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EL 112

PARACHILNA

PROGRESS AND FINAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 19/11/1973 TO 18/5/1974

Submitted by
Dampier Mining Co. Ltd
1974

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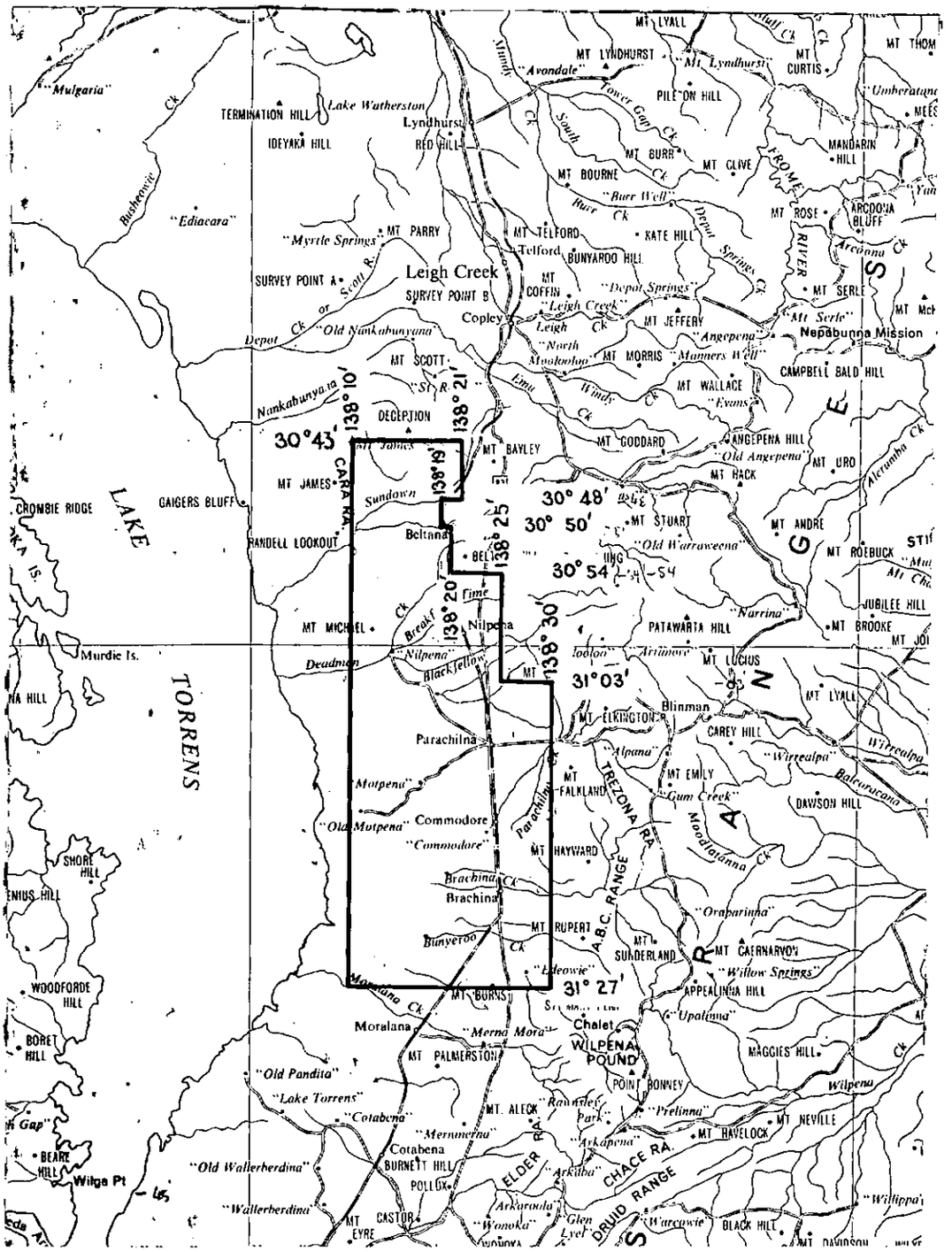
Government of South Australia
Primary Industries and Resources SA

SCHEDULE 'A'



BROKEN HILL PROPRIETARY COMPANY LTD

DOCKET DM 966/73 AREA 2141 km².

1:250000 PLANS COPLEY
PARACHILNA

LOCALITY PARACHILNA

EL No. 112 EXPIRY DATE 18.11.74

CONTENTS ENVELOPE 2386

TENEMENT: E.L. 112 - Parachilna.

TENEMENT HOLDER: Dampier Mining Co. Ltd.

EXPLORATION LICENCE 112

PARACHILNA, SOUTH AUSTRALIA.

REPORT FOR THE QUARTER ENDED 31st MARCH, 1974.

1. GENERAL STATEMENT

To examine the potential of the area for sedimentary uranium, a programme of drilling was carried out to investigate the structure and stratigraphy of the Beltana embayment area.

2. FIELD INVESTIGATIONS

2.1 Drilling

Eight rotary drill holes, P.C.1 - 8 totalling 618.8 metres were drilled. Bore locations are shown on Figure 1 (A2-1158). The drill-holes were logged in the field visually and by scintillometer probe. Samples were selected for chemical analysis and palynological study.

3. RESULTS OF INVESTIGATIONS

3.1 Drilling

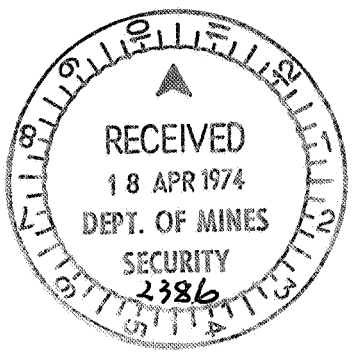
Drill logs, including radiometric logs,are attached. Figure 2 (A4-1557) and Figure 3 (A4-1556) show graphic logs for bores P.C.1 - 5 and 7 and bores P.C. 6,5, and 8 respectively.

4. EXPENDITURE

Expenditure debited to Exploration Licence 112 to 28th February, 1974 was as follows:-

Wages and Salaries	$ 583
Drilling	$4,150
Sample Analysis	$ 39
	$4,772

Expenditure for March, 1974, has not yet been consolidated.



This report if submitted to the Mines Department as required by Condition 4 of Exploration Licence 112

THE BROKEN HILL PROPRIETARY CO. LTD
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO.

FINAL DEPTH: 34·6 M

Core size From To

PROSPECT: Parachilna | LOCATION: SH 54-9 642C/768 | TIT: EL 112

DRILLHOLE Nº : PC1

SHEET 1 OF SHEETS 1

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date:	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals	
0	Red silt, Wate	Red iron oxides coat silt		
2	worn Gravel	grains brown oxide on gravel.		
	As Above Gravel			
4	Silt, Lst, cht			
	Clay and Gravel	Brown colour		
6	Brown and White			
	Clay & Gravel.			
8·3				
	Red & white silt	Red iron oxides mottled		
10·6	& Gravel			
	Red brown clay silt	Carbonate concretionary layer		
12·6	& Pale concretion			
	As above with	Layer of limonite clay.		
14·6	gravel some Rock			
	Pale white clay silt	Some Mn coating in fracture		
16·6	& gravel in lens.	in gravel.		
	White opal clay &	Limonite siliceous clay		
18·6	fine white sst			
	Silcrete or silicious	Iron or Manganese oxides in		
20·6	clay-siltstone.	place.		
	White clay silt as	Minor - rare		
22·6	fine sand.			
	white clay & fine	Some large horiz. SDST		
24·6	sand			
	as above.			
26·6				
	White Quartzite	QTZT		
28·6	fine sand & clay			
	White clay sst &			
30·6	Quartzite bands			
	as above			
32·6				
	as above			
34·6				

RADIOMETRIC LOG

With long core axis (degrees) — A

Intensity (per metre)

COUNTS PER SEC. 10 20 30

HOLE DEPTH (metres) | RECOVERY % 50 70 80 90 | GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG — 1 Weak 2 Moderate 3 Intense

Bleaching | Iron Oxide | Calc. nod. | Clay | Silcrete | Ox/Red | PYRITE

MINERALIZATION

SAMPLE NO. FOR ANALY.

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 40/618
FINAL DEPTH: 84·6
Core size From To

PROSPECT: PARACHILNA
LOCATION: SH 54-9 6395/760
TITLE: EL 112

DRILLHOLE Nº : PC 2

SHEET 1 OF SHEETS 2

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL/METASOMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite/marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 28.11.73 29.11.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel and brown clay			
2	Gravel brown clay and Kunkar			
4	As above			
6·8	Gravel and Kunkar			
8·3	Gravel Brown clay and Kunkar			
10·6	Grey white clay mottled red	Red & Khaki mottling, Iron and Manganese oxides as Hebs faces etc.		
12·6	as above			
14·6	as above			
16·6	as above			
18·6	as above & thin yellow sandstone			
20·6	Grey white clay & mottled section	Red and yellow mottles and accumulations of Fe ox		
22·6	as above	Some layers of Red/Brown clay.		
24·6	as above			
26·6	As above.			
28·6	As above			
30·6	As above			
32·6	As above			
34·6	As above			
36·6	As above			
38·6	As above & thin yellow sandstone			
40·6	Clay sand white	Fe ox coats in places.		
42·6	Clay sand & silty clay			

RADIOMETRIC LOG
A: With long core axis (degrees)
Intensity (per metre)
COUNT PER SEC. 20 40 60 80 100

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE
0		Ca
2		Ca
4		Ca
6		Ca
8		Ca
10		
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		
32		
34		
36		
38		
40		
42		

ALTERATION
GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxides, Calc. nod., Clay, Calcite

MINERALIZATION
ANALYSIS Cu Zn U ppm
PYRITE
Ox/Red
SAMPLE NO. FOR ANALY.

SAMPLE NO. FOR ANALY.	Cu ppm	Zn ppm	U ppm
MEL 846	18	36	3

Logged by:
Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: PARACHILNA | LOCATION: SH54-9 6395760 | TITLE: EL 112

DRILLHOLE No: PC 2.80

SHEET 2 OF 2 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH: 84.6.

Core size | From | To

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	~~NON-DETRITAL / MAGMATIC~~ ALTERATION	MINERALIZATION
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals	

Date: 28.11.73 / 29.11.73.

RADIOMETRIC LOG: With long core axis (degrees) A | Intensity (per metre) | COUNTS PER SEC. 20 40 60 80 100

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE
44.6		Grey white silty clay and clay sand
46.6		White plastic clay
48.6		Grey white plastic clay
50.6		As above & stringers of CaCO3 rich clay
52.6		Sandstone & carbonate nod in white clay
54.6		Dark grey brown clay, limonite in hairline fractures
56.6		Dk grey brown clay, No pyrite or iron oxides, organic matter
58.6		Brown grey clay, iron stone oxides carbonate & med round clastic sand
60.6		Dark grey lignitic clay
62.6		As above.
64.6		Grey clay
66.6		As above
68.6		light grey clay & blueish red rich clay at intervals, Iron oxide colour clay in layers?
70.6		clay above & black clay and pyrite, Py cemented sandstone
72.6		White clay and limestone. Inset
74.6		as above.
76.6		Alt clay and silic clay & silt stone. Some iron oxides as layers and clots.
78.6		More siliceous siltstone
80.6		as above.
82.6		as above

ALTERATION — GRAPHIC LOG: 1 Weak, 2 Moderate, 3 Intense — Bleaching, Iron Oxide, Calc. nod., Clay, Pyrite, Ag

MINERALIZATION — PYRITE

Ox/Red

SAMPLE NO. FOR ANALY.

PALY/N

PALY/

PALY/

Logged by:

Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT	LOCATION	TITLE
PARACHILNA	SH 54-9 6365/752	EL 112

DRILLHOLE Nº : Pc 3

SHEET 1 OF 2 SHEETS

DRILLING HEADER SHEET NO. 4 0 1 6 1 8

FINAL DEPTH: 70·6 m.

