DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPORT BOOK NO. 89/34

MURRAY BASIN HYDROGEOLOGICAL INVESTIGATION. DRILLING PROGRAMME - MALLEE REGION PROGRESS REPORT NO. 8

GEOLOGICAL SURVEY

BY

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MAY, 1989 DME 186/80

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DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT. BK. NO. 89/34
D.M.E. NO. 186/80
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MURRAY BASIN HYDROGEOLOGICAL INVESTIGATION. DRILLING PROGRAMME - MALLEE REGION PROGRESS REPORT NO. 8

ABSTRACT

Sixteen rotary investigation holes have been drilled in the Mallee region of the Murray Basin, mostly between May and September 1983, to depths varying between 74 and 280 metres. Five were completed in the Murray Group unconfined aquifer and the remaining eleven in the Renmark Group confined aquifer. Potentiometric levels vary from 35 to 70 metres below ground level.

INTRODUCTION

A rotary drilling programme was carried out in the Mallee to obtain hydrogeological and stratigraphic information for the Murray Basin Hydrogeological Investigation, in addition to providing observation wells to monitor water levels and possible effects from large scale irrigation projects which may develop in the region.

Barnett (1983) carried out a data assessment of the region which outlined data deficiencies (mainly in the Renmark Group confined aquifer), which led to this drilling programme. This is the eighth and final report in a series presenting results from a comprehensive drilling programme throughout the Murray Basin in South Australia.

A total of sixteen holes were drilled at eleven sites (Figure 1). Five were completed in the Murray Group unconfined aquifer and eleven in the Renmark Group confined aquifer. At four of the sites, holes to both aquifers were drilled side by side to obtain accurate head difference measurements.

A replacement well was drilled adjacent to M129 because the sandscreen was inadvertently installed six metres too deep (adjacent to Cretaceous mudstone) and the hole also filled in by vandals.

WELL COMPLETION

Each hole was rotary drilled (150 mm diameter) to total depth using mud circulation. Renmark Group completions were cased with 80 mm ID steel including two metre sand screens (0.5 mm aperture) placed opposite the chosen aquifer interval, while shallower completions within Murray Group Limetone were cased with 80 mm PVC with a 12 metre slotted interval (2 mm aperture).

All casing was cemented and development was carried out by air lifting until a consistent water quality was achieved. All bores were completed with a one metre yellow standpipe and screw cap for future water level observation.

GEOPHYSICAL LOGGING

Holes completed in the sandy Renmark Group aquifer were geophysically logged using the following tools: gamma, neutron, density, caliper, point resistivity, self potential, 16 inch and 64 inch normal resistvty.

Due to a malfunction in the logging equipment, point resistivity, 16 inch and 64 inch normals were not available for M140.

Bulk density log was substituted for the 64 inch normal at M133. The logs were employed to choose the best aquifer interval to be developed.

Composite logs combining geological and geophysical information and well construction are included in Appendix A.

WATER QUALITY

Two water samples were obtained from each hole, one for full chemical analysis (results presented in Table 2) and one for total dissolved solids (ATS). Only two wells yielded an insufficient supply for representative sampling of the aquifer. A follow up sampling programme using the small diameter mono pump also failed to achieve representative samples although approximate salinities are presented.

S.R. BARNETT

Geologist III

REFERENCES

Barnett, S.R., 1983. Murray Basin Hydrogeological Investigation, Data Assessment - Mallee Region. S. Aust. Dept. Mines and Energy Report 83/18 (unpublished).

TABLE 1
SUMMARY OF WELL DATA
(all depth in metres)

TEMPORARY NO.	PERMIT NO.	UNIT NO.	TOTAL DEPTH	WATER LEVEL (below ground level)	SCREENED (2m) or SLOTTED (12m) INTERVAL	SALINITY (mg/L)	AQUIFER TYPE *	AQUIFER NAME **
M126	92921B	6828-731	188	25.3	171-173	2871***	C	RG
M128	12877	6828-737	201	52.0	168-170	2488***	C	RG
M129	12876	6929-423	230	33.8	208-210	2983	C	RG
M129A	94736	6929-495	213	33.5	194-197	2983	C	RG
M130	12875	6928-542	280	36.8	208-210	1577	C	RG
M131	12874	6827-1530	225.5	42.3	203-205	1965	C	RG
M132	12871	6927-588	100	53.1	85-98	2003	UC	MG
M133	12870	6927-587	234	50.8	203-205	1052	C	RG
M134	92861	7027-587	75	49.8	60-72	1120	UC	MG
M135	92860	7027-586	125	49.8	110-123	1295	SC	MG
M136	92859	7027-585	248	47.6	236-238	1142	C	RG
M137	12873	7026-111	111	64.2	95-108	755	UC	MG
M138	12872	7026-110	257	66.0	218-220	768	C	RG
M139	13080	7026-113	102	67.7	85-98	645	UC	MG
M140	13079	7026-112	257	69.8	221.5-223.5	759	C	RG
M152	94361	6929-465	245	33.9	160-163		C	RG
M153	94436	6930-17	178.5	35.6	171-173	15100	C	CC

* Aquifer Type - C = confined SC = semi-confined UC = unconfined
** Aquifer Name - RG = Renmark Group CC = Compton Conglomerate MG = Murray Group limestone
*** Approximate TDS only

TABLE 2
WATER ANALYSES (mg/l)

TEMP. No.	PERMIT NO.	ANALYSIS NO.	Ca	Mg	Na	K	HCO_3	SO_4	Cl	NO_3	TDS	pH	AQUIFER
M129A	94753	3887/87	19	18	1110	17	700	125	1344	<0.1	2983	8.0	RG
M130	12875	4684/83	6.8	5.5	620	11	677	33	565	3	1577	8.1	RG
M131	12874	4614/83	9.4	7.4	760	13	639	110	751	<1.0	1965	8.3	RG
M132	12871	3821/83	75	60	605	16	288	193	911	<1.0	2003	8.2	MG
M133	12870	3822/83	40	34	315	15	307	87	410	<1.0	1052	8.3	RG
M134	92851	3714/83	46	36	300	11	270	97	450	<1.0	1074	8.0	MG
M135	92860	3711/83	63	44	355	11	263	125	566	<1.0	1294	8.0	MG
M136	92859	2726/89	14	13	410	17	402	57	426	4	1142	7.8	RG
M137	12873	4171/83	54	37	184	7.7	254	50	301	<1.0	759	8.1	MG
M138	12872	4160/83	64	27	190	7.7	249	61	283	<1.0	756	8.2	RG
M139	13080	4564/83	50	37	133	6.7	277	47	222	1.0	633	8.2	MG
M140	13079	4563/83	63	32	175	8.9	248	60	297	<1.0	759	8.3	RB
M152	94361	BMR	529	608	6810	94	342	879	1170	-	22000	7.8	RG
M153	94436	3848/86	220	475	4700	73	284	1700	7760	<1.0	15100	8.0	CC

