680
Ross Creek-1.

Well Completion Report
Ross Creek-1
(W680)

92 Pages.

ROSS CREEK-1 WELL COMPLETION REPORT

(OTWAY BASIN, PEP 6)

BY

SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.

S.D.A. Report 184

Melbourne, August 1974.

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WIRELINE LOGS	1: 240/1: 1,200
LL-9+SP	1,220' - 11,965'
GR	30' - 11,944'
BHC	1,220' - 11,944'
FDC	1,220' - 11,977'
HDT	3,688' - 11,966'
CBL	4,000' - 8,735'

SUMMARY

Drilling

Ross Creek -1 was spudded on the 10th February, 1974. A 26"-hole was drilled to a depth of 1225 ft., and 20"-casing run and cemented to surface. Casing shoe was at 1220 ft.

A 20"-Hydril was installed and tested to 500 psi. A 17½"-hole was drilled to 3695 ft. After logging and sidewall sampling a checktrip was made and the hole deepened to 3700 ft. 13.3/8"-casing was run and cemented at 3691 ft. 13.5/8"-BOP's were installed and tested to 3000 psi.

Drilling was continued in 12¼"-hole to 3726 ft. At this depth a formation pressure test indicated a break-down gradient of 0.7 psi/ft. Drilling was continued to 4167 ft.

An RTTS - packer was run to test the top of the casing against the BOP's. The test was satisfactory. A top fill of cement was made in the 13.3/8"-20" annulus.

Drilling continued to 8887 ft. where a velocity survey was made, and logs and sidewall samples taken. 9.5/8" casing was cemented at 8871 ft.

Upon resumption of drilling it became apparent that the cement had not set, and the casing was recemented. A cement bond log indicated top cement to be at 6572 ft. 8¼"-hole was drilled to 8900 ft. where the formation was tested successfully with a pressure equivalent to 0.75 psi/ft.

Drilling continued to a depth of 9665 ft. where three bit cones were left in the hole. Junk was recovered in subsequent runs of a junk basket and junksub.

At 10,358 ft. the mud became gascut, and the mud-weight was increased from 9.3 to 9.5 lbs/gallon.

Drilling was continued to a total depth of 12,005 ft. where logs were run and sidewall samples recovered.

A cement plug was set from 9110 ft. to 8300 ft.

Attempts to cut the casing with a mechanical cutter at 5630 ft., 4641 ft., 4630 ft., and 3600 ft. were unsuccessful.

Set further cement plugs from 4700 ft. to 4500 ft., from 3650 ft. to 3450 ft. and from 300 ft. to 50 ft.

Ross Creek - 1 was abandoned on the 8th May, 1974, after having drilled a total of 12,005 ft.

Geological

Ross Creek - 1 tested the Lower Cretaceous fluviatile Pretty Hill sandstone in a dip-fault closure in the eastern part of the Victorian onshore Otway Basin (Frome/Shell permit PEP6), within the inferred hydrocarbon generating zone. These sandstones were the only objective remaining attractive in the area after much drilling effort had failed to prove any commercial petroleum accumulation within the higher reservoir section.

The well entered the Pretty Hill sandstone at 11,140 ft. after having penetrated 2670 ft. of Tertiary and Upper Cretaceous sediments (marine to paralic carbonates and siliciclastics) and 8470 ft. of Lower Cretaceous Eumeralla Formation

(continental lithic, volcanic sandstones and shales).

As elsewhere generally in the Victorian onshore Otway Basin, the Tertiary and Upper Cretaceous section was fresh-water flushed. The lower most part of the Upper Cretaceous sequence (Waare Sst. Flaxman Beds and Belfast Mudstone) was absent, as a result of erosion or non deposition. The lithic sandstones of the Eumeralla Formation were found to be tight, except at shallow levels, as in the other wells of the basin in which the formation was encountered.

The Pretty Hill sandstone consisted of 500 ft. of subangular, fine to medium quartz sandstones, silica cemented and very tight, alternating with siltstones and shales. As no better porosity could be expected further down (quartz overgrowths) drilling was discontinued at 12,005 ft.

Fair to good gas shows (up to C4) were recorded below 7500 ft. from the Eumeralla Formation and from the Pretty Hill sandstone. These shows are related to carbonaceous beds and to gas filled fractures. Log analysis did not indicate any hydrocarbon-bearing interval.

I. INTRODUCTION

Ross Creek - 1 (encl. 1) was programmed to further evaluate the hydrocarbon potential of the Lower Cretaceous reservoirs (Pretty Hill sandstone of the Geltwood Beach Formation) in the onshore permits held by Frome and Shell in the Victorian part of the Otway Basin.

Compared to previous wells drilled for this reservoir, Ross Creek - 1 was intended to test a more basin-ward structure, in the eastern part of the Victorian onshore Otway Basin (PEP6), within the inferred hydrocarbon generating zone.