Core size From To

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals

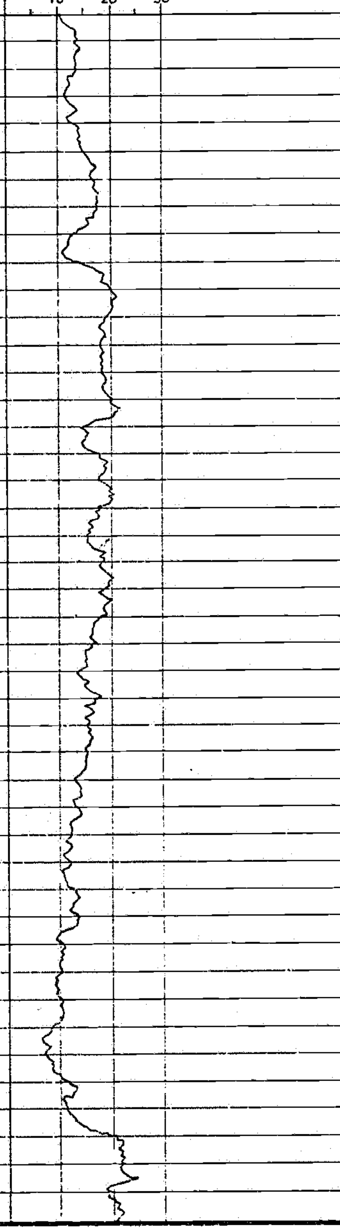
WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole, Date: 29.11.73, 30.11.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: A With long core axis (degrees); Intensity (per metre); COUNTS PER SEC 10 20 30

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	MINERALIZATION
0	Gravel and Red brown calcareous Clay		
2	As above with gypsum		
4	As above then grey white clay	Clay mottled with iron oxides	
6·0	Grey white clay mottled red & yel.	Red and yellow iron oxide	
8·3	As above with gravel.		grey-white
10·6	Grey white clay mottled red		non red [illegible]
12·6	as above		
14·6	as above		
16·6	as above		
18·6	as above		
20·6	as above then grey clay		
22·6	grey stiff plastic clay	Some brown red and yellow iron oxides	
24·6	grey plastic clay.		gry-dgy +
26·6	as above		blk-white
28·6	Dark grey to grey plastic clay	Yellow iron oxides in fractures and clots	
30·6	Grey clay c̄ Kharki clay	yellow iron oxides in places.	
32·6	Grey white clay	yellow iron oxides in places.	
34·6	Dark grey clay c̄ white clay + sand	Some red iron stone or Fe ox cemented sand.	
36·6	Dark grey claystone and ironstone c̄ fine sand	Red and yellow iron oxides in fine sands.	
38·6	Black brown clay c̄ some grey white clay		
40·6	grey white sandy clay and black clay		bk
42·6	as above.		



HOLE DEPTH (metres); RECOVERY % 60 70 80 90; GEOL. LOG: ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG: 1 Weak, 2 Moderate, 3 Intense; Bleaching, Iron oxide, Calc. nod., Clay, Carbonates

MINERALIZATION — Analyses: Cu Zn U ppm; PYRITE; Ox/Red; SAMPLE NO. FOR ANALY.

Cu	Zn	U	SAMPLE NO.
26	84	4	MEL 847

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: Parachilna | LOCATION: SH 54-9 / 6365752 | TITLE: EL 1121

DRILLHOLE Nº : PC 3

SHEET 2 OF 2 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH:

Core size | From | To

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL/MAGMATIC ALTERATION	MINERALIZATION
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date:	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals	
44.6	Grey white fine sand clay & blue clay	Sand grey-wh clay blue clay		
46.6	Blue clay with fine sand clay			
48.6	as above			
50.6	as above			
52.6	Blue grey clay	blue grey clay Trace Sandstone		
54.6	as above			
56.6	as above			
58.6	as above			
60.6	as above & blue grey calcareous shale	calc shale		
62.6	grey calcareous shale	blue grey		
64.6	as above			
66.6	as above.	grey		
68.6	dark grey calcareous shale	dark grey		
70.6				

RADIOMETRIC LOG

A: With long core axis (degrees) | Intensity (per metre)

COUNTS PER SEC: 10 20 30

HOLE DEPTH (metres)	RECOVERY % (60 70 80 90)	GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. Mod., Clay

MINERALIZATION: Ox/Red | Pyrite | SAMPLE NO. FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 40/6/8
FINAL DEPTH: 88.6 m.
Core size From To

PROSPECT: PARACHILNA
LOCATION: SH 54-9 631517 45
TITLE: EL 112

DRILLHOLE Nº : PC4 D 3

SHEET / OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite/marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 30.11.73 30.11.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel red calcareous clay as above	Red iron oxides coat gravel in part.		
2				
4	as above then Red mottled White clay			
6	Red and white mottled clay	Red iron oxides as coats and in places apparently as layers		
8·3	as above			
10·6	Grey white clay mottled			
12·6	Grey white clay with red mottles			
14·6	as above			
16·6	as above			
18·6	as above	yellow limonite concretions layer interbedded		
20·6	as above			
21·6	Grey white clay with brown mottle	Brown iron oxides as coats with brown concretions.		
24·6	as above			
26·6	Grey clay brown in part.	limonite in hair fractures throughout		
28·6	Grey brown and dark grey clay	Carbonaceous clay with variable iron oxide coat.		
30·6	Khaki limonite stained clay			
32·6	White clay & fine grained calcareous	layers.		
34·6	Grey white clay with fine sandy clay			
36·6	Blue green clay and calc bands			
38·6	Blue green sandy clay & calc frags as above			
40·6	as above			
42·6	as above			

RADIOMETRIC LOG
With long core axis (degrees)
Intensity (per metre)
A
COUNTS PER SEC
10 20 30

94 - red clay red mott

clay br-blue-grey 97 calcareous

8

26

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE
0		Ca
2		Ca
4		Ca
6		Ca
8		
10		
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		
32		Ca Ca
34		
36		Ca
38		Ca Ca
40		Ca
42		Ca
44		Ca

ALTERATION
GRAPHIC LOG
1 Weak
2 Moderate
3 Intense
Bleaching | Iron Oxide | Calc. Nod. | Clay | Calc. Veins

MINERALIZATION
PYRITE | Ox/Red

SAMPLE NO. FOR ANALY.

Logged by:

Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 40161 8
FINAL DEPTH: 88.6.
Core size From To

PROSPECT: PARACHILNA
LOCATION: SH 54-9 / 6315745
TITLE: EL 112

DRILLHOLE Nº: PC4-[illegible]

SHEET 2 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox., Base partial ox., Ground water level in hole, Date:	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals	

RADIOMETRIC LOG — With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC. 10 20 30

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc-nod, Clay, Carbonate (ccg)	MINERALIZATION: Analysis Cu Zn U	PYRITE	Ox/Red	SAMPLE NO FOR ANALY.
44.6	Brown Clay red sand						MEL
	and blue green clay ē limst.			20 22 5			848
46.6	Brown carbonaceous sst ē limst frags.						MEL
48.6	Brown Carbonaceous clay			30 42 10			849
50.6	Brown Mach						MEL
	Carbonaceous Sand.						
52.6	as above			4 14 1			851
54.6	as above						
56.6	as above						
58.6	as above.						
60.6	Brown carbonaceous clay/sand ē clay						MEL
62.6	Brown carbonaceous clay			22 26 6			850
64.6	Grey white silty clay						
66.6	Grey white silty clay ē grey py sst						
68.6	Grey white clay				SG2		
70.6	Grey white clay ē pyrite rich band						MEL
72.6	Grey white clay and calcareous grit/sand			8 22 3	SG2		852
74.6	Grey white clay						
76.6	Red purple clay and calcareous shale						
78.6	as above						
80.6	as above						
82.6	as above						
84.6	as above						
86.6	as above						

Logged by: Date:

77N

88.6.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4016/8
FINAL DEPTH: 88.6 m.
Core size From To

PROSPECT: Pannichilan
LOCATION: SH 54-9 6330:752
TITLE: KL 142

DRILLHOLE Nº: PC 5

SHEET 1 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite/marcasite Other minerals	Iron oxides Clay Mottling Base complete ox. Base partial ox. Ground water level in hole Date: 30.11.73 1.12.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel and Recent Calcareous Clay			
2	as above			
4	as above			
6	as above 1ft red-white clay			
8·3	white and red clay with gravel beds			
10·6	Grey white clay & mottled mottles	Mottling as matrix stands and then of red iron oxide		
12·6	as above	Mottling variable but more intense higher in hole.		
14·6	as above			
16·6	as above			
18·6	as above			
20·6	as above			
22·6	as above			
24·6	as above			
26·6	as above	very little iron oxide mottling		
28·6	Grey white clay & some red			
30·6	as above			
32·6	as above			
34·6	Grey white clay grading to Grey			
36·6	Grey brown clay	limonite stringers in cracks and fractures		
38·6	as above			
40·6	as above			
42·6	as above			

RADIOMETRIC LOG
A: With long core axis (degrees)
Intensity (per metre)
COUNTS PER SEC 10 20 30

HOLE DEPTH (metres) | RECOVERY % 60 70 80 90 | GEOL LOG ROCK TYPE & STRUCTURE

ALTERATION
GRAPHIC LOG 1 Weak 2 Moderate 3 Intense
Bleaching | Iron Oxide | Calc. nod. | Clay

MINERALIZATION
Pyrite | Ox/Red | SAMPLE NO FOR ANALY.

Grey-white clay
red-mottled.

Semi-ly

grey-brown clay

8

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 401/81/8

FINAL DEPTH:

Core size | From | To

PROSPECT: PARACHILNA | LOCATION: SH 54-9 6330 1752 | TITLE: EL 112.

DRILLHOLE Nº: PC5

SHEET 2 OF 2 SHEETS

HOLE DEPTH (METRES) | ROCK-TYPE | WEATHERING | HYDROTHERMAL / MAGMATIC ALTERATION | MINERALIZATION

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date:

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 10 20 30

HOLE DEPTH (metres)	ROCK TYPE & STRUCTURE	RECOVERY % 50 70 80 90	GEOL. LOG	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. Mod., Clay, Carbonate Nodules	MINERALIZATION: Analysis Cu Zn U; PYRITE; Ox/Red	SAMPLE NO. FOR ANALY.
44.6	Dark-grey stiff plastic clay					
46.6	Dk grey clay and yellow clay and					
48.6	Pale siltstone clay sand fine					
50.6	as above.					
52.6	White sandy clay & black shale	laminated layer or concretion occurs.				
54.6	fine qtz sand. fine clear qtz sand					
56.6	Ltn carbonaceous fine sand.					
58.6	fine mod sorted? carbonaceous sand.					
60.6	as above.				10 14 26	1102
62.6	as above.					853
64.6	as above ltn					
66.6	fine clear qtz sand. fine clear qtz sand					
68.6	as above					
70.6	as above.					
72.6	grey white clay & black pyritic sand					
74.6	black brown clay fine sand & wood.					
76.6	as above					
78.6	Grey white silty clay & black pyritic clay and					
80.6	Blue grey sandy clay					
82.6	Blue grey clay and green blue silty calc clyst					
84.6	As above & red maroon calc shale					
86.6	Red maroon calc shale.					

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 40/18

FINAL DEPTH: 80.6

Core size | From | To

PROSPECT: NARACHILLA | LOCATION: SH 54-9 6330177 | TITLE: EL 112

DRILLHOLE Nº: PC 6 310

SHEET 1 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite/marcasite Other minerals	Iron oxides Clay Mottling Base complete ox. Base partial ox. Ground water level in hole Date: 1.12.73 1.12.73.	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel and red brown clay			
2	As above.			
4	As above & white mottled red clay			
6	White mottled red clay & grey layers as above clay pretty calcareous.	Red maroon mottle in vein stringers and blobs mineral visible.		white clay red mott
8.3				
10.6	as above but no gravel.			
12.6	as above.			
14.6	as above.			maroon clay red mott white
16.6	Maroon clay & minor white clay			
18.6	White mottled red maroon sandy clay	Brown and yel vein oxide in places. Gypsum present		
20.6	as above.			
22.6	as above.			
24.6	as above.			
26.6	as above.	yellow vein oxide with red oxide.		
28.6	as above.			
30.6	Lt grey waxy plastic clay	little vein oxide		clay
32.6	as above			
34.6	as above	No vein oxide.		lt grey wax
36.6	Greenish grey waxy plastic clay			gr-gy
38.6	as above			
40.6	as above.			
42.6	Lt grey clay and & some yell clay	Limonite stringers in places		

RADIOMETRIC LOG

With long core axis (degrees) — A

Intensity (per metre)

COUNTS PER SEC: 20 40 60 80 100

HOLE DEPTH (metres)	RECOVERY % (60 70 80 90)	GEOL. LOG ROCK TYPE & STRUCTURE
0		
2		
4		
6		
8		
10		
12		
14		
16		
18		
20		
22		
24		
26		
28		
30		
32		
34		
36		
38		
40		
42		

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching | Iron Oxide | Calc. Mod. | Clay | Pyrite

MINERALIZATION: PYRITE | Ox/Red | SAMPLE NO. FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4C/6/18

FINAL DEPTH: 80·6

Core size From To

PROSPECT: TARACHILNA LOCATION: SH 54-9 6330 1772 TITLE: EL 112

DRILLHOLE Nº: TC6

SHEET 2 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION	RADIOMETRIC LOG
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals		With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 20 40 60 80 100
44·6	white Siliceous sandstone			sandst.	
46·6	Dk grey slate & limonite shale	yellow shale probably bed intersected		slate	
48·6	as above				
50·6	as above.				
52·6	very fine sand w/ layers of siliceous clay			sandy clay carbonaceous	
54·6	as above with some carbonaceous material				
56·6	as above				
58·6	fine sand wet bits siliceous clay/slate & limonite and organic	retained		sand org.	
60·6	as above.	fragments.			
62·6	Dk brown clay with organic material			clay dk br, org.	
64·6	light grey clay				
66·6	light grey sandy clay & brown clay	Some carbonaceous frags.		carb.	
68·6	Grey brown clay then blue green clay				
70·6	blue grey clay			blue-grn clay.	
72·6	Blue grey clay & maroon clay				
74·6	Red maroon calc clay and shale			red, maroon calc shale	
76·6	as above				
78·6	as above.				