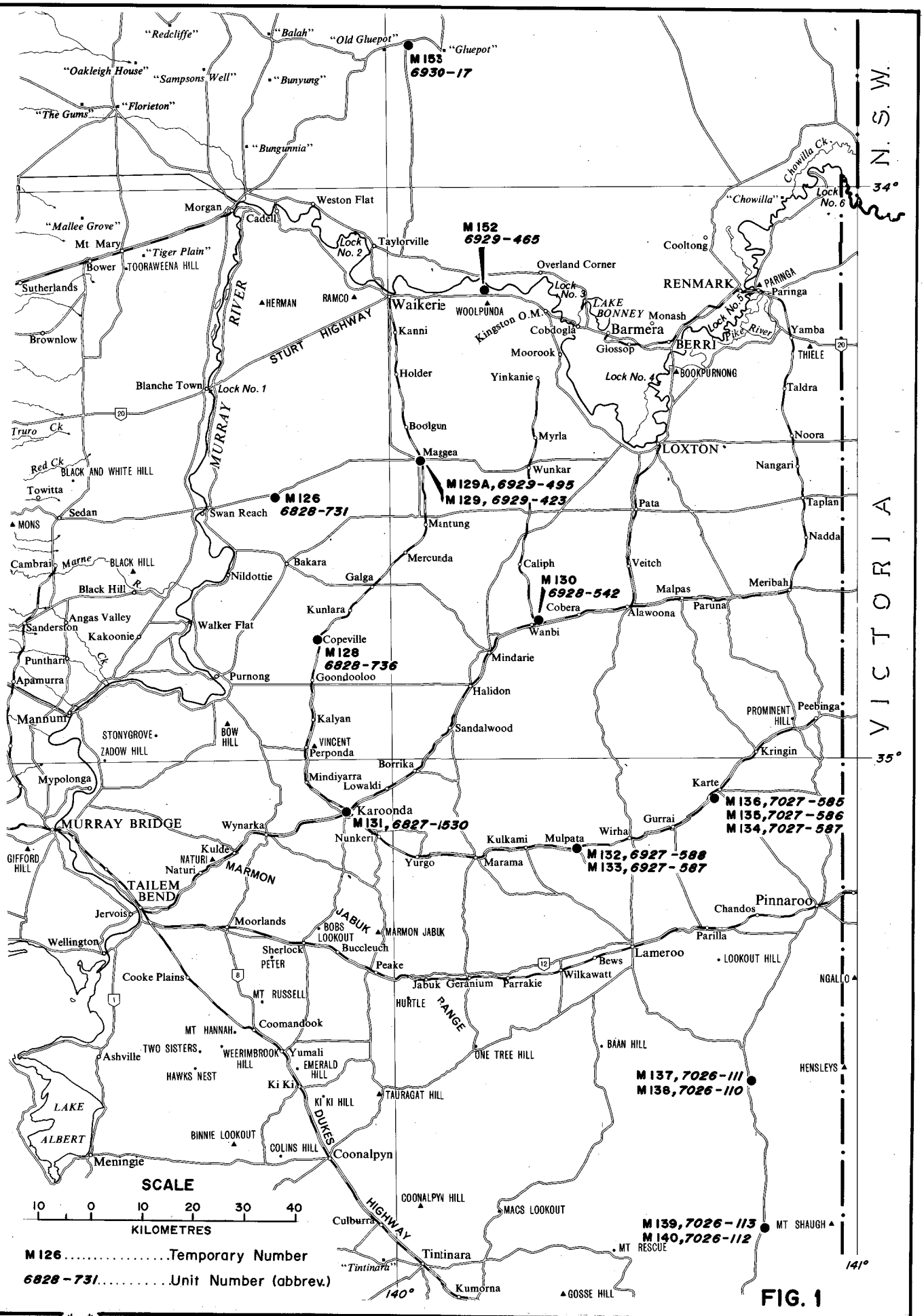


FIG. 1

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED S. Barnett	MR 24-2-88 C.D.O. DATE
DRAWN E. Calabio	SCALE 1:1 000 000
DATE Oct. '87	PLAN NUMBER S 19600
CHECKED	

MURRAY BASIN HYDROGEOLOGICAL INVESTIGATION
PROGRESS REPORT No. 8
LOCALITY PLAN

4497

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION AIR (0-43m) and MUD
MUD RESISTIVITY/TYPE
START 20·6·86 FINISH 26·6·86
TOTAL DEPTH 179·4 m

	mm	From (m)	To (m)
HOLE DIAMETER	247	0	6
	197	6	43
	137	43	179·4
CASING DIAMETER (Cemented)	200 PVC	0	6
	150 PVC	0	43
	75 Steel	0	175
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	75	171	173
	(0·5mm aperture stainless		
			steel)

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
171	36·59	10	Airlift	15100	3848/86
	T.O.C.				
	13·4·87				

REMARKS:

PROJECT MURRAY BASIN HYDROGEOLOGICAL INVESTIGATION
FIELD No. M153 UNIT No. 6930000 0W00017 PERMIT No. 94436
LOCATION GLUEPOT STATION

REF. ELEV. 66·231 m SURFACE ELEV. 65·472 m DATUM AHD
LOGGED BY S.R. BARNETT DATE 30·6·86

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	P.R.	DENSITY	TEMP.		
DATE OF RUN	24·6·86	24·6·86	24·6·86	24·6·86				
FIRST READING (m)	177·8	179·4	179·4	179·4				
LAST READING (m)	0	0	32	32				
RECORDED BY	B. TAYLOR							

WELL SYMBOLS

Casing seal
Casing shoe
Wire wound screen
Slotted casing
Cemented interval
Gravel packed interval

CONSTRUCTION LOG	WATER CUT AND LEVEL	HYDRO DATA	LITHOLOGY AGE	LITHOLOGY UNIT	LITHOLOGY DESCRIPTION	LITHO. LOG	DEPTH (m)
			QUATERNARY	BLANCHETOWN CLAY	CLAY; Brick red-brown, sticky, slightly sandy and calcareous, becoming silty with depth. Occasional cemented ferruginous sandstone layers.		0
			PLIOCENE	PLIOCENE SANDS	SAND; Clayey 10-13m, poorly sorted, fine-medium grained, subrounded. Red-brown, occ. cemented layers.		
					18-27m med-coarse, pale orange.		20
					27-30m coarse, dk orange, slightly clayey.		
					30-33m fine gr. clayey, multi-coloured layers yellow, orange & red.		
					33-36m as above dark red-burgundy colour.		
		Aq?	L. MIOCENE - E. PLIOCENE	BOOKPURNONG BEDS	CLAY; Sandy (fine gr) multicoloured a.a.		
					CLAY; Dark grey, stiff & slightly sandy. 20% fine sand with occasional coarse grains.		40
		Confining Layer	OLIGO-MIOCENE	WINNAMBOOL FORMATION	MARL; grey, slightly glauconitic and sandy, abundant fine fossil frags. with occasional whole shell fragments (bivalves).		60
		Aquifer		MURRAY GP.	LIMESTONE, hard, consolidated, grey, fine grained. Shell casts 10-20% coarse frags. (bryozoa, shell). Rare rounded quartz grains, fine glauconite. Core 88·66 - 91·16m		80
		Confining Layer		WINNAMBOOL FORMATION	MARL; Grey, glauconitic, as above with interbedded LIMESTONE as above.		100
							120
							140
			OLIGOCENE	ETTRICK FMN.	MARL; Dark grey-green, glauconitic, very stiff, consolidated. Contains very fine glauconite & occ pyrite grains and whole shells. Occasional silt size layers of fossil frags, slightly carbonaceous. CORE: 161·4 - 162·2m.		160
		Aquifer		COMPTON CONGLOMERATE	SAND & SILT; fine, subrounded, moderately sorted (No evidence in cuttings - from log of adj. CRA hole MBR 55)		
				ETTRICK FMN.	MARL; as above.		
					LIMESTONE; cemented, extremely hard. Dark grey, fine grained fossil fragments glauconitic. Occasional coarse frags. and coarse cemented rounded qtz. grains and pyritic nodules. Directly overlies basement?		180

GAMMA — 20 API
NEUTRON — 100 CPS — 20 CPS
SELF POTENTIAL — 10 mV
POINT RESISTIVITY — 2 Ω

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA
MURRAY BASIN HYDROGEOLOGICAL INVESTIGATION
WELL No. 6930000 0W00017
COMPOSITE WELL LOG

COMPILED S.R.B.
DRAWN R.H.
DATE Oct 1986
CHECKED
CDO DATE 21·7·88
SCALE
PLAN NUMBER 86-615

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG – GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION MUD
MUD RESISTIVITY/TYPE
START 6-9-83 FINISH 8-9-83
TOTAL DEPTH 188 m

	mm	From (m)	To (m)
HOLE DIAMETER	200	0	2
	140	2	188
CASING DIAMETER (Cemented)	152	0	2
	80	0	179.5
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	82	171	173
	STAINLESS STEEL 0.5mm APERTURE		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO SWL (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No
171	26.07 (TOC) 15-10-83		PUMP	2488 (approx.)	

