10	340	50	
420	"	50	660	250	
421	"	45	660	1700	
422	"	40	2200	800	
423	"	180	600	190	
424	"	1100	90	60	50
425	"	60	50	70	100
426	"	180	90	70	200
427	"	20	40	40	200
428	"	10	30	30	200
429	"	<2	40	40	200
430	"	40	60	50	100
431	"	10	30	30	300
432	"	10	20	35	200
433	"	30	60	25	200
86434	"	15	80	50	300

PACMINEX PTY. LTD.

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0139

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14-3-74 | COMPLETED: 16-3-74

LOCATION: "PANDURRA" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: N | INCLINATION: N | TOTAL DEPTH: 90 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: 22/5/74 | BIT SIZE: 121 mm. TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SOIL, CLAY, GRAVEL, GYPSUM 0-3		0					
		PANDURRA FM. (SANDSTONE) 3-45		3	86435	3.0	20	40	45
		3-18: White gtzose s.s. of rounded qtz.		6	436	"	15	30	20
		grains + pink lithic grains. (Silicified		9	437	"	15	20	20
		from 3-6).		12	438	"	20	20	20
		18-21: Grey gtzose s.s. of rounded qtz.		15	439	"	25	20	25
		+ grey + pink lithic + grey chert +		18	440	"	60	20	30
		volcanic grains.		21	441	"	35	70	30
		21-24: Green micaceous s.s.		24	442	"	10	20	40
		24-27: S.S., white + purple coated qtz. grains		27	443	"	10	30	30
		some rounded, + purple volcanic + chert grains.		30	444	"	10	20	40
		27-45: Fine gr. micaceous s.s., mainly		33	445	"	10	20	40
		red, ± green patches. Shaley.		36	446	"	10	20	30
				39	447	"	5	40	30
				42	448	"	10	<20	40
				45	449	"	10	30	35
		(SANDSTONE + SHALE) 45-90		48	450	"	20	20	25
		45-57: Conglom. of 1cm smooth hematite		51	451	"	15	20	30
		chert + fawn volcanic pebbles + white + red coated		54	452	"	10	20	50
		round 1-2mm qtz + red + green micaceous shale.		57	453	"	15	20	45
				60	454	"	30	40	45
		57-90: White quartzite + red/brown		63	455	"	25	20	40
		micaceous shale + minor rounded		66	456	"	20	30	50
		volcanic pebbles.		69	457	"	20	20	45
		Very hard from 75 m.		72	458	"	15	20	30
				75	459	"	15	20	30
				78	460	"	20	20	40
				81	461	"	20	20	30
				84	462	"	15	20	35
		(Bottomed in Pandurra Fm.)		87	463	"	15	30	40
				90	Pb 464	"	20	20	40
		END OF HOLE							

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HOLE No. EX 83
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PROJECT AREA: PANDURRA
PROJECT No. 405
SPUDDED: 16 - 3 - 74
COMPLETED: 16 - 3 - 74
0140
LOCATION: "PANDURRA"
CO-ORDS: X: Y:
ELEVATION: DIRECTION: V INCLINATION: V TOTAL DEPTH: 40 m
HOLE TYPE: ROTARY DRILLING CONTRACTOR: THOMSON DRILLER: G. SCANNON
LOGGED BY: D.G.T. DATE: BIT SIZE: 121 mm. TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
	0	SOIL GRAVEL CLAY 0 - 3			86465	3.0	25	40	65	
		?WHYALLA SANDSTONE 3 - 12			466	"	15	30	20	
		S.S. white, c well rounded qtz grains.			467	"	25	30	20	
		Silicified from 3 - 7 m.			468	"	30	120	20	
	15	MAGAZINE HILL CLAY 12 - 28			469	"	40	260	20	
		12 - 15 Clay, soft, white.			470	"	30	40	35	
		15 - 18 Clay, soft, greenish			471	"	25	70	20	
		18 - 21 Clay, soft, buff, micaceous, silty.			472	"	20	60	40	
		21 - 28 Clay, soft, white, silty.			473	"	15	60	25	
	30	ELIZABETH RIVER CONGLOM. 28 - 39.5			474	"	20	50	20	300
		Sand & gravel of Pandurra Fm. & Gawler Volc.			475	"	20	20	30	200
		pebbles (1.5 cm) in white clay matrix.			476	"	20	20	20	300
		Poorly consolidated.			477	"	20	20	25	300
		PANDURRA FM. 39.5 - 40			86478	1.0	20	20	25	300
		V. hard fresh pink quartzite								
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 84

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0141

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16 - 3 - 74 | COMPLETED: 20 - 3 - 74

LOCATION: PANDURRA | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 87 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. DATE: 22-5-74 BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
		SOIL + SILCRETE 0 - 3		0						
		PANDURRA FM. 3 - 84		3	86479	3.0	25	30	30	
		3-6 White strong s.s. - silicified.		6	480	"	20	20	20	
		6-9 S.S., purple strong.		9	481	"	15	20	25	
		9-12 S.S., purple + white.		12	482	"	15	20	20	
		12-15 Ditto - coarser		15	483	"	10	<20	20	
		15-18 S.S. white.		18	484	"	10	<20	20	
		18-45 S.S., purple, coarse angular quartz grains.		21	485	"	15	20	25	
		45-69 S.S., purple/brown & unstained white patches. Quartz + red lithic grains.		24	486	"	10	<20	20	
				27	487	"	20	20	30	
				30	488	"	15	<20	30	
				33	489	"	10	<20	20	
				36	490	"	5	30	25	
				39	491	"	5	20	20	
				42	492	"	5	20	20	
				45	493	"	10	20	20	
				48	494	"	10	20	30	
				51	495	"	15	20	30	
				54	496	"	10	30	25	
				57	497	"	10	20	20	
				60	498	"	10	20	20	
				63	499	"	10	30	<2	
				66	500	"	10	20	30	
				69	501	"	10	40	25	
		(Sandst. + shale 69 - 87)		72	502	"	10	20	40	
		69-72 Shale, brick red + green, micaceous		75	503	"	20	<20	40	
		72-79 S.S., strong, red/brown + shale, micac.		78	504	"	20	20	30	
		79-84 Conglom. of 5mm Gawler Volc. pebbles + smooth rounded 1-2mm qtz. + green shale.		81	505	"	10	20	35	
		84-87 S.S. round white qtz 2mm + smooth 5mm volcanics (minor) + v. minor jasper + shale + grey quartzite. Very hard.		84	506	"	10	30	25	50
				87	86507	"	20	20	35	300
		END OF HOLE								

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HOLE No. EX 85

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0142

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	20 - 3 - 74	COMPLETED:	20 - 3 - 74
LOCATION:	"PANDURRA"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 21 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY:	K.J.M. DATE:	BIT SIZE: 121 mm. TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
		SAND & GYPSUM 0 - 2		0						
		MAGAZINE HILL CLAY 2 - 12		3	86508	3.0	15	40	30	
		2 - 7 : Sandy clay, grey - green		6	509	"	10	50	45	
		7 - 12 : Pale green clay		9	510	"	15	380	25	
		'WOOCHALLA' (BLACK SHALE) 12 - 19		12	511	"	10	640	30	
		12 - 18 : Shale, soft yellow/br., gradually → grey		15	512	"	80	1400	80	
		18 - 19 : Shale, grey to black. Soft. laminated.		18	513	"	240	260	110	
		PANDURRA FM. 19 - 21		21	86514	"	2100	180	240	
		Pink quartzite. Very hard.								
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 86

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0143

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	20 - 3 - 74	COMPLETED:	20 - 3 - 74
LOCATION:	" PANDURRA "	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 28 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY:	K.J.M. DATE:	BIT SIZE: 121 mm. TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	V
		SOIL & GRAVEL 0 - 8		0	86515	3.0	40	80	30	
				3	516	"	20	40	25	
				6	517	"	70	60	30	
		SANDSTONE 8 - 23		9	518	"	25	40	25	
		S.S. red/brown, soft. Grains sub-angular to round. Minor clay. Grains become more angular c̄ depth.		12	519	"	40	50	30	
				15	520	"	35	40	30	
				18	521	"	25	60	20	
				21	522	"	60	140	40	200
		ELIZABETH CONGLOMERATE 23 - 28		24	86523	3.0	45	130	30	300
		Gravel of quartzite & BIF pebbles		27	86524	1.0	40	100	30	300
				28						
		END HOLE.								
		N.B. Hole abandoned because of caving in of soft sandstone & loose gravel from surface.								
		Samples from 8 m - 28 m contaminated c̄ approx. 25% gravel fall back.								

PACMINEX PTY. LTD.

HOLE No. EX 87

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 20-3-74 | COMPLETED: 20-3-74 | 0144

LOCATION: "PANDURRA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 3m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: K.J.M. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
		SILCRETE & SAND 0 - 3.		////	86525	3.0	30	50	50		
		END OF HOLE									
		N.B. Abandoned because unable to penetrate tough silcrete.									

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HOLE No. EX 88

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PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	21 - 3 - 74	COMPLETED:	21 - 3 - 74
LOCATION:	"PANDURRA"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 0145
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANNAN
LOGGED BY: D.G.T.	DATE: 23-5-74 BIT SIZE: 121 mm	TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SANDY CLAY & GRAVEL 0 - 3		0					
		MAGAZINE HILL CLAY 3 - 6		3	86526	3.0	20	50	45
		Greenish/grey, gypseous, sandy + sandy clay		6	527	"	15	40	30
		"WOOMALLA" (SHALE) 6 - 17		9	528	"	70	200	75
		6-9 Ferruginous shale, red/brown & ochres, soft/brittle		12	529	"	110	200	90
		9-12 Mustard & brown, laminated. Soft. Sectile. Some clay.		15	530	"	80	70	130
		12-15 Lt. grey & mustard. Clay/shale. V. soft.		18	531	"	100	40	80
		15-17 Apple Green shale, V. soft.		21	532	"	70	50	65
		"ELIZABETH C.K. CONGLOM" 17-63		24	533	"	130	40	65
		17-18: S.S., silicified, purplish, fine. Pink lithics.		27	534	"	45	40	40
		18-21: S.S./conglom. Coarse S.S. c̄ 1 cm pebbles of		30	535	"	50	40	50
		Gawler Volc., jasper & acid plutonic. White clay matrix.		33	536	"	60	30	55
		21-24: Shale, soft, grey, laminated. Pebbles Volc 1-12mm		36	537	"	70	20	50
		24-30: S.S. green, fine, c̄ pink lithics. Shale laminae. Pebbles		39	538	"	20	40	45
		30-36: S.S., green, fine, abund. red lithics. Weakly calcareous		42	539	"	20	40	40
		36-45: SS./conglom. 20% pebbles up to 1 cm of		45	540	"	30	20	40
		Gawler Volc., Hb granite & quartz.		48	541	"	15	30	45
		45-51: As above, but pebbles > 1 cm.		51	542	"	25	40	50
		51-63: SS./conglom. 1 cm pebbles of Hb granite,		54	543	"	20	30	35
		quartzite, Gawler Volc. & tourmaline qtz. SS. is		57	544	"	35	20	40
		weakly calcareous.		60	545	"	40	20	40
				63	86546	"	20	40	45
		END OF HOLE							

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HOLE No. EX 89

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 21-3-74 | COMPLETED: 21-3-74

LOCATION: "LINCOLN GAP" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 45 m

0146

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: K.J.M. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND & RED CLAY 0 - 4		0	86547	3.0	15	30	30
		SILCRETE 4 - 9		3	548	"	10	20	30
		White siliceous rock		6	549	"	10	60	20
		CLAY 9 - 15		9	550	"	5	40	20
		White, pink & Pale green clay.		12	551	"	5	20	15
		? YUDNAPINNA BEDS : 15 - 23		15	552	"	30	50	10
		Clayey s.s., fine grained, yellow-buff, c̄ shale bands. Rounded qtz grains + 20% PEV & P-pellets		18	553	"	5	<20	15
		MAGAZINE CLAY ? 23 - 29		21	554	"	5	20	45
		Soft grey & grey-green clay, banded + some siltstone bands		24	555	"	10	30	80
		"WOOCALLA" (SHALE & DOLOMITE) 29-45		27	556	"	10	40	40
		29-30: Green-grey & brown dolomitic mudstone & siltstone. Pebble bands c̄ qtz & PEV.		30	557	"	10	40	50
		30-33: As above + high proportion of tough whitish dolomite bands.		33	558	"	140	50	60
		33-45: Dark grey shale c̄ minor dolomite bands.		36	559	"	200	50	90
				39	560	"	60	40	95
				42	86561	"	40	60	75
		END OF HOLE		45					

PACMINEX PTY. LTD.

HOLE No. EX 90

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 21-3-74 | COMPLETED: 21-3-74

LOCATION: "ILLEROO" | CO-ORDS: X: Y: 0147

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 36 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: 26-4-74 | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND GRAVEL & GYPSUM 0-2		0					
		CLAY 2-11		3	86562	3.0	30	40	45
		Gypseous, grey-green, sandy, pebbly		6	563	"	15	40	55
				9	564	"	20	40	60
		SILCRETE 11-13		12	565	"	20	50	60
		MAGAZINE HILL CLAY 13-20		15	566	"	40	360	45
		13-15 Crisp green white, sandy, micaceous		18	567	"	80	120	60
		15-20 Soft green red, silty.		21	568	"	750	70	260
		ELIZABETH CREEK CONGLOM. 20-28		24	569	"	260	60	90
		20-21 Khaki clayey s.s. & pebbles 1-2 cm. Clay.		27	570	"	330	120	90
		21-28 Khaki brown/green Pebbly s.s. Clay-rich		30	571	"	140	40	70
		GAWLER RANGE VOLCANICS 28-36		33	572	"	80	40	100
		Purple and acid volcanics.		36	86573	"	80	40	100
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 91

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0148

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 21-3-74 | COMPLETED: 21-3-74

LOCATION: "ILLEROO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 3 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: K. J.M. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
		CLAY GRAVEL & SILCRETE		0 / 3	86594	3.0	30	40	75		
		HOLE ABANDONED									
		Silcrete too hard to penetrate.									

PACMINEX PTY. LTD.

HOLE No. EX 92

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 22-3-74 | COMPLETED: 22-3-74 | 0149

LOCATION: "MYAAL CREEK" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 27 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND & GRAVEL 0 - 4		0					
				3	86575	3.0	20	40	50
				6	576	"	5	40	20
		GAWLER RANGE VOLCANICS 4-27		9	577	"	10	30	25
		4-9 Weathered volcanic clay - beige		12	578	"	10	20	50
		9-12 As above - buff		15	579	"	20	20	90
		12-15 Weathered volcanic - straw		18	580	"	20	20	140
		15-27 Purple-brown porphyritic acid volcanic		21	581	"	10	30	120
				24	582	"	10	20	140
				27	86583	"	20	20	140
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 93

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 22 - 3 - 74 | COMPLETED: 22 - 3 - 74

LOCATION: "CARRIEWERROO" | CO-ORDS: X: Y: 0150

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 42 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANNON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		TREGOLANA SHALE 0 - 42		0					
		0 - 17 Chocolate shale, soft, micaceous cleavage. Minor greenish-grey fine S.S. bands, widening with depth & harder.		3	86584	3.0	10	40	70
				6	585	"	10	50	65
				9	586	"	15	30	70
				12	587	"	10	40	60
				15	588	"	15	40	50
		17 - 20 S.S., fine grained, green-grey silicified, hard.		18	589	"	15	30	65
				21	590	"	20	20	30
				24	591	"	15	40	45
		20 - 33 Chocolate shale, micaceous, + minor S.S. bands		27	592	"	10	40	40
				30	593	"	20	40	35
		33 - 42 Sandstone, v fine grained fine grey, silicified in hard Pink/thic grains. Then white S.S. + buff matrix. Hard Pink?		33	594	"	30	60	60
				36	595	"	150	20	30
				39	596	"	210	40	30
				42	86597	"	130	30	30
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 94

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0151

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	22 - 3 - 74	COMPLETED:	22 - 3 - 74
LOCATION:	"CARRICWERLOO"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 78 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT Soil clay gypsum silcrete gravel		0					
		SILICIFIED SANDSTONE 3 - 9		3	86598	3.0	25	70	60
		Pink & white f.g silicified s.s. or siltstone		6	599	"	15	40	30
		TREBOLANA SHALE 9 - 78		9	600	"	15	30	30
		9 - 12 : Red-brown shale, soft, limonite bands		12	601	"	15	50	35
		12 - 18 : Mudstone, yellow & brown		15	602	"	20	50	45
		18 - 21 : Mudstone, chocolate & lt. brown		18	603	"	10	40	45
		21 - 24 : Mudstone red-brown & yellow		21	604	"	20	30	50
		24 - 27 : m.s., greenish, brown & dark brown		24	605	"	15	40	60
		27 - 30 : m.s., brown & grey-brown		27	606	"	20	40	80
		30 - 33 : m.s., light grey, friable		30	607	"	10	50	120
		33 - 39 : m.s., light brown-grey, friable soft		33	608	"	20	50	90
		39 - 42 : m.s., brown & grey, soft		36	609	"	10	40	85
		42 - 45 : shale, grey & brown		39	610	"	20	50	80
		45 - 57 : shale, chocolate + minor thin s.s. or		42	611	"	15	50	80
		siltstone bands (hard)		45	612	"	20	40	80
		57 - 66 : S.S., very fine grained, green & grey,		48	613	"	10	50	80
		+ minor choc. shale. Hard.		51	614	"	20	50	80
				54	615	"	20	60	70
		66 - 78 : S.S., grey-green, fine, c. pink		57	616	"	20	30	75
		lithic grains; fine green s.s., brown		60	617	"	30	40	70
		shaley siltstone; green & brown shale.		63	618	"	30	40	65
				66	619	"	20	30	70
				69	620	"	20	30	60
				72	621	"	20	40	55
				75	622	"	25	30	50
				78	86623	"	15	40	45
		END OF HOLE							

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0152

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	23 - 3 - 74	COMPLETED:	23 - 3 - 74
LOCATION:	"CARRIEWERRUC"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 35 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm. TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL + SILCRETE 0 - 4		0					
		SILICIFIED SANDSTONE 4 - 10		3	86624	3.0	30	40	40
		White & pink s.s. larger grains well rounded		6	625	"	30	20	20
		MAGAZINE HILL CLAY 10 - 21		9	626	"	25	<20	20
		10 - 15 : Pale green, soft clay		12	627	"	25	40	20
		15 - 18 : Pale green & pink clay		15	628	"	30	80	25
		18 - 21 : Yellow - Khaki clay		18	629	"	30	80	30
		WOOCARRA (BLACK SHALE) 21 - 30.5		21	630	"	400	150	310
		21 - 24 : Soft grey shale		24	631	"	40	130	290
		24 - 30.5 : Soft grey calcareous shale.		27	632	"	80	1800	800
		WOOCARRA (DOLOMITE) 30.5 - 32.5		30	633	"	470	800	320
		Hard grey dolomitic limestone		33	634	"	250	140	110
		GAWLER RANGE VOLCANICS 32.5 - 35		35	86635	2.0	40	90	70
		Purple - brown volcanic							
		END OF HOLE							

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0153

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	23-3-74	COMPLETED:	23-3-74
LOCATION:	"CARRIEWERLOO"	CO-ORDS: X:	Y:
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 60 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: G. SCANLON
LOGGED BY:	D.G.T. DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	V
		SAND + GRAVEL 0 - 4		0						
		SILICIFIED SANDSTONE 4 - 10		3	86636	3.0	60	50	60	
				6	637	"	45	20	40	
				9	638	"	20	30	20	
		?"YUDNAPINNA BEDS" : 10 - 39		12	639	"	25	20	15	
		10-27: Clayey s.s., greenish white		15	640	"	15	20	15	
		qtz. + pink lithic grains in white matrix		18	641	"	10	30	20	
		Well rounded pink lithics at base.		21	642	"	10	20	20	
				24	643	"	10	40	35	
		27-39: Clayey s.s., Grey, ± Gawler volc.		27	644	"	15	20	40	
		pebbles upto 10% by vol. from 10 -	FeS	30	645	"	10	40	70	
		15 m.m.	FeS	33	646	"	10	40	50	
		Sulphide ≈ 3% from 27-30, ≈ 0.5%		36	647	"	5	30	55	
		30 - 33.		39	648	"	500	70	80	
		WOOCARRA (BLACK SHALE) 39 - 56		42	649	"	600	60	120	
		39-42: Soft grey shale		45	650	"	65	90	130	
		42-56: Laminated grey calcareous		48	651	"	60	100	90	
		shale.		51	652	"	65	70	100	
		54 m: Water Table. Salty.		54	653	"	95	60	90	
		Thin band dolomitic limestone + FeS at base.		57	654	"	2000	70	60	300
		"ELIZABETH CK. CONGLOM." 56 - 60		60	86655	"	180	40	25	100
		Deep. rust-red gravel of Gawler volc. pebbles up								
		to 2cm. + minor milky + smoky qtz pebbles.								
		END OF HOLE								

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0154

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 23-3-74 | COMPLETED: 23-3-74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 17 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600		SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
					0					
		SOIL SILCRETE GRAVEL CLAY GYPSUM			3	86656	3·0	20	60	100
		CLAY 3 – 12			6	657	"	15	50	120
		Puggy green yellow & mustard clay			9	658	"	30	80	210
		& green flecks. Probably weathered volcanic.			12	659	"	20	50	220
		GAWLER RANGE VOLCANICS 12 – 17			15	660	"	10	60	220
		Dark green – grey volcanic			17	86 661	2·0	35	60	150
		END OF HOLE								

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0155

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 25 - 3 - 74 | COMPLETED: 25 - 3 - 74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 54 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
		SOIL GRAVEL & GYPSUM 0 - 1		0					
		WOOCARRA (BLACK SHALE) 1 - 53		3	86662	3.0	55	50	80
		1 - 10 : Soft yellow brown shale		6	663	"	110	50	110
				9	664	"	30	80	100
		10 - 15 : Grey & khaki green shale		12	665	"	55	60	75
				15	666	"	45	60	80
		15 - 30 : Grey shale		18	667	"	20	50	75
				21	668	"	20	70	70
				24	669	"	100	70	70
		30 - 33 : Grey calcareous (weakly) shale		27	670	"	45	80	45
		33 - 39 : Dark grey, brittle, slaty shale.		30	671	"	30	80	40
		36 m : Water table. Salty.		33	672	"	60	140	60
		39 - 42 : Dark grey slaty shale & grey, soft		36	673	"	170	130	60
		calcareous shale.		39	674	"	110	100	40
		42 - 53 : Grey, soft, calcareous shale.		42	675	"	110	100	55
				45	676	"	65	80	75
				48	677	"	40	90	80
		PANDURRA FM. 53 - 54		51	678	"	75	80	90
		Hard Pink quartzite		54	86679	"	90	70	70
		END OF HOLE							

PACMINEX PTY. LTD.

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0156

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 26·3·74 | COMPLETED: 26-3·74

LOCATION: "MYAAL CREEK" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 64 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL GRAVEL GYPSUM 0-3		0					
		WOOCALLA (BLACK SHALE) 3 - 57.5		3	86680	3.0	50	40	40
		3 - 13 : Weathered shale - soft, yellow, brown & grey clay or shale.		6	681	"	80	50	40
				9	682	"	160	60	140
				12	683	"	160	60	160
				15	684	"	40	60	150
		13 - 42 : Shale - grey, calcareous, soft.		18	685	"	45	40	100
				21	686	"	30	50	70
				24	687	"	30	80	70
				27	688	"	45	60	55
				30	689	"	35	80	50
				33	690	"	50	120	70
				36	691	"	50	100	65
				39	692	"	50	100	75
		42 m : Water table V. Salty.		42	693	"	95	140	85
				45	694	"	110	90	50
		42 - 48 : Shale - brittle, slaty, black.		48	695	"	120	120	25
				51	696	"	120	120	45
		48 - 57.5 : Shale - grey, calcareous, soft.		54	697	"	75	70	85
				57	698	"	260	80	65
		PANDURRA FORMATION 57.5 - 64		60	699	"	500	60	60
		57 - 60 : Red S.S. & Sandstone Volc. pebbles & Pyrite chips	Fes.	64	86700	4.0	120	40	40
		60 - 64 : Red/pink quartzose s.s. & volc. pebbles otr. fes.							
		END OF HOLE							
		Estimated water flow 800 galls./hr.							

PACMINEX PTY. LTD.