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. Mod., Clay, Calcite

MINERALIZATION: Pyrite; Ox/Red; SAMP NO. FOR ANA

23 42 68 — ME 85

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: DARACHILLA | LOCATION: SH54-9, 6230/1748 | TITLE: EL 112

DRILLHOLE No: PC 7

SHEET 1 OF 2 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH: 82.6

Core size | From | To

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date: 2.12.73

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC. 20 40 60 80 100

HOLE DEPTH (METRES)			
0	Red Clay		
2	Red & white mottled clay		
4	White clay & Kunkar		
6	White & Red clay Kunkar & Gravel		
8.3	White clay red layers some Gravel	Red iron oxide mottling in blotches and layers decreasing	
10.6	as above.	with depth.	
12.6	as above		
14.6	as above with ~~low~~ salt.	sandstone cemented by iron oxide	
16.6	White and red clays	Red iron oxide mottling in blotches and layers	
18.6	Red clay with minor white		
20.6	Red and white mottled clay		
22.6	Grey white sandy clay.	Red mottling decreasing with depth.	
24.6	as above		
26.6	as above		
28.6	as above.		
30.6	Grey white clay and maroon clay	Layer of iron oxide rich clay	
32.6	as above		
34.6	Grey green stiff plastic clay		
36.5	as above		
38.6	as above		
40.6	White marl or calc shale		
42.6	White calc shale and limestone		

Laterite

White mottled clay

Red white mottled clay

Grey-white sandy clay

MARL CALC SHALE LIMST

HOLE DEPTH (metres) | RECOVERY % 60 70 80 90 | GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION: GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. mod., Clay, Carbonate

MINERALIZATION: PYRITE; Ox/Red; SAMPLE NO. FOR ANALY.

Logged by: Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 401618

FINAL DEPTH: 82.6m.

Core size | From | To

PROSPECT: Parachilna | LOCATION: 8454-9, 6290 1248 | TITLE: EL 112

DRILLHOLE No: DC7

SHEET 2 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION	RADIOMETRIC LOG	HOLE DEPTH (metres)	RECOVERY %	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense)	MINERALIZATION Analysis Cu Zn U ppm	PYRITE	Ox/Red	SAMPLE NO. FOR ANALY.
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date: 2.12.73.	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals		With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 20 40 60 80 100		50 80 90		Bleaching, Iron Oxides, Calc. nod., Clay, Carbonaceous				
44.6	White calc shale and limestone			White calc shale & limst.									
46.6	as above												
48.6	as above												
50.6	Green silty clay	possibly with glauconite											
52.6	Calc white shale and limestone			Shly									
54.6	as above												
56.6	Calc sandy white clay			clay									
58.6	Green white clay and c white calc clay												
60.6	as above + some red clay												
62.6	White clay and c Black red cycl shale			Sand									
64.6	White clay sand, black												
	red round clean qtz sd and py black shale												
66.6	as above with brown clay also												
68.6	Black fine grain py sst Sand and white clay			SDST py black									
70.6	Black f grained py qtz sst									8 30 1			HEL 855
72.6	white clay sand py qtz sst.	poor sample.											
74.6	as above	"		"									
76.6	Red calc clay and shale			red shale									
78.6	Red shale												
80.6	as above												
82.6													

TQ

63 -

77 -

N

Logged by:

Date:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: PARACHILNA | LOCATION: SH 54-9, 6320 1730 | TITLE: EL 112

DRILLHOLE Nº : PC 8

SHEET 1 OF 3 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH:

Core size | From | To

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole, Date: 2.12.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 20 40 60 80 100

ALTERATION — GRAPHIC LOG: 1 Weak, 2 Moderate, 3 Intense; Bleaching, Iron oxide, Carbonate, Clay, Feldspar oxide

MINERALIZATION: Ox/Red, Pyrite

HOLE DEPTH (METRES)			HOLE DEPTH (metres)	RECOVERY % 50 70 80 90	GEOL LOG ROCK TYPE & STRUCTURE	SAMPLE NO FOR ANALY.
0	Gravel brown clay and gypsum					
2	as above					
	as					
4	as above					
6	as above with Wanbar.					
8.5	Gravel with white clay mottled red	red mottles in blocky beds and streaks				
10.6	Grey white clay red mottled	decreasing down the holes				
12.6	as above					
14.6	as above					
16.6	as above	some limonite veinstone				
18.6	as above					
20.6	as above					
22.6	as above					
24.6	as above	some yellow mottling				
26.6	Grey white stiff blocky clay	little vein oxide				
28.6	as above	Some black coves in clay				
30.8	Grey blue-black stiff waxy clay	Blocky due to pervasive yellow limonite in clay				
32.8	as above					
34.8	as above & yel clay sand	yellow limonite clay sand.				
36.8	yel clay & sand wht & black & grey	black sand pyrite cemented.				
38.8	clean fi. grained qtz sd.					
40.6	as above.					
	as					
42.6	as above part cemented and shale.					

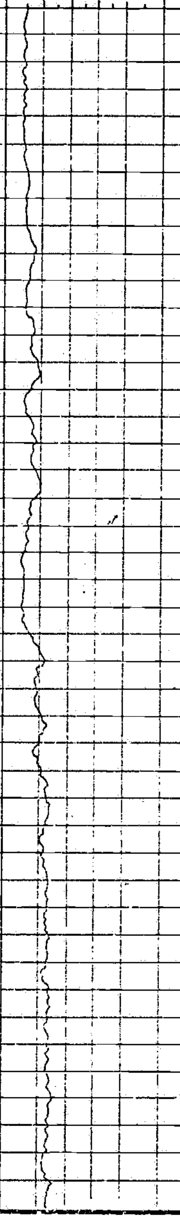
Logged by: Date:

DRILLING HEADER SHEET NO.	THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT
FINAL DEPTH: 100·6	PROSPECT: Parachilna · LOCATION: SH 54-9 63201730 · TITLE: EL 112
Core size / From / To	DRILLHOLE Nº: 0768
	SHEET 2 OF 3 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE (Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals)	WEATHERING (Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date:)	HYDROTHERMAL / MAGMATIC ALTERATION (Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals)	MINERALIZATION
44·6	Clean fine to med round subround qtz sand in part cemented			Sand part cement
48·6	as above			
50·6	as above			
52·6	as above			
54·6	as above			
56·6	as above			
58·6	as above			
60·6	as above c̄ grey clay snd.			
62·6	f-m qtz snd clean c̄ greyclaysand and brown clay sand.			Sand & qz clay.
64·6	Brown lignitic qtz snd c̄ white shls			lignite
66·6	as above.			
68·6	as above c̄ black py snds and wood fragments.			sand wood.
70·6	Brown lignitic clay c̄ some brown shale.			
72·6	Brown lignitic clay			
74·6	f to med qtz c̄ lignite and brown clay			
76·6	Blue grey cly c̄ lignite and py qtz snd.			
78·6	Blue grey clay			blue green clay ? wrd bedrock
80·6	as above			
82·6	as above			
84·6	as above			
86·6	as above			

77 —

RADIOMETRIC LOG: With long core axis (degrees) · Intensity (per metre) · COUNTS PER SEC 20 40 60 80 100



HOLE DEPTH (metres) · RECOVERY % 60 70 80 90 · GEOL. LOG: ROCK TYPE & STRUCTURE (py at ~69, Py at ~77)

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. nod., clay, Carb.

MINERALIZATION: PYRITE, Ox/Red, SAMPLE NO. FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: PARACHILNA | LOCATION: SH 54-9 6320 1730 | TITLE: EL 112

DRILLHOLE Nº : DC 8

SHEET 3 OF 3 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH: 100·6.

Core size | From | To

HOLE DEPTH (METRES) | ROCK-TYPE | WEATHERING | HYDROTHERMAL / MAGMATIC ALTERATION | MINERALIZATION | RADIOMETRIC LOG

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole, Date: 2.12.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC. 20 40 60 80 100

HOLE DEPTH (metres)	RECOVERY % (60 70 80 90)	GEOL. LOG ROCK TYPE & STRUCTURE
88·6		Blue grey clay
90·6		as above
92·6		as above
94·6		as above
96·6		as above
98·6		as above.

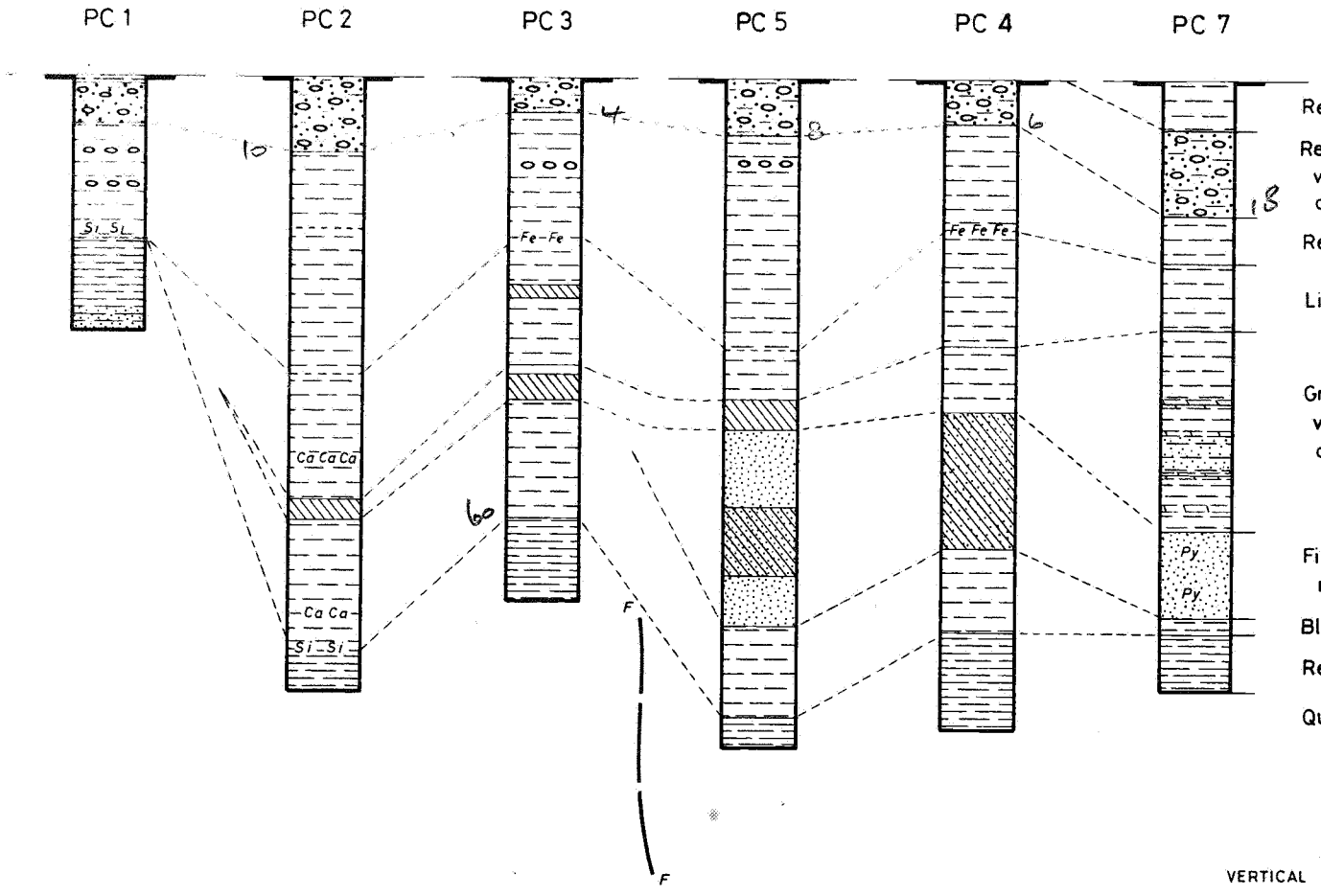
ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. nod., Clay, Pyrite

MINERALIZATION: Ox/Red; PYRITE; SAMPLE NO. FOR ANALY

Logged by: Date:

A
(E)

B.
(W)



Red clay

Red clay, calcareous with gypsum in places and gravel

Red and white mottled clay

Light grey, grey-white clay

Grey-green clay with marl and limestone in west dark grey clay in east

Fine rounded sand with carbonaceous material and pyrite in places

Blue-grey clay

Red calcareous shale in west

Quartzite in east

VERTICAL SCALE

1:1,000

0 20 40 60

METRES

E L 112 PARACHILNA, S.A.
GRAPHIC LOGS
BORES PC1 TO 5 & PC 7

Drawing No. A4– 1557

Project No.