REMARKS

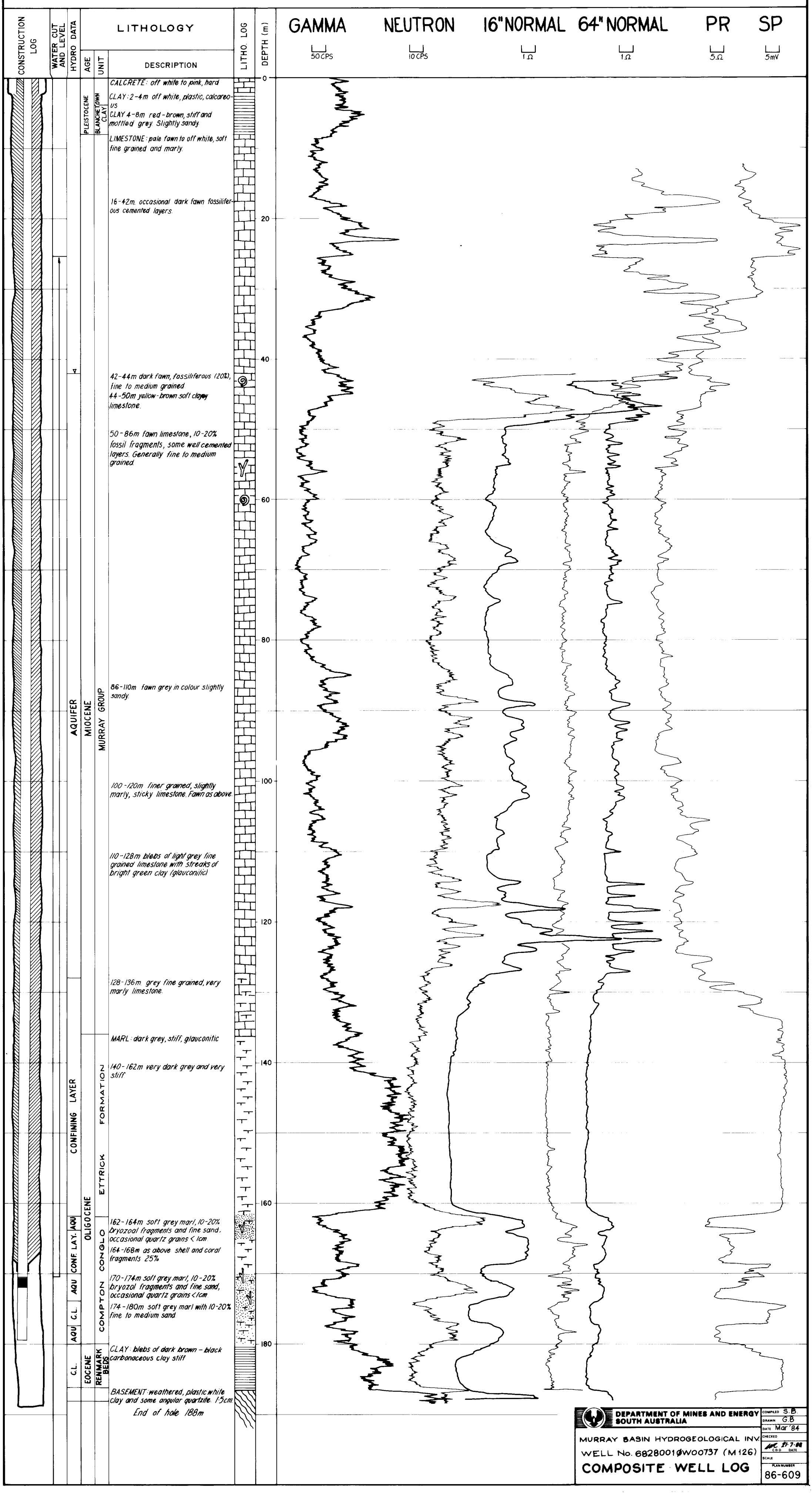
PROJECT MURRAY BASIN
FIELD No. M126 UNIT No 6828001ØW00737 PERMIT No. 92921B
LOCATION ADJ SEC.44 HD. BAKARA 150m south of Swan Reach - Loxton road 19.5km from Swan Reach. Eastern side of dirt road.
REF ELEV. 53.34 m SURFACE ELEV. 52.55 m DATUM AHD
LOGGED BY S. BARNETT DATE 6-10-83

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	TEMP		
DATE OF RUN	10-9-83	10-9-83	10-9-83			10-9-83	10-9-83	10-9-83
FIRST READING (m)	188	188	188			188	187	187
LAST READING (m)	0	42	13			13	42	42
RECORDED BY	A.W. YOUNG	A.W. YOUNG	A.W. YOUNG			A.W. YOUNG	A.W. YOUNG	A.W. YOUNG

WELL SYMBOLS

Casing seal
Casing shoe
Wire wound screen
Slotted casing
Cemented interval
Gravel packed interval



DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN HYDROGEOLOGICAL INV.
WELL No. 6828001ØW00737 (M126)
COMPOSITE WELL LOG

COMPILED	S.B.
DRAWN	G.B
DATE	Mar '84
CHECKED	
C.D.D. DATE	21-7-84
SCALE	
PLAN NUMBER	86-609

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION MUD
MUD RESISTIVITY/TYPE BENTONITE
START 9/8/83 FINISH 16/8/83
TOTAL DEPTH 257·2 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	5·5
	150	5·5	257
CASING DIAMETER (Cemented)	200	0	5·5
	80	0	230·26
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	80 (I.D.)	221·5	223·5
	85 (O.D.)		
	(0·5mm aperture)		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
221·5	70·59	145	AIR LIFT	759	4563 / 83
	(T.O.C.				
	31/10/83)				

REMARKS:

PROJECT MURRAY BASIN
FIELD No. M 140 UNIT No. 7026002ØW00112 PERMIT No. 13079
LOCATION SEC. 12, HUNDRED SHAUGH, approximately 68·5 km. south of Pinnaroo along Bordertown Road.
REF. ELEV. 125·104 m SURFACE ELEV. 124·33 m DATUM A.H.D.
LOGGED BY B. JUDD DATE 11/8/83

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	TEMP.		
DATE OF RUN	13/8/83							
FIRST READING (m)	257·2	257·2	257·2	257·2	257·2			
LAST READING (m)	0	0	12·2	0	0			
RECORDED BY	B. TRAEGER							

WELL SYMBOLS

- Casing seal
- Casing shoe
- Wire wound screen
- Slotted casing
- Cemented interval
- Gravel packed interval

CONSTRUCTION LOG	WATER CUT AND LEVEL	HYDRO DATA	AGE	UNIT	LITHOLOGY DESCRIPTION	LITHO. LOG	DEPTH (m)
		Aquifer	PLIOCENE	PLIOCENE SANDS	**SAND**: Silty and slightly clayey with hard to moderately consolidated bands. Quartz. Medium grained, < 2mm (average 0·3mm) angular to subrounded, clear to orange and reddish, minor milky. Poorly sorted. Deep orange to reddish-brown. 30-50m: Gravelly coarse sand. From 48m: Occasional mica flakes, better sorted. 60-74m: Becoming more clayey, light grey with minor orange mottling. Fine to medium grained sand, micaceous.		0–74
					CLAY? Dark grey with hard bars of Fe cemented red-brown sand.		
			MIOCENE	MURRAY GROUP	**LIMESTONE**: Bryozoal, fossiliferous. Dominantly hard, moderately to well cemented with sandy bands. Off-white to pale cream. From 106m: Pyrite content increasing (up to 2% at 126m). From 114m: Glauconite content increasing (up to 2% at 124m).		
					DOLOMITE: Poorly to well consolidated, glauconitic. Dolomite rhombs, fine, even grained, very angular, clear to brownish. (Average 0·2mm) Olive-brown.		
					LIMESTONE: Sandy, bryozoal, fossiliferous, glauconitic in part. Off-white. Thin bands of highly glauconitic dolomite (as for 128 to 137m). Minor pyrite. Poorly consolidated. 150-154m: Marly layer. 164-172m: Very marly glauconitic limestone with occasional very hard fine grained dark grey flint layers. Light grey.		
		Confining Layer	OLIGOCENE	ETTRICK FORMATION	**MARL**: Grey-green, highly glauconitic. Fossiliferous, becoming stiffer with depth. Some flint fragments.		
		Aquifer	EOCENE	RENMARK BEDS	**SAND**: Carbonaceous. Silty and gravelly with bands of moderately to very stiff carbonaceous clay. Poorly sorted quartz ranging up to 5mm. Pyrite and pyrite cemented sand up to 10%. Dark brown to black. 221-232m: Silty, even grained (average 0·3mm), mainly clear and angular. Minor brown siltstone. Dark brownish-grey.		
		C.L.			**CLAY**: Carbonaceous, sticky. Sandy in part and slightly gravelly. Pyrite and pyrite cemented sand up to 25%. Black. 238-244m: Becoming much more stiff.		
		Aquifer			**SAND**: Silty. Gravelly in part, quartz on 0·3mm, medium grained. Pyrite and pyrite cemented sand. 250m: Firm black carbonaceous clay increasing.		–260