HOLE No. EX 100

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 26-3-74 | COMPLETED: 26-3-74 | 0157

LOCATION: "MYALL CREEK" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 9 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND SOIL GRAVEL 0-3		0	86701	3.0	20	30	45
		GAWLER RANGE VOLCANICS 3-9		3	702	"	10	40	120
		Weathered, purple/orange Agate.		6	86703	"	10	40	130
				9					
		END OF HOLE							

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0158

PROJECT AREA: PANDURRA
PROJECT No. 405
SPUDDED: 26.3.74
COMPLETED: 26.3.74
LOCATION: "CARRIEWERRNO"
CO-ORDS: X: Y:
ELEVATION: DIRECTION: V INCLINATION: V TOTAL DEPTH: 46.5 m.
HOLE TYPE: ROTARY DRILLING CONTRACTOR: THOMSON DRILLER: G. SCANLON
LOGGED BY: D.G.T. DATE: BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	V
		GRAVEL CLAY GYPSUM 0 - 3		0						
		SANDSTONE (PANDURRA FM.?) 3 - 45		3	86704	3.0	30	40	65	
		3-6 Silcrete + silicified s.s.		6	705	"	10	20	20	
		6-9 Friable pink/purple s.s. Appearance Punka		9	706	"	15	40	20	
		9-15 Varicoloured friable s.s. Rounded, clay-coated grains.		12	707	"	10	30	20	
		15-24 Violet friable s.s. Larger (up to 4mm) grains rounded. Pink lithic grains.		15	708	"	10	30	20	
		24-30 Coarse purple grains in grey groundmass. Tr. of heavy mineral		18	709	"	10	20	15	
		30-45 Pink qz. grains in grey groundmass. Friable. Coarse.		21	710	"	5	<20	15	
				24	711	"	10	20	25	
				27	712	"	35	20	20	
				30	713	"	10	20	20	
				33	714	"	10	20	30	
				36	715	"	10	20	20	
				39	716	"	10	20	30	
				42	717	"	10	20	25	
		42-45 Good trace pyrite. Grey	Py.	45	718	"	20	30	20	
		CONGLOMERATE (PANDURRA FM.?) 45-46.5	Py.	46.5	86719	1.5	30	40	20	200
		Fine (5mm) white-s/2-pebble conglom. Pink/brown very hard. Good trace pyrite in 2-3mm chips.								
		Water table.								
		END OF HOLE								

		U_3O_8 PPL	Cu PPL	Zn PPL	TDS %	pH
46m	WATER SAMPLE	10	<10	<10	4.27	7.0

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HOLE No. EX 102

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 27-3-74 | COMPLETED: 27-3-74 | 0159

LOCATION: "CARRIEWERROO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 15 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLAN

LOGGED BY: D.A.T. DATE: | BIT SIZE: 121 mm. TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND CLAY GRAVEL 0-6		0					
				3	86720	3.0	20	40	40
				6	721	"	20	40	40
		PANDURRA FORMATION 6-15		9	722	"	20	20	30
		6-9 Weathered Pandurra?		12	723	"	15	30	20
		9-15 Red coarse grite & white mottled hard		15	86724	"	20	30	25
		END OF HOLE							

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HOLE No. EX 103

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 27 - 3 - 74 | COMPLETED: 27 - 3 - 74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y: 0160

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 33 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE ppm Cu	Pb	Zn
		SOIL GRAVEL 0 - 3		0					
		CLAY Greenish 3 - 6		3	86725	3.0	35	40	50
		WOOCARRA (BLACK SHALE) 6 - 33		6	726	"	60	50	40
		6 - 9 Yellow		9	727	"	200	50	160
		9 - 12 Khaki		12	728	"	40	40	100
		12 - 15 Khaki grading to grey		15	729	"	35	50	70
		15 - 33 Grey shale.		18	730	"	50	40	70
				21	731	"	40	50	70
				24	732	"	30	50	70
				27	733	"	40	60	45
				30	734	"	35	50	50
				33	86735	"	80	110	60
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 104

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 27-3-74 | COMPLETED: 27-3-74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 31 0161

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE ppm. Cu	Pb	Zn
		SOIL 0 - 3		0					
		GRAVEL & CLAY 3 - 6		3	86736	3.0	40	40	60
		WOOCARRA (BLACK SHALE) 6 - 31		6	737	"	40	60	60
		6-9 yellowe brown clay/shale		9	738	"	75	40	70
		9-12 Khaki green shale		12	739	"	15	40	85
		12-31 Grey shale.		15	740	"	90	60	70
				18	741	"	30	60	50
				21	742	"	45	60	60
				24	743	"	180	420	90
				27	744	"	120	80	40
				31	86745	4.0	120	100	25
		END HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 105

PAGE 1 OF 1

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 27-3-74 | COMPLETED: 27-3-74

LOCATION: "CAMARIEWERALOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 18m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE ppm Cu	Pb	Zn
		SOIL & GRAVEL 0-5		0					
		V. well rounded, mainly quartz pebbles		3	86746	3.0	25	40	45
		CLAY (Weathered volcanic) 5-9		6	747	"	25	20	25
		GAWLER RANGE VOLCANICS 9-18		9	748	"	25	40	25
		Fawn, porphyritic volcanic.		12	749	"	20	50	25
		Hard.		15	750	"	20	30	40
				18	86751	"	15	30	30
		END OF HOLE							

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PACMINEX PTY. LTD.

HOLE No. EX 106

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0163

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 28 - 3 - 74 | COMPLETED: 28 - 3 - 74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 18m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE ppm Cu	Pb	Zn
		SAND 0 - 3		0					
		SILCRETE 3 - 9		3	86752	3.0	10	30	30
		Off-white. Poss. altered volcanic.		6	753	"	5	20	20
		CLAY (Weathered volcanic) 9 - 12		9	754	"	5	20	20
		GAWLER RANGE VOLCANICS 12 - 18		12	755	"	10	40	25
		12 - 15 White clay & weathered orange volcanic		15	756	"	5	40	20
		15 - 18 Orange/purple porphyritic volcanic		18	86757	"	5	30	20
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 107

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 28-3-74 | COMPLETED: 28-3-74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: | Y: 0164

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 33 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND CLAY GYPSUM 0 - 3		0					
		GRAVEL		3	86758	3.0	25	40	50
		SANDSTONE Soft yellow 7 - 10		6	759	"	10	30	30
		SILCRETE/FERRICRETE 10 - 12		9	760	"	15	20	25
		CLAY 12 - 30		12	761	"	10	20	20
		12 - 18 White, then varicoloured silicified clay chips.		15	762	"	5	20	15
		18 - 30 Green clay & white kaolin phenocrysts		18	763	"	10	30	40
		Weathered volcanic. Green mafic		21	764	"	5	40	50
		phenocrysts.		24	765	"	<2	30	65
				27	766	"	<2	50	60
				30	767	"	5	60	60
		GAWLER RANGE VOLCANICS 30 - 33		33	86768	"	<2	30	60
		Green & purple weathered volcanic							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 108

PAGE: 1 OF 1

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 28.3.74 | COMPLETED: 28.3.74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: Y: 0165

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 33 m.

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND & SANDY CLAY 0 – 6		0					
		SILCRETE 6 – 7.5		3	86769	3.0	20	30	50
		CLAY (weathered volcanic) 7.5 – 9		6	770	"	10	30	35
		GAWLER RANGE VOLCANICS 9 – 33		9	771	"	10	20	30
				12	772	"	5	20	20
		9 – 18 white, weathered volcanic		15	773	"	5	60	40
				18	774	"	10	40	45
		18 – 33 Orange-pink, weathered volcanic.		21	775	"	10	40	35
				24	776	"	5	40	55
				27	777	"	10	40	50
		Hard at 33m.		30	778	"	10	40	40
				33	86779	"	10	30	55
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 109

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 28.3.74 | COMPLETED: 29.3.74 | 0166

LOCATION: "CARRIEWERRA" | CO-ORDS: X: | Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 77 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE PPM Cu	Pb	Zn
		GRAVEL & SOIL 0 - 3		0					
		PANDURRA FORMATION: 3 - 77		3	86780	3.0	25	40	45
		3 - 39 Purple qtz. grains, not well rounded, in white clay matrix. Soft at first, becoming hard at 12 m. Cuttings have appearance of Pandurra Formation (Poss. reworked?)		6	781	"	10	40	20
				9	782	"	10	50	60
				12	783	"	10	20	20
				15	784	"	40	30	40
				18	785	"	10	20	20
				21	786	"	25	20	30
				24	787	"	10	20	20
				27	788	"	15	<20	20
		39 Water table.		30	789	"	20	20	15
		39 - 48 Coarse grained s.s. with red matrix. Hard.		33	790	"	20	20	25
				36	791	"	10	20	20
		48 - 66 Fine grained, c̄ red matrix, pink grains. Hard. (Possibly reworked Pandurra Fm?)		39	792	"	10	30	30
				42	793	"	20	20	20
				45	794	"	15	30	30
				48	795	"	15	20	30
				51	796	"	20	20	30
				54	797	"	10	30	30
				57	798	"	15	20	30
				60	799	"	15	30	30
		66 - 77 Fine grained, c̄ red matrix & Pink grains. Some green shale bands. Very hard. (Possibly reworked Pandurra Fm?)		63	800	"	20	30	25
				66	801	"	10	30	25
				69	802	"	20	30	30
				72	803	"	20	30	35
				75	804	"	15	40	30
				77	86805	2.0	50	40	20
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 110

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0167

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 29 · 3 · 74 | COMPLETED: 30 · 3 · 74

LOCATION: " CARRIEWERROO " | CO-ORDS: X: Y:

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 72 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: G. SCANLON

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 124 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL & GRAVEL 0 – 2		0	86 806	3·0	20	60	40
		SILCRETE 2 – 4		3	807	"	10	30	20
		PANDURRA FM: 4 – 72		6	808	"	10	20	30
		4 – 12 Friable white s.s.		9	809	"	5	20	20
				12	810	"	10	20	30
		12 – 20 Friable pink/purple s.s.		15	811	"	15	20	25
		Harder at 20 m. (Poss.		18	812	"	10	20	25
		reworked Pandurra Fm.?).		21	813	"	20	20	25
		20 – 24 Very coarse qtz. grains in		24	814	"	<2	20	20
		pink purple matrix.		27	815	"	10	20	40
				30	816	"	10	20	20
		24 – 51 Coarse qtz. in purplish		33	817	"	15	20	30
		matrix. Some patches of		36	818	"	10	20	20
		white matrix. From 36 m		39	819	"	10	20	25
		matrix redder, & c̄ greenish		42	820	"	10	20	20
		patches. Reasonably soft.		45	821	"	10	20	25
		(Poss. reworked Pandurra Fm.)		48	822	"	15	20	30
		51 m. Water table. Matrix becomes		51	823	"	15	20	25
		red.		54	824	"	10	20	35
		51 – 63 Red & white subrounded qtz. +		57	825	"	15	20	30
		good trace of Heavy mineral.		60	826	"	5	30	30
		63 – 72 As above + green shale in thin		63	827	"	20	20	30
		bands. Harder.		66	828	"	20	20	25
				69					
				72	86 829	"			
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 111

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 5.6.74 | COMPLETED: 6.6.74 | 0168

LOCATION: "CORRABERRA" | CO-ORDS: X: 561 E Y: 1000 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 60 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SOIL CLAY 0 - 3		0					
		WILYALLA SANDSTONE 3 - 25.5		3					
		3-9 Fine gr. qtz. s.s., clayey, white, soft		6	86830	3.0	15	20	20
		9-21 Fine gr. qtz. s.s., silicified, white, hard		9	831	·	25	20	15
		Some coarser grains below 15 m.		12	832	·	20	20	10
		Making Water from 10 m.		15	833	·	25	20	15
		21-24 Grey-green fine silicic. s.s. c̄ coarse		18	834	·	25	20	10
		lithic grains (up to 5mm).		21	835	·	30	20	15
		24-25.5 Grey, c̄ rounded lithics (volcanic) to 5mm		24	836	·	15	20	15
		YUDNAPINNA SILTSTONE 25.5-52		27	837	·	15	20	40
		25.5 - 27 Grey siltstone. Soft.		30	838	·	20	20	40
		27 - 30 Grey/green & some silicif. weakly calc.		33	839	·	10	20	35
		30 - 33 Grey/green & red/brown calc. siltst.		36	840	·	10	30	30
		c̄ orange volcanic grains 1-3mm		39	841	·	10	30	40
		33 - 52 Red/brown & green calcareous		42	842	·	10	30	30
		siltstone.		45	843	·	10	20	30
				48	844	·	10	20	20
				51	845	·	10	30	30
		WOOCALLA (DOLOMITIC BLACK SHALE)		54	846	·	340	50	45
		52-54 White pyritic dolomite & grey carb. shale		57	847	·	110	40	60
		54-60 Grey dolomitic shale.		60	86848	·	45	40	45
		END OF HOLE							
					T.D.S.		Cu	Pb	Zn
			46 m	WATER SAMPLE	2.94		8	45	16
					%		ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX 112

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 6.6.74 | COMPLETED: 6.6.74

LOCATION: "CORRAGERRA" | CO-ORDS: X: 561 E Y: 1001 N

0169

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 57 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE ppm Cu	Pb	Zn
		SOIL SAND + SILCRETE SCREE 0-5		0					
		SILCRETE (Silcreted whyalla S.S.) 5-8		3	86849	3.0	20	40	20
		WHYALLA SANDSTONE 8-15		6	850	"	10	30	15
		Friable off white S.S. c̄ largest pink lithic grains		9	851	"	10	20	20
		Buff S.S. c̄ pink lithics + green clay.		12	852	"	10	20	20
		'YUDNAPINNA SILTSTONE' 15-43.5		15	853	"	15	20	20
		15-26 Sandy green clay. Sparse qtz. + pink grains in greenish clayey matrix. Yellowish + grey bands.		18	854	"	15	20	20
				21	855	"	20	20	20
				24	856	"	20	20	20
				27	857	"	45	30	25
				30	858	"	10	20	35
		26-30 Grey sandy clay. V. finely divided sulphides	Py.	33	859	"	10	20	40
		30-42 Green silty clay c̄ pink lithic grains up to 3mm.		36	860	"	10	20	25
				39	861	"	15	20	35
		42-43.5 Green siltstone. Water table.		42	862	"	10	30	30
		WOOCARRA (DOLOMITE + BLACK SHALE) 43.5-51		45	863	"	170	50	30
		43.5-46 Lt. grey, hard dolomite		48	864	"	80	30	40
		46-51 Grey shale. Salty water.		51	86865	"	60	50	40
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 113

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 7-6-74 | COMPLETED: 7-6-74 | 0170

LOCATION: "CARRIEWERLOU" | CO-ORDS: X: 541 E Y: 993 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 20.7 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RECENT Orange-red clay & gravel		0	86866	3.0	30	40	45
		SILCRETE 4.5 – 6		3	867	"	15	30	20
		SANDSTONE Silicified lithic Ss + sypsum		6	868	"	15	30	10
		MAGAZINE HILL CLAY 9 – 16		9	869	"	40	60	20
		Pale green laminated clay		12	870	"	55	220	20
		GAWLER RANGE VOLCANICS 16 – 20.7		15	871	"	40	1300	10
		Brick red weathered volcanic. Hard.		18	86872	2.7	20	740	10
				20.7					
		END OF HOLE							

PACMINEX PTY. LTD.

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0171

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8 - 6 - 74 | COMPLETED: 8 - 6 - 74

LOCATION: " CARRIEWERLOO " | CO-ORDS: X: 541 E Y: 994 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 18 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL 0 - 1		0					
		SILCRETE / FERRICRETE 1 - 5		3	86873	3.0	20	40	40
		MAGAZINE HILL CLAY 5 - 14		6	874	"	25	40	15
		Soft, pale green, brittle, sandy at 1st, no relict texture		9	875	"	75	120	20
		Soft, pale green, tends to shiny cleavage 9 - 14		12	876	"	120	2800	20
		GAWLER RANGE VOLCANICS 14 - 18		15	877	"	85	720	20
		Red-brown acid volcanic, weathered at 1st, Hard.		18	86878	"	50	160	20
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 115

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0172

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8.6.74 | COMPLETED: 8.6.74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 539 E Y: 993 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 45 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm. TO Roller Bit TO 6m ; Blade Bit TO 45 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
		SOIL 0 – 1		0					
		SILCRETE 1 – 6		3	86879	3.0	10	30	20
		PANDURRA FM. 6 – 23		6	880	"	10	20	25
		Quartzose Sandstone, buff colour,		9	881	"	10	20	25
		high % of Gawler Volcanic grains		12	882	"	10	20	20
		ranging from 1-8 mm diam.		15	883	"	10	20	15
				18	884	"	10	20	20
				21	885	"	10	30	15
				24	886	"	15	30	30
		GAWLER RANGE VOLCANICS 23-45		27	887	"	10	20	45
		Red volcanic at 1st. Then buff.		30	888	"	10	20	75
		24-27 Pink volc. frags coated c whiteclay		33	889	"	10	20	70
		27-30 Buff then grey acid volc. frags.		36	890	"	10	30	70
		30-39 Grey aphanitic volcanic		39	891	"	5	20	65
		39-42 Grey, then purple/brown porphyritic volc.		42	892	"	5	30	45
		42-45 Purple/brown acid volcanic.		45	86893	"	5	20	45
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 116

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0173

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 8.6.74 | COMPLETED: 10.6.74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 538 E Y: 997 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 10 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		PANDURRA FM. 0 – 10		0					
		0 – 3 Fe stained weathered quartzite.		3	86 894	3.0	10	30	20
		3 – 6 Red quartzite, hard.		6	895	3.0	10	20	20
		6 – 10 Red quartzite. Very hard, Fresh.		10	86 896	4.0	15	30	15
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 117

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0174

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10.6.74 | COMPLETED: 10.6.74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 540 E Y: 999 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 44 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. ~~TO~~ Blade TO 44 m. Roller TO 44 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RED CLAY, SAND, CARCRETE 0-6		0					
				3	86897	3.0	15	30	35
				6	898	"	10	20	25
		WEATHERED SANDSTONE ? 6-18		9	899	"	10	20	15
		Red to buff sand. White grains +		12	900	"	10	20	15
		red-coated grains Probably a		15	901	"	5	20	10
		decomposed (?whyalla) Sandstone.		18	902	"	10	20	10
		WHYALLA SANDSTONE 18-39		21	903	"	5	20	10
		18-21 Friable S.S., off-white, some pink grains		24	904	"	10	20	15
		21-27 Lt grey S.S. & grey sandy claystone		27	905	"	10	20	10
		27-36 Friable yellow S.S. & subangular to		30	906	"	10	20	15
		rounded grains, coarser with depth.		33	907	"	10	20	10
		36-39 Lithic S.S., coarse, yellow. Pebbles		36	908	"	10	20	10
		up to ½ cm.		39	909	"	10	20	10
		SANDSTONE/CONGLOMERATE 39-44		42	910	"	35	20	15
		White qtz pebbles 8mm. Pandurra + Gawler pebbles		44	86911	2.0	30	20	15
		PANDURRA FM. 44m. Red quartzite							
		END OF HOLE							
					T.D.S.		Cu	Pb	Zn
				WATER SAMPLE	1.83		15	250	4
					%		ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX 118

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0175

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10 · 6 · 74 | COMPLETED: 11 · 6 · 74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 541 E Y: 997 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 36 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND CLAY GRAVEL 0 – 4.5		0					
				3	86912	3.0	15	30	25
				6	913	"	10	20	20
		SINCRETE Fe.-rich 7.5 – 9.0		9	914	"	20	30	20
		WILYAKALI SANDSTONE 9 – 21		12	915	"	15	20	20
		Clayey S.S., coarse, poorly sorted.		15	916	"	10	30	10
		Pebbles up to 1 cm. include Pandurra Fm.,		18	917	"	15	30	10
		Gneiss Volc., chert. White clay matrix Bundsilt		21	918	"	20	30	10
		MAGAZINE HILL CLAY 21 – 31.5		24	919	"	60	760	15
		21 – 24 Soft pale green clay.		27	920	"	70	740	20
		24 – 27 Green & minor red Puggy soft clay		30	921	"	170	1100	25
		27 – 31.5 Soft Puggy red + green clay		33	922	"	145	1100	40
		PANDURRA FORMATION 31.5 – 36		36	86923	"	45	190	15
		Hard, red quartzite.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 119

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0176

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11·6·74 | COMPLETED: 11·6·74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 536 E Y: 1005 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 18 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT Gravel & red clay		0	86924	3·0	20	40	35
		Gravel sand clay & gypsum		3	925	"	10	30	20
		SILCRETE		6	926	"	10	30	10
		CLAYEY SANDSTONE 9 – 17·75		9	927	"	10	20	15
		9–10·5 Pink sand		12	928	"	10	20	10
		10·5 – 12 Khaki, clayey, soft sandst.		15	86929	"	15	30	10
		12–15 Yellow, white & brown clayey s.s Soft		18					
		15–17·75 Yellow clayey s.s. (Coarse gr.)							
		PANDURRA FM 17·75 – 18·0							
		V. Hard Pink quartzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 120

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0177

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 11 · 6 · 74 | COMPLETED: 12 · 6 · 74

LOCATION: " CARRIEWERROO " | CO-ORDS: X: 535 E Y: 1009 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 27 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND SOIL GRAVEL 0 – 3		0					
		CLAYEY SANDSTONE 3 – 13·5		3	86930	3·0	20	30	25
		3–6 Beige clayey s.s. + gypsum		6	931	"	15	20	15
		6 – 12 Beige & white sticky s.s. Some pink coated grains		9	932	"	10	20	20
		12 – 13·5 Yellowish soft fine s.s.		12	933	"	10	40	20
		YUDNAPINNA BEDS ? : 13·5 – 27		15	934	"	10	30	30
		13·5 – 21 Clayey Siltstone. Soft grey		18	935	"	10	20	75
		& brown weathered siltstone.		21	936	"	15	30	60
		21 – 27 Siltstone Grey + green. Minor		24	937	"	10	20	30
		pink grains. Pois. trace Fes. Minor		27	86938	"	10	30	20
		red/brown w'ashly C.L. sil'st. 24–27							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. Ex 121

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0178

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 · 6 · 74 | COMPLETED: 12 · 6 · 74

LOCATION: " CARRIEWERLOO " | CO-ORDS: X: 531 E Y: 1011 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 48 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT: 0-3 Red gypseous clay		0	86939	3·0	20	30	45
		3-6 Coarse rounded gravel & sand		3	940	"	15	20	25
		YUDNAPINNA BEDS ? : 6 - 48		6	941	"	10	30	10
		6-9: Decomp. S.S. white, clay rich		9	942	"	10	20	20
		9-12: Clayey s.s., mustard & beige, soft.		12	943	"	10	20	10
		12-15: clayey lithic s.s., mustard & white.		15	944	"	15	20	20
		15-18: Qztse. S.S., friable, yellow.		18	945	"	15	20	25
		18-24: Qztse. Coarse S.S. grains to 5mm. yellow		21	946	"	10	20	10
		24m: Water table.		24	947	"	10	20	10
		24-27: Clayey s.s., buff.		27	948	"	10	20	10
		27-30: Clayey S.S., beige.		30	949	"	10	20	10
		30-48: Clayey S.S., greenish - white		33	950	"	10	20	15
		qtz. grains in green mud matrix.		36	951	"	10	20	10
				39	952	"	10	20	15
				42	953	"	10	20	15
		48m: Hole Abandoned ∵ cave-in of S.S.		45	86954	"	15	20	15
				48					
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 122

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12 · 6 · 74 | COMPLETED: 13 · 6 · 74 | 0179

LOCATION: " CARRIEWERLOO" | CO-ORDS: X: 532 E Y: 1009 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 28 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND & GRAVEL 0 - 3		0	86955	3.0	15	20	20
		SANDSTONE RUBBLE 3 - 9		3	956	"	15	20	20
		Dz. S.S., off-white pieces.		6	957	"	15	30	10
		CLAY 9 - 15		9	958	"	15	20	20
		Platy clay, mainly pale green, some pink, fawn.		12	959	"	15	20	10
		CLAY, SILTY CLAY & SILT 15 - 27		15	960	"	15	20	10
		White, yellow, mustard & brown interbanded		18	961	"	20	20	10
		weathered claystone & siltstone.		21	962	"	25	30	20
		("Yuanalinna Beds"?)		24	963	"	250	30	35
		PANDURRA FM. 27 - 28		27	86964	1.0	250	40	20
		Red quartzite. Hard.		28					
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 123

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13.6.74 | COMPLETED: 13.6.74

LOCATION: "CARRIEWERLOO" | CO-ORDS: X: 530 E Y: 1014 N 0180

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 47 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO Bladebit TO 39 m. Roller TO 47 m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND & GRAVEL 0 - 12		0					
		loose red Sand c̄ minor pebbles		3	86965	3.0	10	20	25
		& large pebbles.		6	966	"	10	20	15
				9	967	"	15	20	20
				12	968	"	30	20	25
		YUDNAPINNA BEDS ? : 12 - 47		15	969	"	20	20	15
		12-21 Yellow silt c̄ subordinate sand grains		18	970	"	20	20	15
		21-24 Buff siltone c̄ minor sand. Sticky		21	971	"	25	20	10
		24-27 Grey-buff, soft, sticky silt.		24	972	"	20	20	15
		27-30 Grey, sticky, sandy silt.		27	973	"	300	20	40
		30-33 Silver grey sandy silt. Pink sand gr.		30	974	"	50	20	20
		33-36 Lt. grey sandy silt.		33	975	"	20	20	60
		36 m Water table.		36	976	"	10	20	20
		36-45 Grey sandy silt. Harder from 39		39	977	"	30	20	25
				42	978	"	20	40	90
				45	979	"	20	20	20
		45-47 Red/brown sandy silt. Weakly Calc. & Hard		47	86980	2.0	25	40	35
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 124

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13 · 6 · 74 | COMPLETED: 14 · 6 · 74 | 0181

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 528 E Y: 1018 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 47 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO Blade TO 47 m. TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL, CALCRETE, SILCRETE 0 - 3		0					
		WHYALLA SANDSTONE 3 - 42		3	86981	3.0	10	20	15
		3-6 Rubble of silicified lithic S.S.		6	982	"	10	20	10
				9	983	"	15	20	30
		6-24 Friable white or off-white		12	984	"	10	20	10
		S.S., often fine grained		15	985	"	15	60	10
		24-27 Friable yellowish SS. + minor		18	986	"	10	30	25
		siltstone.		21	987	"	15	40	65
		27-30 Friable lithic S.S. Well rounded grains		24	988	"	10	20	50
		30-36 Friable yellowish S.S.		27	989	"	10	20	50
				30	990	"	10	20	60
		36-42: V. fine S.S. + grading into		33	991	"	10	20	30
		grey/green siltstone.		36	992	"	10	20	20
				39	993	"	10	20	10
		YUDNAPINNA SILTSTONE 42 - 47		42	994	"	10	20	20
		42-45 Transition fine white SS - grey calc. siltst		45	995	"	25	20	20
		45-47 Grey/green + red/brown calc. siltst. V. Hard.		47	86996	"	25	20	30
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 125

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 14 · 6 · 74 | COMPLETED: 14 · 6 · 74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 525 E Y: 1020 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 17·5 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121mm. TO | Rock Bit TO 17·5 m. | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
				0							
		SOIL SAND & SILCRETE RUBBLE 0-3		3	86997	3·0	15	30	15		
		SILCRETE 3-9		6	998	"	10	20	10		
		Very Hard.		9	999	"	15	20	15		
		PANDURRA FM: 9-17·5		12	87000	"	20	20	10		
		Red quartzite & red/brown		15	97001	"	15	20	10		
		sandstone - quartzite. Very Hard		17·5	97002	2·5	10	20	10		
		END OF HOLE									

PACMINEX PTY. LTD.