Centre Melbourne

Date 18 - 12 - 73

THE BROKEN HILL PROPRIETARY CO. LTD.

E. L. 112 PARACHILNA, S. A.

GRAPHIC LOGS

BORES PC6, 5 & 8

Project No.

Drawing No. A4– 1556

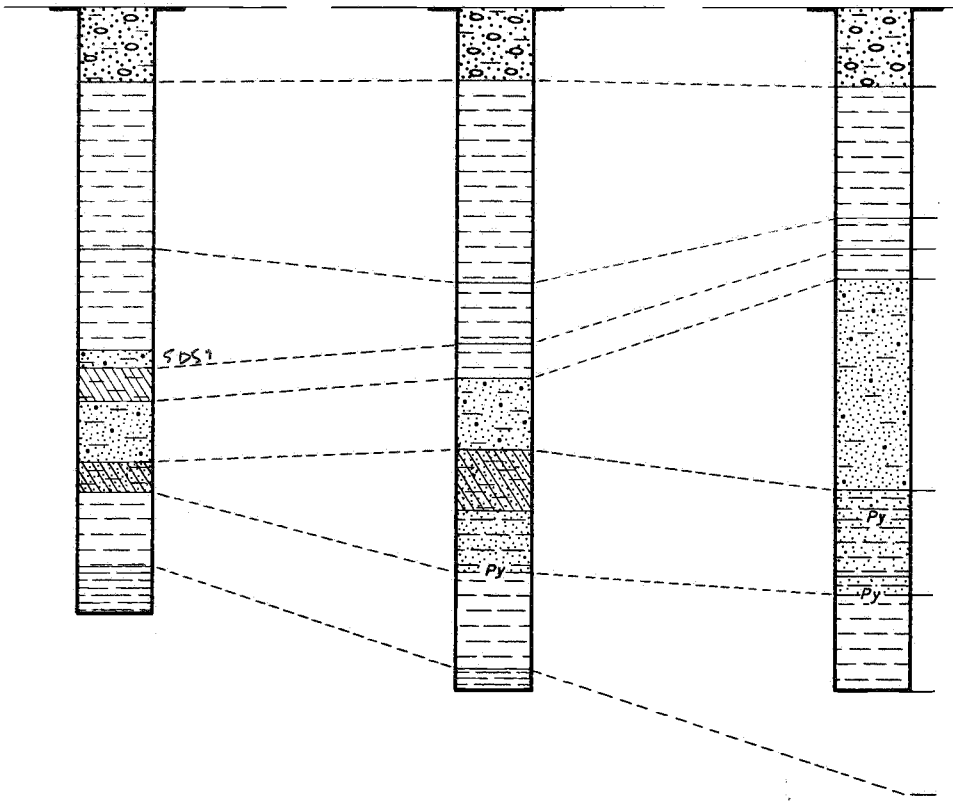
N

S

PC 6

PC 5

PC 8



Gravel and red calcareous clay

Red and white mottled clay some gypsum

Light grey, grey-white clay

Dark grey to blue-grey clay

Fine quartz rounded or siliceous sandstone with some clay

Carbonaceous clay and fine sands pyrite at base of sand

Blue-grey clay

Red calcareous shale

VERTICAL SCALE

1:1,000

0 20 40 60

METRES

Centre Melbourne

Date 18-12-73

THE BROKEN HILL PROPRIETARY CO LTD

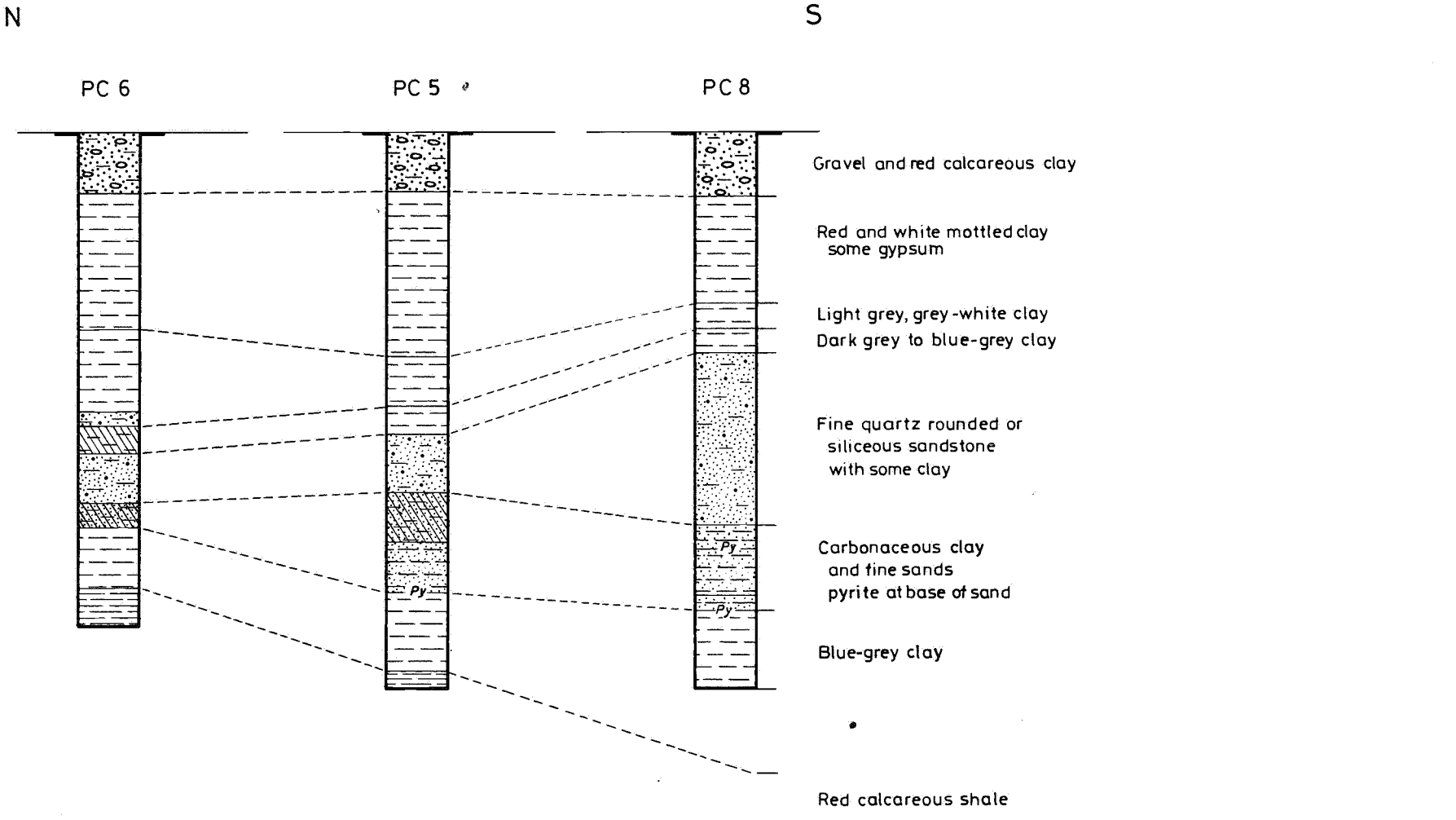
E.L. 112 PARACHILNA, S.A.

GRAPHIC LOGS

BORES PC6, 5 & 8

Project No.

Drawing No. A4- 1556



VERTICAL SCALE

1:1,000

0 20 40 60

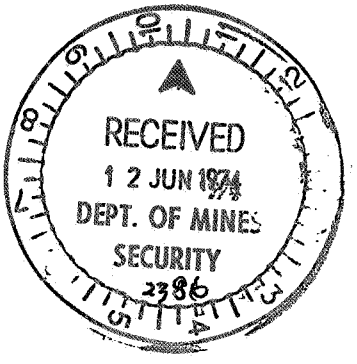
METRES

FIG. 3

EXPLORATION LICENCE 112

PARACHILNA, SOUTH AUSTRALIA.

FINAL REPORT.



C O N T E N T S

Appendices

Figures

1. General Statement

As part of the general research into possible uranium areas in South Australia, the Pirie-Torrens Basin was selected as a possible favourable environment for uranium deposition. Forty-four underground water samples were collected during March, 1973, and from the results and assessment of the geology of the area, the Beltana - Parachilna - Brachina area was chosen for further work. A programme of drilling was carried out to investigate the structure and stratigraphy of the area.

2. Title

Exploration Licence 112 was applied for on 16th August, 1973, and was granted for a period of twelve months on 19th November, 1973. The Licence covers 2,141 square kilometres.

3. Location and Access

Location of Exploration Licence 112 is shown in Figure 1. Access to the area is good. The Licence lies 160 miles north from Port Augusta by sealed and good gravel road. Within the area, station tracks allow access by all vehicles in dry weather. Travel off the tracks is limited to four wheel drive vehicles over much of the area.

4. Previous Work

4.1 Geology

Lake Torrens, a normally dry salina whose surface is 112 ft. above sea level, has been the site of accumulation of some 1100ft. of continental lacustrine sediments since Eocene times. The sediments consist of Eocene carbonaceous mudstone, siltstone and sandstone in the lower part of the section, with overlying dolomitic sediments.

The eastern shore is ill defined, but sand and gypsum bands separate the lake from the Torrens plain which runs to the foot of the Flinders Ranges. These plains have aligned sand dunes superimposed on broad alluvial outwash fans built up by creeks draining the Ranges.

The basin is indicated by a number of stratigraphic bores to contain the following general sequence:

Quarternary - Pleistocene	Up to 300 ft.
Tertiary	Up to 900 ft.
Cambrian/Precambrian	

The Quarternary/Pleistocene consists of lake sediments or wind blown lake derived deposits, with higher level piedmont gravels, sands and varicoloured clays derived from erosion of the Flinders Ranges, which were uplifted and formed a source area during the late Tertiary. Some carbonaceous beds and lignites are present.

The Tertiary (Eocene) consists of fresh and brackish water lacustrine sediments, mudstones, siltstones and sandstones (in part dolomitic). In the lower part carbonaceous sandstones and shales occur with occasional lignite bands.

The development of duricrust occurred in at least two periods during the Tertiary; the first near the base of the Tertiary in Eocene time and again in Oligocene to Miocene. It is doubtful if these can be uniquely distinguished. In this area silcrete duricrust is considered as the base of the Tertiary.

The Tertiary sediments thin and becomes finer to the west indicating an easterly source. Undoubtedly some contribution from the West occurred but this area was a site of Cretaceous sedimentation and no significant uplift in Tertiary time is indicated.

The source area of Tertiary sediments was presumably from the East, but the Flinders Ranges had not been uplifted at the time of deposition. The sediments were therefore probably derived from a mixture of basement gneiss, granite, porphyry, schist terrain, and Adelaidian sediments, possibly in part from reworking of a Cretaceous sheet covering parts of the terrain and perhaps the Flinders area. The Cretaceous-Tertiary of the Flinders Range cover may have been derived in part from the Mt. Painter igneous/uranium bearing complexes but this is very hypothetical.

4.2 Structure

Aeromagnetics indicate a major fault on the west side of Lake Torrens. This appears to be the western limit of the deeper Tertiary extending northward from Port Augusta to just east of Andamooka Island and thence NNW and north.

It is noteworthy that a line of springs appears to occur in the vicinity of the fault south of Andamooka Island, and that a radium-radon rich area occurs near Andamooka Island on a fault within the Precambrian; this may be due to leakage from the Tertiary although the radium could equally well be from a Precambrian source. Aeromagnetics also indicate the Ediacara fault.

Ground magnetic, gravity and seismic work on the eastern shore of Lake Torrens has been carried out by Geosurveys of Australia for Santos N.L., by the S.A. Mines Department and by Carpentaria Exploration. The gravity and seismic work has indicated several major faults and these are indicated on the attached sketch map (Fig. 1).

The cumulative movement on the Ediacara fault which throws Tertiary sediments against Adelaidian, is 210 ft down throw to the west. The basement by magnetics here is at 1800 ft to 2400 ft and east of the fault this basement is at 4700 ft to 5500 ft.

This is considered part of the Torrens hinge zone. The Ediacara fault here is the most important of, probably, a series of lineaments which have been active since (?) Cambrian time. This possibility is illustrated in Fig. 1.

Seismic work by Kendall indicates the presence of a fault west of Motpena with a cumulative down throw to the west of 200 ft., and at Warioota a further indication of faulting with a considerable throw from the profiles viewed at Adelaide with the down throw to the west.