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 7026002ØW00112
COMPOSITE WELL LOG

COMPILED	B.J.
DRAWN	E.C.
DATE	Dec.'84
CHECKED	
C.D.O. DATE	UR 20·3·86
SCALE	
PLAN NUMBER	85-262

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG – GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION MUD
MUD RESISTIVITY/TYPE BENTONITE
START 14/7/83 FINISH 25/7/83
TOTAL DEPTH 257 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	3
	150	3	257·4
CASING DIAMETER (Cemented)	200	0	3
	80	3	226·58
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	80 (I.D.)	218	220
	87 (O.D.)		
	stainless steel		
	0·5 mm aperture		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
218	67·76	115	AIR LIFT	768	W4159/83
	T.O.C. 5/8/83				

REMARKS:

PROJECT MURRAY BASIN
FIELD No. M 158 UNIT No. 70260010W00110 PERMIT No. 12872
LOCATION 41·5 km south of Pinnaroo, on Bordertown Road, Section 49, County Chandos (Scorpion Springs Cons. Pk.)
REF. ELEV. 115·64 m SURFACE ELEV. 114·68 m DATUM A.H.D.
LOGGED BY B. JUDD DATE 21/7/83

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	P.R.	16" NORMAL	64" NORMAL
DATE OF RUN	22/7/83							
FIRST READING (m)	254·6	256·3	256	256·4	256·4	256	255	254
LAST READING (m)	0	1·3	12	1	1	12	11	10
RECORDED BY	B. P. TAYLOR & P. FAULKNER							

WELL SYMBOLS

Casing seal — Slotted casing
Casing shoe — Cemented interval
Wire wound screen — Gravel packed interval

LITHOLOGY

CONSTRUCTION LOG | WATER CUT AND LEVEL | HYDRO DATA | AGE | UNIT | DESCRIPTION | LITHO. LOG | DEPTH (m)

Hydro data: CL.; Aquifer; C.L.; Aq.; CL.; Aquifer; Confining Layer
Age: PLIOCENE; MIOCENE; OLIGOCENE; EOCENE
Unit: PLIOCENE SANDS; BOOKPURNONG BEDS; MURRAY GROUP; ETTRICK FORM.; RENMARK BEDS

SAND: Clayey. Quartz mainly clear, angular to subrounded, medium grained. Mottled light grey, reddish-brown.
CLAY: Sandy. Moderately soft, light olive-brown. (Quartz sand 25%, medium grained). Below 4m, becoming stiffer, less sandy (10%). Mottled pale grey to yellow-brown.

SAND: Clayey 18-24 m (40%) decreasing with depth. Medium grained quartz sand, angular to rounded. Minor opaques. Light yellow in colour.

34-54m: Coarse to gravelly sand, poorly sorted.

54-72m: Becoming finer-grained.

CLAY: Dark grey, stiff.

75-76m: Hard flint band with well cemented sandstone. Dark grey-brown.
LIMESTONE: Off-white to cream, mainly bryozoal fragments < 5mm. From 84m: Minor pyrite and green to black glauconite.

100-150m: Mainly hard well cemented bryozoal limestone.

DOLOMITE: Calcareous, well to moderately consolidated. Crystalline rhombs, medium to fine, clear. Minor pyrite. Includes bands of glauconitic, fossiliferous limestone. Olive-brown.

LIMESTONE: Fossiliferous, sandy, well cemented, off-white. Minor pyrite and glauconite.

170-176m: Becoming marly.

DOLOMITE: As above.

MARL: Sandy, very glauconitic, sticky. Grey-green in colour. Becoming stiffer and darker with depth.

SAND: Very silty, fine grained, well sorted and angular. Greyish brown in colour. Minor pyrite-cemented sand. Minor mica flakes.

SAND: Clayey, carbonaceous, dark brown to black. Fine to medium grained. Occasional coarse grains.
Below 203m: Less clay-silt, minor pyrite cemented sand. Greyish-brown. Interbedded sandy clays. Clayey sands.

212-229m: Up to 30% coarse / gravel grains.

229-232m: Carbonaceous clay bands. Dark brown.

244-257·4m: Becoming very silty and clayey. Dark greenish grey in colour. Carbonaceous.

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 70260010W00110
COMPOSITE WELL LOG

COMPILED B.J.
DRAWN E.C.
DATE Jan. 85
CHECKED
C.G.G. DATE 20·3·86
SCALE
PLAN NUMBER **85-261**

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD: ROTARY
CIRCULATION: MUD
MUD RESISTIVITY/TYPE: BENTONITE
START: 12·5·83 FINISH: 21·5·83
TOTAL DEPTH: 248 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	5·7
	150	5·7	248·3
CASING DIAMETER (Cemented)	200	0	5·7
	80	5·7	244·8
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	80 I.D. 84 O.D.	236	238
	(0·5 mm	aperture	S/steel)

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	Analysis W. No.
236	48·37	6·48	AIR LIFTED	2097	W 3710/83
	T.O.C.				
	(10·8·83)				

REMARKS:

PROJECT: MURRAY BASIN
FIELD No. M 136 UNIT No. 70270040W00585 PERMIT No. 92859
LOCATION: 3·2 km south-east of Karte on Gurrai Road. Adjacent Section 10, Hundred of Kingsford.
REF. ELEV. 84·485 m SURFACE ELEV. 83·703 m DATUM AHD
LOGGED BY: B. Judd DATE: 17·5·83

GEOPHYSICS

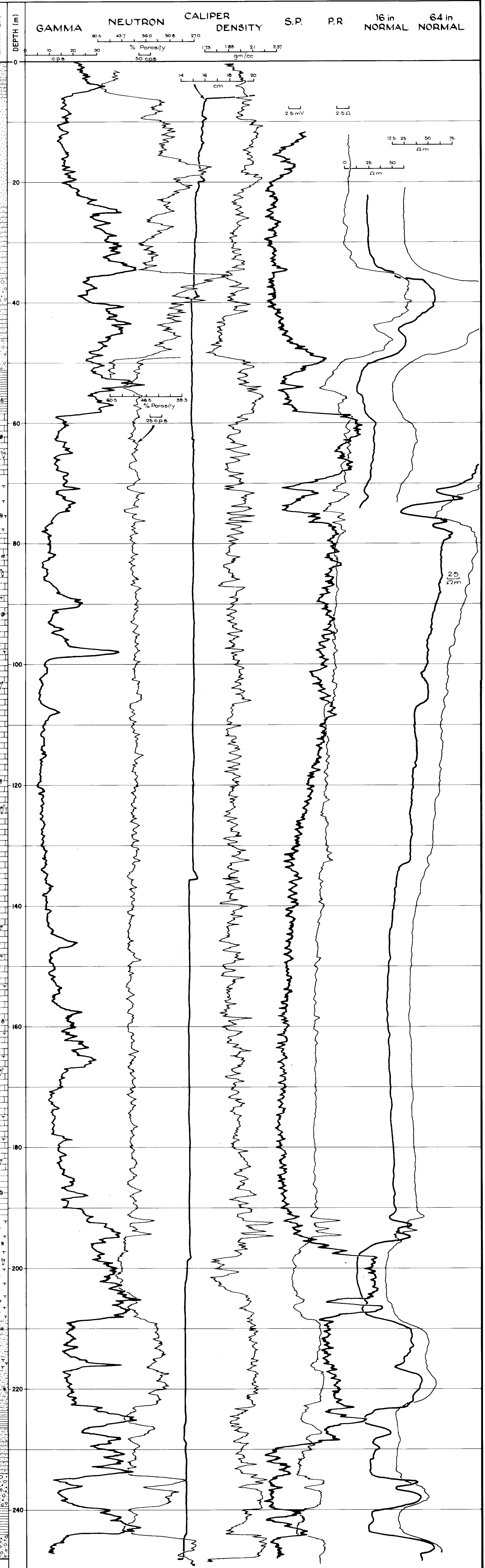
TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	P.R.	16 in NORMAL	64 in NORMAL
DATE OF RUN	18·5·83 →							
FIRST READING (m)	248·2	248·2	248	248·2	248·2	248	247·6	247·6
LAST READING (m)	0	1·7	1·8	0·4	0·4	2·2	22	21
RECORDED BY	B.J. TAYLOR →							