II. WELL HISTORY

1. General Data

(i)	Well	:	Ross Creek - 1
(ii)	Operator	:	Shell Development (Australia) Pty. Ltd. 155 William Street, Melbourne, Victoria, 3000.
(iii)	Joint Tenement Holders	:	Frome - Broken Hill Company Pty. Ltd. Mobil Centre 2 City Road, South Melbourne, Victoria, 3205 AND Shell Development (Australia) Pty. Ltd.
(iv)	Petroleum Tenement	:	Petroleum Exploration Permit No. 6
(v)	District	:	Colac (1:250,000; SJ 54-12)
(vi)	Location	:	Latitude 38°31' 57" S Longitude 143° 08' 34" E (Australian National Spheroid)
(vii)	Elevation	:	Ground: 500 ft. Derrick floor: 528 ft.
(viii)	Total Depth	:	12,005 ft. Driller 11,984 ft. Schlumberger
(ix)	Date Drilling Commenced	:	18th February, 1974
(x)	Date Total Depth Reached	:	28th April, 1974
(xi)	Date Well Abandoned	:	9th May, 1974
(xii)	Drilling Time	:	80 days
(xiii)	Status	:	Plugged and abandoned Plugs: 1) 9110 ft - 8150 ft, 200 sacks 2) 4700 ft - 4500 ft, 70 sacks 3) 3650 ft - 3450 ft, 70 sacks 4) 300 ft - 50 ft, 90 sacks
(xiv)	Total Cost	:	$924,000 as at 30th June.

2. Drilling Data

Detailed information is included in weekly drilling reports (Appendix 6).

2.1 General

(i) Drilling Contractor : Shelf Drilling Pty. Ltd.,
Perry House, 131 Elizabeth St.,
Brisbane, Queensland, 4000.

(ii) Drilling Rig : National Type 1320 DE with 142 ft. Lee C Moore Cantilever Mast nominal capacity of 892,000 lbs, with 5" Drillpipe.

(iii) Drawworks : National 1320 DE - 1.3/8" Grooved National Automatic Catheads, 60" Parkersburg Hydromatic.

(iv) Mud Pumps : No. 1 National N 1300 HP Compound Driven
No. 2 National N 1100 HP Independent Drive
with 2 - PTDS6 Turbocharged Superior Engines

(v) Blowout Preventors : 1 - 20" 600 Series Hydril
1 - 20" 600 Series Cameron Q.R.C.
1 - 13.5/8" 5000 GK Hydric
2 - 13.5/8" 5000 Cameron Single Gate

(vi) Hole Sizes and Depths :

Hole Size Inches		Depth B.D.F. Feet
26"	to	1225
17½"	to	3700
12¼"	to	8887
8½"	to	12005

for bit record see Table 1.

(vii) Casing

O.D. (inches)	Grade	Weight lbs/ft	Range	Joint Type	Depth Set B.D.F.	Length (feet)
20	H-40	94		Vetco	1120	1120
13.3/8	J55	68		Buttress	3691	3662
9.5/8	N80	43.5		Buttress	8871-6816	2055
9.5/8	N80	47.0		Buttress	6816	6828

(viii) Cementing

Hole	Casing		Cement				Theoretical fill to B.D.F.	Remarks
	Size	B.D.F.	Type	Sacks	Additives	Weight lbs/gal		
26"	20	1120	Class A	1440	2% Ben. 2% CaCl2	13.4	Surface	-
17½"	13.3/8	3691	Class A	1882	2% Ben.	13.3	Surface	-
12¼"	9.5/8	8871	Class F	2300	1% Ben. 0.2% Diacel	14.5	4900	Did not set. circulated out to Recement.
12¼"	9.5/8	8871	Class A	1500	0.2% Diacel 0.1% HR.4	14.6	6572*	Cemented through drill pipe

*From cement Bond Log.

(ix) Drilling Fluid See Table No. 2 for mud properties and Figure No. 2 for mud costs.

(x) Water Supply

Two dams were constructed adjacent to the well site. Water from these reservoirs was pumped to a 20,000 gal. holding tank on site.

(xi) Plugging Back and Squeeze Cementation Jobs

The hole was plugged in accordance with Victorian Mines Department Regulations:-

Plug No.	Location of Plugs	Sacks of Cement	Tested
1	9110 ft. - 8150 ft.	280	Tagged and pressure tested to 1000 psi
2	4700 ft. - 4500 ft.	70	-
3	3650 ft. - 3450 ft.	70	-
4	300 ft. - 50 ft.	90	-

(xiii) Fishing Operations

Bit Nos. 21, 22, 23 and 24 were run with a junk basket and junk sub to recover 3 cones left in hole after pulling bit No. 20. At 9665 ft. a total of 8 lbs. of junk and some 6" of core were recovered.

(xiv) Sidetrack Hole

No sidetrack operations were performed.