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0183

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	14.6.74	COMPLETED:	14.6.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	523 E Y: 1022 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 42 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND 0 – 3		0					
		SAND & GRAVEL 3 – 6		3	97003	3.0	15	20	30
		SANDSTONE (WITYAMA?) 6 – 25		6	004	"	15	20	30
		Soft weathered S.S. Pink & white		9	005	"	10	20	15
		qz. grains in grey to off-white		12	006	"	15	20	15
		matrix		15	007	"	10	20	15
				18	008	"	10	20	30
				21	009	"	10	20	10
				24	010	"	10	20	10
		SANDSTONE (PANDURRA?) 25 – 42		27	011	"	15	30	50
		24 – 36 Brick red to maroon S.S.		30	012	"	10	20	10
		Angular red-coated qz. grains		33	013	"	10	<20	15
				36	014	"	5	<20	10
		39 – 42 Pink coarse S.S. Qtz. grains up		39	015	"	10	<20	10
		to ½ cm. Hard drilling.		42	99016	"	10	<20	10
		END OF HOLE							

PACMINEX PTY. LTD.

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 15.6.74 | COMPLETED: 24.6.74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 524 E Y: 1023 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 64 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO Blade bit TO 64 m TO

0184

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND 0 - 3		0					
		SAND & GRAVEL 3 - 6		3	97017	3.0	15	20	20
		GRAVEL & SILCRETE 6 - 9		6	018	"	15	20	25
		? WHYALLA SANDSTONE: 9 - 50		9	019	"	10	20	15
		9 - 18 Decomposed S.S. Red/orange		12	020	"	5	<20	10
		& angular qz. grains		15	021	"	10	20	10
		18 - 30 Clayey S.S. Pink, quartzose,		18	022	"	10	20	15
		& subangular grains		21	023	"	10	20	15
		30 - 50. Quartzose S.S. Pink, grains		24	024	"	5	20	10
		not well rounded. Grains		27	97025	"	5	<20	10
		appearance of derivation from		29					
		Pandurra Fm.?		32	97033	3.0	10	<20	15
				35	034	"	50	20	30
				38	035	"	10	20	10
				41	036	"	5	20	10
				44	037	"	5	<20	10
				47	038	"	10	<20	15
				50	039	"	10	20	10
		SANDSTONE - 50 - 62		53	040	"	10	20	10
		Coarse S.S. ÷ 2 phases of grains		56	041	"	30	<20	30
		fine fraction: angular qz. grains		59	042	"	10	<20	10
		coarse fraction: smooth milky qtz, minor jasper, 0.5 - 0.75 cm, 2 - ?		62	043	"	10	20	10
		PANDURRA PALEO-REGOLITH 62 - 63.5		64	97044	2.0	10	20	10
		PANDURRA FM: 63.5 - 64							
		Hard, fresh, pink quartzite							
		END OF HOLE							
		NB. Original hole caved-in at 46 m & was redrilled, using mud circulation, & sampling from 29 m.							

PACMINEX PTY. LTD.

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0185

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	24.6.74	COMPLETED:	25.6.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	527 E Y: 1024 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 63 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm. TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND & CLAY 0-8		0					
				3	97045	3.0	15	20	30
				6	046	"	10	<20	15
				9	047	"	15	20	20
		SILCRETE 8 - 12		12	048	"	15	20	15
		CLAYEY SILTSTONE 12 - 32		15	049	"	10	20	20
		12-21: Light green clayey siltstone,		18	050	"	5	30	15
		soft, c̄ minor sand size grains		21	051	"	10	20	20
		21-24: Light grey siltstone, soft.		24	052	"	10	20	15
		24-27: Mustard & pale green siltstone. Soft		27	053	"	5	20	30
		27-32: Friable Khaki siltstone.		30	054	"	10	20	65
		("Yudnapinna Beds"?)			055	"	5	20	45
		CALCAREOUS SILTSTONE/SHALE 32 - 63		33	056	"	10	20	35
		32-48: Red/brown calcareous		36	057	"	10	20	30
		shaley siltstone c̄ minor green & grey		39	058	"	5	20	25
		42 m: Water Table		42	059	"	5	20	30
				45	060	"	10	20	30
		48-63 m: Green Calc. shaley		48	061	"	15	20	25
		siltstone c̄ minor red/brown.		51	062	"	10	20	20
		Samples 75% contaminated c̄		54	063	"	20	20	20
		surface sand & silcrete fallback.		57	064	"	15	20	20
		("Yudnapinna Beds")		60	97065	"	10	20	15
				63					
		END OF HOLE							
		Water flow > 1,000 gall./hour			T.D.S.		Cu	Pb	Zn
				60m WATER SAMPLE	0.60		2	250	<2
					%		ppb	ppb	ppb

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0186

PROJECT AREA: PANDURRA
PROJECT No. 405
SPUDDED: 25·6·74
COMPLETED: 25·6·74
LOCATION: "YUDNAPINNA"
CO-ORDS: X: 528 Y: 1025
ELEVATION:
DIRECTION: V
INCLINATION: V
TOTAL DEPTH: 48m
HOLE TYPE: ROTARY
DRILLING CONTRACTOR: THOMSON
DRILLER: R. BROWN
LOGGED BY: D.G.T. DATE:
BIT SIZE: 121 mm TO Blade Bit TO 48m. Roller Bit TO 48·1m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND 0 – 1.5		0					
		WHYALLA SANDSTONE 1.5 – 45		3	97066	3·0	15	20	15
		1.5 – 15 Friable quartzose S.S., white		6	067	"	10	20	10
		Many grains pink-coated. Coarser grains		9	068	"	15	20	15
		quite well rounded.		12	069	"	10	20	10
		15 – 33 Coarser friable S.S. largest (3 mm)		15	070	"	10	20	10
		grains v. well rounded. Some v. well		18	071	"	10	20	10
		rounded lithic grains.		21	072	"	10	30	15
				24	073	"	15	60	15
		33 – 45 Finer S.S. Buff to beige.		27	074	"	15	70	15
		Friable. Grains less rounded.		30	075	"	20	40	20
				33	076	"	15	30	20
		YUDNAPINNA BEDS.		36	077	"	15	30	15
		(CALCAREOUS SIATSTONE) 45 – 48·1		39	078	"	10	50	15
		Siltstone, lt. grey-green, weakly calcareous.		42	079	"	10	90	50
		Minor sandsize grains of Gawler Vole, Ata, Pandurra Fm.		45	080	"	10	60	65
				48	970.81	"	15	30	50
		END OF HOLE							
		N.B. Very hard rock.							

PACMINEX PTY. LTD.

HOLE No. EX 130

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 25 · 6 · 74 | COMPLETED: 26 · 6 · 74

LOCATION: " YUDNAPINNA " | CO-ORDS: X: 524 E Y: 1028 0187

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 56 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND GRAVEL & CLAY 0 - 7.5		0					
				3	97082	3.0	20	20	35
				6	083	"	20	20	35
		WHYALLA SANDST. : 7.5 - 54		9	084	"	10	20	30
		7.5 - 18 : Qu. Moose s.s., white, clayey		12	085	"	15	20	15
		soft matrix, gen. angular grains.		15	086	"	10	20	15
		18 - 20 : Buff, beige, then orange as above		18	087	"	10	20	15
				21	088	"	10	<20	20
		SILCRETE 20-22		24	089	"	10	<20	15
		22 - 24 : Yellow clayey s.s.		27	090	"	10	<20	10
		24 - 27 : V. coarse s.s. Milky qtz. gr. in yellow matrix		30	091	"	10	<20	15
		27 - 30 : Coarse s.s. Angular qtz in yellow matrix		33	092	"	10	20	10
		30 m : Water table.		36	093	"	10	<20	10
		30 - 33 m : S.S. Angular grains in yellow matrix		39	094	"	10	20	15
		33 - 42 : S.S. Buff grains in beige matrix.		42	095	"	5	20	10
		42 - 48 : S.S. = Reworked Pandurra Fm? Yellow matrix		45	096	"	10	20	10
		48 - 54 : S.S. = reworked Pandurra Fm? Beige matrix.		48	097	"	10	20	15
		Minor 5mm qtz. pebbles		51	098	"	10	<20	10
				54	099	"	20	20	15
		PANDURRA FM. PALEOREGOLITH 54-56		56	97100	2.0	15	20	15
		Fractured slightly oxidised hard red quartzite chips.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 131

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 26.6.74 | COMPLETED: 26.6.74 | 0188

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 527 E Y: 1029 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 47 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND 0-1		0					
		WHYALLA SANDSTONE 1-12		3	97101	3.0	15	20	25
		Two phase lithic s.s. Larger grains rounded		6	102	"	10	20	15
		Colour white to yellow.		9	103	"	10	20	10
		TRANSITION S.S. 12-21		12	104	"	10	40	15
		Fine-grained lithic s.s. Larger grains rounded.		15	105	"	20	40	50
		Red lithic grains. Fawn. Weakly calc. cl base.		18	106	"	10	70	80
		YUDNAPINNA SILTSTONE 21-47		21	107	"	10	30	65
		Calcareous Siltstone.		24	108	"	10	30	50
		21-24: Fawn grey calc. siltstone c minor		27	109	"	10	20	50
		larger (1mm) rounded qtz. & angular red lithics.		30	110	"	20	20	65
		24-33: Grey calc. siltst. Abundant tiny red lithics.		33	111	"	10	20	45
		33-42: Green & red/brown calc. siltst.		36	112	"	10	20	60
		42m: Water table. No flow.		39	113	"	15	30	60
		42-47: Red/brown + minor green calc. siltst.		42	114	"	10	20	40
		V. hard.		45	115	"	15	20	60
				47	97116	2.0	20	20	60
		END OF HOLE							
		N.B. Hole abandoned: drill bit broke in hole.							

PACMINEX PTY. LTD.

HOLE No. EX 132

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0189

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	26.6.74	COMPLETED:	27.6.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	525 E Y: 1028 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 53 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY:	D.G.T. DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
				0					
		SAND & CLAY 0 - 7		3	97117	3.0	20	30	45
				6	118	"	10	20	40
		WHYALLA S.S. : 7 - 52.5		9	119	"	10	20	35
		7-18: Gen. rounded qtz. grains in off-white clay matrix.		12	120	"	10	20	30
		18-21: Sandy clay. Grey. Sparse grains		15	121	"	5	20	20
		21m: Water table.		18	122	"	10	20	30
		21-33: Clayey sandst. Gen. angular qtz. grains in white clay matrix.		21	123	"	15	20	40
		33-39: Sandstone, coarse, angular grains, buff to brown.		24	124	"	10	20	25
		39-52.5: Sandstone, angular grains, brown matrix.		27	125	"	10	20	25
				30	126	"	10	20	30
		52 m: Water flow est. > 1000 gal/hour.		33	127	"	20	20	30
				36	128	"	10	<20	30
		PANDURRA FM. 52.5 - 53.0		39	129	"	10	<20	30
		Red quartzite, fractured, veined & pyrite		42	130	"	15	20	35
				45	131	"	15	20	30
		END OF HOLE		48	132	"	15	20	35
				51	133	"	15	20	35
				53	97134	2.0	20	20	35
					T.D.S.		Cu	Pb	Zn
		Water flow > 1000 gals/hour	52m	WATER SAMPLE	0.47		22	5	16
					%		ppb	ppb	ppb

PACMINEX PTY. LTD.

HOLE No. EX 133

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0190

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	27 · 6 · 74	COMPLETED:	28 · 6 · 74
LOCATION:	" YUDNAPINNA "	CO-ORDS: X:	522 E Y: 1027 N
ELEVATION:	DIRECTION: ✓	INCLINATION: ✓	TOTAL DEPTH: 26·5 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR:	THOMSON DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND & GYPSUM CLAY 0 - 4·5		0					
		WEATHERED SILCRETE OR SILTSTONE		3	97135	3·0	15	20	45
		White & Fe-coated siliceous fragments of sand size		6	136	"	15	20	40
		SILCRETE 11·5 - 15·0 '		9	137	"	10	20	35
		white tough silcrete + brick red sandy ferricrete		12	138	"	15	20	35
		SILTSTONE 15 - 24		15	139	"	10	20	35
		Soft, white & pink, sandy siltstone		18	140	"	15	20	40
				21	141	"	20	20	40
				24	142	"	15	<20	35
		PANDURRA FM. PARGOREGOLITH 24 - 26·5		26·5	97 143	2·5	15	20	35
		Red s.s. & red qtzite in white clay matrix. Hard.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 134

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0191

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	28.6.74	COMPLETED:	28.6.74
LOCATION:	"YUONAPINNA"	CO-ORDS: X:	522 E Y: 1031 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 37 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY:	D.G.T. DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RECENT 0 - 12		0					
		0-6 Alluvium, clay, gypsum		3	97144	3.0	15	20	50
		6-12 Red sandy clay some		6	145	"	20	20	50
		decomposed sandstone.		9	146	"	15	20	45
		SANDSTONE 12 - 37		12	147	"	10	<20	40
		12 - 16.5: Friable qtzose S.S. Nutmeg/lt white		15	148	"	15	20	30
		16.5 - 21: Clayey S.S. white matrix & sand grains		18	149	"	15	20	35
		21 - 36: Sandstone (= reworked Pandurra Fm?)		21	150	"	20	20	40
		gen. angular grains in buff to brown matrix		24	151	"	10	20	30
		36 - 37: As above, but coarser grained		27	152	"	15	<20	30
		37: V. hard at 37m, no cuttings		30	153	"	10	20	35
		returned. Either Pandurra Fm. or		33	154	"	10	<20	30
		Calcareous siltstone.		36	155	"	15	20	35
				37	97156	1.0	15	20	30
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 134

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 28 · 6 · 74 | COMPLETED: 28 · 6 · 74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 522 Y: 10 31

0192

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 37 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RECENT 0 – 12		0					
		0 – 6 Alluvium, clay, gypsum		3	97144	3.0	15	20	50
		6 – 12 Red sandy clay		6	145	"	20	20	50
				9	146	"	15	20	45
				12	147	"	10	<20	40
		WHYALLA ? SANDSTONE 12 – 37		15	148	"	15	20	30
		12 – 16 Sandst., glauc, friable, off-white		18	149	"	15	20	35
		16 – 21 Clayey S.S., white sand-size gr. in clay matrix		21	150	"	20	20	40
		21 – 37 Sandst., glauc, not well rounded,		24	151	"	10	20	30
		grains derived from Pandurra Fm.?		27	152	"	15	<20	30
		Colour buff to pink-brown.		30	153	"	10	20	35
				33	154	"	10	<20	30
		Hole v. hard drilling at bottom		36	155	"	15	20	35
		(Sitting on Yudnapinna beds or Pandurra Fm?)		37	97156	1.0	15	20	30
		END OF HOLE							

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HOLE No. EX 135

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PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	29.6.74	COMPLETED:	29.6.74
LOCATION:	"YUONAPINNA"	CO-ORDS: X:	525 E Y: 1034 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 95 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

0193

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT 0 - 6		0					
		Clayey red sand & calcrete		3	97/157	3.0	20	20	60
		SANDSTONE (WIANAMA) 6 - 45		6	158	"	20	20	50
		6-12 : Sandy clay, green (red), gypsum		9	159	"	15	20	45
		12-15 : Clayey s.s. Qz grains in white matrix		12	160	"	25	20	50
		15-19 : Sandy siltst. white & Fe-coated parts		15	161	"	20	20	40
		19-21 : Sandst., qtz-ose, buff colour.		18	162	"	30	20	50
		21-24 : Sandy clay st. Qtz gl in white matrix		21	163	"	15	<20	35
		24-39 : Sandst. (=reworked Pandurra Fm?)		24	164	"	25	20	40
		Yellow to buff matrix & qtz. grains,		27	165	"	20	20	45
		many pink grains.		30	166	"	10	<20	35
		39-45 : Clayey S.S. White matrix.		33	167	"	25	<20	40
				36	168	"	20	30	40
		Water flow ~ 500 gal/hr.		39	169	"	10	<20	35
				42	170	"	20	<20	35
		SANDSTONE AND SILTSTONE 45 - 95		45	171	"	10	<20	35
				48	172	"	15	<20	45
		Coarse s.s. (= reworked Pandurra		51	173	"	15	20	35
		Fm.?) + interbedded green		54	174	"	10	<20	35
		siltstone & red lithic grains. Minor		57	175	"	20	<20	40
		narrow (1mm) veins of pyrite.		60	176	"	15	20	30
		Sample grey from 45-51 m, then		63	177	"	15	20	35
		buff coloured. More siltstone		66	178	"	15	<20	30
		chips from 72 m.		69	179	"	20	<20	35
		Sandstone very coarse (4-5mm)		72	180	"	10	20	40
		from 72m.		75	181	"	20	20	40
				78	182	"	15	<20	35
		93-95 m : Siltstone - green, fawn		81	183	"	15	20	35
		and brown + Coarse S.S.		84	184	"	10	<20	30
				87	185	"	10	20	35
				90	186	"	15	<20	45
				93	187	"	25	20	45
				95	97/188	2.0	15	<20	40
		END OF HOLE							
		N.B. Hole abandoned because							
		water flow too great for			T.D.S.		Cu	Pb	Zn
		drill to lift & air pressure.		45 m WATER SAMPLE A	0.82		<2	<5	<2
		Flow several thousand gal/hr.			T.D.S.		Cu	Pb	Zn
				66 m WATER SAMPLE B	0.88		<2	35	2
					%		PPb	PPb	PPb

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0194

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	29 · 6 · 74	COMPLETED:	1 · 7 · 74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	523 E Y: 1035 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 84·5 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: A. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT Sand, calcrete, gypsum 0 – 6		0	97189	3·0	20	20	55
		Coarse sand, gravel, gypsum		3	190	"	20	<20	45
		SANDSTONE (WAYAHA) 6 – 51		6	191	"	15	20	45
		6 – 12 Clayey S.S.; Sand grains in white		9	192	"	15	20	45
		clay matrix. Fe-rich bands, brown.		12	193	"	15	20	40
		12 – 21 Sandy clay; white, beige then		15	194	"	25	20	45
		yellow sandy mud. Minor pink grains		18	195	"	10	20	30
		21 – 36 Sandstone; 21–24 orange-brown		21	196	"	15	20	35
		limonitic. 24 – 30 beige, qtz. grains		24	197	"	15	20	30
		in abund. white matrix. 30 – 36 creamy		27	198	"	10	20	30
		grey, grains = reworked Pandurra Fm?,		30	199	"	10	20	30
		larger grains rounded.		33	200	"	10	<20	30
		36 – 51 Sandstone & siltstone – buff qtz.		36	201	"	15	<20	40
		S.S. + minor trace green siltst. Sandst.		39	202	"	15	<20	35
		= reworked Pandurra Fm?, in white clay		42	203	"	15	20	35
		matrix. Even grained, 1·5 mm.		45	204	"	10	20	35
				48	205	"	10	20	35
		SANDSTONE AND SILTSTONE 51 – 84·5		51	206	"	10	<20	35
		51 – 84 Buff lithic SS, 2·5 mm grains, =		54	207	"	15	<20	40
		reworked Pandurra Fm ? abund. smooth		57	208	"	15	20	30
		brown lithics, + minor green & brown siltst.,		60	209	"	10	<20	35
		+ white f.g. sandst. w siltst.		63	210	"	10	20	40
				66	211	"	15	<20	35
				69	212	"	20	20	45
				72	213	"	15	20	50
				75	214	"	10	20	50
				78	215	"	10	20	45
				81	216	"	10	20	55
		PANDURRA FM. 84·5 m.		84	217	0·5	15	20	75
		Pink & green (chloritic) quartzite		84·5					
		END OF HOLE							
		N.B. Mud circulation used from 36 m.							

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HOLE No: EX 137
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0195

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	1·7·74	COMPLETED:	2·7·74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	525 E Y: 1038 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 67 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SOIL & RED CLAY, CALCAREOUS 0 – 6		0					
				3	97218	3·0	20	20	45
				6	219	"	10	20	60
		CLAYEY SANDSTONE: (WILYAKKA) 6 – 48		9	220	"	10	<20	40
		6 – 12: Sand in white clay matrix, Fe staining		12	221	"	10	<20	40
		12 – 21: Sandy clay; greenish white, then yellow clay c̄ sand (some pink) grains		15	222	"	10	<20	40
				18	223	"	10	20	40
		21 – 27: Clayey S.S.; buff, = reworked Pandurra?		21	224	"	10	20	35
		27 – 38: clayey S.S., grey/cream, coarse sand in white matrix (= reworked Pandurra?)		24	225	"	10	20	25
				27	226	"	10	<20	25
		38 – 48: Grey clayey S.S. (= reworked Pandurra?) c̄ good tr. of black heavy mineral 33 – 36 Tr. pyrite.		30	227	"	10	20	30
				33	228	"	10	<20	10
				36	229	"	10	20	30
		45 – 48 minor grey siltstone.		39	230	"	10	<20	30
				42	231	"	15	<20	35
		21 m = water flow		45	232	"	10	<20	35
				48	233	"	10	20	30
		SILTSTONE: 48 – 54		51	234	"	20	20	45
		Soft, fawn siltst. c̄ trace of heavy mineral		54	235	"	10	<20	40
		SANDSTONE: (WILYAKKA) 54 – 67		57	236	"	10	<20	30
		54 – 63: Clean grey S.S., = reworked Pandurra?, tr. of H.M., minor green siltstone.		60	237	"	10	<20	35
				63	238	"	10	<20	30
		63 – 67: clean grey-pink S.S., = reworked Pandurra Fm?, faint H.M. tail		66	239	"	10	<20	30
				67	97240	1·0	15	<20	40
		END OF HOLE							
		N.B. Hole abandoned because very heavy water flow overloaded drill & compressor. Flow of several thousand gals / hour.							
					TDS		Cu	Pb	Zn
				60 m WATER SAMPLE	1·81		<2	10	4
					%		ppb	ppb	ppb

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HOLE No. EX 138

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0196

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 5 · 7 · 74 | COMPLETED: 5 · 7 · 74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 531 E Y: 1040 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 52 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
		RECENT 0 - 12		0	97241	3.0	15	20	45		
		0 - 3 Sand, clay		3	242	"	15	20	45		
		3 - 6 Sand, clay, calcrete.		6	243	"	10	20	45		
		6 - 12 Sandy clay		9	244	"	15	20	35		
		CLAYEY SANDSTONE : (WHYALLA) 12 - 45		12	245	"	10	20	35		
		12 - 15 : Clayey S.S. ; white, fine gr. Fe stained portions.		15	246	"	30	20	40		
		15 - 21 : Silty clay ; greenish/beige		18	247	"	30	50	30		
		21 - 24 : Silicified S.S. ; white, some Fe stains		21	248	"	60	90	20		
		24 - 30 : Clayey S.S. ; buff/beige gr. ss. & angular grains, in muddy matrix.		24	249	"	10	20	20		
		30 - 36 : Sandstone. Buff matrix. Pandurra - derived ? larger grains mod. rounded.		27	250	"	20	20	10		
		36 - 45 : Clayey S.S. ; Pandurra - derived grains in light green clay matrix. Mod. rounding		30	251	"	20	20	10		
		WOOCALLA DOLOMITE : 45 - 52		33	252	"	10	20	10		
		Khaki - green, then grey, hard dolomite.		36	253	"	25	70	20		
		51 - 52 = 90% surface failback contamination		39	254	"	25	80	15		
		END OF HOLE		42	255	"	35	240	90		
		N.B. Hole abandoned because drill unable to penetrate dolomite		45	256	"	190	380	330		
				48	257	"	190	220	170		
				51	97258	1.0	40	110	70	(contaminated)	
				52							

PACMINEX PTY. LTD.