WELL SYMBOLS

Casing seal; Casing shoe; Wire wound screen; Slotted casing; Cemented interval; Gravel packed interval

LITHOLOGY

AGE	UNIT	HYDRO DATA	DESCRIPTION
PLIOCENE	PLIOCENE SANDS		SAND: Angular to subrounded, fine to medium grained, light orange-brown. Well sorted. 3 to 6m: Very clayey, mottled orange to yellow brown.
			16 to 24 m: Light yellow-brown, coarse grained and poorly sorted.
			24 to 36 m: Sand becoming more clayey and fine grained. Slightly micaceous below 32 m.
			36 to 40 m: Gravelly coarse sand < 4 mm, light orange-brown, micaceous.
			40 to 46 m: More clayey sand as above.
			46 to 52 m: Well sorted gravelly sand, more micaceous, orange-brown.
	BOOKPURNONG BEDS	C B	CLAY: Glauconitic, greenish. 10% shell fragments, calcareous chips.
MIOCENE	MURRAY GROUP	Aquifer	LIMESTONE: Sandy, fossiliferous, shelly and glauconitic (light green to black). Some well cemented bands. Becoming marly with depth. Cream to off-white.
			MARL: Light grey, fossiliferous, sandy. 2% glauconite, minor pyrite.
			LIMESTONE: Fossiliferous, light grey to cream. Some marly bands and well cemented layers. Up to 3% glauconite. Minor pyrite.
			158 to 192 m: Increasing to very glauconitic, grey-green marl interbeds.
OLIGOCENE	ETTRICK FORMATION	Confining Bed	MARL: Glauconitic, becoming more stiff with depth. Dark greenish grey. Sandy and fossiliferous. Minor pyrite. Occasional hard well cemented layers.
		Aquifer	SAND: Silty and clayey, fine to medium grained, fossiliferous, glauconitic.
EOCENE	RENMARK BEDS	Confining Bed	CLAY: Carbonaceous, dark brown to black, stiff. Medium grained sandy interbeds. Pyritic.
		Aq	SAND: Medium to gravelly, carbonaceous. Quartz grains < 5 mm, pyritic.
		C B	Clay band 240 to 244 m as above.
		Aq	



DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN GROUNDWATER INVESTIGATION

WELL No. 70270040W00585 (M136)

COMPOSITE WELL LOG

COMPILED B. J. DRAWN M.R. DATE Dec '84 CHECKED C.D.G. DATE 26·3·86 SCALE

PLAN NUMBER 85-260

5434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION MUD
MUD RESISTIVITY/TYPE BENTONITE
START 1/6/84 FINISH 3/6/83
TOTAL DEPTH 234 m

	mm	From (m)	To (m)
HOLE DIAMETER	230	0	5.9
	150	5.9	234
CASING DIAMETER (Cemented)	200 I.D	0	5.9
	81 I.D	0	211.75
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	75 I.D	205	205
	67 O.D		
	Stainless steel (0.5mm Aperture)		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
205	51.58	75	AIR LIFT	1052	W3622/85
	(11/8/85 TOC)				

REMARKS: S.P. log not included. Enclosed in bore aerial folder.

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY		P.R.	16 inch NORMAL
DATE OF RUN	G/G/83							
FIRST READING (m)	232	232	232	232	232	232	232	232
LAST READING (m)	0	0	12	0	0	0	18	12
RECORDED BY	A.W. YOUNG							

PROJECT MURRAY BASIN
FIELD No. M 133 UNIT No. 6927001ØW00587 PERMIT No. 12870
LOCATION MULPATA, HUNDRED COTTON, SECTION 191
REF. ELEV. 86.562 m SURFACE ELEV. 85.704 m DATUM A.H.D.
LOGGED BY B. JUDD DATE 5/6/83

WELL SYMBOLS
Casing seal
Casing shoe
Wire wound screen
Slotted casing
Cemented interval
Gravel packed interval

CONSTRUCTION LOG | WATER CUT AND LEVEL | HYDRO DATA | LITHOLOGY (AGE, UNIT, DESCRIPTION) | LITHO. LOG | DEPTH (m)

PLIOCENE — SANDS

SAND: Gravelly and silty (10%). Medium to coarse grained, quartz to 3mm (average 0.4mm), sub-angular to well rounded. Minor ironstone. Yellow, orange and brown in colour.

Below 34m: Micaceous, becoming clayey (20%), finer grained - fine to medium.

CLAY: Sandy, stiff and glauconitic. Dark grey. Fossiliferous - shell fragments <1cm. — C.B.

MIOCENE — Aquifer — MURRAY GROUP — BOOKPURNONG BEDS

LIMESTONE: Sandy (10%), marly to 80m (10%), bryozoal, fossiliferous, shelly, shelly. Some well cemented bands. Minor glauconite, minor ironstone. Off-white to light grey.

76-80m: Minor pyrite. Light cream.

100-112m: Cream to pale yellow.

122-126m: Becoming dolomitic - up to 20% fine grained crystalline rhombs.

DOLOMITE: Well to moderately cemented fine grained aggregates of crystalline rhombs. Glauconitic, brown in colour.

158-162m: Dolomitic bands, well cemented.

OLIGOCENE — ETTRICK FORMATION

MARL: Dark grey-green, moderately stiff. Very glauconitic, 10% pellets 0.5-1mm. Occasional hard pyrite cemented bands. — Aq | C.L.

175-177m: Fossiliferous, marly sand.

CLAY: Carbonaceous, dark brown-black. Very pyritic (20% fragments <15cm). Stiff, slightly sandy (10-15%). — C.L.

EOCENE — Aquifer — RENMARK BEDS

SAND: Coarse grained, subangular to well rounded <3mm. Clayey at 193-196m and carbonaceous 196-222m. Coarse to gravelly sand very pyritic in parts. Ranging up to 4mm. Carbonaceous clay interbeds at 210-212m and 216-220m. Occasional fragments of laminated brown-grey siltstone.

222-234m: Clayey sand (20-30%) as above.

GAMMA (0 c.p.s. — 100) | CALIPER (50 c.p.s., 14 16 18 20 cm) | DENSITY (1000 c.p.s.) | BULK DENSITY (100 c.p.s.) | 16 in NORMAL (P.R. 500 c.p.s.)

1000 c.p.s.

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA
MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 6927001ØW00587
COMPOSITE WELL LOG
DRAWN E.C. DATE DEC. '84
85-259

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION Air to 51 m ; Mud
MUD RESISTIVITY/TYPE
START 21·9·83 FINISH 28·9·83
TOTAL DEPTH 225·4 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	5·1
	150	5·1	225·4
CASING DIAMETER (Cemented)	200	0	5·1
	80	0	211·74
CASING DIAMETER (Uncemented)	80	203	205
	(0·5mm aperture stainless steel)		
SCREEN DETAILS			

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
203	43·10	100	AIRLIFT	1965	4614/83
		(T.O.C.) 16/10/83			

REMARKS: 64 in normal and P.R. logs also available

PROJECT MURRAY BASIN
FIELD No. M 131 UNIT No. 68270010W01530 PERMIT No. 12874
LOCATION 1 km northeast of Karoonda on Wanbi road

REF. ELEV. 62·75 m SURFACE ELEV. 61·91 m DATUM AHD
LOGGED BY S. Barnett DATE 19/1/84

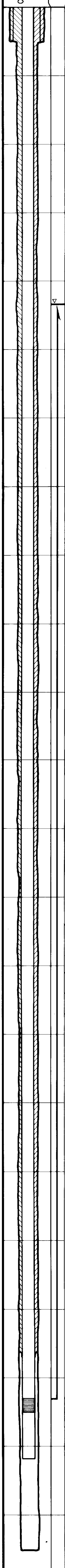
GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	TEMP.	16 in NORMAL	
DATE OF RUN	26·9·83	26·9·83	26·9·83	26·9·83	26·9·83		26·9·83	
FIRST READING (m)	224·8	224·8	224	224	224		224	
LAST READING (m)	0	0	12	0	0		12	
RECORDED BY		B. TAYLOR						