3. Locations

(i) A drilling location of 400' x 600' was levelled, compacted and gravelled. A roadway 30 chains long and 15 feet wide was constructed to gain access to the location. The entire allotment was fenced off from adjoining paddocks.

(ii) Transportation of materials and goods to and from the location was performed by carriage contractor trucks. Personnel transport was provided by rented cars.

4. Formation Sampling

(i) Ditch Cuttings

Ditch cuttings were collected at the shale shaker at 10 ft. intervals whilst drilling. Samples were distributed as follows:-

1 sample washed and dried - Bureau of Mineral Resources,
Core and Cuttings Laboratory,
Collie Street,
FYSHWICK, CANBERRA, A.C.T.

1 sample washed and dried - Victorian Mines Department,
Core Laboratory,
Turner Street,
PORT MELBOURNE, VIC. 3207.

1 sample unwashed - Shell Development (Aust.) Pty. Ltd.,
155 William Street,
MELBOURNE, VIC. 3000.

(ii) Coring

While recovering junk from the hole a 1' 6" core was cut from 9665 ft. of which 6" was recovered. One slice was sent to the Bureau of Mineral Resources and one to the Victorian Mines Department.

(iii) Side Wall Samples

A total of 126 sidewall sample shots were taken of which 113 were recovered in acceptable condition, 5 were empty and 8 were lost. The cores were analysed palaeontological and palynologically and the remnants were stored with Shell Development (Aust.) Pty. Ltd. in Melbourne.

5. Logging and Surveys

(i) Wireline Logging

Performed by Schlumberger. Details of runs taken may be found in Table 4. A velocity survey was carried out at 8874 ft. by Austral United Pty. Ltd. of Brisbane.

(ii) Penetration Rate and Gas Logs

Geoservices Ltd. were responsible for recording penetration rate and mudlogging. A hot wire GMS detector, chromatagraph analyser were run continuously.

(iii) Deviation Surveys

TOTCO double recorders were used to measure hole deviation. Results were as follows:-

Depth ft.	Deviation	Depth ft.	Deviation
80	¼°	4481	3/4°
119	½°	5166	3/4°
137	1/8°	5788	3/4°
169	¼°	6319	1°
346	¼°	6908	2°
468	¼°	7257	3°
778	0°	7630	6°
877	0°	7951	5°
966	½°	8483	2½°
1121	¼°	8732	3°
1376	3/4°	8887	2½°
1563	3/4°	9462	3½°
1874	3/4°	9665	4°
2371	3/4°	10698	5°
2485	1°	12005	6°
2932	3/4°		
3464	1°		
4160	3/4°		

(iv) Temperature Survey

Three temperature logs were run over the interval 8800 to 50 ft. after the cementation of the 9.5/8 casing. In conjunction with a cement bond log these were used to calculate the amount of cement in the 13.3/8 - 9.5/8 annulus.

A bottom hole temperature of 288°F ~~(114°C)~~ 142.5°C ? was recorded 17½ hours after circulation.

6. Testing

No drill stem testing or wireline testing were performed.