HOLE No. EX 139

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 6·7·74 | COMPLETED: 10·7·74 | 0197

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 528 E Y: 1040 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 59 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn		
		RECENT: 0 - 9		0							
		0-6 Orange brown sandy clay		3	97259	3·0	20	30	40		
		6-9 Sticky red sandy clay		6	260	"	20	20	35		
		CLAYEY SANDSTONE (WOOCALLA) 9 - 46		9	261	"	20	20	35		
		9-21: Clayey sandy siltstone; white		12	262	"	35	20	40		
		& Fe staining 9-15. Soft & puggy.		15	263	"	20	20	30		
				18	264	"	10	20	10		
		21-24: Clayey Sandstone;		21	265	"	10	20	10		
				24	266	"	5	<20	15		
		24-46: Clayey lithic S.S.; grey 2-		27	267	"	20	<20	15		
		phase S.S. Fine angular pinkish		30	268	"	10	<20	15		
		qtz. + larger rounded grey & brown		33	269	"	25	20	40		
		lithic grains (2-5 mm). Grey heavy		36	270	"	10	20	75		
		mineral tail.		39	271	"	20	<20	65		
				42	272	"	30	<20	55		
				45	273	"	210	20	65		
				48	274	"	190	20	75		
		WOOCALLA DOLOMITE: 46 - 59		51	275	"	130	600	520		
		46-54 Dark grey dolomitic shale		54	276	"	50	860	1700		
		+ minor grey hard dolomite + faultrock		57	277	"	240	800	640		
		54-57 Dolomite + black dolomitic shale Faultbrec		59	97278	2·0	35	40	60	(con	100% amination
		57-59: 100% surface faultrock contamination									
		END OF HOLE									

PACMINEX PTY. LTD.

HOLE No. EX 140

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0198

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10 · 7 · 74 | COMPLETED: 10 · 7 · 74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 527 E Y: 1041 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 57 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND CLAY CALCRETE 0 - 3		0					
		CLAYEY SAND 3 - 6		3	97279	3.0	10	20	10
		CLAYEY SANDSTONE (WAYALLA) 6 - 33		6	280	"	10	<20	10
		6 - 12 : Red & white, part decomposed clayey Ss. Grains not well rounded.		9	281	"	15	<20	15
		12 - 33 : Clayey S.S. ; buff, greenish, beige & pink; Qtz. grains, not well rounded, in clay matrix.		12	282	"	20	20	20
				15	283	"	20	20	20
				18	284	"	30	20	30
				21	285	"	20	<20	30
				24	286	"	10	<20	25
				27	287	"	20	20	35
				30	288	"	15	<20	80
				33	289	"	30	20	40
		LITHIC SANDSTONE (WAYALLA) 33 - 57		36	290	"	30	30	45
		33 - 42 : Brown & grey rounded & subrounded lithics 3-4 mm, in white silty (angular) matrix.		39	291	"	10	<20	20
		42 - 45 : As above, grey, H.M. tail.		42	292	"	10	<20	10
		45 - 51 : Minor lithic grains only. Buff-orange		45	293	"	5	<20	10
		51 - 56.5 : Lithic S.S. Rnd qtz. gr. P-p lithic grains		48	294	"	10	<20	10
		56.5 - 57.0 : Coarse S.S. (4-5mm)		51	295	"	10	<20	10
		PANDURRA FM. 57 m.		54	296	"	5	<20	10
		Bottomed on hard red quartzite		57	97297	"	5	<20	10
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 141

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0199

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 10.7.74 | COMPLETED: 11.7.74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 523 E Y: 1039 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 38 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. DATE: | BIT SIZE: 121 mm TO Blade TO 38 m, Roller TO 38m.

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SANDY SOIL & CALCRETE 0-3		0					
		SANDY RED CLAY 3-6		3	97298	3.0	15	20	20
		CLAYEY SANDSTONE-Pwh 6-38		6	299	"	15	20	20
		6-12: Clear & pink qtz. in lt. green matrix		9	300	"	20	20	20
		12-18: As above in pink & green matrix		12	301	"	30	20	20
		18-21: As above in pink matrix		15	302	"	10	20	15
		21-27: Reworked Pandurra grains? Beige matrix		18	303	"	10	20	10
		27-30: Reworked Pandurra + minor grey &		21	304	"	10	<20	15
		brown lithics in grey-cream matrix		24	305	"	10	<20	10
		30-37: Reworked Pandurra grains? + minor		27	306	"	10	<20	20
		lithics + minor grey siltst. in lt. grey matrix		30	307	"	5	<20	10
		37-38: Coarse Pandurra-derived s.s. + minor		33	308	"	10	<20	20
		siltstone.		36	309	"	15	<20	25
		? PANDURRA FM. 38 m		38	97310	2.0	15	20	20
		V. Hard base of hole, no penetration.							
		Probably Pandurra Fm. red quartzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 142

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0200

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	11.7.74	COMPLETED:	11.7.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X: 521 E	Y: 1037 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 52.5 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO Blade TO 48m. Roller TO 52.5m.	

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT 0 – 3		0					
		SANDSTONE (WHYALLA) 3 – 21		3	97311	3.0	15	20	15
		3-9: Sandy siltstone, greenish, soft.		6	312	"	10	<20	10
		9-12: Silty lithic sand(st.): Round 3mm qtz		9	313	"	15	<20	10
		& angular grey lithic & round grey lithics in green/mass		12	314	"	10	<20	10
		12-21: Lithic S.S.: Friable, qtzose & lithic		15	315	"	10	<20	10
		grains, gen. rounded, in white matrix		18	316	"	20	<20	10
		SANDY SILTSTONE 21 – 27		21	317	"	10	<20	10
		Transition. Round grains in grey silt matrix		24	318	"	10	<20	45
		YUDNAPINNA SILTSTONE 27 – 52.5		27	319	"	10	<20	30
		27-30: Sandy Calc. Siltst.: Red/brown		30	320	"	10	20	25
		weakly calc. siltst. c̄ round qtz & orange lithics		33	321	"	15	<20	30
		30-48: Calcareous Siltstone: Red/brown		36	322	"	15	<20	30
		weakly calc. siltst. c̄ 2-3mm orange lithic grains		39	323	"	10	<20	25
		& minor green siltstone.		42	324	"	15	20	30
		48m: Hard cap at top of water table		45	325	"	10	20	30
		48-51m: Red/brown & green siltst. + 70% fallback.		48	326	"	15	20	30
		WOOCARRA DOLOMITE 51 – 52.5		51	327	"	15	<20	10
		Hard grey dolomite.		52.5	97328	1.5	15	20	20
		PANDURRA FM: ? 52.5							
		V. hard basement. Some chiprified quartzite.							
		END OF HOLE.							
		N.B. Very heavy water flow at 48m.							
		Estimated to be > 5000 gals / hour.							
					T.D.S.		Cu	Pb	Zn
				52m WATER SAMPLE	1.84		<2	<2	150
					%		ppb	ppb	ppb

PACMINEX PTY. LTD.

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0201

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	12.7.74	COMPLETED:	12.7.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X: 520 E	Y: 1034 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 42 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: A. BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RED SAND & CLAY 0 - 4.5		0					
		SANDSTONE (WHYALLA) 4.5 - 12		3	97329	3.0	15	20	30
		4.5 - 7.5 : Silicified yellowish s.s.		6	330	"	15	<20	20
		7.5 - 12 : S.S., friable, round grains in silty matrix		9	331	"	10	<20	10
		SANDY SILTSTONE 12 - 18		12	332	"	10	<20	10
		Transition. Sand grains in lt. green silty g'd mass		15	333	"	10	<20	10
		YUDNAPINNA SILTSTONE 18 - 37.5		18	334	"	10	<20	15
		18 - 32 : Green/grey soft & friable siltst.		21	335	"	10	<20	70
		Tr. Sulphide		24	336	"	10	<20	60
		32 m : Hard cap at water table		27	337	"	10	<20	100
		32 - 37.5 : Lt. green & pink calcareous siltst.		30	338	"	5	<20	50
				33	339	"	5	<20	30
		WOOCARRA DOLOMITE 37.5 - 42		36	340	"	15	20	25
		Breccia of large dolomite pieces		39	341	"	10	40	25
		PANDURRA FM. 42 m.		42	97342	"	10	50	30
		V. hard red quartzite. Little penetration							
		END OF HOLE							
					T.D.S.		Cu	Pb	Zn
			42m	WATER SAMPLE	0.953		4	<2	120
					%		ppb	ppb	ppb

PACMINEX PTY. LTD.

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 12.7.74 | COMPLETED: 13.7.74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 520 E Y: 1031 N 0202

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 60 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
		SAND & CLAY 0 – 6			97343	3.0	15	<20	15
		Red clayey sand & brick red sand			344	"	10	20	10
		SANDSTONE – (WHYALLA) 6 – 21			345	"	10	<20	10
		6-9 : Silicified s.s. – pink.			346	"	5	<20	10
		9-12 : Fine s.s. – beige, pink & white			347	"	5	<20	10
		12-15 : Fine ss & ss – yellow			348	"	5	20	10
		15-18 : ss – yellow & silic. siltst. in thin bands.			349	"	5	20	10
		CLAY AND MUD 21 – 42			350	"	5	20	10
		21-24 : Platey clay – khaki			351	"	<2	<20	15
		24-30 : Silty clay – green & grey. Water 30m	H_2O		352	"	50	80	35
		30-36 : Soft silty mud – red/brown.			353	"	110	180	65
		36-42 : Mud & Sandy mud – light brown.			354	"	10	20	40
					355	"	45	70	35
					356	"	10	20	25
		YUDNAPINNA SILTSTONE 42 – 57			357	"	35	60	50
		42-48 : Weakly calc. siltst., sandy, tan & green + mud.			358	"	10	20	45
		48-54 : Sandy siltst. & mud. – tan & green			359	"	20	60	60
		54-57 : Siltst. – tan & white + green. TR. pyrite			360	"	5	20	40
		in veins – (large flakes & chips).	FeS		361	"	25	70	45
		PANDURRA FM. PALEOREGOLITH 57-60			97362	"	10	30	60
		Oxidised 1-2 cm red quartzite chips. Hard at base.							
		PANDURRA FM. 60 m							
		Hard at base of hole.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 145

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PROJECT No. 405

PROJECT AREA: PANDURRA

COMPLETED: 13 · 7 · 74

SPUDDED: 13 · 7 · 74

CO-ORDS: X: 517 E Y: 1040203

LOCATION: "YUDNA PINNA"

INCLINATION: V

TOTAL DEPTH: 7 m

ELEVATION:

DIRECTION: V

DRILLING CONTRACTOR: THOMSON

DRILLER: R. BROWN

HOLE TYPE: ROTARY

BIT SIZE: 121 mm TO Roller TO 7m. TO

LOGGED BY: D.G.T. DATE:

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SILCRETE 0 – 5		0	97363	3·0	20	40	20
		Massive silcrete & silicified angular c.s. – yellowish, v. hard		3	364	3·0	50	30	35
		PANDURRA FM. 5 – 7		6	97365	1·0	15	420	10
		Hard red quartzite		7					
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 146

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PROJECT AREA: PANDURRA | PROJECT No. 405 | 0204

SPUDDED: 13·7·74 | COMPLETED: 13·7·74

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 516 E Y: 1043 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 46 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm. TO Blade bit TO 46 m. TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn	Mn
		RECENT SAND 0 - 3		0						
		CLAY 3 - 5		3	97366	3.0	10	<20	25	
		SILCRETE 5 - 6		6	367	"	15	<20	30	
		SANDSTONE (WYANLA) 6 - 30		9	368	"	10	<20	10	
		6-21: Soft, sugary, fine SS, some grains pink coated. Larger round grains minor.		12	369	"	10	<20	10	
		21-24: Fine yellow s.s. Minor rounded 5mm grains		15	370	"	5	<20	10	
		24-27: Fine yellow-pink s.s. Larger rounded gr (1-2mm)		18	371	"	5	<20	10	
		27-30: V. fine ss, pink & grey, minor larger round gr.		21	372	"	5	<20	10	
		CALCAREOUS SILTSTONE/S.S. 30 - 46		24	373	"	5	<20	15	15
		30-33: V. fine ss, calcareous, grey: larger round gr.		27	374	"	5	<20	40	10
		36-39: Strong black H.M. trail (magnetic)		30	375	"	10	<20	30	20
		39-46: Fine s.s. w sandy siltst., weakly calc., grey. Black H.M. trail Tr. c-p lithic grains.		33	376	"	10	<20	1.5	210
				36	377	"	10	<20	40	800
		END OF HOLE		39	378	"	5	<20	20	640
				42	379	"	10	<20	25	920
		N.B. Hole abandoned at 46 m when blade broke off bit, preventing continuation. Hard ground.		46	97380	4.0	10	<20	20	760

PACMINEX PTY. LTD.

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0205

PROJECT AREA: PANDURRA | PROJECT No. 405
SPUDDED: 13·7·74 | COMPLETED: 13·7·74
LOCATION: "YUDNAPINNA" | CO-ORDS: X: 515 E Y: 1044 N
ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 73 m
HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN
LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn	Mn
		SAND & SILCRETE 0 – 3		0						
		SANDSTONE – (WHYALLA) 3 – 69		3	97381	3·0	25	<20	35	
		3 – 33 : Siliceous sand stone – 2 phases		6	382	"	5	<20	10	
		of grain size – (1) fine & angular		9	383	"	5	<20	10	
		(2) coarse & rounded.		12	384	"	5	<20	10	
		Gen. white & friable		15	385	"	5	<20	10	
				18	386	"	10	<20	20	
				21	387	"	5	<20	25	
				24	388	"	10	<20	45	
				27	389	"	5	<20	40	
				30	390	"	5	<20	45	
		33 – 51 : Grey Sandstone & Siltstone		33	391	"	5	50	35	15
		Sand grains in grey matrix +		36	392	"	10	440	95	15
		minor grey siltstone. Non-calc.		39	393	"	10	480	70	10
				42	394	"	5	100	150	15
				45	395	"	5	90	120	10
				48	396	"	5	220	440	10
		51 – 69 : Lithic Sandstone + Muddy		51	397	"	5	90	220	15
		sandstone c̄ abundant rounded brown		54	398	"	5	90	55	15
		grey + red (Pandurra Fm) lithic grains.		57	399	"	10	40	80	10
		Black lithics from 57m. Coarser (2–3mm)		60	400	"	15	20	90	15
		from 60m.		63	401	"	10	30	130	10
				66	402	"	10	30	210	20
				69	403	"	5	40	270	20
		CLAY 69 – 72.5		72	404	"	1100	280	1000	70
		69 – 72.5 D. grey c̄ subrounded 1–1½ cm Pandurra chips		73	97405	1·0	260	100	400	
		PANDURRA FM. 72.5 – 73·0								
		Red quartzite – hard.								
		END OF HOLE								

PACMINEX PTY. LTD.

HOLE No. EX 148

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PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 13·7·74 | COMPLETED: 13·7·74 | 0206

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 519 E Y: 1043 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 13 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		CARCAREOUS SAND 0-3		0					
		CARCAREOUS SANDY CLAY 3-6		3	97406	3·0	25	20	40
		CLAYEY SANDSTONE 6-9		6	407	"	15	20	40
		Fine S.S., multicoloured, soft.		9	408	"	10	<20	20
		PANDURRA FM. PALEOREGOLITH 11-12·5		12	409	"	10	30	20
		Clay, grey, c̄ 2-4 cm red qzt. fragments		13	97410	1·0	25	120	30
		PANDURRA FM. 12·5-13							
		V. Hard at base.							
		END OF HOLE							

PACMINEX PTY. LTD.

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0207

PROJECT AREA: PANDURRA | PROJECT No. 405
SPUDDED: 15·7·74 | COMPLETED: 15·7·74
LOCATION: "YUDNAPINNA" | CO-ORDS: X: 521 E Y: 1042 N
ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 49 m
HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN
LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		SAND 0-3		0					
		SAND, CLAY & SILCRETE 3-6		3	97411	3·0	15	20	35
		CLAYEY SANDSTONE (WAYARA) 6-47		6	412	"	10	20	35
		6-12: Clayey S.S. + qtz & pink qtz grains in lt. green & brown clayey matrix.		9	413	"	10	<20	40
		12-27: Sandy clay & lt. green & brown, v. sticky clay c̄ minor sand grains.		12	414	"	10	<20	40
				15	415	"	10	<20	30
		27-39: Clayey S.S. + Grey/brown clayey silty sandstone. Minor grey lithic grains		18	416	"	15	<20	40
		33-39. Larger grains more rounded. 33-39.		21	417	"	15	<20	45
				24	418	"	5	20	20
		39-47: Clayey lithic S.S. + Grey/brown, larger grains rounded as above, + 2-3mm lithic grains, grey-brown, grey & red (quartzite)		27	419	"	10	20	20
				30	420	"	15	20	20
				33	421	"	10	<20	20
				36	422	"	10	<20	20
				39	423	"	5	<20	20
				42	424	"	10	<20	45
				45	425	"	5	<20	35
				48	426	"	10	20	25
		WOOCARRA DOLOMITE 47-48·5		49	97427	1·0	10	20	35
		Hard, white, dolomite.							
		PANDURRA FORMATION 48·5-49							
		V. hard red quartzite							
		END OF HOLE							
		N.B. Mud circulation used from 12 metres.							
		N.B. Very poor sample recovery 21-27 metres, c̄ heavy contaminat^n. by surface fallback.							

PACMINEX PTY. LTD.

HOLE No. EX 150

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0208

PROJECT AREA: PANDURRA		PROJECT No. 405	
SPUDDED: 15.7.74		COMPLETED: 15.7.74	
LOCATION: "YUDNAPINNA"		CO-ORDS: X: 517 E	Y: 1035 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 4 m
HOLE TYPE: ROTARY	DRILLING CONTRACTOR: THOMSON		DRILLER: R. BROWN
LOGGED BY: D.G.T. DATE:	BIT SIZE: 121 mm TO	TO	TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SOIL 0 - 1		0					
		PANDURRA FM. REGOLITH 1 - 3		4	97428	4.0	15	80	20
		Rubble of red quartzite							
		PANDURRA FM. 3 - 4							
		V. hard red quartzite							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 151

PAGE 1 OF 1

0209

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	15.7.74	COMPLETED:	15.7.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	517 E Y: 1032 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 22m.
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR:	THOMSON
DRILLER:	R. BROWN		
LOGGED BY:	D.G.T.	DATE:	
BIT SIZE:	121 mm	TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND & SOIL 0 - 3		0					
		YUDNAPINNA SILTSTONE 3 - 21.75		3	97429	3.0	10	<20	40
		3-9: Sandy calcareous siltstone, Khaki		6	430	"	10	20	40
		& red/brown. Minor rounded sand grains.		9	431	"	10	<20	35
		9-21.75: Calc. siltstone, red/brown & green +		12	432	"	5	<20	30
		grey-green. Sandy 9-12. Orange 2mm (PEV)		15	433	"	5	<20	30
		lithics 9-12. Water table 15m. Coarser grained		18	434	"	5	<20	120
		21-21.75.		21	435	"	10	20	110
		PANDURRA FM. 21.75 - 22		22	97436	1.0	20	20	140
		Hard red quartzite & lieser gang banding.							
		END OF HOLE							
		N.B. V. low water flow below 15m.							

PACMINEX PTY. LTD.

HOLE No. EX 152

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0210

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	15 · 7 · 74	COMPLETED:	16 · 7 · 74
LOCATION:	" YUDNAPINNA"	CO-ORDS: X:	521 E Y: 1030
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 56 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR:	THOMSON DRILLER: R. BROWN
LOGGED BY:	D.G.T. DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		ALLUVIUM 0 – 12		0					
		0 – 3 Red-orange sand		3	97437	3.0	20	20	50
		3 – 9 Red-orange sand & gravel		6	438	"	10	<20	25
		9 – 12 Pink sand + pebbles. (Fallback?)		9	439	"	15	<20	20
		SANDY SILTSTONE 12 – 54		12	440	"	10	<20	10
		12-21 : Sandy siltstone – beige then		15	441	"	5	<20	15
		grey to off-white sandy siltst. w/ clayey		18	442	"	20	<20	20
		ss, sticky.		21	443	"	5	<20	10
		21 – 30 : Clayey sandstone – Subrounded		24	444	"	10	<20	15
		qtz grains (derived from Pandurra Fm?) in		27	445	"	10	<20	15
		off-white clayey matrix. Minor lithic		30	446	"	10	<20	15
		grains 27 – 30.		33	447	"	10	<20	20
		30 – 54 : Sandy siltstone – off-white		36	448	"	10	<20	10
		very fine matrix (silt) c̄ minor fine sand		39	449	"	10	<20	25
		grains. From 42 – 54 matrix pink.		42	450	"	10	20	30
				45	451	"	10	20	40
				48	452	"	5	20	35
				51	453	"	10	20	40
				54	454	"	10	20	40
		PANDURRA FM. 54 – 56		56	97455	2.0	10	20	70
		Red quartzite. Possibly paleoregolith. Black H.M.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 153

PAGE 1 OF 1

0211

PROJECT AREA: PANDURRA | PROJECT No. H05

SPUDDED: 16.7.74 | COMPLETED: 16.7.74

LOCATION: "YUONAPINNA" | CO-ORDS: X: 512 E Y: 1032 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 4 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: A. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn		
		RECENT 0-3		0							
		Soil & red quartzite rubble.		3	97456	4.0	10	20	15		
		PANDURRA FM. 3-4		4							
		V. hard red quartzite									
		END OF HOLE									

PACMINEX PTY. LTD.

HOLE No. EX 154

PAGE 1 OF 1

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16. 7. 74 | COMPLETED: 16. 7. 74 | 0212

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 514 E Y: 1034 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 14 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm TO TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.m. Cu	Pb	Zn
		SOIL & CALCRETE 0 – 1		0					
		YUDNAPINNA SILTSTONE 1 – 14		3	97457	3.0	10	20	15
		1 – 10 : Khaki sandy shaley siltstone		6	458	"	5	<20	10
		10 – 12 : Red-brown shaley siltstone		9	459	"	10	20	20
		12 – 14 : Red-pink & grey shaley siltst.		12	460	"	10	<20	20
		PANDURRA FM. 14 m.		14	97461	2.0	10	20	95
		V. hard red quartzite at end of hole.							
		END OF HOLE							

PACMINEX PTY. LTD.

HOLE No. EX 155

PAGE 1 OF 1

PROJECT AREA: PANDURRA | PROJECT No. 405

SPUDDED: 16·7·74 | COMPLETED: 16·7·74 | 0213

LOCATION: "YUDNAPINNA" | CO-ORDS: X: 509 E Y: 1031 N

ELEVATION: | DIRECTION: V | INCLINATION: V | TOTAL DEPTH: 26 m

HOLE TYPE: ROTARY | DRILLING CONTRACTOR: THOMSON | DRILLER: R. BROWN

LOGGED BY: D.G.T. | DATE: | BIT SIZE: 121 mm | TO | TO | TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE P.P.M. Cu	Pb	Zn
		RECENT 0 – 7		0					
		Orange sand & clay		3	97462	3·0	20	<20	35
		PANDURRA FM. ? 7 – 26		6	463	"	15	20	35
		7 – 14 : Clayey S.S Sand grains in clayey matrix. Pink & beige to 12m, then greenish to 14 m.		9	464	"	10	<20	25
				12	465	"	15	<20	25
				15	466	"	15	20	20
		14m : Water table.		18	467	"	10	<20	10
		14 – 16 : Silicified s.s. V. hard.		21	468	"	10	<20	10
		16 – 26 : Coarse S.S. Pinkish, grose S.S. & subrounded grains. Very hard at 26m.		24	469	"	10	<20	15
				26	97470	2·0	10	<20	10
		END OF HOLE							
		Water flow estimated 400 gals/hr.							
					T.D.S.		Cu	Pb	Zn
				16m WATER SAMPLE	2·23		2	<2	55
					%		ppb	ppb	ppb

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HOLE No. EX 156

PAGE 1 OF 1

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	16·7·74	COMPLETED:	17·7·74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	500 E Y: 1018 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 23 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR: THOMSON	DRILLER: R.BROWN
LOGGED BY: D.G.T.	DATE:	BIT SIZE: 121 mm TO	TO TO

0214

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1:600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		RECENT 0 – 9		0					
		Red sandy clay & gravel		3	97471	3·0	15	30	35
				6	472	"	10	20	20
				9	473	"	10	<20	25
		PANDURRA FM. ? 9 – 23		12	474	"	10	<20	15
		9 – 12: Red clayey sand – decomp. s.s. ?		15	475	"	10	<20	10
		12 – 22: Oxidised qtzose s.s. ± angular		18	476	"	10	<20	10
		grains. Yellow-ochre.		21	477	"	5	<20	5
		22 – 23: Coarse qtz. s.s. red/brown. Pebbles to 1cm.		23	97478	2·0	10	<20	10
		END OF HOLE							
		N.B. Hole abandoned ∵ very hard.							
		at 23 m. Water table.							

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HOLE No. EX 157

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A215

PROJECT AREA:	PANDURRA	PROJECT No.	405
SPUDDED:	17.7.74	COMPLETED:	17.7.74
LOCATION:	"YUDNAPINNA"	CO-ORDS: X:	500 E Y: 1002 N
ELEVATION:	DIRECTION: V	INCLINATION: V	TOTAL DEPTH: 27 m
HOLE TYPE:	ROTARY	DRILLING CONTRACTOR:	THOMSON DRILLER: R. BROWN
LOGGED BY:	D.G.T. DATE:	BIT SIZE: 121 mm TO	TO TO

CORE RECOVERY	METRAGE	DESCRIPTION	Core bedd'g angle and joint spacing	LOG SCALE: 1 : 600	SAMPLE No.	Assayed length	ASSAY VALUE p.p.m. Cu	Pb	Zn
		SAND 0 – 27		0					
		0 – 6 : Orange-brown sandy clay		3	9748 79	3.0	15	<20	20
		6 – 12 : Bright orange dusty sand		6	480	"	15	<20	25
				9	481	"	10	<20	30
		12 – 24 : Orange-pink dusty sand.		12	482	"	10	<20	30
		(Grains orange-coated, as dune sand).		15	483	"	10	<20	25
				18	484	"	10	<20	15
		24 – 27 : Pink sand. (Orange-coated		21	485	"	10	<20	15
		alt. grains).		24	486	"	10	<20	15
				27	9748 87	"	10	<20	15
		END OF HOLE							
		N.B. Hole abandoned because of cave-in of friable, unconsolidated sand.							