Faulting is indicated east of the Ediacara Range from geology reported by Bink[5] (1972).

The South Australian Mines Department infers faults along the west side of the Flinders Ranges, but these are presumed and said to parallel the lake shore and Flinders Ranges Horst.

Mines Department personnel indicate that the age of faulting in the Flinders Ranges is early Tertiary. Evidence for this is particularly evident in the Adelaide region and on the east side of the Flinders Ranges in the Frome Embayment in which thick sediment wedges have been intersected in drilling.

Binks (1972) suggests a second period of uplift in the late Tertiary or Quarternary. Indeed seismic evidence suggests that the readjustments are continuing.

The Ediacara fault and an associated anticline in the Adelaidian rocks cause a basement ridge which extends from Brachina through Motpena to Ediacara. This bounds a sub-basin in the Parachilna area, which in the Tertiary appears to be partly separated from the Torrens basin proper.

4.3 Geological History

Prior to Mesozoic deposition, the Lake Torrens area was occupied by gently folded Cambrian limestone and Proterozoic sandstone and shale. The Jurassic epeirogenic movements resulted in the formation of the Great Artesian Basin to the north. Lower Cretaceous marine sedimentation apparently did not extend into the Lake Torrens area, but later the Lake Frome embayment extended west across the Flinders Ranges (Callen 1973). The area became dry land again in Cenomanian time and stable weathering conditions prevailed to the end of the Cretaceous. This may be the time of first silcrete formation.

During the Palaeocene, uplift of the Olary and Barrier Ranges to the south and east of the Flinders Ranges occurred, and erosion of their cover led to the deposition of coarse fluviatile carbonaceous sands in the Lake Frome area and probably encroaching onto the area west of the Flinders Range.

The Torrens Basin subsidence began in the early Eocene and fine sands and carbonaceous silts probably of fluvial as well as lacustrine origin were spilled into the Torrens Basin. Activity along faults near Beltana and Parachilna provided small basins of deposition. The source of this sediment is probably Jurassic and Cretaceous sedimentary cover; or cover and detritus, south from the Olary Ranges, east from the Barrier Ranges and possibly west from the Gawler Ranges. Further uplift at the end of the Tertiary began to uncover the Flinders Ranges and to redistribute lower Eocene Sediments.

A period of climatic stability existed through the Oligocene to the Miocene and where suitable conditions applied further duricrusts/silcretes were formed. The Quaternary sediments are fanglomerates and playa lake deposits.

5. Field Investigations

5.1 Sampling of Water Bores

Forty-four existing windmill equiped bores in the Pirie - Torrens Basin were sampled, and the water analysed for uranium, radon. Figure 1 shows the pattern of uranium and radon values obtained. The results suggest that the basin could be significantly uraniferous.

From the small amount of drill hole data available, the most favourable strata appear to be below 150 metres, the maximum depth for possible open pit mining. However, as faulting along the western boundary of the Flinders Ranges, particularly in the Beltana area, may have preserved favourable strata at depths within 150 metres of the surface, this area was chosen for a more detailed investigation.

5.2 Drilling

Eight rotary drill holes, PC 1 - 8 totalling 618.8 metres, were drilled. Bore locations are shown on Figure 1. The drill-holes were logged in the field visually and by scintillometer probe. Samples were selected for chemical analysis and palynological study.

Drill logs, including radiometric logs, are given in Appendix 1. Figure 2 and Figure 3 show graphic logs for bores PC 1 - 5 and 7 and bores PC 6, 5 and 8 respectively.

The drilling proved the presence of up to 25 metres of sands, part of which are carbonaceous. Logging indicated that parts of the carbonaceous section, often close to the top, are more radioactive than other lithologies. The top values from analysis are 26 ppm and 68 ppm (0.13 lbs/ton) uranium.

The basement is much shallower than to the south and appears to be deepening to the south.

No reliable information was obtained about source of sediments, but the most probable source of sand and also of water entry is the south, where the only rocks that could be considered as a uranium source are remote from the area.

Although favourable sediments for uranium mineralization at a suitable depth for open cut mining were found, no uranium mineralization was intersected and the EL. 112 was consequently surrendered.

6. Expenditure

Expenditure debited to Exploration Licence 112 during the duration of the Licence was as follows:-

Wages and Salaries	$ 583
Drilling	4,150
Sample Analysis	39
Mining Tenement Fees, Licences etc.	4,079
	$8,851

This report is submitted to the Mines Department as required by Condition 4 of Exploration Licence 112.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: Parachilna | LOCATION: SH 54-9 6420168 | TITLE: EL 112 | 33

DRILLHOLE Nº : PC1 174622

SHEET 1 OF SHEETS 1

DRILLING HEADER SHEET NO.

FINAL DEPTH: 34.6 M

Core size | From | To

ROCK-TYPE: Quartz; Pebbles; Clay; Organic matter; Grain size; Felspars; Pyrite / marcasite; Other minerals

WEATHERING: Iron oxides; Clay; Mottling; Base complete ox; Base partial ox.; Ground water level in hole; Date: 28/11/1973

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds; Sandstone lens; Clay sandstone boundaries; Carbonate nodules; Bleaching; Iron oxides; Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees); Intensity (per metre); COUNTS PER SEC. 10 20 30

HOLE DEPTH (metres)	RECOVERY % (50 70 80 90)	GEOL. LOG ROCK TYPE & STRUCTURE	Lithology	Graphic log
0			Red silt, Dune	Red iron oxides coat silt
2			iron Gravel	grain brown oxide on gravel.
2			As Above Gravel	
4			Salt, Hot, eht	
4			Clay and Gravel	Brown colour
6			Brown and white	
6			Clay & Gravel	
8·3				
8·3			Red & white silt & Gravel	Red iron oxides mottled
10·6			Red brown clay silt	Carbonate concretionary layer
10·6			& Pale concretion	
12·6			Above with	layer of limonite clay.
12·6			gravel iron rock	
14·6			Pebble clay silt	Some No coating on fractures
14·6			& coarse iron	in gravel.
16·6			silt Regal clay &	limonite siliceous clay
16·6			fine white silt	
18·6			Silcrete transition	Iron or Manganese oxides in
18·6			clay siltstone	place.
20·6			white clay silt &	Dune sand
20·6			coarse sand.	
22·6			white clay silt &	Some large hard
22·6			sand	
24·6			as above.	
24·6				
26·6			White Quartzite	
26·6			fine sandy clay	
28·6			white clay stone	
28·6			Quartzite bands	
30·6			as above	
30·6				
32·6				
32·6			as above	
34·6				

ALTERATION: GRAPHIC LOG — 1 Weak, 2 Moderate, 3 Intense — Bleaching; Iron Oxide; Salt Acid; Clay; Carbonate

MINERALIZATION: Pyrite; Ox / Red

SAMPLE NO FOR ANALY.

D66

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4C/16/8
FINAL DEPTH: 84.6
Core size From To

PROSPECT: PARACHILNA
LOCATION: SH 54-9 6395/1760
TITLE: EL 112

DRILLHOLE Nº: PC 2. 174623

SHEET 1 OF SHEETS 2.

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL/MAGMATIC ALTERATION	MINERALIZATION	RADIOMETRIC LOG	HOLE DEPTH (metres)	RECOVERY %	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG	MINERALIZATION Analysis Cu Zn U ppm	PYRITE	Ox/Red	SAMPLE NO. FOR ANALY.
0	Gravel and brown clay	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 28.11.73 29.11.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals		With long core axis (degrees) A Intensity (per metre) COUNT PER SEC. 20 40 60 80 100		60 70 80 90		Bleaching / Iron Oxides / Soric mud / Clay / Ca Calcrete 1 Weak 2 Moderate 3 Intense				
2	Gravel brown clay and Kunkar												
4	As above												
5.8	Gravel and Kunkar												
8.3	Gravel Brown clay and Kunkar												
10.6	Greyish clay mottled red	Red & Khaki mottling. Iron and Manganese oxides as Hebs facies etc.											
12.6	as above												
14.6	as above												
16.6	as above.												
18.6	As above & thin yellow sandstone												
20.6	Greyish clay & mottled section	Red and yellow mottle and accumulations of Fe ox.											
22.6	as above.	Some layers of Red/Brown clay.											
24.6	as above												
26.6	As above.												MEL
28.6	As above									18 36 3			846
30.6	As above												
32.6	As above												
34.6	As above												
36.6	As above												
38.6	As above & Item yellow sandstone												
40.6	Clay sand white	Fe ox coats in places.											
42.6	Clay sand drilly												

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

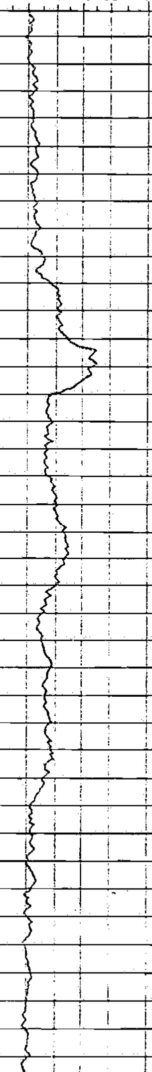
DRILLING HEADER SHEET NO.	
FINAL DEPTH:	84·6.
Core size / From / To	
PROSPECT	PARACHILNA
LOCATION	3454-9 6395/760
TITLE	EL 112.

DRILLHOLE Nº : Pc 2. 030

SHEET 2 OF 2 SHEETS

Column headings: ROCK-TYPE (Quartz, Pebbles, Clay, Organic matter, Grain size, Felspars, Pyrite / marcasite, Other minerals) — WEATHERING (Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date: 28.11.73, 29.11.73.) — HYDROTHERMAL / MAGMATIC ALTERATION (Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals) — MINERALIZATION — RADIOMETRIC LOG (A With long core axis (degrees), Intensity (per metre), COUNTS PER SEC. 20 40 60 80 100) — HOLE DEPTH (metres) — RECOVERY % (60 70 80 90) — GEOL. LOG (ROCK TYPE & STRUCTURE) — ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense; Bleaching, Iron oxide, Carb. nod., Clay) — MINERALIZATION (Pyrite, Ox/Red) — SAMPLE NO. FOR ANALY.

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	ROCK TYPE & STRUCTURE	SAMPLE NO. FOR ANALY.
44·6	Grey white silty clay and claysand			
46·6	White plastic clay			
48·6	Grey white plastic clay			
50·6	As above ē thin [illegible] of Calc. rich clay		Ca / Ca	
52·6	Ironstone carbonate [illegible] in White clay			
54·6	Dark grey brownish clay	Limonite in hairline fractures		
56·6	Dark grey brownish clay ē organic matter	No pyrite or Iron oxides.		PALY
58·6	Brown grey clay ē [illegible] Qtz [illegible] and	Iron stone oxides carbonate		
60·6	Dark grey lignitic clay			PALYN
62·6	As above.			
64·6	Grey clay			
66·6	as above.			PALYN
68·6	light grey clay ē khaki Fe ox rich clayst.	Iron oxides colour clay in layers?		
70·6	clay above ē black clay sand and py	Py cemented sandstone		
72·6	White clay and limestone.			
74·6	as above.			
76·6	Wht clay and silic clayst or siltstone.	Some Iron oxides as layers and clots.		
78·6	More siliceous siltstone		Si Si / Si Si	
80·6	as above.			
82·6	as above		Si Si	



THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4C1618
FINAL DEPTH: 70.6m.
Core size From To

PROSPECT	LOCATION	TITLE
PARACHILNA	SH 54-9 6365/752	EL 112.