TABLE 1

BIT RECORD

BT =>BROKEN TEETH

** 3xLC => LOST 3 CONES

No.	SIZE	MAKE	TYPE	JET 32ND IN	DEPTH OUT	FEET	HOURS	FT/HR	WT. 1000 LBS.	R P M	VERT DEV	PUMP PRESS	S P M 1	MUD			DULL.COND.		FORMATION REMARKS
														WT.	VIS	W.L.	T B G	OTHER	
1RR	26"	HTC	OSC3A	CONV.	1225	1198	41	29	10	120	¼	350	65	9.2	45	20	4 6 1		Set 20"
2	17½"	SEC	S3TJ	3 x 15	2485	1260	21½	59	10.15	120	1°	1250	65	9.3	40	19	4 6 0		
3	17½"	HTC	OSC3AJ	3 x 16	3468	983	29¾	33	20	120	1°	1100	65	9.3	45	18	4 4 0		
4	17½"	REED	T3AJ	3 x 16	3695	227	5¼	43	20	120	1°	1100	65	9.3	52	18	1 1 0		
4RR	17½"	"	T3AJ	3 x 16	3700	5	¼	20	15	120	1°	1100	65	9.3	52	18	1 1 0		Set 13 3/8"
5	12¼"	HTC	OSC3AJ	3 x 13	4167	467	18¼	25	15.20	100	¾	2200	50	9.3	40	16	3 3 0		Drill cement
6	12¼"	"	J33	2 x 14 1 x 13	4481	314	23¾	13	40	40	¾	1600	60	9.1	38	12	1 1 0		
7	12¼"	"	XDG	2 x 13 1 x 14	5166	685	30¼	23	30	120	¾	2100	65	9.3	43	8	3 3 0	BT.	*
8	12¼"	"	CDG	2 x 13 1 x 14	5788	622	31½	20	37	120	¾	2200	65	9.4	43	7.6	4 4 0		
9	12¼"	SEC	533	2 x 13 1 x 14	6319	531	29	18	40	100	1	2250	65	9.5	42	7.8	4 6 0		
6RR	12¼"	HTC	J33	2 x 13 1 x 14	6908	589	56	10	50	50	2	2000	60	9.5	41	8.0	3 3 0		
10	12¼"	"	XDG	2 x 13 1 x 14	7257	349	35¼	10	40 50	100	3	2000	60	9.5	50	7.0	5 5 0		
11	12¼"	SEC	S84	2 x 14 1 x 12	7630	373	45½	8	50	60	6	2350	65	9.5	50	6.5	2 4 0		
12	12¼"	HTC	XDG	2 x 13 1 x 14	7951	321	31¾	10	45	90	5	2350	65	9.5	45	6.5	4 6 0	BT.	*
13	12¼"	"	J33	2 x 13 1 x 14	8186	235	40½	6	50	60-70		2350	65	9.5	45	6.5	6 8 ?	BT.	*
14	12¼"	"	XDV	2 x 13 1 x 14	8483	297	38½	8	45	110	2½	2350	65	9.5	47	6.5	4 6 0	BT.	*
15	12¼"	"	XDV	2 x 13 1 x 14	8732	249	33¼	7	45	110	3	2350	65	9.5	45	6.4	4 7 0		
16	12¼"	"	XDV	2 x 13 1 x 14	8887	155	21¼	7	40	100	2½	2350	65	9.7	47	6.6	2 4 0		Set 9 5/8"
17	8½"	"	XIG	2 x 10 1 x 12	9167	280	22¾	12	30	60		1600	55	8.8	50	12	4 7 0		
18	8½"	"	XIG	2 x 10 1 x 12	9462	295	22¾	13	30	65	3½	1850	55	9.0	45	11	4 5 0		
19	8½"	"	XIG	2 x 10 1 x 12	9665	203	19	11	30	65	4	1850	55	9.0	45	10	8 8 8	3xLC	**
20	8½"	"	W7R-2J	2 x 10 1 x 12	9665	Nil	2¾		10	65		1500	50	9.0	45	9	8 7 1		Drill on junk
21	8½"	SEC	H775	3 x 11	9708	43	4¾	9	25	85		1300	50	9.1	40	9	5 6 0		Drilling junk
22	8½"	HTC	XD7	3 x 11	9840	132	15½	8	30	70		1400	50	9.2	45	8.5	3 3 0		
23	8½	"	J33	3 x 10	10004	164	22¼	7	30	50		2100	60	9.3	45	8.0	1 5 0	Bit washed out into No. 2 grease reservoir	
24	8½"	"	J33	3 x 10	10698	694	99½	7	30	50	5	1950	55	9.6	48	7.2	2 4 0		
25	8½"	"	J33	3 x 10	11408	710	99	7	30 40	50		1700	50	9.7	46	6.4	4 4 0	BT. outside teeth No. 3 cone.	
26	8½"	"	J33	3 x 10	12005	597	76¾	8	30 35	50	6	2000	55	9.7	47	7.2	[illegible] 1		

MUD PROPERTIES ROSS CREEK-1

1. DEPTH FT.
2. CUM. COST $.
3. MUD WEIGHT lbs/gal
4. FUNNEL VISC. SECS.
5. PLASTIC VISC. CP.
6. YIELD POINT lb/100 sq. ft.
7. GELS lb/100 sq. ft. 10 sec/10 min.
8. API WATER LOSS ml.
9. SAND %.
10. DIESEL OIL %.
11. SOLIDS %.
12. pH.
13. SALINITY PPM Cl.
14. REMARKS.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
246	894	8.8	42	8	14	6-15	22	½	NIL	4	8.0	250	26" BIT.
1008	1097	9.1	41	10	15	8-15	19	¼	NIL	4	8.0	250	
1225	1284	9.2	45	9	16	9-17	20	¼	NIL	4	8.0	250	Set 20" casing.
1827	1400	9.3	42	10	7	4-10	19	1	NIL	5	10.0	250	17½" bit.
2619	1928	9.3	38	8	6	3-8	18	½	NIL	5	10.0	250	
3350	2291	9.3	40	11	14	3-18	16	½	NIL	5	9.0	250	
3695	2646	9.3	52	20	15	3-12	18	¼	NIL	5	9.0	250	Log and run 13 3/8" casing.
3940	2706	9.2	38	8	6	3-10	18	1/8	NIL	4	10.5	250	12¼" bit.