4

PACMINEX PTY. LIMITED

15-19 BENT STREET
BOX 221 ROYAL EXCHANGE
SYDNEY 2000 AUSTRALIA
CABLE "PACMINEX" SYDNEY
TELEX AA20285
TELEPHONE 20515

0216

PACMINEX

Ref: DGT/SS

22nd April, 1975.

The Director of Mines,
Department of Mines,
Box 38, Rundle St. P.O.,
ADELAIDE, S.A. 5000.

Dear Sir,

QUARTERLY REPORT ON E.L. 50, PANDURRA AREA, S.A.
FOR THE PERIOD ENDING 22ND MARCH, 1975

During the quarter an INPUT airborne geophysical survey was made in the north-western corner of the lease. This survey covered 1,251 line kilometres, with 400 metres spacing between lines. It also included two 22½ kilomtre profiles across the northern part of E.L. 50.

It is anticipated that this survey will provide data on which to base further exploration of the area. Preliminary results of the survey are expected towards the end of March, 1975. The final report is expected at the end of May, 1975.

A petrographic examination was made of 33 rock and drill cuttings samples. The petrologist's report is appended to this letter.

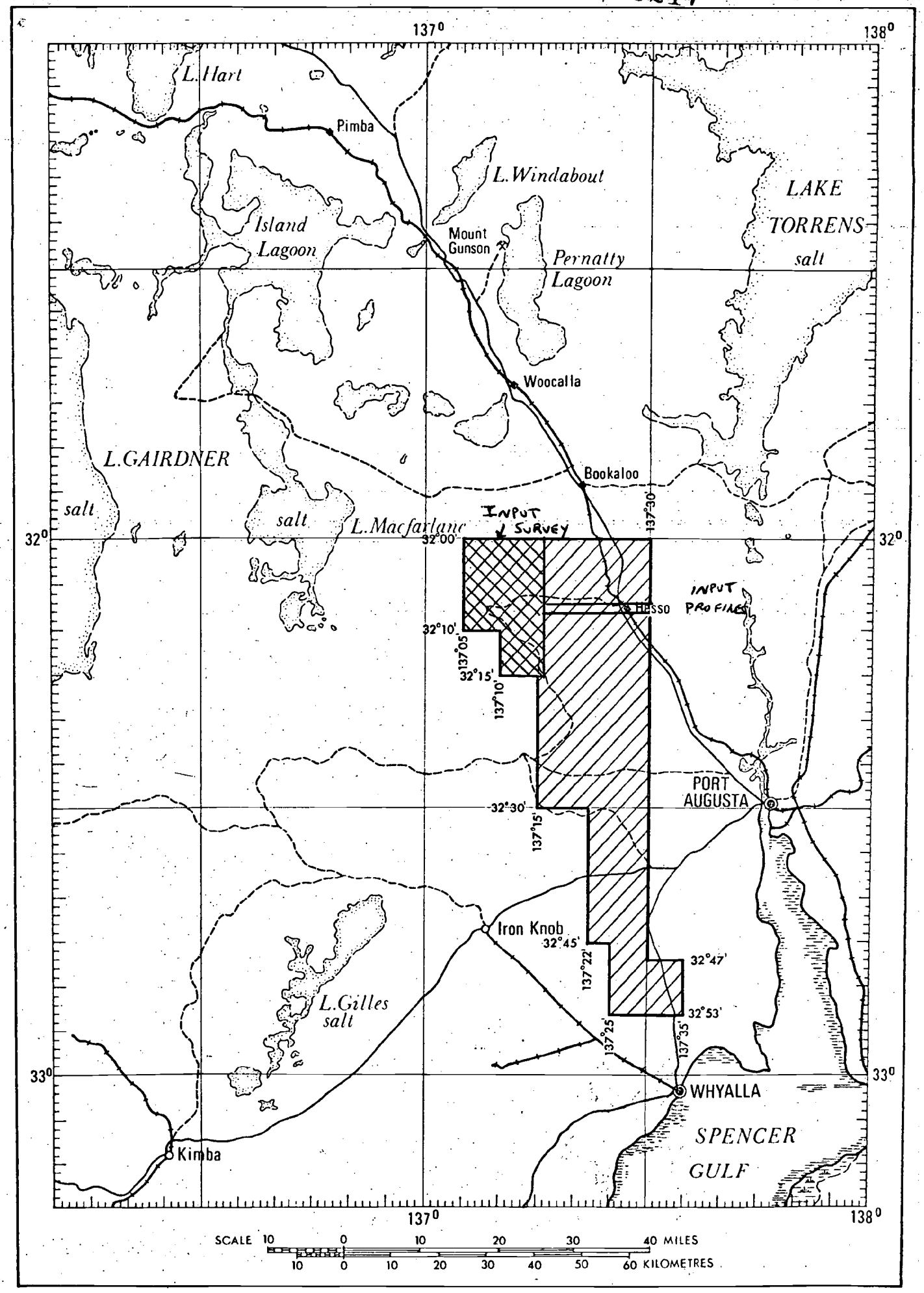
Actual expenditure for the period 1st December, 1974 to 28th February, 1975, was $6,264. This sum was expended on geology, geochemistry and general logistics. An additional expenditure of about $26,000 was incurred by the INPUT geophysical survey, which was only completed on 25th February.

Please note that the report is for the period ending 22nd March, 1975, but the financial statement is for the three month period ending 28th February, 1975.

Yours faithfully,

R.N. SELMAN,
Managing Director.

(Enc.)



LOCATION MAP PANDURRA AREA SOUTH AUSTRALIA

Prospect 405

0218

PACMINEX PTY LIMITED

PETROGRAPHY OF PANDURRA

THIN SECTIONS III

PMR 29/75

SYDNEY
April, 1975

P.J. CURTIS

COPY NO.

0219

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S.A. DEPT. OF MINES	7 & 8

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4MOONABIE
4E L 050
4CORUNNA CONGL
4MAGAZINE HILL
4YUDNAPINNA BEDS

1. INTRODUCTION

Sometime in November, 1974 (Refs. 8 and 9), two consignments of specimens from the Pandurra area were submitted for petrographic examination. The suite of rocks represented rock types, formations and various facies of formations from the Pandurra area. This work was completed and is presented in this report.

Further review work requested, covering much of the petrography in previous reports (Ref. 10) has not yet been attempted because of pressure of priority work from other prospects. This later work will be done as soon as possible and will be entitled "Review and Discussion of Pandurra Petrography completed in 1973 to 1975".

/....

2. SUMMARY

Yudnapinna Beds (85235, 85271 and 97325)

All specimens are very similar with angular, subangular and rounded silt-size quartz grains occur with appreciable potash feldspar and heavy minerals and some volcanic clasts. The interstitial cement is limonite, carbonate or illite. The size and shapes of quartz grains, presence of abundant potash feldspar, volcanic clasts and spherical sand-size quartz grains would seem to suggest this unit to be nothing more than a facies of the Whyalla Sandstone. There is also some resemblance (in the presence of potash and sodic feldspar and abundant limonitised magnetite) to some facies of Corraberra Sandstone but the large occasional spherical sand grains with abundant silt-size potash feldspar matrix is very like some Whyalla Sandstones. However, all specimens are from well below the Whyalla Sandstone base and must therefore constitute a separate unit.

Woocalla Dolomite (97275, 97427 and 97342)

Variable samples of dolomite Collenia fragments and lagoonal mud specimens, mainly the former (97275); Collenia dolomite fragments, a variety of Pandurra Quartzite forms; and basal(?) Woocalla Dolomite with angular quartz forms and some lithic cherty and volcanic clasts (97427); and finally dolomitic lagoonal mud with occasional quartz porphyrotopes. Typical Woocalla facies of stromatolitic dolomite and lagoonal carbonate mud is associated with adjoining Pandurra Quartzite and lithic grains (normally associated with Whyalla Sandstone). The angular to subangular quartz clasts in carbonate cement is a curious lithology and may locally be basal Woocalla Dolomite facies?

All three specimens, petrographically fit their stratigraphic positions in the drill-log but for the presence of the volcanic clasts.

/....

Whyalla Sandstone (97292, 97229 and 86645)

Typical round pebble quartz, volcanic lithic grains, potash feldspar and silt-size matrix (97292); similar to 97292 but lithic cherts are smaller and there occur clasts of possible Pandurra Formation quartzite and abundant pyrite and transparent heavy minerals are present in appreciable quantities (97229); very similar to Yudnapinna Beds (85271), large round pebbles with silt, fine feldspar, ferruginous cherts and silt-size subangular quartz, resembles Yudnapinna Beds, also there is a resemblance of silt-size quartz and feldspar content to Corraberra Sandstone at Mount Gunson (86645).

The specimens 97292 and 97229 are typical Whyalla Sandstone; the last specimen (86645) is from the Yudnapinna Beds.

Tregolana Shale (86587 and 86589)

A sandy band of subangular equigranular quartz of sand-size which contains about 2 volume percent of oligoclase > microcline; abundant limonitised opaque matter, chloritic grains with opaques (volcanic origin); an impure quartz arenite (Ref. 2). Mainly typical Tregolana Shale of fine quartz, clay mineral and limonite, (86587); very similar sandy bands to 86857 with microcline, but also carbonate is appreciable and some tourmaline and coarse brown clay mineral, volcanic clasts and pyrite - as for the specimen immediately above but texturally different with scattered larger quartz, chert, microcline and carbonate rhombs (86589).

The clayey specimens in 86587 are similar to those Tregolana Shale specimens sectioned from Pernatty Lagoon, otherwise the sandy bands are similar to some Corraberra Sandstone from Mount Gunson.

Possible sandy bands occur within the Tregolana Shale which has not been recorded before. Petrographically the rocks are in transition to overlying Corraberra Sandstone.

/....

Sundry Specimens (97378 and 97404)

The specimen 97378 is similar to 97325 of the Yudnapinna Beds in angularity of silt-size grains, presence of clay mineral and of small numbers of rounded to subangular sand-size quartz grains. These beds equate with some bottom beds of the Whyalla Sandstone. Probably Yudnapinna Beds.

The specimen 97404 has various rock types represented in the sample and comes from the contact of Whyalla Sandstone and Pandurra Formation. The most common type is of banded clay with scattered silt-size, rounded and subangular quartz grains (approx. 0.025 mm) to 3 volume percent and the opaque mineral concentration is to 5 volume percent. Bands of irregular quartz up to 0.8 mm occur in the clay. The opaque mineral is of mainly chalcopyrite, but pyrite framboids, sphalerite and galena also occur. This is a facies of the basal Whyalla Sandstone not petrographically seen before.

Elizabeth Creek Conglomerate (P.27 and P.29)

The pebbles of P.27 are obviously of Pandurra Quartzite of quartz gneiss and silicified quartzite grains but of different facies. Any resemblance of smaller spherical quartz grains in the pebble interstices to Whyalla Sandstone indicates that Whyalla Sandstone-like spherical quartz grains do occur in older formations.

The specimen P.27 is different from P.29 in having few large clasts, then only of cherty quartzite. The groundmass of somewhat rounded near equigranular quartz grains is similar to that seen in the Pandurra Formation at Woocalla Sidings (A4229).

Magazine Hill Clay (P.81 and P.85)

The section P.81 contains fine transparent particles of high R.I. previously thought to be rutile but now recognised to be grinding media in the clay. The clay possibly contained fine halite which solubilised during section preparation. Traces of gypsum and illite occur but otherwise the section is of almost pure kaolinite.

/....

With P.85 the same problem exists of grinding media filling holes to 7 volume percent of the section, some gypsum and limonite also occur. It is suggested that the halite, if present, occupied the holes now filled by the grinding medium. The main host rock is kaolinite and illite (Ref. 7). Micro-faulting and slump characteristics of bands are seen.

Pandurra Formation

P.83A - Consists of large round quartzite pebbles in a finer quartzite matrix which has similarities with the 'Elizabeth Creek Conglomerate' P.27.

P.84B - Variable subrounded to subangular quartz grains. Unsorted and ferruginous cherts are seen including one ferruginous porphyrite grain. Cherty cement occurs between quartz grains. An unusual Pandurra Formation type.

P.86 - Somewhat like Elizabeth Creek Conglomerate P.27 with large rounded quartzite clasts; though in P.86 the matrix is more cherty and the smaller quartz grains are more rounded. There is abundant ferruginous chert. One large (several millimetres) angular quartz gneiss clast is present. The presence of large, angular or subangular clasts of quartzite in a fine quartz matrix and absence of feldspar are characteristic of the Pandurra Formation.

P.87 - The larger mineral grains present are subrounded quartz, roughly banded with some interstitial chert and rounded cherts. The matrix is illitic and cherty. No feldspar. The specimen is rather similar to Pandurra Formation rocks in a variety of Mount Gunson sections.

P.88B - This Pandurra Formation type is of finer rounded grains as seen in West Lagoon sample A4005 which is made up of fine and coarser quartz bands. Many quartz grains are quite angular and intermingle with the rounded quartz. Chert is quite abundant in P.88B and is present as micaceous and ferruginous chert as seen in the Whyalla Sandstone of Mount Gunson. The presence of the ferruginous cherts, some of which may be devitrified volcanic glass is unusual for Pandurra Formation specimens as observed so far.

/....

P.89 - A roughly banded rock of rounded to subangular quartz grains, appreciable chert and minor angular quartz mineral grains and rock fragments. The quartz varies in the coarse bands from 0.1 to 1 mm, finer bands which have more subangular grains 0.05 to 0.5 mm occur. Appreciable cherty grains and abundant illite and some chloritic clay are seen in the interstices. A substantial matrix element is characteristic of the suite of Pandurra Formation rocks discussed in this report and there are resemblances in grain shapes and distribution to Pandurra Formation rocks from West Lagoon, Pernatty Lagoon drill holes and at Woocalla sidings.

Corunna Conglomerate

This rock type occurs below the Gawler Range Volcanics.

P.90 - This specimen contains large rounded quartz rock fragments of several millimetres with a matrix of smaller quartz, subangular and part rounded grains from 0.2 to 2 mm. The fragments are made of equigranular quartz of cherty quartz grains varying from fragment to fragment, 0.02 to 2 mm. The large fragments occur as sutured silicified grains; the interstitial grains contain a little yellow clay mineral and limonite between the grains. Interstitial cherty quartz occurs, also abundant cloudy zircon.

There are marked similarities to Elizabeth Creek Conglomerate rock specimen P.27. Both contain moderate zircon apart from similar quartz and shapes. Though P.90 is more 'dirty' with limonite in the interstices.

P.91 - A siltstone of fine subangular to rounded quartz grains and abundant illitic clay and scattered limonitised opaques (magnetite and ilmenite?) with some zircon grains in the interstices. Occasional large porphyrotopes of quartz occur and limited banding of larger quartz grains is seen. The rock is very similar to finer bands of Pandurra Formation P.89 in shapes of quartz grains and sizes and the presence of illitic clay in the interstices. However, there is a greater heavy mineral content and possible presence of a little plagioclase in P.91.

/....

P.92 - This specimen has a character of its own consisting of very irregular quartz and abundant chert grains up to 3.5 mm. Some cherts are similar in lithological appearance to those in P.90. Others (most) are tuff fragments, granophyre and possible ferruginous trachyte(?) clasts occur. Large microcline grains are conspicuous. The rock is not over-abundant with heavy minerals.

P.93 - Somewhat similar to P.92 but fewer ferruginous (volcanic 'cherts') are seen, but in P.93 pockets of illite occur . Except for slightly greater angularity of quartz grains the quartzite fabric is very similar to Pandurra Formation specimen P.89. P.93 occupies a position between P.89 (Pandurra Formation) and P.92 the Corunna Conglomerate specimen. No feldspar is seen.

P.94 - Large (several millimetres) clear chert pebbles, micaceous chert (volcanic rock?) pebbles and other pebbles of irregular quartzite are seen which include appreciable clear microcline grains. The interstices are mainly chert and this appears to encroach on some pebbles which resorb into the interstitial chert. Some pebbles present are derived from volcanic rocks and tuffs (c.f. Elizabeth Creek Conglomerate).

Moonabie Formation

This rock type occurs below the Carpentarian, Corunna Conglomerate.

P.95 - A fine siltstone of quartz grains with abundant chloritic clay > illite matrix. Similar in grain size to Yandicoogina specimens but the grains are more irregular in size and shape and vary from subangular and flattened quartz grains to some quite angular grains and up to 10 percent slightly sericitised plagioclase grains, few showing twinning. There is an abundance of heavy minerals in the interstices of mainly limonitised magnetite and a little tourmaline. A calcareous lithic arenite of Williams et al (Ref. 2) or tuffaceous sandstone. Banding is due to the presence of more abundant opaque mineral and possible slump 'folds' are seen in the bands.

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P.86 - A quartzite of much rounded quartz mineral grains and abundant chert grains. Shapes and sizes of quartz are like many seen in Pandurra Formation specimens P.86, P.87 and P.89. The cherts, including some volcanic clasts are very similar to those seen in many Whyalla Sandstone rocks in the Mount Gunson area.

An unsorted tuffaceous cherty quartzite. Volcanic material present has a similar origin to that seen in P.95.

SPECIMENS SUBMITTED AT A LATER DATE

Elizabeth Creek Conglomerate

EX 88-86545 - Variable rock types were exhibited in a number of thin-sections (Ref. 5) of pebbles.

One pebble was of slightly metamorphosed adamellite; another of a possible sericitised and chloritised dolerite; yet another of porphyritic (plagioclase, albitised to oligoclase) basalt; and a silicified, carbonatised basic tuff and finally a pebble of feldspathic quartzite. The latter pebble does not resemble other quartzite pebbles seen from the Elizabeth Creek Conglomerate. The only other rocks sectioned which resemble the quartzite are Yudnapinna Beds, though these are not as feldspathic as the 86545 pebble, or Corraberra Sandstone which though limonitic, is less cloudy since it contains less clay mineral matrix.

Pandurra Formation

EX 136-97217 - Variable facies of Pandurra Formation are portrayed by the various pebbles, including silicified coarse rounded grains in quartzite with a little limonite as the only matrix and are identical to P.27 of the Elizabeth Creek Conglomerate.

Other pebbles present are similar to P.86 Pandurra Formation with large rounded clasts and much smaller interstitial quartz grains - a mixture of sand and silt but without the abundant chert of P.86, but with interstitial clay mineral.

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Variation in make-up of Pandurra Formation rocks of the present series discussed is shown by large volcanic clasts as are seen in P.84B, Pandurra Formation specimen.

Yudnapinna Beds ?

EX-146 - Similar to Yudnapinna Beds of the series in the finer quartz grain sizes and shapes and the presence of minimal clay mineral in the interstices and also the presence of appreciable potash feldspar. However, fragments of irregular Pandurra Formation and Woocalla Dolomite occur. Possibly the pebbles represent Yudnapinna Beds from the base of the beds where Woocalla Dolomite is thin and lies immediately over the Pandurra Formation? The specimen also resembles basal Whyalla Sandstone.

3. PETROGRAPHIC INVESTIGATION

Yudnapinna Beds

85235 - Drill Hole ex 11, 34 to 37 m. Rotary drill cuttings. Cu 5 ppm, Pb < 20 ppm, Zn 26 ppm, Mn 1340 ppm. Greyish-green and greyish-red siltstone. Effervescent in HCl.

Angular to subangular quartz grains with few rounded grains (0.016 to 0.24 mm, but mainly close to the median size of 0.064 mm). Grains of oligoclase occur (< 1 volume percent) and potash feldspar (varies between 2 and 7 volume percent); detrital rounded rutile (approx. 0.05 mm, ≪1 volume percent); octahedral < rounded magnetite grains (approx. 0.03 mm, approx. 1 volume percent); greenish, rounded glauconite(?) grains (approx. 0.1 mm, < 1 volume percent) and red subangular chert grains (approx. 0.1 mm, < 1 volume percent), muscovite flakes (approx. 0.1 x 0.03 mm, < 1 volume percent) and granular, subangular carbonate grains (0.05 to 0.06 mm, 2 volume percent). The interstices are of fine granular carbonate > limonite > clay mineral, overall around 15 volume percent. Size ranges are just within siltstone grain size, (Pettijohn - Ref. 1).

All mounted fragments show varying amounts of potash feldspar as grains (K. Feldspar staining method). Volcanic clasts, cherty or glassy clasts are seen in section, with potash feldspar phenocrysts in some fragments.

A quartz wacke (Williams et al - Ref. 2) with a mainly carbonate matrix. Very much like the silt-size fraction consisting of the matrix of some Mt. Gunson, Whyalla Sandstone samples and elsewhere.

85271 - Drill Hole ex 12, 73 to 76 m. Rotary drill cuttings. Cu 8 ppm, Pb < 20 ppm, Zn 17 ppm. As previous sample.

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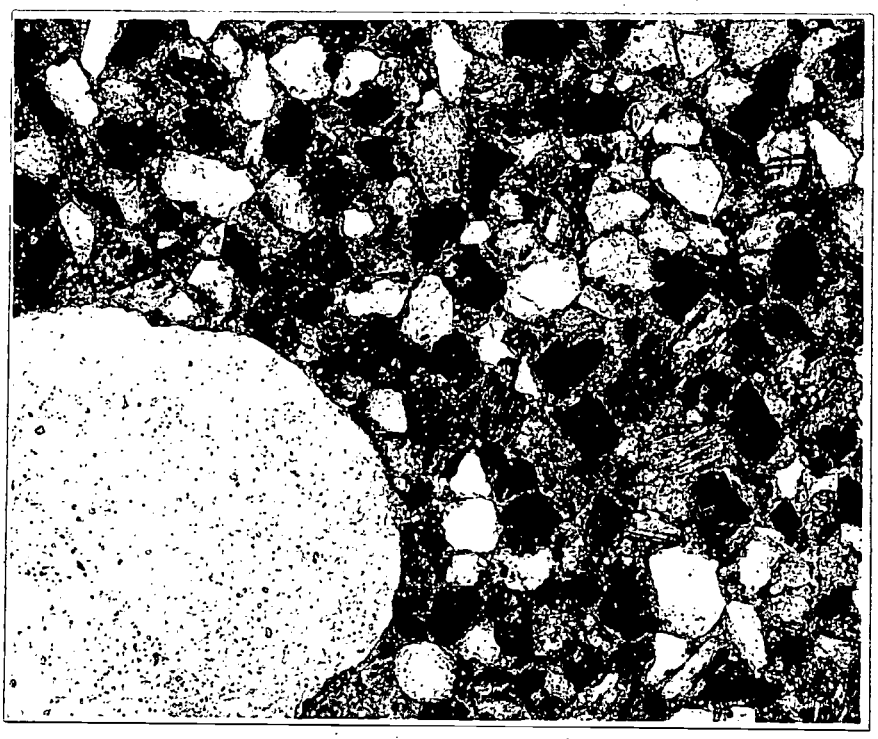

Figure 1 Yudnapinna Beds. 97325/DH ex 142, 42 to 45 metres.

Part of a large round quartz grain (left, bottom corner). Silt size quartz (clear black, grey and white); oligoclase (lamellar twinned) grains; microcline (some faintly stippled grains) are variable in shape (angular to rounded), but similar in size. Fine matrix of carbonate and illite between larger grains shows as finely stippled 'fill'.

Crossed nicols Magnification X 90

Very similar to 85235 except that the quartz grains are more subangular rather than angular and limonite becomes more dominant than carbonate in the matrix.

Subangular to round quartz and flat quartz fragments (0.03 to 0.16 mm, median 0.064 mm); oligoclase grains, similar in size to quartz grains, sharply albite twinned; < 1 volume percent potash feldspar, clear cherty grains and some micaceous chert grains (0.03 to 0.16 mm, 2 volume percent); muscovite flakes (up to 0.1 x 0.03 mm, < 1 volume percent); clear carbonate grains (approx. 0.05 mm, up to 3 volume percent in clear fragments, nil percent in limonitic cement fragments); rounded glauconite (approx. 0.05 mm, < 1 volume percent). Rounded magnetite (approx. 0.05 mm, 1 volume percent). Magnetite is limonitised where limonite content is high. The matrix varies between carbonate and limonite-rich - 10 to 15 volume percent. No heavy minerals other than magnetite are seen.

Staining for potash feldspar indicated occasional clasts in 'white' mounted fragments of the rock, i.e. < 1 volume percent of potash feldspar is present. Occasional sericitised but glassy clasts are volcanic and are present to < 1 volume percent.

A quartz wacke as for 85235.

<u>97325</u> - Drill Hole ex 142, 42 to 45 m. Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 30 ppm. Greyish-red siltstone with orange lithic grains. Minor greyish-green siltstone. Weakly effervescent in HCl. (Figure 1).

Similar to 85235 but a variety of grain shapes from angular to rounded quartz, abundant microcline and some oligoclase, and volcanic clasts (sericite, glass(?) and chert). Quartz varies between 0.02 and 0.22 mm, median 0.06 mm, similarly for microcline which occurs at 2 volume percent and oligoclase, < 1 volume percent. A large granophyric grain is seen. Chert is rounded,

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approx. 0.6 mm, many grains are micaceous, occurs to 3 volume percent; carbonate grains, approx. 0.06 mm, subangular occur to 1 volume percent and rounded to euhedral magnetite, approx. 0.06 mm at 3 volume percent; also several grains of glauconite(?) are seen, approx. 0.05 mm, <1 volume percent. Matrix between the larger grains is fine carbonate > illite > limonite, together to about 10 volume percent. One large zircon grain, (approx. 0.05 mm) is seen; minor rutile and coarse rounded tourmaline (greenish) occur as rounded grains.