DRILLHOLE Nº : DC 3 930 174624

SHEET 1 OF 2 SHEETS

ROCK-TYPE: Quartz Pebbles; Clay; Organic matter; Grain size; Feldspars; Pyrite/marcasite; Other minerals

WEATHERING: Iron oxides; Clay; Mottling; Base complete ox; Base partial ox.; Ground water level in hole; Date: 29.11.73, 30.11.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds; Sandstone lens; Clay sandstone boundaries; Carbonate nodules; Bleaching; Iron oxides; Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 10 20 30

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Brecciation; Iron Oxide; Calc. Red; Clay; Argillaceous	MINERALIZATION Analyses Cu Zn U ppm; Pyrite; Ox/Red	SAMPLE NO FOR ANALY.
0			Gravel and Red brown calcareous clay		
2			Its above with gypsum		
4			Its above then grey white clay	Clay mottled silt iron oxides	
6			Grey white clay mottled red & yel	Red and yellow iron oxide	
8.3			Its above with gravel		
10.6			Grey white clay mottled red		
12.6			as above		
14.6			as above		
16.6			as above		
18.6			as above		
20.6			as above Item grey clay		
22.6			grey slift plastic clay	Some brown red and yellow iron oxides	
24.6			grey plastic clay.		
26.6			as above		
28.6			Dark grey to grey plastic clay	yellow iron oxides in fractures and slots	
30.6			Grey clay & Khaki clay	yellow iron oxides in places	
32.6			Grey white clay	yellow iron oxides in places.	
34.6			Dark grey clay & white clay & sand	Some red iron stone or Fe ox cemented sand.	
36.6			Dark grey clay stone and stone & sand	Red and yellow iron oxides in fine sands.	
38.6			Black brown clay		
40.6			& some grey white clay		1781
42.6			grey white sandy clay	26 84 4	8427
			& black clay		
44.6			as above		

ROCK-TYPE
Quartz
Pebbles
Clay
Organic matter
Grain size
Feldspars
Pyrite/marcasite
Other minerals

WEATHERING
Iron oxides
Clay
Mottling
Base complete ox.
Base partial ox.
Ground water level in hole
Date:

HYDROTHERMAL/MAGMATIC ALTERATION
Distribution:
Isolated beds
Sandstone lens
Clay sandstone boundaries
Carbonate nodules
Bleaching
Iron oxides
Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG
With long core axis (degrees)
Intensity (per metre)
COUNTS PER SEC
10 20 30

DRILLING HEADER SHEET NO.
FINAL DEPTH:
Core size From To

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT	LOCATION	TITLE
Parachilna	SH54-9 6365/252	EL 112.

DRILLHOLE Nº: Pc 3. 037

SHEET 2 OF 2 SHEETS

HOLE DEPTH (metres)	RECOVERY % (60 70 80 90)	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak 2 Moderate 3 Intense): Bleaching, Iron oxides, Carb. nod., Clay	MINERALIZATION: Pyrite, Ox/Red	SAMPLE NO FOR ANALY.
64.6					
65.6					
66.6					
67.6					
68.6					
69.6					
70.6					
71.6					
72.6					
73.6					
74.6					
75.6					
76.6					
77.6					
78.6					
79.6					
80.6					
81.6					
82.6					
83.6					
84.6					
85.6					
86.6					
87.6					
88.6					
89.6					
90.6					

64.6 Grey white fine and clay & blue clay
66.6 2" blue clay and fine sand clay
67.6 as above
68.6 as above
72.6 Blue grey clay
74.6 as above
75.6 as above
77.6 as above
78.6 as above & blue grey calcareous shale
82.6 Grey calcareous shale
84.6 as above
86.6 as above
88.6 dark grey calcareous shale
90.6

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 10/618
FINAL DEPTH: 88.6 M.
Core size From To

PROSPECT: PARACHILNA
LOCATION: SH 54-9 6315/745
TITLE: EL 112

DRILLHOLE Nº : PC4 174625

SHEET 1 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite/marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 30.11.73 30.11.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	

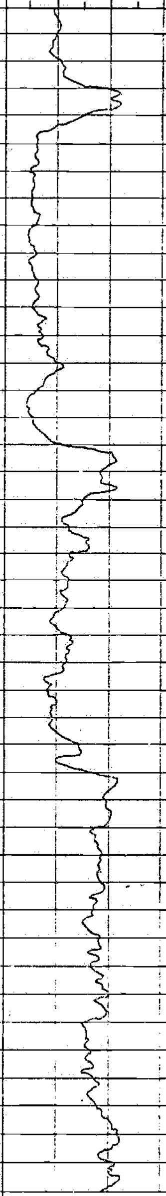
RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 10 20 30

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. Mod., Clay, Ferruginous Calc.	MINERALIZATION: Pyrite, Ox/Red	SAMPLE NO. FOR ANALY.
0	Gravel & red calcareous clay as above.	Red iron oxides coat gravel in part.			
2					
4	as above thin Red mottled white clay				
6	Red and white mottled clay as above	Red iron oxides as dots and in places apparently as layers			
8 3	Grey white clay mottled				
10 6					
12 6	Grey white clay with red mottles				
14 6	as above				
16 6	as above				
18 6	as above	yellow limonite concretionary layer in breccia			
20 6	as above				
22 6	Grey white clay with brown mottle	Brown iron oxides as dots with brown concretions.			
24 6	as above				
26 6	Grey clay brown in part	limonite in hair fractures throughout			
28 6	Grey brown and dark grey clay with N.A. limonite stained clay	Carbonaceous clay with variable iron oxide cont.			
30 6	White clay & fine gravel calcareous	layers			
32 6	Grey white clay and fine sandy clay				
34 6	Blue green clay and pale buff				
36 6	Blue green fine clay & calc. frags as above				
38 6	as above				

ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION
Quartz	Iron oxides	Distribution:
Pebbles	Clay	Isolated beds
Clay	Mottling	Sandstone lens
Organic matter	Base complete ox	Clay sandstone boundaries
Grain size	Base partial ox.	Carbonate nodules
Feldspars	Ground water level in hole	Bleaching
Pyrite / marcasite	Date:	Iron oxides
Other minerals		Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG — With long core axis (degrees) — Intensity (per metre) — COUNTS PER SEC. 10 20 30



DRILLING HEADER SHEET NO. 40618

FINAL DEPTH: 88.6.

Core size From To

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: PARACHILNA — LOCATION: SH 54-9 63151745 — TITLE: EL 112

DRILLHOLE No: PC4 089

SHEET 2 OF 2 SHEETS

HOLE DEPTH (metres) — RECOVERY % 60 70 80 90 — GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG: Bleaching, Iron Oxide, Calc. nod., Clay, Sulphur (?) — 1 Weak 2 Moderate 3 Intense

MINERALIZATION — Analysis Cu Zn U — PYRITE — Ox/Red — SAMPLE NO. FOR ANALY.

HOLE DEPTH (METRES)	ROCK-TYPE	Analysis Cu	Zn	U	PYRITE	SAMPLE NO. FOR ANALY.
44.6	Brown Clay red sand					MEZ
	and blue green clay ē limst.	20	22	5		84[illegible]
46.6	Brown carbonaceous					MEZ
	sst ē limst frags.	30	42	10		84[illegible]
48.6	Brown Carbonaceous					
	clay					
50.6	Brown black					MEZ
	Carbonaceous Sand	4	14	1		851
52.6	as above					
54.6	as above					
56.6	as above					
58.6	as above.					
60.6	Brown carbonaceous					MEZ
	clay/sand siltyclay	22	26	6		850
62.6	Brown carbonaceous					
	clay					
64.6	Grey white silty					
	clay					
66.6	Grey white silty clay					
	ē qtz py sst				50%	
68.6	Grey white clay					
70.6	Grey white clay ō					MEZ
	purple red brown	8	22	3	50%	852
72.6	Grey white clay and					
	red-brown qtz sand					
74.6	Grey white clay					
76.6	Red purple clay and					
	calcareous shale					
78.6	as above					
80.6	as above					
82.6	as above					
84.6	as above					
86.6	as above					

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: Paraachilla | LOCATION: SH 54-9, 4330 1752 | TITLE: EL 112.

DRILLHOLE Nº : PCS. 3249

SHEET 1 OF 2 SHEETS 174626

DRILLING HEADER SHEET NO. A0161S

FINAL DEPTH: 88.6 m.

Core size | From | To

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite / marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 30.11.73 1.12.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel and Recent Colluvium Clay			
2	as above			
4	as above			
6	as above Item vent - white clay			
8.3	White and red clay with gravel beds			
10.6	Grey white clay & mottled nodules	Mottling as patches of red iron oxide		
12.6	as above	Mottling variable but more intense higher in hole.		
14.6	as above			
16.6	as above			
18.6	as above			
20.6	as above			
22.6	as above			
24.6	as above			
26.6	as above	very little iron oxide mottling		
28.6	Grey white clay & some red			
30.6	as above			
32.6	as above.			
34.6	Grey white clay gradating to Grey			
36.6	grey brown clay	limonite staining in cracks and fractures		
38.6	as above			
40.6	as above			
42.6	as above.			

RADIOMETRIC LOG

With long core axis (degrees) | Intensity (per metre)

COUNTS PER SEC 10 20 30

HOLE DEPTH (metres)	RECOVERY % 60 70 80 90	GEOL. LOG ROCK TYPE & STRUCTURE
0		
10		
20		
30		
40		
50		
60		
70		
80		
90		

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching | Iron Oxide | Carb. nod. | Clay

MINERALIZATION: Pyrite | Ox/Red | SAMPLE NO FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4 0 1 6 1 8

FINAL DEPTH:

Core size	From	To

PROSPECT	LOCATION	TITLE
Parachilna	SH 54-9 6330 1752	EL 112.

DRILLHOLE Nº : PC5.

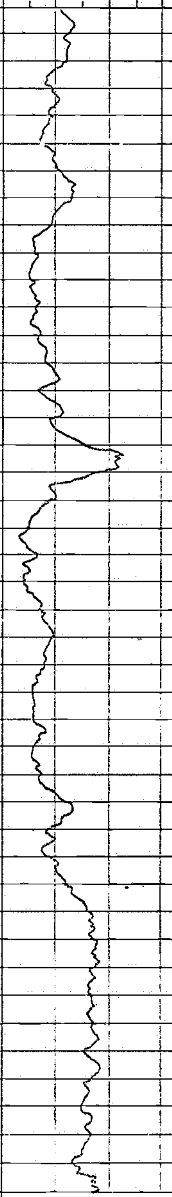
SHEET 2 OF 2. SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals	Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole, Date:	Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals	
44.6	Dark grey stiff plastic clay			
46.6	Dk. brown clay sand & yellow clay sand			
48.6	White siliceous clay sandstone			
50.6	as above.			
52.6	White sandy clay & black shale	Limonitic layer or concretion occurs.		
54.6	fine qtz sand.			
	fine clean qtz sand			
56.6	then carbonaceous fine sand.			
58.6	fine round subround? carbonaceous sand			
60.6	as above.			
62.6	as above.			
64.6	as above then fine clean qtz sand			
66.5	fine clean qtz sand			
68.6	as above			
70.6	as above.			
72.6	grey white clay & black pyritic sand			
74.6	black brown clay fine sand & wood.			
76.6	as above.			
78.6	Grey white silty clay & black [illegible] clay sand			
80.6	Blue grey sandy clay			
82.4	Blue grey clay and green blue silty calc. clayst.			
84.6	As above & red maroon calc shale.			
86.6	Red maroon calc shale.			

RADIOMETRIC LOG

With long core axis (degrees) | Intensity (per metre) | A

COUNTS PER SEC 10 20 30



HOLE DEPTH (metres) | RECOVERY % 60 70 80 90 | GEOL. LOG. ROCK TYPE & STRUCTURE

ALTERATION: GRAPHIC LOG — 1 Weak, 2 Moderate, 3 Intense — Bleaching, Iron Oxide, Calc. nod., Clay, [illegible]

MINERALIZATION: Analysis Cu Zn U | PYRITE | Ox/Red | SAMPLE No FOR ANALY.

Analysis Cu	Zn	U	SAMPLE No FOR ANALY.
10	14	26	Mr 2
			8 3

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 40/8/8

FINAL DEPTH: 80·6

Core size | From | To

PROSPECT: PARACHILNA | LOCATION: SH 54-9 6330/772. | TITLE: EL 112

DRILLHOLE Nº : PC 6

SHEET 1 OF 2 SHEETS

174627

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite / marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 1.12.73 1.12.73.	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Gravel and red brown clay			
2	As above.			
4	As above & white mottled red clay			
6	White mottled red clay & gravel layers	Red maroon mottle in vein bleaching and blebs iron oxide		
8·3	As above clay	visible		
10·6	as above but			
12·6	as above gravel.			
14·6	as above.			
16·6	Maroon clay & minor white clay			
18·4	White mottled red maroon sandy clay	Brown and yel vein oxide in places. Gypsum pearl		
20·6	as above.			
22·6	as above.			
24·6	as above.			
26·6	as above.	yellow vein oxide with red oxide.		
28·6	as above.			
30·6	Lt grey waxy plastic clay	little vein oxide.		
32·6	as above			
34·6	as above	No vein oxide.		
36·6	pale grey waxy plastic clay			
38·6	as above			
40·6	as above.			
42·6	Lt grey clay and	laminite changes in		

RADIOMETRIC LOG

With long core axis (degrees) A

Intensity (per metre)

COUNTS PER SEC 20 40 60 80 100

HOLE DEPTH (metres)

RECOVERY % 60 70 80 90

GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION

GRAPHIC LOG 1 Weak 2 Moderate 3 Intense

Brecciation | Iron Oxide | Calc. Mod. | Clay | Carbonate

MINERALIZATION

PYRITE | Ox/Red

SAMPLE NO. FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO. 4C/161/8
FINAL DEPTH: 80.6
Core size From To

PROSPECT: TARACHILNA
LOCATION: SH 54-9 6330:1772
TITLE: EL 112

DRILLHOLE Nº : TC6

SHEET 2 OF 2 SHEETS

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION	HOLE DEPTH (metres)	ROCK TYPE & STRUCTURE	ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense)	MINERALIZATION	SAMPLE NO FOR ANALY.
4.6	White Siliceous sandstone								
6.6	Dk grey shale & limonitic shale	yellow shale, goethite & hematite stained							
8.6	as above								
12.6	as above.								
32.6	very fine sand & layers of siliceous clay								
36.6	as above with some carbonaceous material								
38.6	as above								
40.6	fine sand not retained but siliceous clay/shale & limonitic and organic fragments.								
42.6	as above								
44.6	Dk brown clay with organic material							28 42 68	MCL 854
46.6	light grey clay								
48.6	light grey sandy clay & brown clay	Some carbonaceous specs.							
50.6	Grey brown clay & lt blue green clay								
52.6	Blue grey clay								
54.6	Blue grey clay & maroon clay								
56.6	Dk maroon calc clay and shale								
58.6	as above								
60.6	as above.								