TABLE 2. MUD PROPERTIES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
4167	3394	9.3	40	12	8	3-8	16	trace	NIL	5	10.0	250	
4375	4461	9.1	38	10	8	2-10	12	trace	NIL	5	10.0	250	
4760	4859	9.1	39	12	8	3-9	11	trace	NIL	5	10.0	250	Tight hole on connections.
5166	6019	9.3	43	16	12	2-4	8.2	¼	NIL	6	9.5	250	Reduced water loss - hole O.K.
5557	6440	9.4	43	13	13	2-4	7.8	trace	NIL	6	9.5	250	
5788	7056	9.4	43	13	11	2-4	7.6	trace	NIL	6	9.5	250	Heavy watering back to hold weight.
6242	7871	9.5	42	10	15	3-6	7.7	trace	NIL	6	9.7	250	" " " " " "
6430	8199	9.5	40	10	11	2-5	8.0	trace	NIL	6	9.0	250	" " " " " "
6745	8603	9.5	40	12	8	2-4	7.5	trace	NIL	6	9.5	250	" " " " " "
6908	9591	9.5	38	12	11	2-5	8.0	trace	NIL	7	9.7	250	
7101	10028	9.5	48	20	15	2-5	7.0	trace	NIL	7	10.0	250	
7257	10987	9.5	50	22	15	3-5	7.0	trace	NIL	7	9.7	250	
7445	12378	9.5	48	19	14	2-4	6.5	trace	NIL	6	9.7	250	Flowline temperature 149°F-started

TABLE 2. MUD PROPERTIES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
7623	13118	9.5	50	20	16	3- 6	6.6	trace	NIL	7	9.5	250	
7773	13358	9.4	46	18	14	2-4	6.0	trace	NIL	6	9.5	250	140°F.
7951	13686	9.5	45	17	16	3-6	6.5	trace	NIL	7	9.7	250	
8042	14165	9.5	46	19	15	2-4	6.0	trace	NIL	7	10.0	250	145°F.
8183	15296	9.5	45	17	10	2-4	6.2	trace	NIL	-	10.0	250	151°F.
8288	15986	9.5	47	18	14	2-5	6.6	trace	NIL	7	9.5	250	142°F.
8474	16633	9.5	46	20	10	2-4	6.5	¼	NIL	7	9.0	250	152°F.
8595	17211	9.5	47	18	13	2-4	6.5	¼	NIL	7	9.0	250	150°F.
8732	17527	9.5	45	17	10	2-4	6.4	¼	NIL	7	9.0	250	152°F.
8865	18064	9.7	46	15	9	2-4	6.6	¼	NIL	7	9.0	250	150°F.
8887	18291	9.7	55	20	15	2-4	6.5	¼	NIL	7	10.0	250	Log + set 9 5/8" casing.
9143	23099	8.8	50	14	12	2-10	13	¼	NIL	3	11.0	300	Circulated out 2300 sx cement - severe contamination. Mixed new mud and dumped old mud.
9364	23099	8.8	50	16	15	2-10	12	trace	NIL	3	11.0	300	

TABLE 2. MUD PROPERTIES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
9560	23856	9.0	43	13	7	1-8	11	trace	nil	4	11.0	350	128°F.
9665	25468	9.0	45	14	7	1-5	10	trace	nil	4	10.5	350	132°F. Fishing cones
9708	25015	9.1	40	13	6	1-4	8.5	trace	nil	4	9.5	350	
9840	26410	9.2	46	13	7	1-3	8.8	trace	nil	4	9.5	350	
9975	27530	9.2	47	15	8	2-3	8.0	trace	nil	5	9.5	350	136°F
10057	28520	9.3	44	15	8	2-3	8.0	trace	nil	4	9.5	350	134°F
10233	28788	9.3	47	18	10	2-3	7.5	trace	nil	5	9.5	400	136°F
10361	31042	9.5	41	14	8	2-3	8.0	trace	nil	5	9.5	400	132°F. Gas cut mud, increased mud weight.
10536	31282	9.5	45	16	9	2-3	8.5	trace	nil	6	9.5	400	135°F.
10683	32267	9.6	48	19	11	2-3	7.2	¼	nil	7	10.0	400	136°F.
10749	32267	9.7	48	20	12	2-3	7.0	¼	nil	7	9.5	400	
10917	33059	9.7	43	14	8	2-3	6.6	¼	nil	7	9.5	400	135°F.
11070	33467	9.7	45	17	9	2-3	6.5	trace	nil	7	9.5	400	136°F.

TABLE 2. MUD PROPERTIES

1	2	3	4	5	6	7	8	9	10	11	12	13	14
11246	33874	9.7	46	16	10	2-3	6.4	Trace	NIL	7	9.5	400	
11408	34319	9.7	47	20	10	2-3	6.4	¼	NIL	7	9.5	400	
11465	34426	9.7	47	20	9	2-3	6.8	Trace	NIL	7	9.5	400	
11676	34533	9.7	47	18	9	2-3	7.1	¼	NIL	6	9.0	400	
11883	34792	9.7	47	18	12	2-3	7.2	¼	NIL	7	10.0	400	
12005	35496	9.7	45	18	9	2-3	7.3	¼	NIL	6	10.0	400	T.D.

TABLE 2. MUD PROPERTIES

TABLE 3.