There is a resemblance to Corraberra Sandstone particularly with 97325, albeit of finer grains, in grain shapes, presence of appreciable magnetite, limonite, varied heavy minerals and appreciable feldspar (Refs. 3 and 4). The presence of a carbonate matrix may be unusual for the Corraberra Sandstone but the sedimentation and environmental characteristics may to some extent have been similar.

All fragments contain between 2 and 7 volume percent potash feldspar. Occasional glassy volcanic clasts are seen; these are also probably potassic and occur to 2 volume percent.

All three specimens constitute a separate unit as they are found well below the base of the Whyalla Sandstone.

Woocalla Dolomite

97275 - Drill Hole ex 139, 48 to 51 m. Rotary drill cuttings. Cu 130 ppm, Pb 600 ppm, Zn 520 ppm. Grey shale and dolomite.

i) Angular dolomite fragments (0.04 to 0.3 mm) contain fine opaque dust with clear secondary dolomite/calcite cement between fragments.

ii) Fine dolomite of grains approx. 0.008 mm contain bands of fine limonite dust and fine opaques (0.001 to 0.018 mm, median 0.005 mm, to 4 volume percent)

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and angular quartz (0.005 to 0.05 mm, very variable size to 10 volume percent). From a Collenia 'reef'.

iii) Irregular dolomite fragments (0.001 to 0.3 mm, median 0.005 mm) and quartz grains of angular and subangular aspect (0.16 to 1 mm, to 25 volume percent) and fine limonitised opaque mineral, (0.004 to 0.03 mm, to 2 volume percent). Some of the larger dolomite fragments themselves contain quartz fragments. Lagoonal mud.

Fragments from ii) are the most common. Some Pandurra Quartzite/spherical Whyalla Sandstone grains are also present. Facies of Collenia 'reef' and lagoonal carbonate mud.

97427 - Drill Hole ex 149, 48 to 49 m. Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 35 ppm. Light grey dolomite and red quartzite (Pandurra Formation).

i) Irregular clear dolomite fragments cemented by dolomite (0.005 to 0.05 mm) with angular > subangular and a little rounded quartz (0.024 to 0.2 mm, at 3 volume percent) and fine limonitised opaque mineral, (< .001 to 0.008 mm, to 1 volume percent). Lagoonal mud.

ii) Rounded and subangular quartz grains (0.16 to 0.50 mm) in fused mosaics but pockets of kaolinite are present in the interstices and limonite flecks indicate the position of original interstitial minerals. About 20 volume percent of quartz grains are fused quartz rock fragments - Pandurra Quartzite.

iii) Fine subangular quartz (0.016 to 0.08 mm, median 0.03 mm) with abundant illite > kaolinite cement (20 volume percent), one large oblong, part sericitised twinned plagioclase (approx. 0.7 x 0.4 mm) and a little irregular quartz to 0.30 mm altogether to 10 volume percent. Irregular opaque mineral blebs, now limonite (0.08 to 0.11 mm) to 1 volume percent.

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iv) Large quartz grains (approx. 2 mm) containing trains of limonite particles, attached finer quartz mineral grains and rock fragments (0.05 to 0.5 mm) some limonite cement, otherwise interstitial clay mineral - Pandurra Quartzite.

v) Angular to subangular quartz in carbonate cement - basal Woocalla Dolomite.

vi) Lithic cherty and volcanic (basaltic?) clasts.

The fragments are Pandurra Quartzite > Woocalla Dolomite > volcanic/cherty clasts.

97342 - Drill Hole ex 143, 39 to 42 m. Rotary drill cuttings. Large (5 cm) chip of greyish dolomite from thin probably brecciated lens between "Yudnapinna Beds" and Pandurra Formation.

Fine cloudy dolomite in fragments with clear calcite/dolomite cement (approx. 0.03 mm width but variable), and in pockets. Fine limonitic opaques (approx. 0.02 mm to 2 volume percent overall) speckle the dolomite fragments. Prismatic gypsum (approx. 0.3 mm x 0.1 mm, 1 volume percent) and angular quartz and a minority of round detrital grains (0.03 to 0.3 mm at 1 volume percent of section) occur scattered through the section.

Possible solution breccia of Woocalla Dolomite.

Whyalla Sandstone

97292 - Drill Hole ex 140, 39 to 42 m. Rotary drill cuttings. Cu 10 ppm, Pb < 20 ppm, Zn 20 ppm. Dirty lithic sandstone.

Typical Whyalla Sandstone textures. Two generations of quartz grains. Large rounded quartz grains (0.3 to 1.0 mm, median 0.7 mm) with finer silt-size subangular grains; also there are some mosaics of smaller quartz grains as irregular intergrowths of ex-Pandurra Quartzite(?), (approx. 2.0 mm). Smaller angular to subangular quartz (up to 0.2 mm, median 0.08 mm) occupy the interstices with fine platelets of illite. Red with limonite, chert

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grains (lithic grains), subangular to rounded (0.2 to 2.0 mm) to 2 volume percent of the rock. Some of the latter grains are composed of fine chert, others are devitrified volcanics and contain capillary structures, devitrified glass and silicified feldspar(?) fragments. Occasional subangular grains of fine carbonate also occur.

In various fragments potash feldspar (confirmed by stain method) occurs as mainly clasts varying between median and larger quartz grains in size to about 1 volume percent.

97229 - Drill Hole ex 137, 33 to 36 m. Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 30 ppm. Grey lithic sandstone with pyrite and black heavy mineral. Pan-concentrated specimen. Thin and polished sections.

Somewhat similar to 97292 but a small proportion of large quartz grains are subangular. A greater proportion of quartz grains are of the fine variety which are more even grained with most grains approaching the median of 0.05 mm. Lithic cherts here are all very small (approx. 0.08 mm) and contain limonite scattered through their groundmass. Abundant fine opaque minerals (0.02 to 0.13 mm) occur, some rounded but mainly subangular occur to 3 volume percent. This includes minor rounded monazite and tourmaline of similar grain size but totalling <1 volume percent of all grains present and some oblong and rounded zircon grains to approx. 1 volume percent. Some large (several millimetres) grains are made up of rounded and subangular quartz with a rich limonite cement. Secondary pyrite appears to replace margins of some quartz grains in the mosaics.

A heavy mineral concentrate in Whyalla Sandstone. Constituent fragments of Pandurra Quartzite show ferruginised quartz mosaics.

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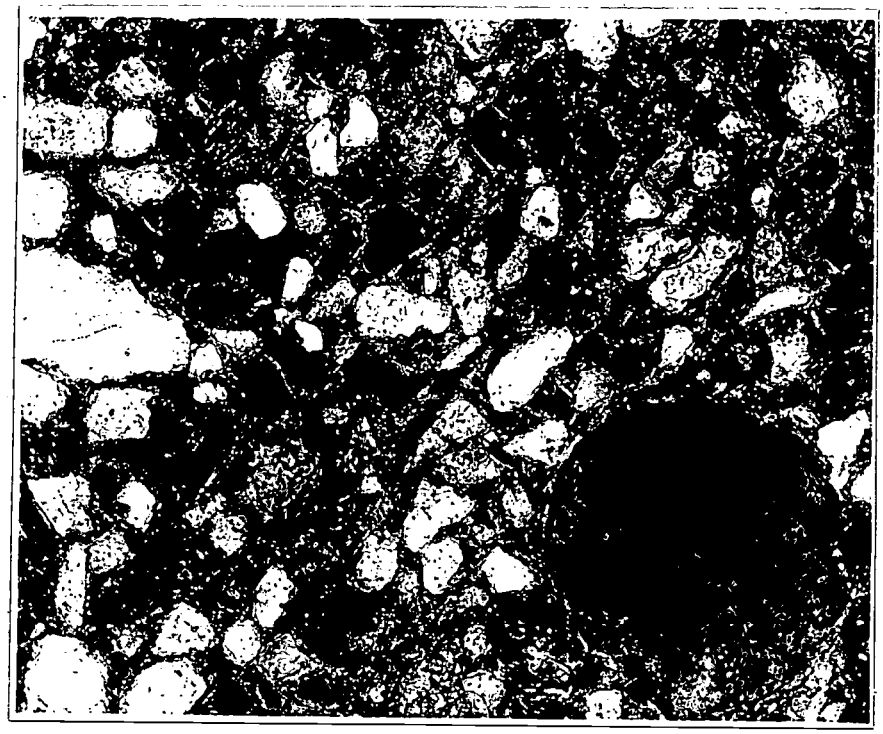

Figure 2 Whyalla Sandstone. 86645/DH ex 96, 27 to 30 metres.

Rounded large aeolian quartz grain (right, bottom corner). Silt-size angular and subangular quartz grains (flat grey, black and white colours). Heavily stippled lithic cherts of silt-size and potash feldspar and oligoclase are present as faintly mottled grains. Unfortunately lamellar twinning of oligoclase present has not photographed well. Fine laths of illite may be seen in the matrix.

Crossed nicols Magnification X 90

P.S. A minor brown melnikovite variety of pyrite is associated with the yellow variety. The former variety shows massive aggregates of tiny spheres cemented by the secondary yellow pyrite. The pyrite is interstitial to other mineral grains and varies 0.02 to 0.4 mm and is present to approx. 5 volume percent of grains present. The pyrite is syngenetic but detrital with sandstone formation (similar quartz/pyrite aggregate grain sizes and shapes).

86645 - Drill Hole ex 96, 27 to 30 m. Rotary drill cuttings. Dark grey clayey sandstone. Sulphide-bearing. Cu 10 ppm, Pb 40 ppm, Zn 70 ppm. Thin and polished sections. (Figure 2).

Consists largely of subangular and some angular quartz grains of similar size (0.015 to 0.18 mm, but median size 0.06 mm) in a groundmass of clay mineral (illite > kaolinite as mainly fine flakes but some diagenetically formed larger flakes to 0.16 mm length are seen; clay is present to 20 volume percent of rock). Large, more rounded grains of quartz (approx. 0.3 mm) and Pandurra Quartzite fragments occur to 3 volume percent of rock. Plagioclase (oligoclase) and potash feldspar are of similar grain size and shape to the population of small quartz grains and are of size (approx. 0.06 mm). Also seen is opaque (pyrite?), euhedral and angular in larger sizes, rounded smaller sizes (0.008 to 0.08 mm, median 0.02 mm) occurs to 8 volume percent with clay in the interstices. Ferruginous, subangular cherts, largely around 0.10 mm are seen scattered in the section to 1 volume percent.

Staining for potash feldspar shows the content to be around 5 volume percent for most mounted rock fragments. Mainly small feldspar grains but some quite large grains are seen. Group intergrowths of potash feldspar grains are also seen to occur. The 5 volume percent of potash feldspar includes some glassy-looking volcanic clasts, present.

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Similar to angular Whyalla Sandstone of P.49 (Ref. 5) but also has similarities to rocks described as Corraberra Sandstone in that report (P.41A, P.46, P.51 and P.65).

P.S. Pyrite (up to 0.09 x 0.03 mm) occurs as a recrystallised framboidal type with secondary pyrite filling spaces between recrystallised spheres which are now euhedral. Very fine pyrite (few microns in size) occurs adhering to margins of quartz clasts. A little goethite (0.015 x 0.006 mm) occurs adhering to quartz. Fine framboids (0.003 to 0.018 mm, spheres <1 to 2μ) occur associated with margins of the quartz clasts. Possible melnikovite pyrite as brown specks associated with normal pyrite in colloform zoned varieties are seen. Pyrite content is probably 2 volume percent of the section and scattered as fine growths.

Tregolana Shale

86587 - Drill Hole ex 93, 10 m. Rotary drill cuttings. Cu 10 ppm, Pb 40 ppm, Zn 60 ppm. Greyish red shale.

Several fragments are shown mounted in section.

i) Coarse quartzite of subangular quartz, plagioclase (oligoclase), perthite and clear microcline grains in that order of abundance. Feldspar grains constitute about one half of the larger grains (0.16 to 0.6 mm) present and form a distinct population of grains. Quartz grains, also subangular (0.03 to 0.08 mm) are more dominant with some clay mineral cement tinged with limonite. Flecks of chlorite also occur. A mixed rock of fragments derived from some underlying igneous source. Sandy bands in clayey Tregolana Shale.

ii) As for i) with abundant feldspar but grains are nearly all 0.16 to 0.6 mm, very little interstitial clay occurs so that quartz grains are now mainly

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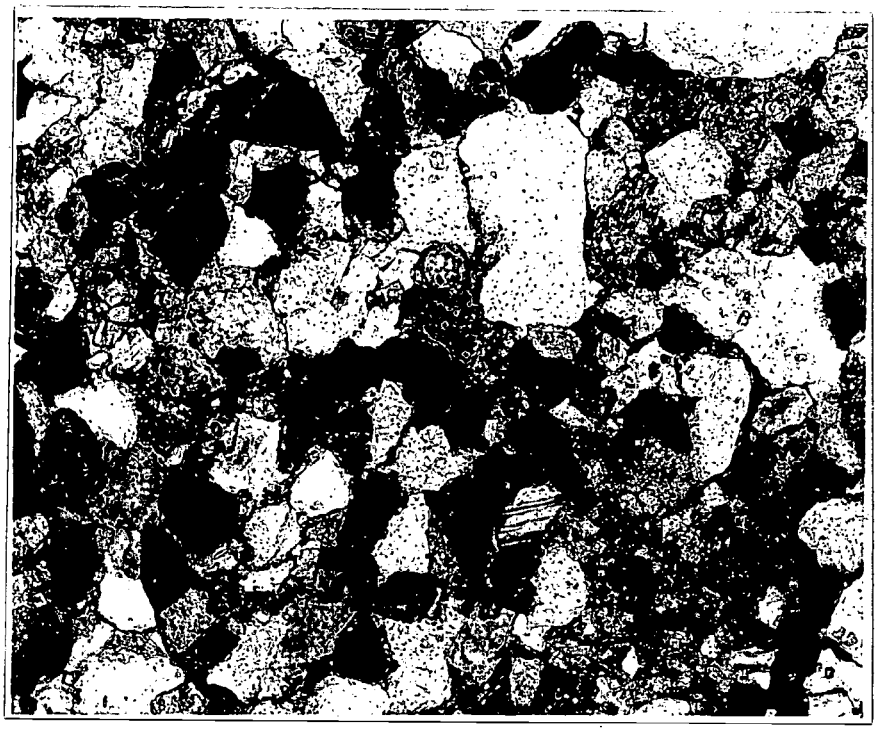

Figure 3 Tregolana Shale. 86589/DH ex 93, 17 metres.

A sandy band of subangular quartz grains of irregular size as for 86589 ii). Quartz grains are faintly stippled black, and grey and are also clear white. Oligoclase grains show lamellar twinning (bottom centre); dolomite grains occur sporadically as small heavily stippled grains (one grain to right of oligoclase grain previously indicated). Two large ferruginous chert grains as composite grains occur towards top left corner of photograph.

Crossed nicols Magnification X 90

cemented by secondary quartz showing trails of limonite particles indicating original grain boundaries. A little zircon as rounded grains is present. The rock is rather like a feldspathic Pandurra Quartzite(?).

iii) Distinctly Tregolana Shale (as per A4239, A4246 - Ref. 4). A very fine quartz groundmass of subangular grains (approx. 0.01 mm) and limonite-clay mineral mixture in about equal quantities. Grain size is fairly equigranular. Elsewhere are parallel bands (0.15 to 0.3 mm) of limonite/clay > quartz.

Abundance of type rocks in section are iii > ii > i.

86589 - Drill Hole ex 93, 17 m. Rotary drill cuttings. Cu 15 ppm, Pb 30 ppm, Zn 65 ppm. Fine greenish grey sandstone, interbedded with shale. (Figure 3).

i) Similar to 86587 ii). Almost equigranular (0.05 to 0.16 mm, median 0.10 mm) rounded to subangular quartz grains, abundant clear oligoclase, somewhat oblong grains similar to quartz size range at about 2 volume percent and clear microcline at about 1 percent. Large tourmaline grains (approx. 0.05 mm) occur as a trace. Minimal clay matrix and a coarse brown clay mineral and volcanic clasts, the latter two minerals occur to approx. 1 volume percent each. The grains of quartz are more rounded here than for 86597 ii). Carbonate grains occur intermixed and are of similar size to the quartz grains or smaller and occur to 2 volume percent. Occasional ferruginous cherts and large pyrite(?) grains occur to 1 volume percent.

ii) Similar to 86587 i). Large and small quartz grains (0.05 to 0.5 mm) but differentiation into two populations as for 86587 i) is not possible. Among the rounded larger grains are sericitised anti-perthite grains with potash feldspar sericitised

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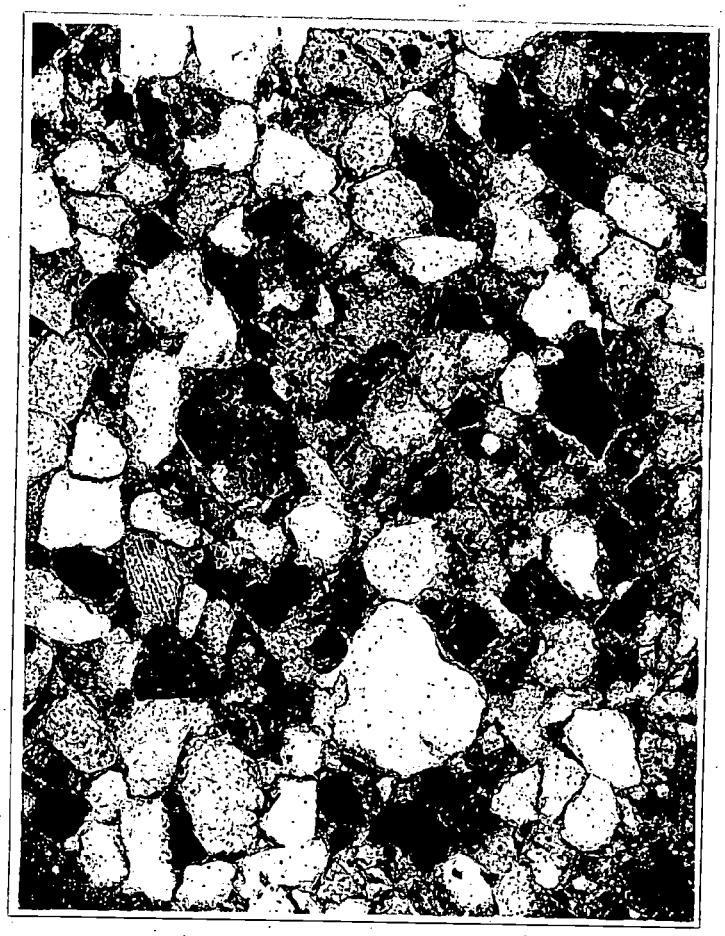

Figure 4 Yudnapinna Beds. 97378/D.H. ex 146, 36 to 39 metres.

One larger somewhat rounded sand-size quartz grain (bottom-centre, white). Silt-size quartz (clear or faintly stippled grey and white and black grains). Lamellar twinned plagioclase (oligoclase) are seen scattered around photograph. Microcline is present but is not obvious here. A little illitic clay occurs interstitially. Tourmaline as smaller than silt-size and pyrite as detrital grains are black here.

Crossed nicols Magnification X 90

patches in oligoclase which is otherwise clear. Smaller oligoclase grains are twinned and clear and are elongate oblong in shape. Also among the large and small quartz grains are occasional ferruginous cherts. Rhombs of dolomite (0.05 to 0.11 mm) are also present to 2 volume percent. No previous rock types from the area seen are in anyway similar to this type except possibly some sections of Corraberra Sandstone.

Mineral grains are close fitting with very little clay matrix in both types i) and ii). Types i) and ii) are equally prolific in the section.

Sundry Specimens

97378 - Drill Hole ex 146, 36 to 39 m. Rotary drill cuttings. Cu 5 ppm, Pb <20 ppm, Zn 20 ppm, Mn 640 ppm. Grey fine-grained sandstone. Effervescent in HCl. Thin and polished sections could be equivalent to either Whyalla Sandstone or Yudnapinna Beds. (Figure 4).

Similar to 86589 i) attributed to a sandstone band in the Tregolana Shale containing subangular to rounded equigranular grains (0.03 to 0.15 mm, but median 0.08 mm) feldspar oligoclase occur to 1 volume percent; and carbonate, very little at approx. 1 volume percent as rhombs. From 2 to 5 volume percent potash feldspar* is seen and zircon occurs as elongate rough prisms with rounded pyramid forms. Some clay mineral occurs between the grains but no more than 3 volume percent and 'pyrite' occurs as rounded grains (approx. 0.08 mm to 1 volume percent).

The Yudnapinna Beds (85235, 85271 and 97325) are somewhat similar to 97378 but only 97325 is strictly similar in having clay mineral rather than carbonate or limonite matrix and with the quartz grains being rounded rather than largely angular.

* checked by mineral staining procedure

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P.S. Opaques present are mainly goethite (0.003 to 0.09 x 0.06 mm) (after pyrite) rather variable in size and anhedral, occur in quartz mineral aggregates in the interstices. Some sandy aggregates contain unoxidised pyrite (approx. 0.006 mm) within quartz. Traces of malachite occur in more heavily oxidised aggregates. Some quartz aggregates contain no pyrite but most contain a little goethite largely in the interstices and some of the larger grains of goethite are rounded of similar size to neighbouring sandstone grains and may well be detrital within the sandstone fragments.

97404 - Drill Hole ex 147, 69 to 72 metres. Rotary drill cuttings. Cu 1100 ppm, Pb 280 ppm, Zn 1000 ppm, Mn 70 ppm. Grey clay from contact between Whyalla Sandstone and Pandurra Formation. Thin and polished sections.

Various rock types are represented by the fragments sectioned.

i) Whyalla Sandstone with Pandurra Formation fragments. Round quartz and quartz gneiss grains (approx. 1.5 mm); subhedral quartz grains and some rock fragments (0.2 to 1.5 mm); also smaller quartz grains, subhedral and round (0.1 to 0.3 mm); and a fine matrix of illitic clay occur. There is a trace of potash feldspar present as round grains.

ii) Banded clay of fine illite and some kaolinite. Banding is shown by limonite particle concentrations (approx. 0.02 mm wide) bands close together (approx. 0.05 mm apart). Scattered subangular > angular quartz grains (0.025 mm) occur to 3 volume percent and concentrations of opaques (grain size to 0.05 mm) or scattered much finer opaque minerals also occur in some bands and total amount in section to 5 volume percent. Quartz bands of variable quartz, round to subangular (0.05 to 0.080 mm) occur in the clay. Quartz as large grains has collected around peripheries of clay particles in some chips from the

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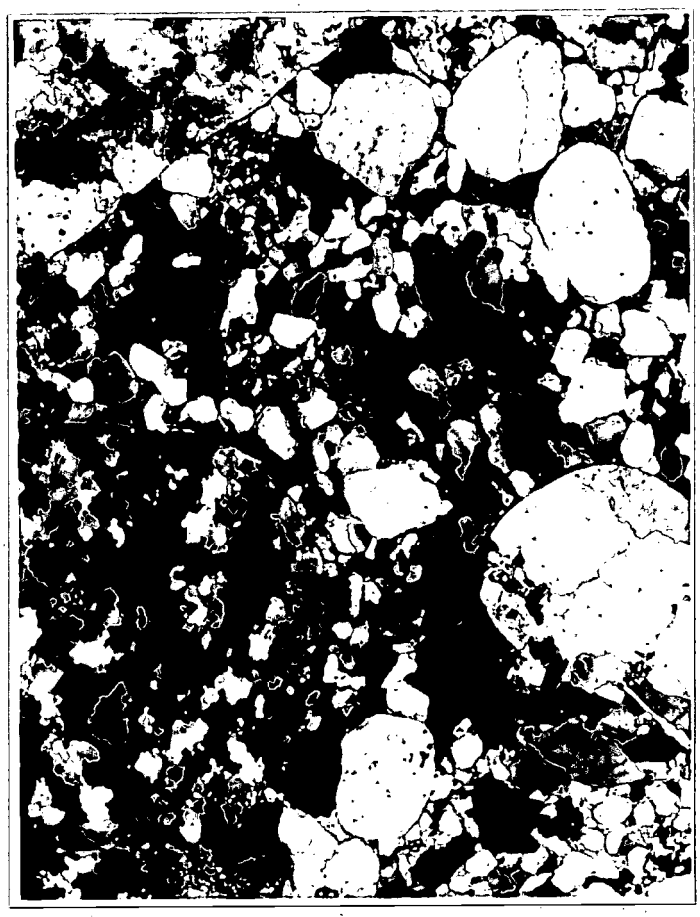

Figure 5 Elizabeth Creek Conglomerate. P27.

Large round quartz rock pebbles (sutured black and white mosaics of quartz as equigranular and inequigranular grains) are seen. The margins of the pebbles are very round and the contact with matrix is sharp. Smaller quartz rounded pebbles also occur (right top corner of photograph). A matrix of individual quartz grains occur which are finer than quartzite or quartz pebbles.

Crossed nicols Magnification X 12

process of 'drilling' to that of 'preparation'.

iii) Particles of Pandurra Quartzite with subhedral quartz grains > quartz rock fragments > ferruginous cherts, (0.16 to 0.30 mm, median 0.24 mm). Some interstitial illite flakes to 5 volume percent but abundant silicification has occurred.

Largest number of particles constitute those of section ii).

P.S. Massive (maximum 0.8 x 0.6 mm) framboids are seen which have irregular outlines and pyrite cement occurs between individual spheres or the spheres surround detrital quartz from the rock. Colour of aggregates is visually pale yellow or yellow although occasional 'framboids' are brown and isotropic as in the melnikovite variety of pyrite.