RADIOMETRIC 40G

With long core axis (degrees) A

Intensity (per metre)

COUNTS PER SEC
20 40 60 80 100

HOLE DEPTH (metres)

RECOVERY %
60 70 80 90

GEOL. LOG
ROCK TYPE & STRUCTURE

ALTERATION
GRAPHIC LOG
1 Weak
2 Moderate
3 Intense
Bleaching
Iron Oxide
Calc. mat.
Clay
Calcite

MINERALIZATION
PYRITE
Ox/Red

SAMPLE NO FOR ANALY.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

PROSPECT: PARACHILNA | LOCATION: SH54-9 6290/1748 | TITLE: EL 112

DRILLHOLE Nº : PC 7

SHEET 1 OF 2 SHEETS 174628

DRILLING HEADER SHEET NO.

FINAL DEPTH: 82.6

Core size | From | To

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
	Quartz Pebbles Clay Organic matter Grain size Feldspars Pyrite / marcasite Other minerals	Iron oxides Clay Mottling Base complete ox Base partial ox. Ground water level in hole Date: 2.12.73	Distribution: Isolated beds Sandstone lens Clay sandstone boundaries Carbonate nodules Bleaching Iron oxides Removal of primary minerals	
0	Red clay			
2	Red & white mottled clay			
4	White clay & Kunkar			
6	White & Red clay Kunkar & Gravel			
8·3	White clay red layers some Gravel as above	Red iron oxide mottling in blotches and layers decreasing with depth.		
10·6				
12·6	as above			
14·6	as above with some salt.	sandstone cemented by iron oxide		
16·6	White and red clays	Red iron oxide mottling in blotches and layers		
18·6	Red clay with some white			
20·6	Red and white mottled clay.			
22·6	Grey white sandy clay.	Red mottling decreasing with depth.		
24·6	as above			
26·6	as above			
28·6	as above.			
30·6	Grey white clay and brown clay	layer of iron oxide rich clay		
32·6	as above			
34·6	Grey green stiff plastic clay			
36·6	as above			
38·6	as above			
40·6	White marl or calc shale			
42·6	White calc shale and limestone			

RADIOMETRIC LOG

A: With long core axis (degrees) | Intensity (per metre)

COUNTS PER SEC. 20 40 60 80 100

HOLE DEPTH (metres) | RECOVERY % 60 70 80 90 | GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. Mod., Clay, Cavities

MINERALIZATION: Pyrite | Ox/Red | SAMPLE NO. FOR ANALY.

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EXPLORATION DEPARTMENT

PROSPECT	LOCATION	TITLE
Parachilna	SH54-9 62901748	EL 112

DRILLHOLE No: Pc 7

SHEET 2 OF 2 SHEETS

DRILLING HEADER SHEET NO. 4 0 1 6 1 8

FINAL DEPTH: 82.6 m.

Core size	From	To

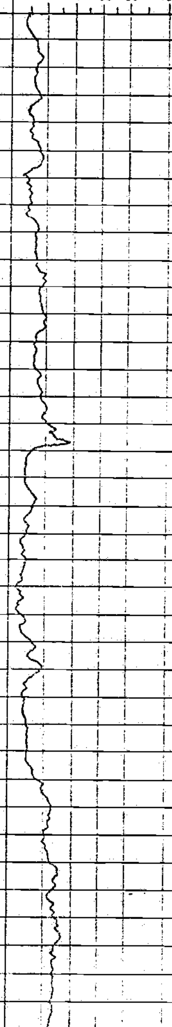
ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox., Base partial ox., Ground water level in hole, Date: 2.12.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG — A: With long core axis (degrees); Intensity (per metre); COUNTS PER SEC 20 40 60 80 100



GEOL. LOG — HOLE DEPTH (metres); RECOVERY % 60 70 80 90; ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron oxide, Calc. nod., clay, Carbonate

MINERALIZATION — Analysis Cu Zn ?? ppm; PYRITE; Ox/Red; SAMPLE NO. FOR ANALY.

HOLE DEPTH (METRES)	ROCK-TYPE	WEATHERING / REMARKS	ROCK TYPE & STRUCTURE	Analysis Cu Zn ?? ppm	SAMPLE NO.
44.6	White calc shale and limestone		Ca		
46.6	as above		Ca		
48.6	as above		Ca		
50.6	Green siltyclay	possibly with glauconite			
52.6	Calc white shale and limestone				
54.6	as above		Ca		
56.6	Calc sandy white clay.		Ca		
58.6	Green white clay and ? white calc clay		Ca		
60.6	as above ? red clay		Ca		
62.6	White clay and ? Black, red, ? shale				
64.6	White clay sand, black ? clean qtz sand and py black shale				
66.6	as above with brown clay also				
68.6	Black fine grain py sst Gravel and white clay		py		
70.6	Black f grained py qtz sst		Py	8 20 1	M. L. & S.
72.6	White clay some py qtz sst.	poor sample.	POOR SAMPLE RETURN.		
74.6	as above	"			
76.6	Red calc clay and shale				
78.6	Red shale				
80.6	as above				

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DRILLING HEADER SHEET NO.

FINAL DEPTH: 100.6

Core size From To

PROSPECT: PARAMILINA
LOCATION: 8454·9 / 6320730
TITLE: EL 112

DRILLHOLE No: PC8 174629

SHEET 1 OF 3 SHEETS

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite/marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox., Base partial ox., Ground water level in hole, Date: 2.12.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC 20 40 60 80 100

HOLE DEPTH (metres)	ROCK-TYPE	WEATHERING	HYDROTHERMAL / MAGMATIC ALTERATION	MINERALIZATION
0	Gravel loam			
2	Clay and gypsum as above			
4	as above			
6	as above with Kunkar			
8	Gravel with white clay mottled red	red mottles in blocks		
10	Grey white clay red mottled	decreasing down the holes		
12	as above			
14	as above			
16	as above	some limonite veinstone		
18	as above			
20	as above			
22	as above			
24	as above	some yellow mottling		
26	Grey white stiff plastic clay	little iron oxide		
28	as above	Some black specs in clay		
30	Grey blue-black stiff waxy clay	Black due to pervasive yellow limonite in clay		
32	as above			
34	as above & yel clay sand	yellow limonitic clay sand		
36	yel clay & sand with black & grey	black nodules pyrite cemented		
38	clean fine grained qtz sand			
40	as above			
42	as above			
44	as above part cemented			

ALTERATION: GRAPHIC LOG — 1 Weak, 2 Moderate, 3 Intense — Bleaching, Iron oxide, Iron mod, Clay, Kunkar rock

MINERALIZATION: Py (Pyrite), Ox/Red

SAMPLE NO FOR ANALY.

HOLE DEPTH (metres)

60 70 80 90 RECOVERY %

GEOL. LOG ROCK TYPE & STRUCTURE

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EXPLORATION DEPARTMENT

DRILLING HEADER SHEET NO.

FINAL DEPTH: 100·6

Core size	From	To

PROSPECT: Parachilna | LOCATION: SH 54-9 6320 1730 | TITLE: EL 112

DRILLHOLE Nº: Ø·PC8

SHEET 2 OF 3 SHEETS

Column headings: HOLE DEPTH (METRES) | ROCK-TYPE (Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals) | WEATHERING (Iron oxides, Clay, Mottling, Base complete ox, Base partial ox., Ground water level in hole, Date:) | HYDROTHERMAL / MAGMATIC ALTERATION (Distribution:, Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals) | MINERALIZATION | RADIOMETRIC LOG (A With long core axis (degrees), Intensity (per metre), COUNTS PER SEC 20 40 60 80 100) | HOLE DEPTH (metres) | RECOVERY % (50 70 80 90) | GEOL. LOG ROCK TYPE & STRUCTURE | ALTERATION GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense; Bleaching, Iron Oxide, Calc. nod., clay, lignite) | MINERALIZATION (PYRITE, Ox/Red) | SAMPLE NO. FOR ANALY.

HOLE DEPTH (METRES)	ROCK-TYPE
44·6	Clean fine-med round
	rounded qtz sand
46·6	ē partic. est[illegible]
48·6	as above
50·6	as above
52·6	as above
54·6	as above
56·6	as above.
58·6	as above
60·6	as above ē
	grey clay snd.
62·6	fine qtz snd clean
	grey clay sand and brown clay sand.
64·6	Brown lignite qtz
	sand ē white shls
66·6	as above.
68·6	as above ē
	black py snds and wood fragments.
70·6	Brown lignitic
	clay ē some brown shale
72·6	Brown lignite
	clay
74·6	[illegible] qtz ē
	lignite and brown clay
76·6	Blue grey cly ē
	lignite and py qtz snd.
78·6	Blue grey clay
80·6	as above
82·6	as above
84·6	as above
86·6	as above

Geol. log: py (at ~68·6–70·6), py (at ~76·6–78·6)

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PROSPECT: PARACHILNA | LOCATION: SH 54-9 6320 1730 | TITLE: EL 112

DRILLHOLE No. : PC 8

SHEET 3 OF 3 SHEETS

DRILLING HEADER SHEET NO.

FINAL DEPTH: 100·6.

Core size | From | To

ROCK-TYPE: Quartz, Pebbles, Clay, Organic matter, Grain size, Feldspars, Pyrite / marcasite, Other minerals

WEATHERING: Iron oxides, Clay, Mottling, Base complete ox, Base partial ox, Ground water level in hole. Date: 2.12.73.

HYDROTHERMAL / MAGMATIC ALTERATION: Distribution: Isolated beds, Sandstone lens, Clay sandstone boundaries, Carbonate nodules, Bleaching, Iron oxides, Removal of primary minerals

MINERALIZATION

RADIOMETRIC LOG: With long core axis (degrees) A; Intensity (per metre); COUNTS PER SEC. 20 40 60 80 100

HOLE DEPTH (METRES)	ROCK-TYPE
33	Blue grey clay
36	as above
39	as above
42	as above
45	as above
48	as above

HOLE DEPTH (metres) | RECOVERY % 60 70 80 90 | GEOL. LOG ROCK TYPE & STRUCTURE

ALTERATION — GRAPHIC LOG (1 Weak, 2 Moderate, 3 Intense): Bleaching, Iron Oxide, Calc. nod., Clay, Silica

MINERALIZATION — Pyrite | Ox/Red | SAMPLE NO. FOR ANLY.

REGION SL 112

PROJECT No. U 630

LINE/ZONE

THE BROKEN HILL PROPRIETARY CO. LTD.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
8	3	5	4	0	1	6	1	5	0	P	?	0	?

PUNCH IN EVERY CARD

GENERAL SAMPLE DESCRIPTION

SAMPLE NUMBER			EASTING		NORTHING		REDUCED LEVEL OF SAMPLE	FOR CHANNEL SAMPLES Etc.			Information Available	Duplicate samples	ROCK TYPE	Sample Type	SAMPLE DESCRIPTION
			LONGITUDE		LATITUDE			ORIENTATION		SAMPLE LENGTH					
ALPHA PREFIX	NUMERICAL VALUE	Suf.	MIN	SEC.	MIN	SEC.		BEARING	DEP.						
15 16 17	18 19 20 21 22 23	24	25 26 27 28 29 30 31		32 33 34 35 36 37 38		39 40 41 42 43 44 45	46 47 48	49 50	51 52 53 54	55	56	57 58 59 60	61	
MEL	846		6395		1760		-26		90	2	F		CLY		PC 2 26-28
	7		6365		1752		-38		90	2			CLY		PC 3 38-40
	8		6315		1745		-44		90	2			CLY		PC4 44-46
	9		"		"		-46		90	2			SND		46-48
	50		"		"		-60		90	2			SND		60-62
	1		"		"		-50		90	2			SND		50-52
	2		"		"		-70		90	2			CLY		70-72
	3		6330		1752.		-60		90	2			SND.		PC5 60-62
	4		6330		1772.		-62		90	2			CLY		PC6 62-60
MEL	855		6390		1748		-70		90	2			PY		PC7 70-72

REMARKS –

Date 5.12.73

Logged or sampled by P.J.B.