ROSS CREEK -1

MUD CHEMICAL CONSUMPTION

Product	Rec'd NE-1	Rec'd Supplier	Tot. rec'd	Used	Stock
Barytes x 100 lbs.	2460	2000	4460	1660	2800
Bentonite x 100 lbs.	923	2316	3239	2489	750
Spersene x 50 lbs.	72	636	708	637	71
CMC LV x 50 lbs.	NIL	320	320	144	176
Sodium bicarb x 93 1/3 lbs.	12	24	36	26	10
Soda Ash x 93 1/3 lbs.	21	NIL	21	21	NIL
Alumin. Stearate x 18 kg	4		4	2	2
D - D Compound x 55 gal	5		5	5	NIL
Pipe lax x 55 gal	8		8	NIL	8
Caustic Soda x 140 lbs.	24	110	134	130	4
Caustic Soda x 504 lbs.		10	10	NIL	10
Mica Fine x 50 lbs.*	612			79*	460
Mica Medium x 50 lbs.*				73*	
XP - 20 x 50 lbs.	192	96	288	288	NIL
Calcium chloride x 70 lbs.	61		61	31	30
Class A cement x 94 lbs.	300	6050	6350	5750	600
Class F cement x 94 lbs.		3450	3450	2700	750
Diacel LWL x 50 lbs.		17	17	17	NIL
HR - 4 x 50 lbs.		5	5	5	NIL

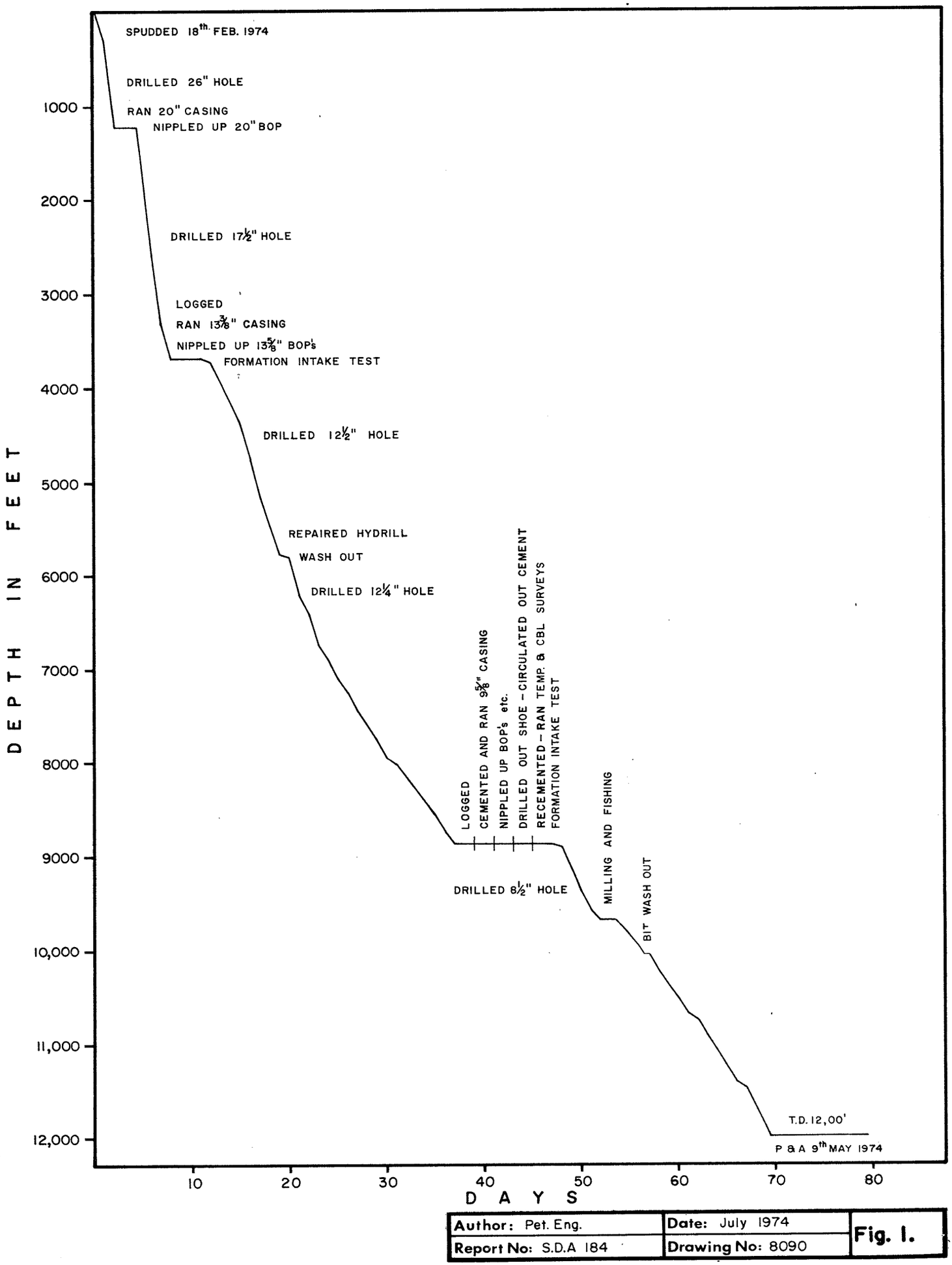
*NOTE : 70 Mica Fine + 70 Mica Medium returned to Magcobar 1.4.74.