One massive chalcopyrite:sphalerite/galena exsolution composite grain (0.6 x 0.3 mm) formed from a gel form is is seen. Mutual boundaries between chalcopyrite, sphalerite and galena are observed. Elsewhere chalcopyrite nucleates around pyrite, or occurs in massive form. Evidence of framboidal chalcopyrite is seen here. Abundance progression is chalcopyrite > pyrite > sphalerite > galena.

Elizabeth Creek Conglomerate

P.27 - Silicified quartz pebble conglomerate from 'Pandurra' copper prospect. (Figure 5).

A number of large round quartz grains (1.5 mm) and some quartz rock fragments (approx. 2.0 mm) of equigranular quartz grains (approx. 0.1 mm) occur which are similar to those common in Whyalla Sandstone. A matrix of smaller rounded quartz grains (approx. 0.2 mm) occur in the interstices and also occur in mosaics as fragments. Lenticular fragments and rounded grains of very variable quartz (0.002 to 0.1 mm) occur as silicified shale fragments of several millimetres in size.

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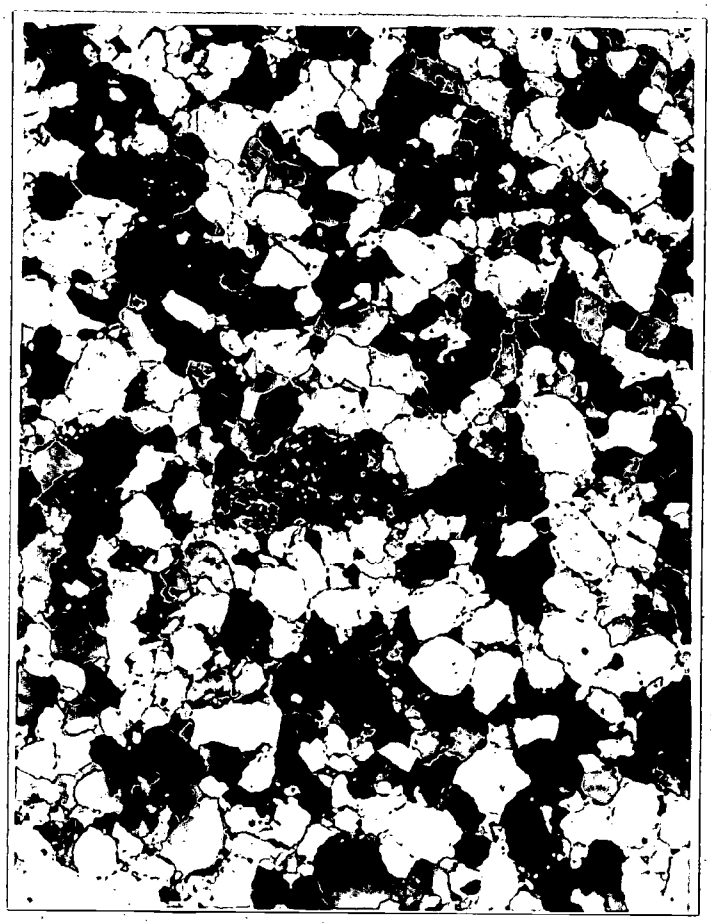

Figure 6 Elizabeth Creek Conglomerate. P29.

A silicified fairly equigranular quartzite of mainly rounded quartz grains. Ferruginous cherts occur (dark, mottled somewhat cloudy mosaic composites) at centre of photograph and near top left corner.

Crossed nicols Magnification X 13

All the large constituent grains show some rounding but are not spherical. These large grains are generally fragments of silicified quartzite. This rock is a very pure quartzite and the larger quartzite grains are derived from the Pandurra Formation.

Zircon (approx. 0.15 mm) and a little topaz (approx. 0.06 mm) occur interstitially or embedded in quartz and a scattering of cubic opaque mineral (0.02 to 0.04 mm) - all occur to < 1 volume percent.

P.29 Silicified conglomerate with b.i.f. pebbles. From 5 km SSE of Pandurra. (Figure 6).

A mainly silicified quartzite of somewhat rounded quartz grains (0.1 to 2.0 mm but median 0.7 mm). Secondary quartz cement occurs between the quartz grains. A ferruginous, somewhat rounded chert with a little mica, occurs (0.2 to 2.0 mm, to 2 volume percent). Occasional zircon prisms (approx. 0.01 mm) are seen embedded in quartz grains. Large rounded clasts (approx. 10 mm or larger) occur with mosaics of very fine quartz, <0.05 mm grain size as were seen in P.27. As for P.27 the specimen is very clean but coarser and with more abundant matrix compared with pebbles. With large fine-grain clasts the rock is similar to many occurrences of Pandurra Quartzite Formation and with abundant round quartz grains and ferruginous chert but without the large chert clasts the rock is similar to the Pandurra Formation from the road metal quarry at Woocalla Sidings (see A4229, Ref. 4).

Magazine Hill Clay

P.81 White clay from Magazine Hill quarry.

A fine white banded clay.

In thin-section the specimen is seen to consist of very fine kaolinite with a little rounded quartz (0.025 to 0.050 mm) distributed throughout to about 1 volume percent.

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Figure 7 Magazine Hill Clay. P85.

Mobilised kaolinitic clay shown by goethite stained bands. Mobilisation occurred during slumping(?). Microfaulting of bands occurs. Flakey illite occurs along some bands.

Plain light Magnification X 12

Scattered very fine grinding medium (up to 0.008 mm) as single grains or aggregates also occur to about 3 to 4 volume percent and occasional opaque limonite masses (to 0.03 mm). Traces of gypsum may also be present and a little illite. It has been suggested that the grinding medium has filled in spaces occupied previously by halite before solubilised by water in section preparation (Ref. 7).

A possible leached shale rock, an almost pure kaolinite.

P.85 White and grey banded clay from Magazine Hill quarry. (Figure 7).

A fine white banded clay but possibly more gypsiferous than P.81?

In thin-section the fine kaolinitic clay is patchily stained with goethite/limonite. Euhedral plates of gypsum up to 0.5 mm occur to about 1 volume percent. Rounded and angular quartz (to 0.15 mm) also occur to about 2 volume percent. A sprinkling of illite flakes (approx. 0.03 mm) to 3 percent or more is seen near limonite stained areas. Abundant holes in the section are filled with fine grinding media (< 0.03 mm particle size) occur patchily with more abundant goethite(?) to about 7 volume percent in stained areas; traces of glauconite(?) occur. Some very fine opaque matter is very fragmentary and could be organic carbon.

Definite similarities to P.28 (Woocalla Shale). Some mobilisation of clay occurred during slumping; crenulation and micro-faulting follows grey bands.

The rock is probably weathered Woocalla Shale(?).

It is thought that holes filled with grinding media were occupied by halite before section preparation. (Ref. 7).

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Pandurra Formation

Specimens are believed to be from the lower portion of the sequence.

P.83A - Grit, from 15 km west of 'Carriewerloo' Homestead.

Large quartz and quartzite clasts (several millimetres in size) occur in a groundmass of smaller quartz grains.

Large clasts (2.5 to 6 mm) of mainly quartz rock fragments, some quartz gneiss fragments and fine grain quartzite (approx. 0.10 mm quartz grain size) are seen. Finer round to subangular quartz grains (0.5 to 1.5 mm, median 0.6 mm) occupy the interstices and take up to 60 volume percent of the rock. Kaolinite in voids (0.5 to 2.0 x 1.0 mm) take up 10 volume percent of the rock volume. The rock grains are fused together by secondary quartz where pores are absent. Larger quartz grains contain inclusions of sericite flakes (approx. 0.008 x 0.008 mm) sparsely, and abundant fluid inclusions mainly around 0.003 mm contain gas bubbles and one inclusion appears to contain a cube of halite. Trapped fluids occur from circulating brines between quartz grains in an original quartz mosaic now secondary silicified to form one grain with internal differences in extinction which mark-off previously distinct separate grains.

There is an approach to two populations of quartz grains. Large quartz grains are in fact fused mosaics of originally smaller grains.

No heavy minerals are seen.

No potash or plagioclase feldspar occur, as indicated by staining procedure.

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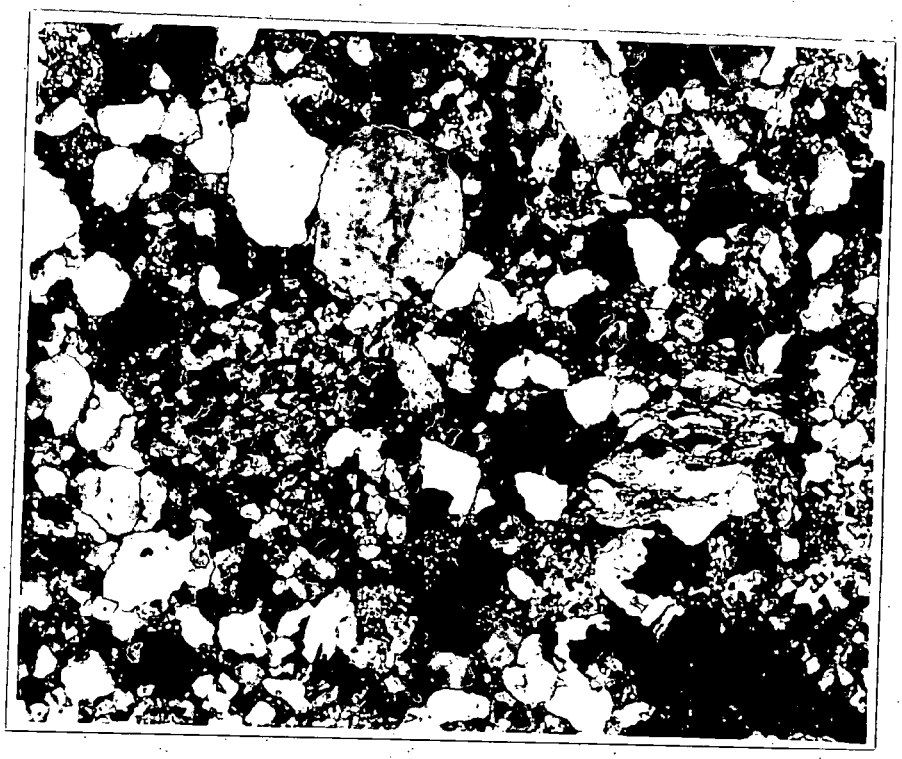

Figure 8 Pandurra Formation. P86.

Typical of gritty facies of Pandurra Formation but clasts are more round than seen in Gunson area. Rounded large quartz grain (top centre); cherty quartz (near left margin, centre); quartz gneiss grain (near right margin, centre). Finer quartz occurs in matrix.

Crossed nicols Magnification X 12

P.84B - Grit, from Seven Miles Outstation, 21 km south-west of 'Yudnapinna'.

An irregular quartzite of variable subangular grains, unsorted and with appreciable chert grains.

In thin-section the grains vary between 0.2 and 3 x 3 mm with an approximate modal value of 0.6 mm. Most grains are quartzite grains of irregular quartz grain size. However, a proportion of quartz grains where present (0.5 to 1 mm) are almost spherical but most grains are subangular. An abundance of ferruginous cherts, rounded and oval (0.5 to 1.5 mm) are seen such as commonly occur in the Whyalla Sandstone. Again, most cherts, of similar grain size are clear, are of irregular shape and are of fine composite grains. One very large irregular shape, chert clast, (several millimetres) occurs in one corner of the section. Possibly the Whyalla Sandstone, ferruginous cherts are derived from a basal Pandurra Formation rock such as this which contains an abundance of interstitial (pore filling) chert. One large volcanic chert, possibly porphyrite is seen with a large plagioclase grain; no individual feldspar grains are seen. In previous specimens it has been noted that Pandurra Formation generally seems to be free of ferruginous chert. Careful examination of quartz boundaries indicates that progressive chertification of the rock has taken place as occurs during oxidation.

No individual potash or plagioclase feldspar grains are present as indicated by staining method.

P.86 - Grit, overlying basal conglomerate, Mt. Laura, Whyalla (Figure 8).

Vaguely like the Pernatty Lagoon, Pandurra Formation section A4241 (Ref. 4) but large clasts are more round as in Elizabeth Creek Conglomerate P.27. Large (several millimetres) clasts of quartz rock and cherty quartzite

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(including a chert grain with a strong lineation of composite grains) in a fine quartz groundmass. The large clasts indicate the existence of a rough banding within the rock.

In thin-section quite like P.84B above, but in this (P.86) specimen the cherts are present as abundant large clasts as well as smaller grains. Some of the smaller chert grains are quite ferruginous in P.84B. The cherts are thoroughly mixed up with the quartz grains and rock fragments, also chert is present as interstitial silica cement. Chert occurs to 40 volume percent of the rock. The larger quartz rock fragments and quartz mineral grains (approx. 2 mm) are commonly round but not so much as in Whyalla Sandstone and these are present to 25 volume percent of the rock. Smaller quartz grains and rock fragments (0.1 to 0.6 mm, median 0.5 mm) constitute most other rock not covered by chert and the larger quartz grains. Many of these are fairly round (approx. 0.15 mm) are embedded in quartz rock fragments and chert grains and occur to less than 1 volume percent and a little massive sphene occurs with this.

Under high power, illite is seen to be intermixed with interstitial chert. Whyalla Sandstone micaceous cherts are seen to be derived from the rock cement of this variety of Pandurra Formation.

No feldspar (potash or plagioclase) are present as indicated by staining method.

P.87 Grit, Mt. Laura, Whyalla.

A roughly banded variety with alternate bands (several millimetres wide) indicating more coarse and more fine quartz grains. Rounded and subangular quartz grains occur ranging from 1 to 2.5 mm, median 0.6 mm.

The banding seen on sawn section at low power is not so obvious in thin-section and appears to indicate

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abundance of fine interstitial chert at alternate horizons. The larger quartz grains appear to have been somewhat more rounded at one stage but silicification has made the grains more angular. As in previous section P.86, the interstices are cherty/micaceous. Rounded cherts occur to 10 volume percent of the rock, no ferruginous chert as per Whyalla Sandstone are seen. Grain size and textures compare with Pandurra Formation rocks from the Mount Gunson area (Refs. 4 and 6) such as A4009, 4226 and 4245.

No feldspar (potash or plagioclase) is present as indicated by staining method.

P.88B - Sandstone, very dusky red with white patches and bands. From site overlying Moonabie Formation at Water Tank Hill, Whyalla.

Large quartz rock clasts fairly evenly distributed in finer grained subangular quartz groundmass as seen in hand specimen.

Thin-section shows the 'clasts' seen in the rock under low power microscopy are not clasts at all but areas where the grain cement is quartz rather than limonitic chert. The rock is largely of fairly even grain subrounded quartz grains (0.16 to 1.2 mm, median 0.3 mm) and some distinctly angular grains. Chert is present as limonitic chert and micaceous chert as rounded grains around 0.5 mm and present to about 10 volume percent of the rock; also as interstices with limonite and fine sericite to about 3 volume percent. Coarse micaceous interstitial areas occur of illite, but these are not common. No large quartzite clasts occur.

Chertification of margins of quartz grains has taken place. An even-grained ferruginous Pandurra Formation rock which may also be basal Whyalla Sandstone. The degree of rounding of quartz is seen in the finer quartz bands of A4005, Pandurra Formation specimen, West Lagoon. (Ref. 4).

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No feldspar (potash or plagioclase) are present as shown by staining method.

P.89 - Light coloured sandstone, heavy mineral bearing, from Ready Mix Concrete quarry, Whyalla.

A coarse and fine banded (several millimetres wide) quartzite with a number of red stained grains speckling the rock.

In thin-section are seen abundant large rounded quartz grains, appreciable subangular quartz grains and quartz rock fragments, also some angular grains. About one-third of quartz grains which are more than 0.2 mm in size are quite round, near spherical and this is uncommon in the Pandurra Formation. Coarse quartz bands, grains vary 0.10 to 1 mm, median 0.3 mm, some illite and chloritic clay occurs in pockets or thinly between quartz grains to 5 volume percent. Large cherty grains (approx. 1 mm) occur occasionally.

Fine, quartz bands where quartz is more subangular (0.05 to 0.5 mm, median 0.15 mm) with abundant illite and chloritic clay in pockets and between grains, taking up about 20 volume percent of the rock are seen. Again cherty rounded quartz grains (approx. 0.3 mm) occur to about 2 volume percent, and more commonly than the coarse quartz bands.

Opaque minerals, topaz and sphene occur to rather less than 1 volume percent, grain size approx. 0.03 mm.

Although as mentioned above there is an unusually high degree of rounding in the larger quartz grains, there is a large amount of quartz of all size ranges which is distinctly subangular or angular and this is typical of Pandurra Formation quartzite. The presence of abundant clay is also unusual for Pandurra Formation which in previous specimens examined was commonly silicified.

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Ferruginous cherts (0.3 to 1 mm) occur, the smaller ones being quite round, the remainder are subrounded. Some contain a little mica and are possibly of volcanic origin. One other glassy volcanic fragment, somewhat angular (approx. 0.2 mm) is seen. All cherty material occurs to 5 volume percent. A little worn tourmaline (approx. 0.05 mm), pleochroic grain occurs.

No staining for potash feldspar is observed at all, but some grains (< 1 volume percent of grains present) etched easily with hydrofluoric acid, possible micaceous volcanic(?) clastic grains.

All the sections above from the Pandurra Formation specimens have a strong or moderate resemblance to some Whyalla Sandstone specimens as previously mapped. These Whyalla Sandstone rocks are dirty in appearance and contain some subangular or even angular grains of quartz, e.g. :-

i) A9847, A9849 have a dirty intermixture of fine and coarse grains though most coarse quartz grains are quite spherical.
ii) A9843 has an abundance of subangular grains though much of this may be due to silicification around originally spherical grains.
iii) A9845 where many grains are subangular and some larger quartz gneiss subangular grains occur.

However, differences in grain size and angularity and a dirtier matrix are also characteristic of the P.83A to P.89 suite and resemblance particularly to Pandurra Formation sections, all from the Mt. Gunson area, A4009 (West Lagoon); A4241 and A4245 (Pernatty Lagoon); and A4226 (Woocalla Sidings quartzite quarry) are more convincing. There is less angularity in many of the quartz grains of this series and rounded ferruginous cherts are not so evident.

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Figure 9 Corunna Conglomerate. P90.

Large rounded quartz mosaic pebble (upper part of photograph). Quartz grains in the pebble are sutured. A ferruginous chert (speckled black and white) very much smaller than the pebble, occurs just below lower limit of pebble. Chert and sutured quartz grains make up the matrix. Zircon present is not easily differentiated here.

Crossed nicols Magnification X 12

Heavy mineral information on the P.83A to P.89 suite are not so conclusive. Even in P.89, heavy minerals content are something less than 1 volume percent. In much of the Mt. Gunson material a slightly greater abundance of heavy mineral content was noted for the Whyalla Sandstone than for the Pandurra Quartzite examined.

Corunna Conglomerate

P.90 - Silicified conglomerate from Tassie Creek reservoir, "Corunna" station. (Figure 9).

In hand specimen the rock has the appearance of an irregular quartz conglomerate containing minimal matrix but possible greenish volcanic fragments.

Shows large rounded quartz rock fragments, several millimetres in size, the individual quartz mineral grains (0.2 to 2 mm, median 1 mm) of sutured quartz grains. The fragments are quite clear and there is an absence of non-silica cement; also quartz mineral grains (approx. 1 mm) with alternate cherty grains of similar size occur. The interstices of large fragments are quartzite with grains (approx. 1 mm). Yellowish clay occupies some corners between interstitial quartz and chert; the clay occurs to 3 volume percent of interstitial quartz. Chert, overall occurs to 20 volume percent of the rock. Abundant (locally) cloudy zircon (approx. 0.08 mm) occurs in clots in the interstices, the grains contain near perfect forms with very little rounding and are present overall to <1 volume percent. Some limonite granules, also shapeless masses of the mineral occur in between some matrix quartz to 2 volume percent.

The large individual quartzite and quartzite chert fragments are characteristic. No volcanic element is seen in thin-section. A coarse quartzite conglomerate. It is hard to differentiate between this rock and Elizabeth Conglomerate P.27.

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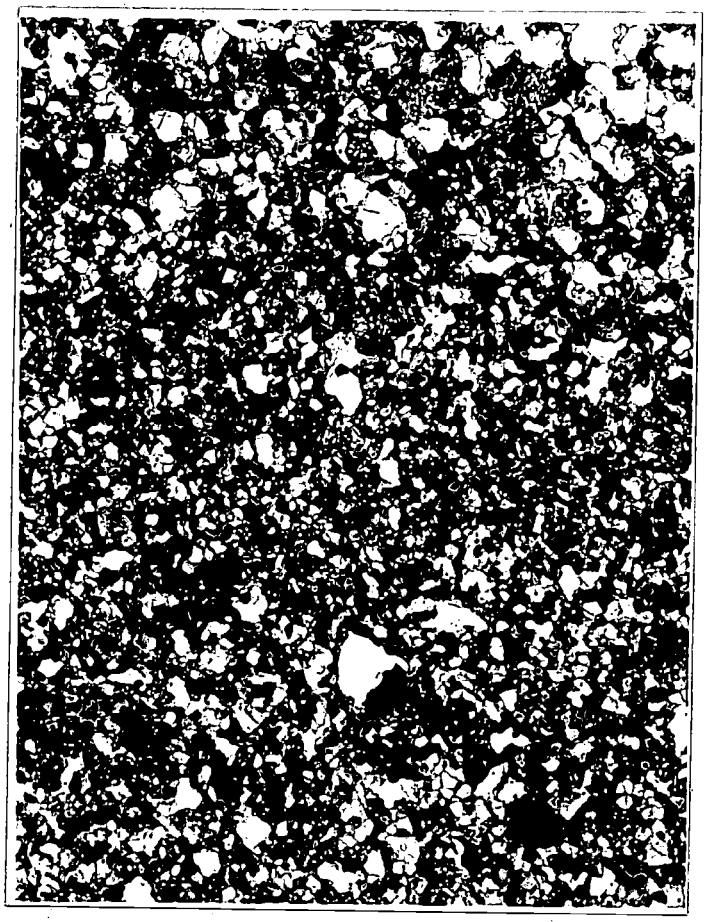

Figure 10 Corunna Conglomerate. P91.

Consists mainly of silty quartz, fine (bottom two thirds of photograph) with sporadic large quartz clasts (near bottom, centre and bottom right corner). At the top of photograph is seen a coarser quartz band with clay (fine speckled material) between the larger grains. Merging of the two bands occurs.

Crossed nicols Magnification X 13

P.91 - Siltstone facies of Corunna Conglomerate, Tassie Creek reservoir. (Figure 10).

A fine reddish coloured siltstone with sporadic large rounded clasts of mainly quartz rock and occasional quartz mineral grains, all rather more than 1 mm in size. Some bands of larger grains of quartz are seen.

In thin-section a rough banding of coarser quartz grains (approx. 0.5 mm) are seen, several grains of just one grain thick. The larger quartz grains in bands may have silicified in situ as abundant clay pockets between quartz grains remain, i.e. silicification proceeded along selected planes parallel to 'bedding'. Grains on the whole are not graded and quartz grains, largely subangular (0.08 to 0.5 mm) with a fair abundance of illitic clay up to 20 volume percent of rock in pockets and between quartz grains are seen where not silicified.

An igneous clast (approx. 0.3 mm) of possible silicified dolerite shows decussate lath pattern (now of quartz outlined by limonite particles). Occasional rounded cherts (approx. 0.08 mm) occur to less than 1 volume percent of rock. Opaque laths of ilmenite(?) and magnetite euhedra occur to 4 volume percent of rock. Also a scattering of zircon and possible topaz are seen ($<$ 1 volume percent). Under very low power reflected light microscopy other volcanic clasts (approx. 0.3 mm) are seen as feldspar fragments, chlorite and oxidised basaltic fragments to about 2 volume percent of the rock. No sulphides are seen.

The rock is a sandstone of lithic wacke composition (Ref. 2) characterised by mainly unsorted sand grains (quartz and lithic) but with some silicified larger quartz in bands. Characterised by abundance of opaque minerals and volcanic clasts.

Staining proves the absence of potash feldspar but some grains have etched powdery white with hydrofluoric acid (presence of plagioclase?).

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Figure 11 Crystal Tuff. P92.

Volcanic fragments of possible altered ferruginous trachyte and microcline occur abundantly. The possible trachyte fragments are seen as rounded cloudy grains (near centre top of photograph). Microcline is not so readily identifiable in the photograph but is present here. Cherts are somewhat similar to volcanic clasts in being cloudy (square grain just below centre of photograph). Otherwise quartz mineral grains and rock fragments make up the rock.

Crossed nicols Magnification X 12

P.92 - Crystal tuff? Tassie Creek reservoir. (Figure 11).

Limonite stained rock fragments (approx. 1 mm) alternate with clear quartz.

In thin-section, subhedral cherts are seen (0.5 to 3.5 mm) several of which are similar to those seen in P.90. Apart from clear cherts are many others like the ferruginous cherts of Whyalla Sandstone and of basic tuff and volcanic clasts. Tuffaceous cherts of cemented volcanic fragments which are now largely silicified but containing some mica which indicates form of fragments of original constituent feldspar. One granophyric fragment now pseudomorphed by quartz and limonite is seen. Fragments of ferruginous trachyte(?) are now largely silicified. Elsewhere several crystal fragments, up to 2 mm of microcline are seen. Magnetite and a little zircon up to 0.2 mm occur.