WELL SYMBOLS

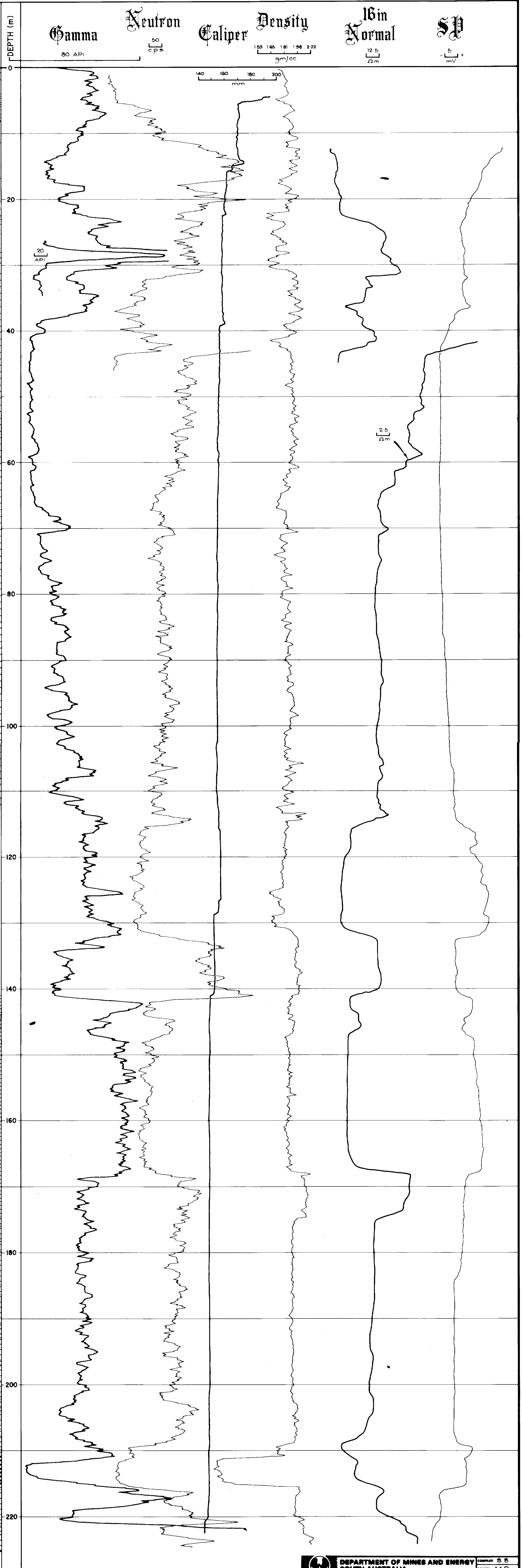
Casing seal — Slotted casing
Casing shoe — Cemented interval
Wire wound screen — Gravel packed interval

CONSTRUCTION LOG | WATER CUT AND LEVEL | HYDRO DATA | LITHOLOGY (AGE, UNIT, DESCRIPTION) | LITHO. LOG | DEPTH (m)



HYDRO DATA: Aquifer; Confining Bed; Aquifer ?; Aq? ; C.B; Confining Bed; Aq

AGE	UNIT	DESCRIPTION
QUATERNARY	MOLINEAUX SAND	**SAND**: Pale orange, silty, well sorted, subangular, fine grained (0 to 2 mm). 4 to 8 m: 40% clay, sand as above.
PLIOCENE	PLIOCENE SANDS	**GRAVEL**: Poorly sorted, rounded < 4 mm (ave. 2 mm). Quartz grains smokey and milky, most iron stained.
		SAND: Poorly sorted, coarse grained (ave 1·0 mm). 30 % gravel as above.
MIOCENE	MURRAY GROUP	**LIMESTONE**: Hard. Hard consolidated layers, yellow brown, fine grained, sandy.
		38 to 60 m: Pale yellow/off-white marly limestone, soft. Minor hard layers.
		60 to 82 m: Marly limestone as above, no hard layers. Becoming stiffer with depth.
		82 to 114 m: Grey-fawn, slightly fossiliferous, marly limestone.
		86 to 88 m: Cemented layer, 10-20% fossils.
		Glauconitic below 92 m.
		104 to 106 m: Consolidated grey glauconitic layer. Minor shells.
OLIGOCENE	ETTRICK FORMATION	**MARL**: Dark grey, glauconitic, soft, 10% fossil fragments, becoming stiffer with depth.
		134 to 141 m: Sandy, shelly marl ? (no evidence of sand in cuttings).
EOCENE	RENMARK BEDS	**CLAY**: Dark brown to black, moderately stiff. Interbedded fine sand.
		174 to 178 m: Very carbonaceous black clay, 10% fine sand and pyritic cemented sand.
		LIGNITE: Dark brown to black (no evidence in cuttings).
		CLAY: As above.
		BASEMENT: Angular milky quartz gravel < 1 cm overlying white & grey phyllitic clay.



DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 68270010W01530 (M 131)
COMPOSITE WELL LOG

COMPILED	S.B.
DRAWN	M.R.
DATE	Dec. '84
CHECKED	
C.D.O. DATE	30·5·85
SCALE	
PLAN NUMBER	85-258

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION MUD
MUD RESISTIVITY/TYPE
START 30·9·83 FINISH 10·10·83
TOTAL DEPTH 280 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	3·8
	150	3·8	280
CASING DIAMETER (Cemented)	200	0	3·8 PVC
	80	0	217
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	85	208	210·8
	Stainless steel		
	0·5mm aperture		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
208	37·55	220	AIRLIFT	1577	4648/83

REMARKS: 16 inch Normal, 64 inch Normal and S.P logs available.

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	P.R.	CALIPER	DENSITY	TEMP.		
DATE OF RUN	6/10/83							
FIRST READING (m)	280	280	280	280	280			
LAST READING (m)	0	9	3	0	0			
RECORDED BY	B. P Taylor							

PROJECT MURRAY BASIN
FIELD No. M 130 UNIT No. 6828002ØW00542 PERMIT No. 12875
LOCATION 1·4 kilometres east of Wanbi on Northern side of railway line
REF. ELEV. 72·63 m SURFACE ELEV. 71·78 m DATUM A.H.D.
LOGGED BY S. Barnett DATE 11/1/84

WELL SYMBOLS

- Casing seal
- Casing shoe
- Wire wound screen
- Slotted casing
- Cemented interval
- Gravel packed interval

LITHOLOGY

DESCRIPTION

CALCRETE: Pink/white, hard nodular.

CLAY: Stiff, dark orange, minor sand.

SANDY CLAY: Moderately stiff, mottled fawn, orange, red-brown. 30% fine quartz sand. Non-calcareous.

LIMESTONE: Yellow-brown to off white, consolidated, fine to medium grained. 30% sand.

26-35m: Softer marly limestone.

36-44m: Marly layers grey fawn, moderately stiff.

44-50m: Fine grained limestone, 40% coarse fossil fragments and 20% quartz sand.

50-62m: Becoming marly, less fossiliferous.

62-66m: Grey in colour, 30% marl, 25% fossil fragments. Soft and sticky.

66-94m: Off-white, very marly.

94-108m: Limestone, coarser grained, less marly.

Glauconitic below 102m.

108-124m: Grey marly limestone. 20% fossil fragments.

124-152m: Darker grey. Mainly well cemented layers with 40-50% fossil fragments.

152-156m: Highly glauconitic marly limestone, ochre-grey.

MARL: Dark grey, moderately stiff, slightly fossiliferous.

LIGNITE: Dark brown-black, soft.

CLAY: Stiff, dark brown-black.

CLAYEY SAND: Light brown, well sorted, subangular. 20-30% clay decreasing with depth. Average of 0·2-0·3mm.

198-204m: Coarse grained quartz, subrounded, pyritic, < 3mm. Poorly sorted.

SAND: Clean, slightly silty with occasional clay interbeds. Quartzite sand moderately well sorted average 1-2mm, < 3mm. Subrounded.

SANDY CLAY: Dark brown-black carbonaceous. 25% medium grained sand. Clay stiffer with depth.

244-272m: 30-40% sand as above.

BASEMENT: Blebs of white and pale green clay with coarse angular quartz grains < 1cm.