TABLE 4.

WIRELINE LOGGING OPERATIONS

DATE	LOG	DEPTH INTERVAL, FEET
26/2/74	LL 9 (D) + S.P	3678 - 1220
"	FDC + CAL	3689 - 1220
"	GR	3682 - 30
"	BHC	3682 - 1220
"	CST	1 GUN
27/3/74	BHC - GR	8874 - 3688
"	FDC + CAL	8878 - 3688
28/3/74	LL 9 (D) + SP	8868 - 3688
"	Velocity Survey	To 8874
"	HDT	8878 - 3688
"	CST	2 GUNS
5/4/74	Temp. Survey. (2 Runs)	From 8378
6/4/74	CBL	8735 - 4000
29/4/74	BHC - GR	Tool Failure
"	HDT	" "
"	FDC - CAL	11977 - 8847
"	LL 9 (D) + SP	11965 - 8847
30/4/74	HDT	Tool Failure
	BHC - GR	" "
	GR - SNP	" "
1/5/74	BHC - GR	11944 - 8847
	SNP	11954 - 8847
	CNT	11984 - 8847
2/5/74	HDT	Held up at 10170
3/5/74	HDT	11966 - 8850
"	CST	2 Guns

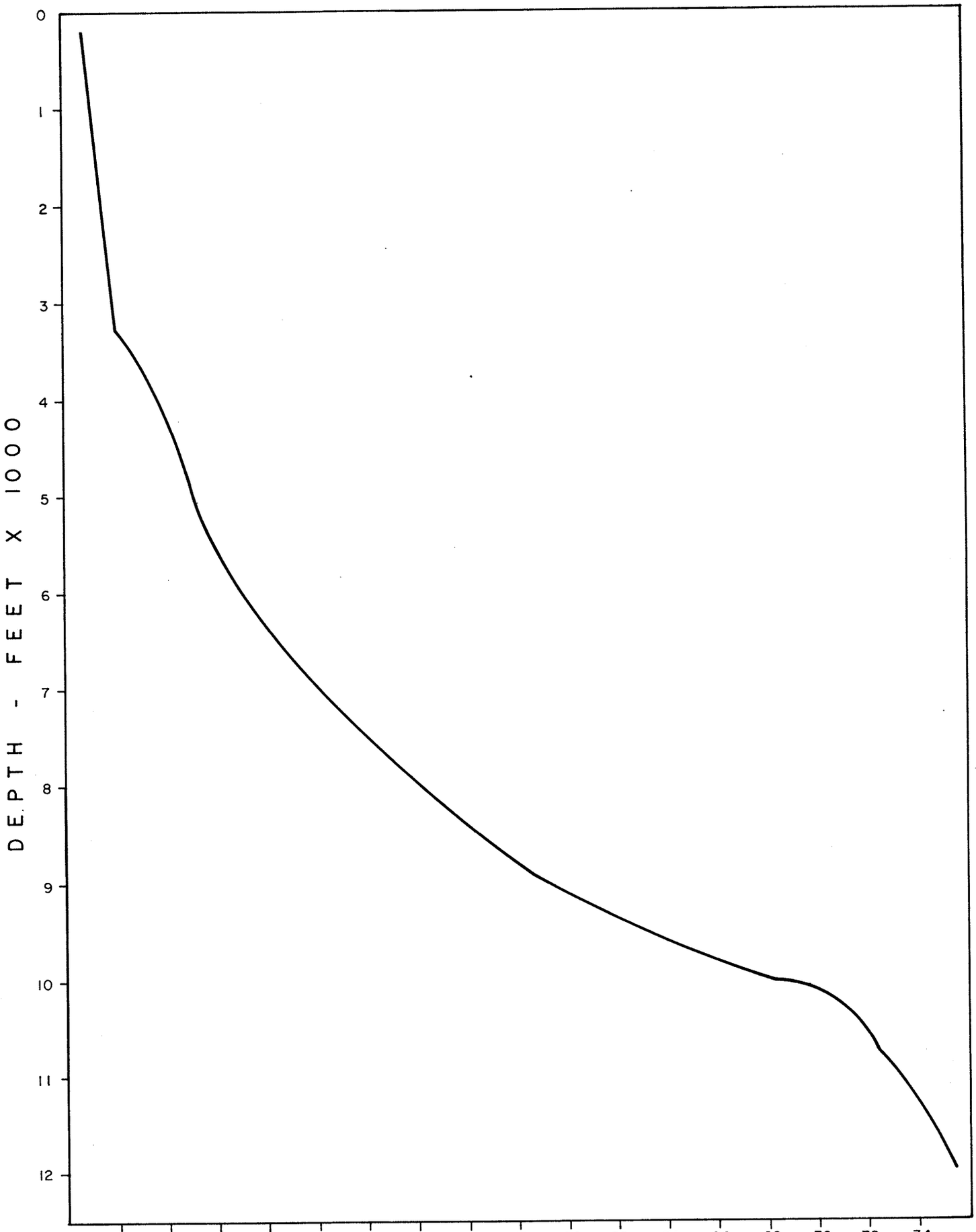
ROSS CREEK - 1
DRILLING TIME Vs DEPTH



Author: Pet. Eng.	Date: July 1974	Fig. 1.
Report No: S.D.A 184	Drawing No: 8090	

ROSS CREEK - 1

MUD COST Vs DEPTH



Author: Pet. Eng. Dept.	**Date:** July 1974	Fig. 2
Report No: S.D.A. 184	**Drawing No:** 8091	

III. GEOLOGY

1. Regional Geology

The Otway Basin (Encl. 1) is an east-west trending trough containing a thick Mesozoic/Tertiary section that extends from Cape Jaffa (South Australia) to the Mornington Peninsula (Victoria) and which is under-lain by north/south trending Paleozoic basement rocks of the Tasman geosyncline.

The Otway Basin was probably initiated in the Upper Jurassic. First continental sandstones, shales and basaltic volcanics accumulated locally (Basal Unit). This episode was followed in the Lower Cretaceous by the deposition, apparently also local, of fluviatile quartz sandstones (Pretty Hill sandstone) often interbedded with continental lithic (volcanic) sandstones, siltstones and shales (Geltwood Beach Formation). The Lower Cretaceous sedimentation was completed with regional deposition of similar continental lithic (volcanic) sandstones, siltstones and shales (Eumeralla Formation). At least locally, deposition appears to have been interrupted by a brief phase of uplift and erosion (Intra-Eumeralla seismic unconformity).

The basal unit, Pretty Hill/Geltwood Beach and Eumeralla Formations make up the Otway Group.

At the end of the Lower Cretaceous a widespread episode of block faulting affected the area, causing the formation of the Dartmoor Ridge, the Warrnambool High and the Otway Ranges (Encl. 1).

During Upper Cretaceous and Lower Tertiary times these highs effectively divided the area into four sub-basins; the Torquay, Port Campbell, Tyrendarra and Gambier Embayments.