Volume Percentage modal mineral composition of the rock:-

Quartz rock fragments	45
Quartz mineral grains	22
Clear cherts	10
Ferruginous volcanic cherts	12
Microcline	10
Interstitial clay	-
Magnetite (with a little zircon)	1

Microcline fragments and volcanic cherts stained well for potash. A quartzite containing mixed volcanic; lithic and crystal tuff fragments.

P.93 - Reputed tuff. From 2 km west of Tassie Creek reservoir. May contain pebbles of acid Gawler Range Volcanics.

Somewhat similar to P.92 in outward appearance.

In thin-section somewhat finer grained than P.92 with smaller volcanic clasts.

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At one end of the section are coarse subangular quartz rock fragments (1 to 3 mm) in chaotic array, with coarse ferruginous (volcanic) cherts. The coarse cherts consist of :-

i) a mass of angular quartz, fine opaque mineral and a little clay from a silicified tuffaceous rock;
ii) banded clear chert and quartz rock wirh opaques as in i);
iii) ferruginous chert; and
iv) chert and finely disseminated clay mineral.

The finer grained part of the section shows variations in grain size of 0.1 to 1.2 mm, median 0.24 mm. A mixture of quartz mineral grains and generally a greater proportion of quartz rock fragments in the larger size range. Clay mineral, mainly illite occupies about 10 volume percent of the section. The quartz grains show little or no sorting. Volcanic cherts and fragments of opaque minerals mica and chert (approx. 0.3 mm) occur to about 6 volume percent of the rock.

Opaque minerals (mainly magnetite) up to 0.15 mm, occur to about 2 volume percent of the rock, and occasional rounded zircon with dark grain borders (0.08 mm). No feldspar is seen (as confirmed by staining procedure). A micaceous quartzite (lithic wacke) which contains tuffaceous and volcanic grains. Related to P.92.

P.94 - Conglomerate. From 2 km west of Tassie Creek reservoir. May contain pebbles of acid Gawler Range Volcanics.

A coarse lithic polymict conglomerate with pebbles, centimetres in size.

In thin-section the interstices partly consists of a groundmass of very fine chert which appears to be encroaching on the contained pebbles, i.e. the pebbles are showing alteration to dark chert. The remaining

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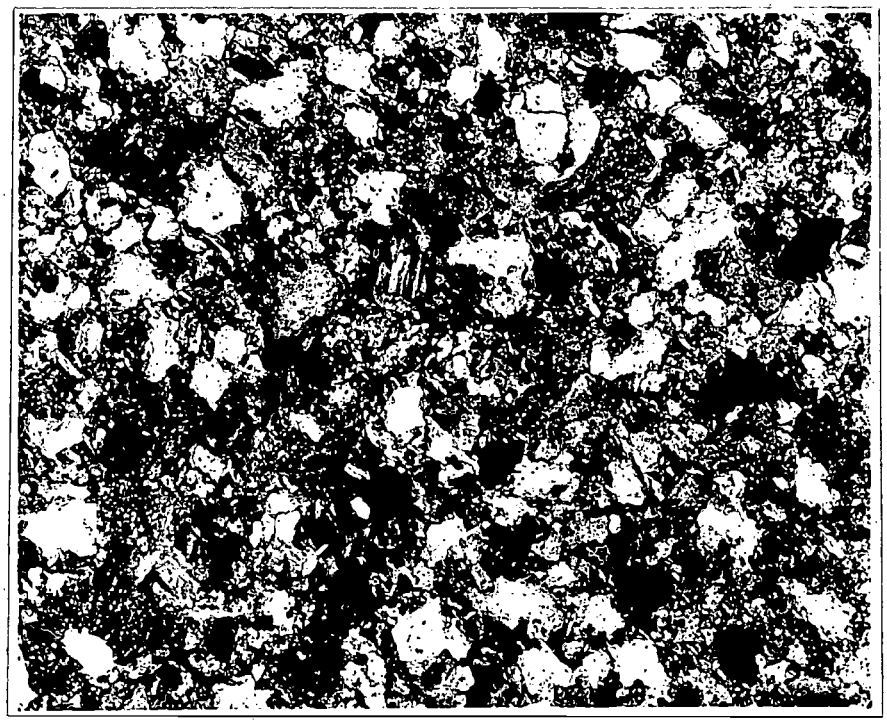

Figure 12 Moonabie Formation. P95.

A tuffaceous sandstone of fragmentary quartz (flat-white, grey and black); lamellar twinned oligoclase fragments (just above centre of photograph is the only obvious grain present); chlorite and illite, abundant fine flakey, interstitial and in vugs.

Crossed nicols Magnification X 90

groundmass is of small quartz grains, microcline and rock fragments (0.1 to 1.0 mm, median 0.25 mm) are set in a mass of fine chert and a little illite.

Where unattacked by chertification, the quartz rock pebbles are seen to consist of very irregular quartz mosaics. Other pebbles (approx. 5 mm) are of lighter chert than groundmass and are round. One large (several millimetres) chert:mica pebble may be recrystallised volcanic rock (devitrified glass) with a little leucoxene and <1 volume percent magnetite. Another pebble of devitrified glass (now chert) contains a glassy micaceous fragment and an eroded quartz grain and is probably tuff. There are other similar pebbles to the latter, including large potash feldspar (approx. 1 mm) grains and pebbles (several millimetres in size).

This is a conglomerate which contains volcanics and/or tuffaceous pebbles. However, some pebbles are of clear Feldspathic quartzite (approx. 7 volume percent microcline) where seen not to be converted to chert.

Silicified Elizabeth Creek Conglomerate is probably different from the Corunna Conglomerate in having more rounded quartz pebbles, few if any potash feldspar grains, volcanics of tuffaceous pebbles; the former rock type possibly also contains less chert(?).

Moonabie Formation

P.95 - Siliceous fine-grained quartzite from Mt. Laura, Whyalla.

A fine pink siltstone alternating with dark clay bands. A possible recumbent fold(?) is seen in the hand specimen. The fold is not seen in thin-section and may be a 'slump' characteristic.

A very fine-grained, mainly even-grained quartzite of mainly subangular but some angular and fewer rounded

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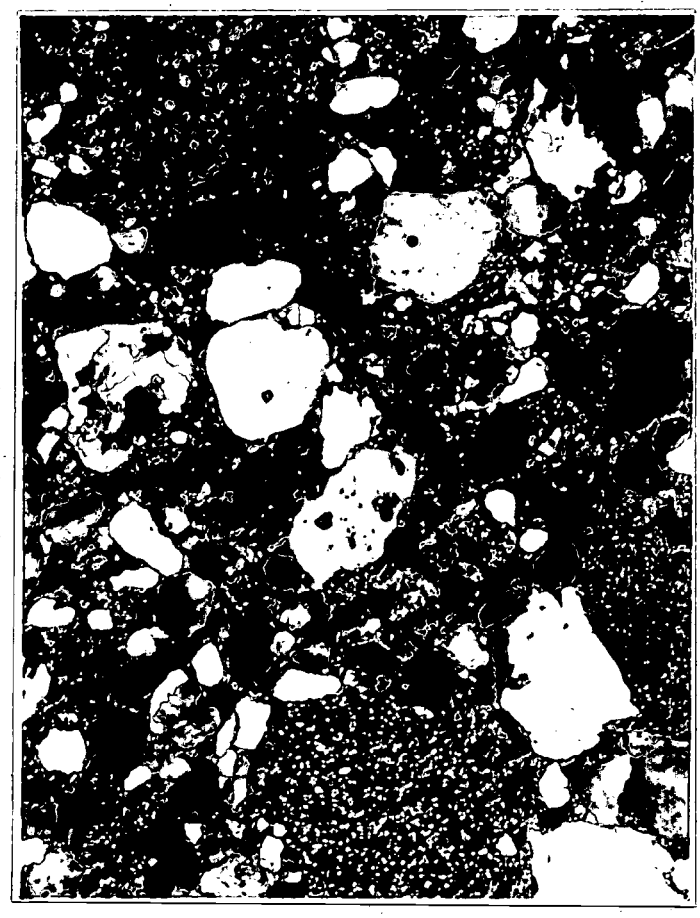

Figure 13 Moonabie Formation. P96.

Abundant ferruginous chert (speckled black and white), including altered volcanic clasts which are possibly andesitic some being tuffaceous, (just below centre of photograph). Fine, rounded cherts occur (left corner, top; bottom, centre; lower, right margin). Otherwise mainly rounded quartz grains occur (flat white and grey) but some angular grains are seen.

Crossed nicols Magnification X 13

quartz grains (0.02 to 0.3 mm, median 0.08 mm). Up to 10 volume percent of fine angular mainly untwinned plagioclase (oligoclase)* occurs which shows only occasional lamellar twinning. Subangular pleochroic blue and greenish tourmaline (approx. 0.08 mm) to <1 volume percent; opaque mineral, likely magnetite of very variable grain size (0.002 to 0.08 mm) occurs scattered as large grains or in groups of fine grains to 4 volume percent.

Some quartz grains are flattened or even spicular and fragmentary (tuffaceous?) (approx. 0.25 x 0.02 mm). Some of the long or flat quartz grains show a rough parallelity.

The presence of angular splintery quartzite suggests metamorphic origin of clasts as does the presence of blue pleochroic tourmaline.

Clay mineral (chloritic > illite) occupies areas between quartz grain boundaries and overall is present to about 7 volume percent of the rock. Vugs commonly contain fine opaques.

Some tuffaceous fragments and up to 10 volume percent of fine fragmentary oligoclase plagioclase and an abundance of opaques and chloritic clay show this rock to be a <u>tuffaceous sandstone</u>. Some of the quartz is fragmentary and is plainly tuffaceous. The rough banding indicates probable sedimentation under water.

<u>P.96</u> - Dark grey quartzite, from Water Tank Hill, Whyalla.

A different rock from P.95. The hand specimen indicates a rock type very like the Pandurra Formation specimens P.86, P.87 and P.89. In thin-section, quartz mineral grains and some rock fragments around 1 mm in size are

* confirmed by mineral stain

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rounded-oblong in section. The remaining grains of largely quartz mineral grains (0.2 to 2.2 mm) show more than half of these to have a high degree of rounding. Cherts in this rock (0.6 to 2.5 mm) and corresponding to half the grains present are very like those seen in the Whyalla Sandstone. Most cherty grains are ferruginous and round. About 30 volume percent of the cherty grains are of devitrified volcanic glass and opaques and mica showing original flow-banding. Other interstitial mineral is probably tuffaceous. The volcanic chert present is possibly a similar source bed to that for Whyalla Sandstone cherts(?). As in many sandstone/quartzite rock types in the area, no sorting of quartz grains is apparent. Opaque minerals (apart from tuffaceous grains) are likely magnetite (0.1 to 0.2 mm), present to 2 volume percent. Several grains of zircon, one attached to magnetite are seen in the interstices.

Feldspar staining shows a complete absence of potash feldspar but white etching of occasional grains indicates the presence of volcanic clasts containing plagioclase material.

<u>Three further samples received from I.R. Pontifex and Associates on memorandum (from D.G. Tonkin dated 26/11/1974)</u>.

<u>EX 88-86545</u> - Elizabeth Creek Conglomerate. 57 to 60 m. Acid volcanic and acid 'plutonic' pebbles. Carbonate matrix.

Different rock types are represented by various pebbles present in the samples, as :-

i) A slightly altered adamellite granite of medium grain size. Large irregular plates (approx. 1 mm) of microcline mainly clear of inclusions but intergrown with part sericitised plagioclase of similar grain size. Variable clear anhedral quartz and perfect prisms and some clusters of fibrous actinolite needles, containing exsolution opaques

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and with slight extinction occupy the interstices. Larger flakes of secondary muscovite have grown from locally formed sericite. Myrmekite patches have developed where microcline and altering plagioclase are intergrown. Apart from secondary iron oxides associated with actinolite, occasional interstitial primary magnetite octahedra occur.

Minerals Present	Vol %
Plagioclase (now much altered and inlcudes muscovite and sericite)	40
Microcline	32
Quartz	20
Actinolite (after hornblende)	8
Opaque minerals (includes magnetite)	<1

ii) A possible dolerite much sericitised and chloritised. The feldspar occurs as a decussate pink coloured framework of sericitised plagioclase of variable size (median 0.2 mm). Some relict lamellar twinning is seen in marginal areas of some grains. The interstices are now largely flakey ripidolite chlorite (anisotropic green to purple) and is commonly associated with local abundances of magnetite. Scattered areas of irregular secondary quartz occur and small calcite aggregates after plagioclase are seen.

iii) An altered (metasomatised/hydrothermally altered) porphyritic basalt with oligoclase phenocrysts part-silicified but some fresh (approx. 0.7 mm) with a groundmass of fine feldspar prisms and irregular but rounded pockets (to 0.3 mm) of flakey green chlorite or augite phenocrysts shapes (approx. 1 mm) now chlorite and magneite. Areas of groundmass silicified by quartz but leaving feldspar phenocrysts intact or part or totally silicified or totally carbonatised. Fine scattered magnetite (much limonitised) occurs throughout, though much of it

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is limonitised and appreciable amounts are associated with chlorite and are secondary after original ferromagnesian phenocrysts which are now altered. Ophitic textures of plagioclase shapes in large augite plates which are now mainly chlorite are seen locally as possible dolerite fragments in basalt; possibly by irregular shapes of some plagioclase grains, possibly tuffaceous.

iv) A possible silicified and carbonatised basic tuff. Patchy albite mosaics, very variable as amygdules; some branching albite forms containing fine scattered carbonate grains are seen. The groundmass is of limonite stained carbonate and fine magnetite. Magnetite shows lenticular concentrations associated with lenticular carbonate possibly simulating original flow of glassy material. No other structures are perceptible.

v) Feldspathic quartzite or feldspathic arenite of Williams et al (Ref. 2). An equigranular quartzite of subangular and flattened quartz grains (0.05 to 0.4 mm, median 0.16 mm) and abundant microcline (approx. 5 volume percent) as oblong grains. Illite occurs along grain margins and in pockets at about 7 volume percent; tourmaline as a rounded grain (0.08 mm) and abundant opaque mineral as fine grains ($>$0.005 mm) occurs to roughly 5 volume percent with octahedral (0.02 to 0.08 mm) magnetite(?) at about 1 volume percent. Much of the fine opaques with illite and a little carbonate may be much altered volcanic grains and would thus constitute about 3 percent of the section. The section resembles Corraberra Sandstone (A4224) from Mount Gunson, (Ref. 4) and also of Yudnapinna Beds (97325), all remarkably similar rocks.

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EX 136-97217 - Pandurra Formation quartzite. 84-84.5 m. Green quartzite.

Variable drill fragments mounted in the one thin-section.

i) Rounded grains of quartz mineral grains with fewer rock fragments (0.15 to 1.8 mm, median 0.4 mm) are silicified into mosaics, but a little residual limonite occurs in the space now silicified, adjoining quartz boundaries. Clay mineral (kaolinite) occurs in pockets to 2 volume percent. One rounded quartz gneiss grain is seen. There is about 2 volume percent of fine granules of limonite mostly interstitial but some occurs with clay in pockets. No potash feldspar is present. An unusual Pandurra Formation type in view of the roundness of most quartz grains.

ii) As for i) but the grains roundness is accentuated by the absence of silicification, with the presence of interstitial chloritic clay > kaolinite which occurs to about 7 volume percent. One square, glassy-looking chert grain (0.55 mm) occurs and some round quartz gneiss pebbles.

iii) More typically Pandurra Formation (as per Mt. Gunson), although most quartz grains are fairly rounded. Very large quartz rock grains (approx. 1.5 mm) but somewhat flattened, set in an unsorted fabric of fairly round quartz mineral grains (0.1 to 0.7 mm). All quartz grains are fairly tightly fitted with minimal limonite cement between all grains.

iv) Subangular to angular unsorted quartz grains (0.004 to 0.5 mm). Cemented with limonite which occurs as fine flecks. Limonitic chert similar to that seen in Whyalla Sandstone occurs.

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Most pebbles present are similar to i) above. Some are similar to iv) but have a very heavy limonite cement to about 25 volume percent of pebble. A few loose pebbles of quartz rock and mineral grains occur to 2 mm and one large quartz gneiss pebble (3 x 4 mm).

A very variable textured make-up for approx. 0.5 mm pebbles and the rounded quartz grains seen in many cuttings are not typical Pandurra Formation.

EX 146 - Panned Concentrate

Yudnapinna Beds(?). 30-46 m. Carbonate-bearing. Black heavy mineral.

Similar to Yudnapinna sections 85235, 85271 and 97325 but very like basal Whyalla Sandstone in that the quartz grains present are more spherical quartz (0.2 to 1 mm, to about 7 volume percent of the section). Pandurra Formation fragments (to 8 mm) with unsized angular to subangular quartz grains > rock fragments (0.1 to 0.6 mm) in a limonite cement occur; also grains of Woocalla Dolomite (approx. 0.5 mm). The 'silt-size' matrix is mainly of round grains (0.03 to 0.10 mm, median 0.08 mm) and are just slightly within the sand sizes of Pettijohn (Ref. 1). This includes ferruginous and micaceous:ferruginous chert grains quite rounded and rounded cherts of devitrified basalt (volcanic chert of Whyalla Sandstone) - total to 3 volume percent of the rock. Up to 3 volume percent potash feldspar (silt size)* is present. Fine illitic clay and some clay mineral laths are seen to 3 volume percent. A little rounded grains of green tourmaline also occur and less rounded zircon at about 1 volume percent. Grain size of fine quartz and shapes of the grains are similar to Yudnapinna Beds. Silt-size Yudnapinna is similar to silt-size matrix of Whyalla Sandstone (A4007A, Ref. 6). With the round (spherical) Yudnapinna quartz sand-size grains differentiation is difficult and petrographically impossible with present

* checked by mineral staining procedure.

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state of sampling. It would be preferable to put the Yudnapinna Beds specimen, if EX 146 is a typical example of the type, at the base of the Whyalla Sandstone where in fact it occurs stratigraphically but with no break. In other specimens the presence of appreciable plagioclase precludes this.

P.S. Shows rounded grains of specularite (0.02 to 0.08 mm) mainly free, though minor amounts are seen flecking quartz rock fragments. Specularite occurs to about 1 volume percent of section as scattered grains. One large pyrite grain (approx. 0.3 mm) which is a pyrite cemented agglomeration of spheres (framboid) shows some faint internal vein-like growths of specularite. Lamellar translation planes of specularite are easily seen and and some grains contain titanhematite flecks distributed along lattice planes.

4. REFERENCES

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7. PONTIFEX, I.R., : Mineralogical Report No. 1667, dated 14th January, 1975. Ian R. Pontifex & Associates.

8. TONKIN, D.G., : Pandurra Thin and Polished Sections'. Memo from DGT to P.J. Curtis dated 7th November, 1974.

9. TONKIN, D.G., : 'Three Pandurra Formation Samples for Petrographic Examination', Memo from DGT to P.J. Curtis, dated 26th November, 1974.

10. TONKIN, D.G., : 'Pandurra Petrography', Memo from DGT to P.J. Curtis, dated 27th November, 1974.

PJC/SS
3/4/75

APPENDIX I

PACMINEX PTY. LIMITED

MEMORANDUM TO: MR. P.J. CURTIS OUR REF: DGT/IM

FROM: D.G. TONKIN DATE: 7.11.1974

PANDURRA THIN AND POLISHED SECTIONS

"YUDNAPINNA BEDS" SPECIMENS

Typical Specimens

(1) 85235: (Drill Hole ex 11, 34 to 37 metres). Rotary drill cuttings. Cu 5 ppm, Pb < 20 ppm, Zn 26 ppm, Mn 1,340 ppm. Greyish green and greyish red siltstone. Effervescent in HCl.

(2) 85271: (Drill Hole ex 12, 73 to 76 metres). Rotary drill cuttings. Cu 8 ppm, Pb < 20 ppm, Zn 17 ppm. As previous sample.

(3) 97325: (Drill Hole ex 142, 42 to 45 metres). Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 30 ppm. Greyish red siltstone with orange lithic grains. Minor greyish green siltstone. Weakly effervescent in HCl.

WOOCALLA DOLOMITE SPECIMENS

(4) 97275: (Drill Hole ex 139, 48 to 51 metres). Rotary drill cuttings. Cu 130 ppm, Pb 600 ppm, Zn 520 ppm. Grey shale and dolomite.

(5) 97427: (Drill Hole ex 149, 48 to 49 metres). Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 35 ppm. Light grey dolomite and red quartzite (Pandurra Formation).

(6) 97342: (Drill Hole ex 143, 39 to 42 metres). Rotary drill cuttings. Large (5 cm) chip of greyish dolomite from thin probably brecciated lens between "Yudnapinna beds" and Pandurra Formation.

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WHYALLA SANDSTONE SPECIMENS

(7) 97292: (Drill Hole ex 140, 39 to 42 metres). Rotary drill cuttings. Cu 10 ppm, Pb < 20 ppm, Zn 20 ppm. Dirty lithic sandstone.

(8) 97229: (Drill Hole ex 137, 33 to 36 metres). Rotary drill cuttings. Cu 10 ppm, Pb 20 ppm, Zn 30 ppm. Grey lithic sandstone with pyrite and black heavy mineral. Pan-concentrated specimen. Thin and polished sections.

(9) 86645: (Drill Hole ex 96, 27 to 30 metres). Rotary drill cuttings. Dark grey clayey sandstone. Sulphide-bearing. Cu 10 ppm, Pb 40 ppm, Zn 70 ppm. Thin and polished sections.

TREGOLANA SHALE SPECIMENS

(10) 86587: (Drill Hole ex 93, 10 metres). Rotary drill cuttings. Cu 10 ppm, Pb 40 ppm, Zn 60 ppm. Greyish red shale.

(11) 86589: (Drill Hole ex 93, 17 metres). Rotary drill cuttings. Cu 15 ppm, Pb 30 ppm, Zn 65 ppm. Fine greenish grey sandstone, interbedded with shale.

SUNDRY SPECIMENS

(12) 97378: (Drill Hole ex 146, 36 - 39 metres). Rotary drill cuttings. Cu 5 ppm, Pb < 20 ppm, Zn 20 ppm, Mn 640 ppm. Grey, fine-grained sandstone. Effervescent in HCl. Thin and polished sections could be equivalent to either Whyalla sandstone or "Yudnapinna Beds".

(13) 97404: (Drill Hole ex 147, 69 to 72 metres). Rotary drill cuttings. Cu 1100 ppm, Pb 280 ppm, Zn 1000 ppm, Mn 70 ppm. Grey clay from contact between Whyalla Sandstone and Pandurra Formation. Thin and polished sections.

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"ELIZABETH CREEK CONGLOMERATE" SPECIMENS

(14)	P.27:	Silicified quartz pebble conglomerate from "Pandurra" copper prospect.
(15)	P.29:	Silicified conglomerate with B.I.F. pebbles. From 5 km SSE of "Pandurra"

"MAGAZINE HILL CLAY" SPECIMENS

(16)	P.81:	White clay from Magazine Hill quarry.
(17)	P.85:	White and grey banded clay from Magazine Hill quarry.

PANDURRA FORMATION SPECIMENS

Specimens believed to be from the lower portion of the sequence.

(18)	P.83A:	Grit, from 15 km west of "Corriewerloo" Homestead.
(19)	P.84B:	Grit, from Seven Mile Outstation, 21 km south-west of "Yudnapinna".
(20)	P.86:	Grit, overlying basal conglomerate, Mt. Laura, Whyalla.
(21)	P.87:	Grit, Mt. Laura, Whyalla.
(22)	P.88B:	Sandstone, very dusky red with white patches and bands. From site overlying Moonahie Formation at Water Tank hill, Whyalla.
(23)	P.89:	Light coloured sandstone, heavy mineral bearing, from Ready Mix Concrete quarry, Whyalla.

CORUNNA CONGLOMERATE SPECIMENS

(24)	P.90:	Silicified conglomerate from Tassie Creek reservoir, "Corunna" station.
(25)	P.91:	Siltstone facies of Corunna Conglomerate. Tassie Creek reservoir.

(26) P.92: Crystal tuff? Tassie Creek reservoir.

(27) P.93: Reputed tuff. From 2 km west of Tassie Creek reservoir.

(28) P.94: Conglomerate. From 2 km west of Tassie Creek reservoir. May contain pebbles of acid Grawler Range Volcanics.

Note: Many hand specimens of Corunna Conglomerate are very similar to silicified "Elizabeth Creek Conglomerate".

MOONABIE FORMATION SPECIMENS

(29) P.95: Siliceous fine-grained quartzite from Mt. Laura, Whyalla.

(30) P.96: Dark grey quartzite, from Water Tank Hill, Whyalla.

Please include these notes in the Petrographic Report.

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(D.G. TONKIN)

APPENDIX II

PACMINEX PTY. LIMITED

0284

MEMORANDUM TO: Mr. P.J. Curtis

OUR REF: DGT/SS

FROM: D.G. Tonkin

DATE: 26th November, 197
Typed - 10/12/74.

3 Pandurra Samples for Thin & Polished Section

Three drill cuttings samples as per the attached sheet were sent to I.R. Pontifex & Associates.

The samples are :-

EX 88-86545 : "Elizabeth Creek Conglomerate", 57-60 m. Acid volcanic and acid "plutonic" pebbles. Carbonate matrix.

EX 136-97217 : Pandurra Formation quartzite. 84-84.5 m. Green quartzite.

EX 146-Panned Concentrate
: "Yudnapinna Beds"?, 30-46 m. Carbonate-bearing. Black heavy mineral.

D.G. TONKIN