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 69280020W00542
COMPOSITE WELL LOG

COMPILED	S.B.
DRAWN	E. C.
DATE	Mar. '85
CHECKED	
C.D.O. / DATE	20-3-85
SCALE	
PLAN NUMBER	85-257

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION AIR (to 40m), MUD
MUD RESISTIVITY/TYPE Bentonite, 2.57 ohm @ 26°C
START 10/10/83 FINISH 13/10/83
TOTAL DEPTH 250 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	2
	200	2	40
	147	40	250
CASING DIAMETER (Cemented)	150	0	40
	80	0	213.5
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	85	205	207
	0.3mm opening stainless steel		
	6mm perforations	198	200

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD		TOTAL DISSOLVED SOLIDS	
		m³/day	Method of Test	mg/litre	Analysis W. No.
	44.72 (TOC 15/9/82)				

REMARKS:

PROJECT MURRAY BASIN
FIELD No. M 129 UNIT No. 6929003SW00423 PERMIT No. 1287G
LOCATION Adjacent to railway line (on west side) and also north of Swan Road - Loxton Road
REF. ELEV. 63.78 m SURFACE ELEV. 62.85 m DATUM A.H.D.
LOGGED BY S. Barnett DATE 13/3/84

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	P.R.	16" NORMAL	64" NORMAL
DATE OF RUN	15/10/83							
FIRST READING (m)	226.4	230	221.8	226.8	230	221.8	222.4	221.6
LAST READING (m)	0	1.0	3.7	0	0	3.7	41.6	40.8
RECORDED BY	S. TRAEGER							

WELL SYMBOLS

Casing seal
Casing shoe
Wire wound screen
Slotted casing
Cemented interval
Gravel packed interval

CONSTRUCTION LOG | WATER CUT AND LEVEL | HYDRO DATA | LITHOLOGY

AGE	UNIT	DESCRIPTION
PLIOCENE	PLIOCENE SANDS	CALCRETE: Off white/pink, hard. CLAYEY SAND: Well sorted, fine sand, 40 to 50% dark orange clay. LIMESTONE: Interbedded hard fine grained sandy limestone and soft off-white marly limestone.
MIOCENE	MURRAY GROUP	40-50m Yellow-orange well consolidated limestone, 20% fossil fragments. 50-64m Fawn well consolidated limestone as above. 64-80m Pale grey cemented limestone, 30-40% grey marl 20% fossil fragments. Glauconitic. 80-84m Soft, marly limestone fawn-grey, glauconitic. 20% fossils. 84-104m as for 64-80m
OLIGOCENE	ETTRICK FORMATION	MARL: Soft, glauconitic, dark grey/green plastic. Stiffer with depth. 114-120m 30% coarse dark grey shell fragments. 124-130m 30-40% fine grained sand and shell fragments. CLAY: Dark brown-black stiff carbonaceous. INTERBEDDED SANDS AND CLAYS: Sand, poorly sorted, fine to coarse grained, sub-rounded. Pyritic. Clays-dark brown/grey.
EOCENE	RENMARK BEDS	GRAVEL: Rounded to subrounded average 5mm diameter < 1cm. Clayey. CLAY: Grey, stiff, 10% medium grained, clear quartz.
BASEMENT		RHYODACITE (see petrological report)

Aquifer | Confining Layer | Aquifer

LITHO. LOG | DEPTH (m)

GAMMA 8API | NEUTRON 125cps | DENSITY 500cps | CALIPER 114–170 mm

SP 5mV | PR 50cps 5Ω | G4' 125Ω | 16" 125cps | 250cps

0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 6929003SW00423
COMPOSITE WELL LOG

COMPILED S.B.
DRAWN E.C.
DATE MAR 85
CHECKED
SCALE
PLAN NUMBER 85-256

3434

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG — GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION AIR (to 69 m), MUD
MUD RESISTIVITY/TYPE
START 20-10-83 FINISH 28-10-83
TOTAL DEPTH 201·1 m

	mm	From (m)	To (m)
HOLE DIAMETER	250	0	5·5
	200	5·5	69·1
	147	69·1	201·1
CASING DIAMETER (Cemented)	200 PVC	0	5·5
	150 PVC	0	88·1
	80 steel	0	179·2
CASING DIAMETER (Uncemented)			
SCREEN DETAILS	80	186	170·4
	0·5mm aperture stainless steel		

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
186	52·75				

REMARKS: 16 in. and 64 in. normal resistivity logs also available.

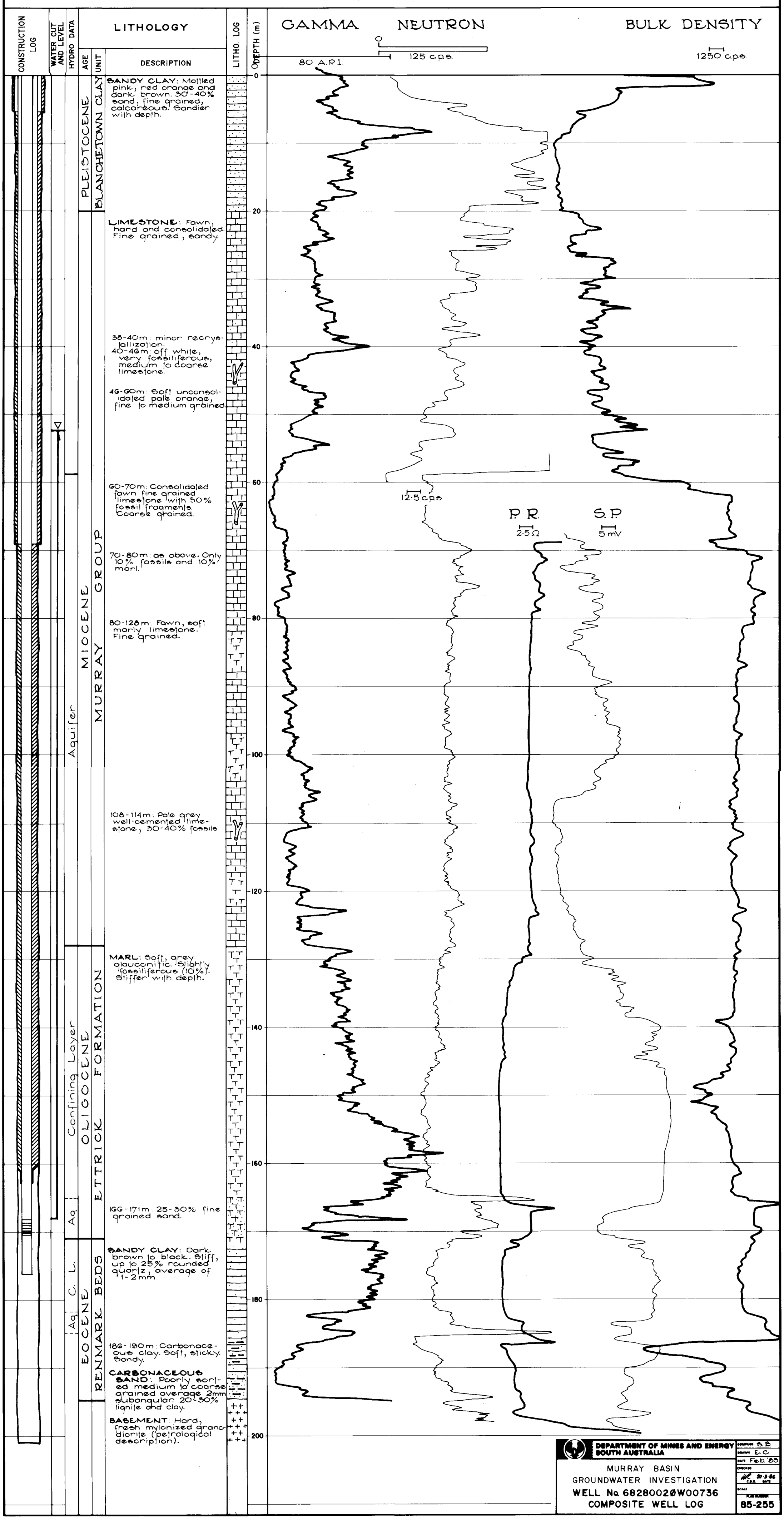
PROJECT MURRAY BASIN
FIELD No. M 128 UNIT No. GB280020W00736 PERMIT No. 12877
LOCATION 1·5 km south of Copeville, adjacent to railway line
REF. ELEV. 70·90 m SURFACE ELEV. 70·04 m DATUM A.H.D.
LOGGED BY S. Barnett DATE 11·1·84

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	BULK DENSITY	P. R.
DATE OF RUN			29/10/83			
FIRST READING (m)	200	200		200	200	200
LAST READING (m)	0	0		66	0	66
RECORDED BY	"	"		B. TAYLOR		