Form No. 477

SHEET No 42504

REGION

PROJECT No. U630

THE BROKEN HILL PROPRIETARY CO. LTD.

1	2	3
8	4	2

PUNCH IN EVERY CARD

P9085

ANALYSIS

050

SAMPLE NUMBER				Cu	Method of Analysis	Zn	Method of Analysis	Pb	Method of Analysis	U	Method of Analysis		Method of Analysis		Method of Analysis		Method of Analysis		Method of Analysis
ALPHA PREFIX	NUMERICAL VALUE		Suf.	ANALYSIS		ANALYSIS		ANALYSIS		ANALYSIS		ANALYSIS		ANALYSIS		ANALYSIS		ANALYSIS	
				029	1A	030	1A	082	1A	92									
				18		36		30		3									
				26		84		34		4									
				20		22		22		5									
				30		42		22		10									
				26		22		34		6									
				4		14		10		1									
				8		22		20		3									
				10		14		10		26									
				28		42		28		68									
				8		20		32		1									

DATE ANALYSED: Day 2 | Month 12 | Year 73

PLACE ANALYSED: GOMIM PER

PPM — M
WT % — W
[30] M

SAMPLING METHOD [1][2][3]

SAMPLE PREPARATION [1][2]

ANALYSIS SCHEME [36][37]

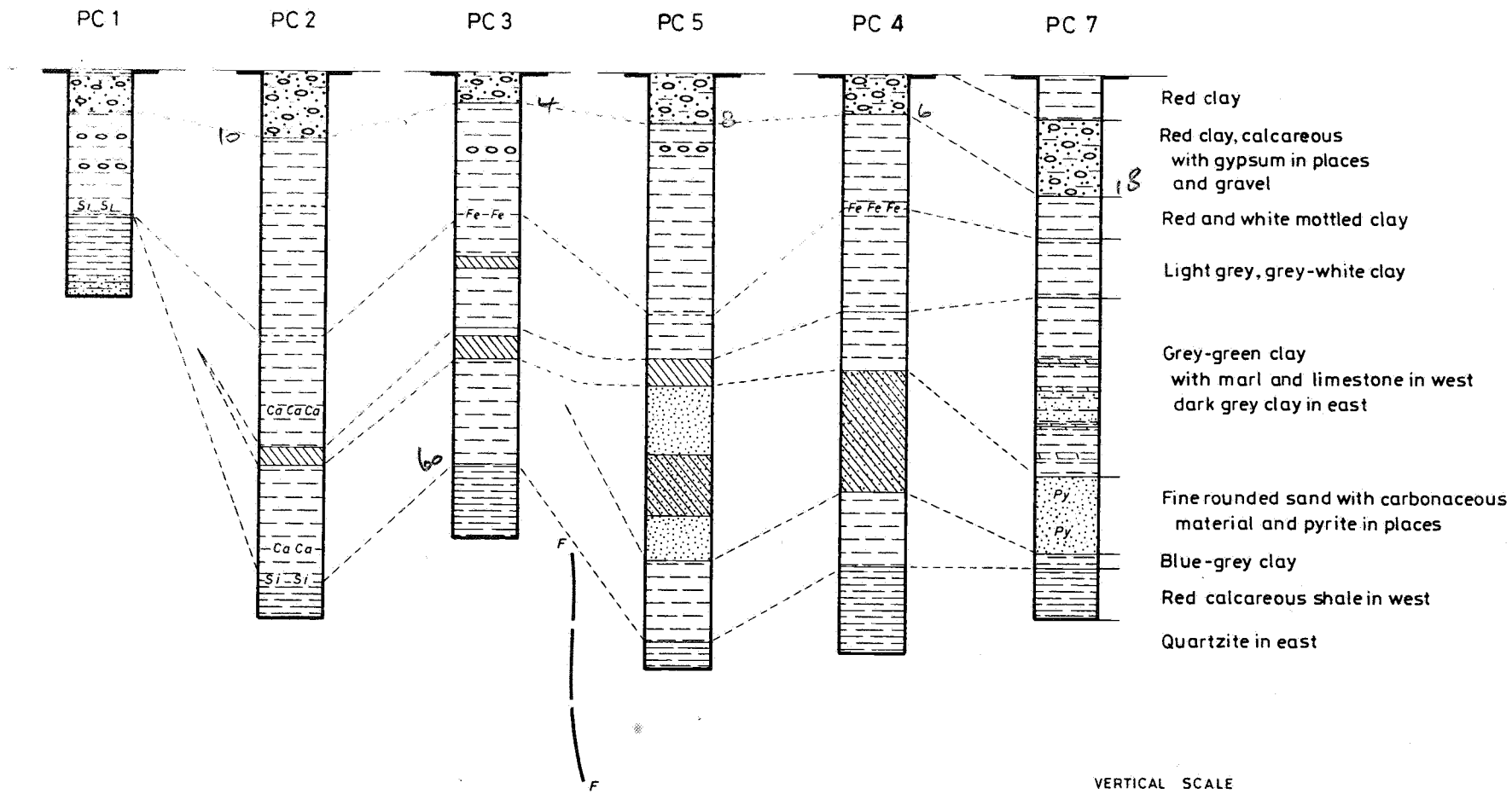
FRACTION SCHEME [38][39]

FORM No. 473

020

A
(E)

B.
(W)



VERTICAL SCALE

1:1,000

0 20 40 60

METRES

E L 112 PARACHILNA, S.A.
GRAPHIC LOGS
BORES PC1 TO 5 & PC 7

Drawing No. A4-1557

Project No.

Centre Melbourne

Date 18-12-73

THE BROKEN HILL PROPRIETARY CO LTD

E.L. 112 PARACHILNA, S.A.

GRAPHIC LOGS

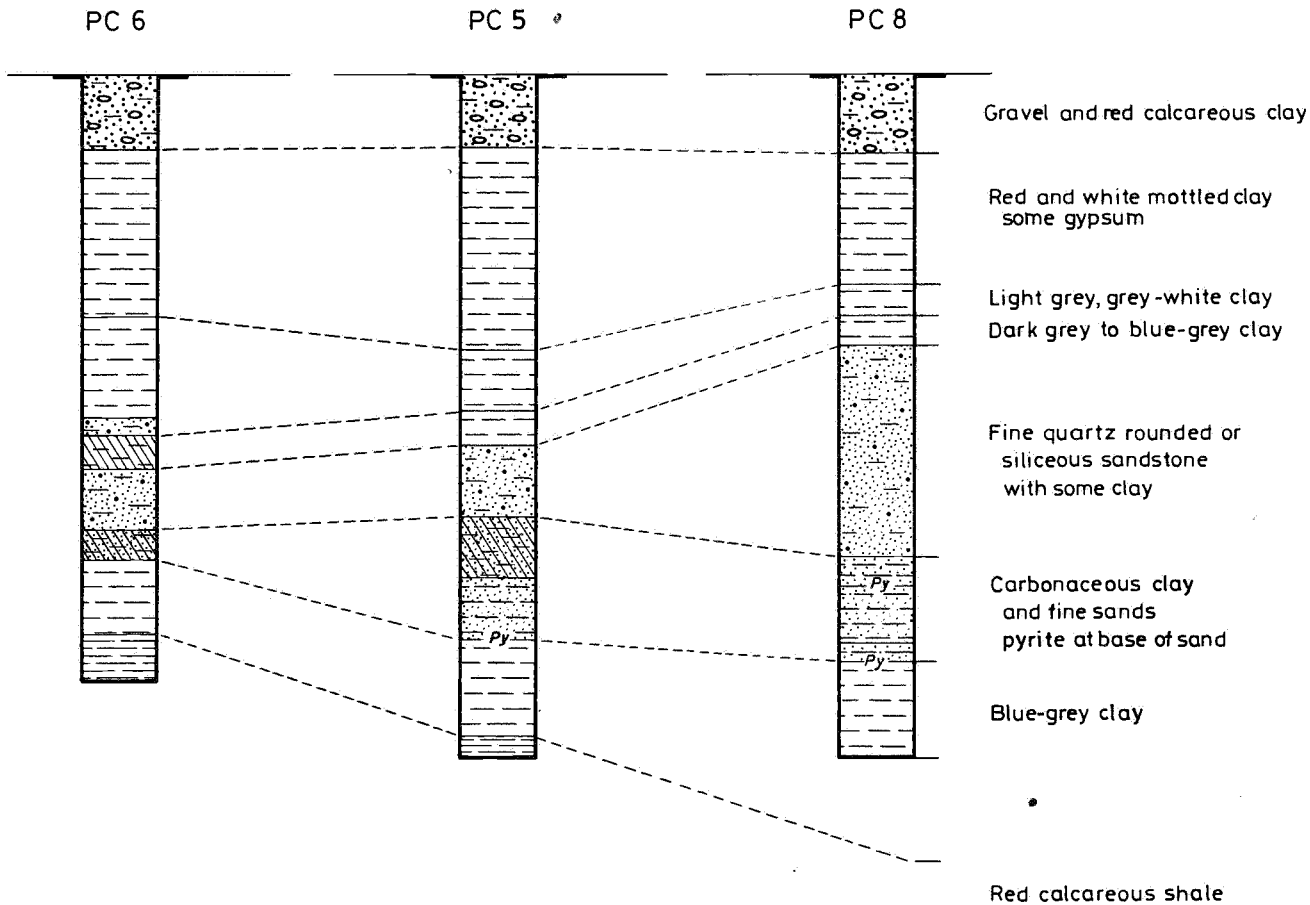
BORES PC6, 5 & 8

Drawing No. A4-1556

Project No.

N

S



Gravel and red calcareous clay

Red and white mottled clay some gypsum

Light grey, grey-white clay

Dark grey to blue-grey clay

Fine quartz rounded or siliceous sandstone with some clay

Carbonaceous clay and fine sands pyrite at base of sand

Blue-grey clay

Red calcareous shale

VERTICAL SCALE

1:1,000

0 20 40 60

METRES

FIG. 3

FIG. 1

1-7996

ANDAMOOKA

MARREE

138°00'E

23, 24
5/- 5/-

25
10/-

27, 28
50/- <5/-

28
<5/-

29
5/-

31, 32
15/- 15/-

Mt. Victory Well

Farewell
33
15/-

Lyndhurst

S. A.

Adelaide

KILOMETRES
0 600

LOCALITY MAP

Ediacara

Mt. James Well
34
<5/2020

35
<5/210

T1

E50

36
<5/340

37
<5/1750

Ediacara Fault

Beltana R.S.

PC6 PC5 PC2 PC1 PC7 PC4 PC3 PC8

38
10/460

A

B

39
<5/330

Bitter Spring

41
10/440

40
5/290

Parachilna R.S.

44
<5/570

56
<5/400

55
5/470

45
10/170

43
5/90

57
<5/340

Motpena

46
10/290

54

53
5/810

47
10/250

52
<5/190

60
<5/500

61
5/450

42
5/560

58
10/560

59
10/260

51-48
25/410 30/440

E. Brachina Bore

49, 50
15/560 15/740

64
40/380

65
20/1090

Brachina Siding

Bunyeroo Well
63
5/540

E. L. 112

62
15/410

66
15/100

Moralana R.S.

3A 4 5

TR1 TR2

11 9 12 1 4 13

31°00'S

32°00'S

138°00'E

LAKE TORRENS

- Qrt Low angle slope deposit.
- Qra Alluvium drainage channels.
- Qrs Sand spread.
- Q
- T Tertiary inferred.
- K Cretaceous.
- € Cambrian Hawker Group.
- pC Adelaidian Pound Quartzite.
- pC Wonoka Formation.
- f Mapped or seismic faults.
- f Inferred faults.
- f1 Kendall
- f2 Binks.
- f3 S.A.Mines mapping.
- f4 S.A.Mines EDB visit.
- Bore.
- Well.
- 10/450 Uppb/Rn PCi/l.
- 43 Sample numbers prefixed SAU
- Bores drilled by S.A.Mines Santos N.L, Carpentaria Expl.
- PC5 B.H.P. bore

SECTION
BELTANA EMBAYMENT

VERTICAL SCALE METRES 0 300 600 900

HORIZONTAL SCALE KILOMETRES 0 1 2 3 4 5

Ediacara Fault

KILOMETRES 0 10 20 30 40

1:432,400

Map based on S.A. Mines Dept. C.R. 1393

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.112, PARACHILNA_TORRENS AREA, S.A.
BORE LOCATIONS, GEOLOGY AND
GROUND WATER URANIUM VALUES

Drawn: E.D.B.	Date: 4-7-73	Centre: Melbourne
Traced: A.S.Czigler	Project No.:	Drawing No.: A2-1158
Checked:		

Revisions:

ENV 2386-1