WELL SYMBOLS

Casing seal — Slotted casing
Casing shoe — Cemented interval
Wire wound screen — Gravel packed interval



DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA
MURRAY BASIN
GROUNDWATER INVESTIGATION
WELL No. 68280020W00736
COMPOSITE WELL LOG

DRAFTED S.B.
DRAWN E.C.
DATE Feb 85
DIRECTOR
C.S.O. DATE
SCALE
PLAN NUMBER 85-255

DEPARTMENT OF MINES AND ENERGY - SOUTH AUSTRALIA
GROUNDWATER AND ENGINEERING SECTION

COMPOSITE WELL LOG – GROUNDWATER

CONSTRUCTION DETAILS

DRILLING METHOD ROTARY
CIRCULATION Foam to 70·7m, Mud to 245m
MUD RESISTIVITY/TYPE
START 2·4·86 FINISH 7·4·86
TOTAL DEPTH 245 m

	mm	From (m)	To (m)
HOLE DIAMETER	200	0	70·6
	146	70·6	245
CASING DIAMETER (Cemented)	125 I.D.	0	70·7
CASING DIAMETER (Uncemented)	90 I.D.	0	160
SCREEN DETAILS	Imm aperture	160	163

GROUNDWATER ANALYSES

DEPTH TO WATER CUT (m)	DEPTH TO S.W.L. (m)	YIELD m³/day	YIELD Method of Test	TOTAL DISSOLVED SOLIDS mg/litre	TOTAL DISSOLVED SOLIDS Analysis W. No.
51	51	330	AIRLIFTING	~ 25,000	
148	33·88	1	PUMP		
(17·4·86)					

REMARKS: Observation Well monitoring upper Renmark Beds aquifer at Site 2
Murray Basin Hydrogeological Inv. Field No. M 152

GEOPHYSICS

TYPE OF LOG	GAMMA	NEUTRON	S.P.	CALIPER	DENSITY	TEMP.		
DATE OF RUN	5·4·86	5·4·86	5·4·86	5·4·86	5·4·86			
FIRST READING (m)	209	211	209	210	212			
LAST READING (m)	0	4	3·5	0	0			
RECORDED BY			N. DUNSTAN					

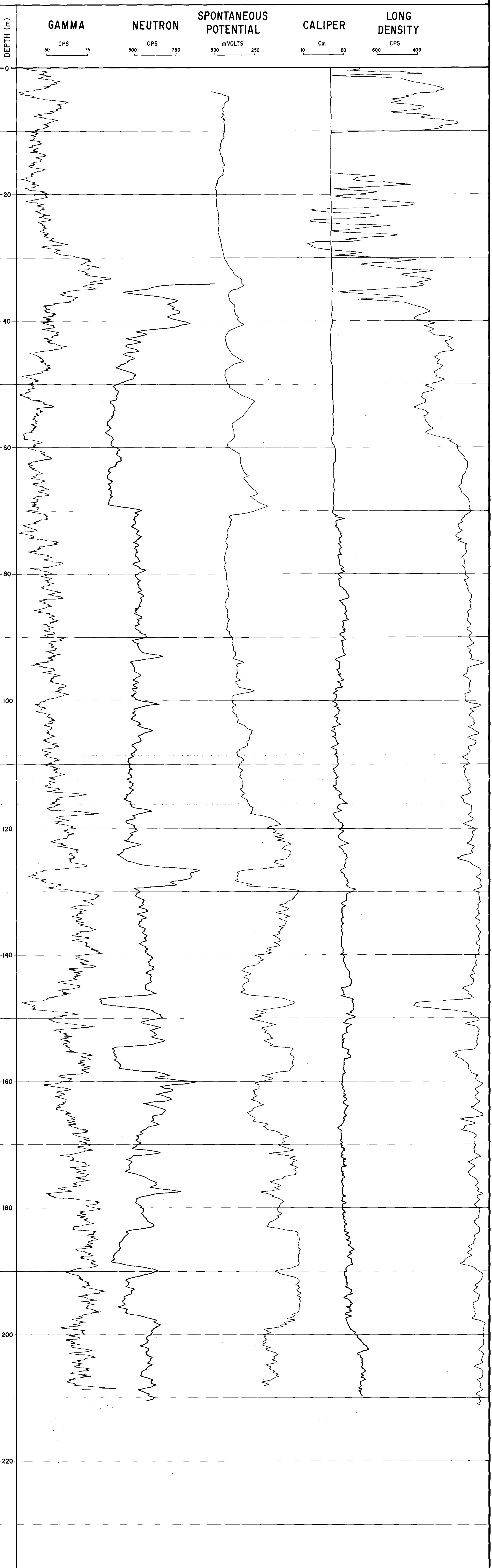
PROJECT WOOLPUNDA GROUNDWATER INTERCEPTION SCHEME
FIELD No. RB1 UNIT No. 69291800W00465 PERMIT No. 94361
LOCATION Woolpunda Site 2, Moorook.

REF. ELEV. 59·812 m SURFACE ELEV. 60·07 m DATUM AHD
LOGGED BY S. Pugh/S. Barnett DATE April 1986

WELL SYMBOLS

Casing seal
Casing shoe
Wire wound screen
Slotted casing
Cemented interval
Gravel packed interval

CONSTRUCTION LOG	WATER CUT AND LEVEL	HYDRO DATA	LITHOLOGY	LITHO. LOG	DEPTH (m)



LITHOLOGY

HYDRO DATA	AGE	UNIT	DESCRIPTION
DRY	PLEISTOCENE	BAKARA SOIL	CALCRETE: Nodular, hard offwhite. Silcrete 3-4 m, mainly red-brown. Minor silts and fine sands.
DRY	PLIOCENE	LOXTON SANDS	SAND: Very clayey 6-10 m, khaki, fine grained and well sorted. Becoming calcareous with depth. Well cemented 17 to 18 m
DRY	MIOCENE	MURRAY GROUP	LIMESTONE: Off-white, consolidated and fossiliferous. 24-28 m: Fawn, marly and consolidated layers. 30-38 m: Light yellow-brown clay, calcareous and gritty.
			50-55 m: Dark yellow-brown, fine grained limestone with strong iron staining and cemented layers.
Aquifer			55-102 m: Light grey fine grained limestone with occasional cemented and fossiliferous layers, glauconitic. Becoming darker grey in colour with depth.
			72 m: Dark grey silt layer. Greenish grey limestone below this depth. Increasing glauconite content (2-5 %).
			From 95 m glauconite increases to 5-10 %
			From 102 m predominantly pale green in colour, 20 % glauconite. Occasional very large shell fragments and very fine grained disseminated pyrite associated with large blebs of dark green glauconite (< 3mm).
			118-124 m: Dark grey, very marly limestone, less glauconitic, 10 % large shell fragments (< 1 cm)
			CORE 125·4 - 126·75 m: 125·4 - 126·0: Grey-green glauconitic fine-med. grained consolidated limestone. 10% shell fragments < 1 cm. 126·0 - 126·7 m: Sandy limestone as above, 50% poorly sorted fine to med. subrounded sand. Occ. pyrite grains. 126·7 - 129 m: SAND, fine to med. grnd, poorly sorted, grey, occ. fine grnd glauconite and pyrite.
Confining Bed	OLIGOCENE	ETTRICK FORMATION	MARL: Dark grey, glauconitic and moderately stiff. Very finely fossiliferous. 141-146 m: Occasional silt-size fossiliferous interbeds.
Confining Bed	EOCENE	UPPER RENMARK BEDS	LIGNITE: Dark brown-black, brittle (shows conchoidal fracture) INTERBEDDED SANDY CLAYS & CLAYEY SANDS: Dark brown carbonaceous, clays and silty interbeds and occasional fine grained sandy intervals.
Aquifer			
Mainly Confining Beds			190 m: Minor shell fragments in brown calcareous clays. Minor thin bands of pyrite.
Aquifer		LOWER RENMARK BEDS	Very fine grained sand, silty.

Screen
Sump

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

WOOLPUNDA GROUNDWATER INTERCEPTION SCHEME

WELL No. 69291800W00465

COMPOSITE WELL LOG

COMPILED	S. PUGH
DRAWN	R.H.
DATE	AUG 1987
CHECKED	
C.D.O. DATE	
SCALE	
PLAN NUMBER	87-554