East of the Otway Ranges (Torquay Embayment), a continental, paralic and marine sequence of conglomerates, sandstones, coals, shales and dolomites accumulated.

West of the Otway Ranges (Port Campbell, Tyrendarra and Gambier Embayments) time equivalent sediments consist of marine sandstones and shales (Flaxman, Belfast and Paaratte Formations), locally underlain by paralic sandstones (Waare Formation) and regionally overlain by paralic sandstones, shales and minor coals (Curdies Formation). The Curdies Formation is followed by marine sandstones and shales (Pebble Point Formation) and paralic sandstones, shales and minor coals (Dilwyn Formation). The Waare, Flaxmans, Belfast, Paaratte and Curdies Formations form a transgressive-regressive Upper Cretaceous cycle (Sherbrook Group). The Pebble Point and Dilwyn Formations represent a transgressive-regressive Paleocene to Lower Eocene unit (Wangerrip Group). The Wangerrip Group is locally capped by the transgressive Nirranda Group consisting of marine sandstones (Mepunga Formation) and marls (Narrawaturk Marl).

During Oligecene and Pliocene times a new transgressive sequence (Heytesbury Group) of marine sandstones, marls and Carbonates (Clifton, Gellibrand and Port Campbell Formations) was deposited over the whole of the basin.

From Pliocene to Recent, after a brief and last episode of marine transgressive carbonate and sand deposition the area has undergone uplift and basaltic volcanism (which probably started locally in Early Tertiary times) resulted in flows, tuffs and scoria deposits.

Normal faults, often downthrown basin-ward are the dominant structural elements of the Otway Basin. The Upper Jurassic - Lower Cretaceous sequence is thick and complexly faulted while the Upper Cretaceous and Tertiary section is thin and much less affected. Folding is uncommon. Generally speaking, the thickness of the sedimentary units increases toward the south.

2. Previous Work

The two Frome/Shell onshore permits of the Otway Basin, PEP5 and PEP6, are entirely covered by gravity and magnetic surveys. In addition a considerable mileage of simple fold seismic and about 300 miles of high multiplicity (6-12) fold lines have been recorded in the area (Encl. 2).

Of the 52 wells drilled in the Otway Basin, 11 were drilled in the two Frome/Shell permits.

Although no commercial quantities of hydrocarbons were discovered in the Otway Basin, significant shows were recorded in the Port Campbell area (PEP 6) from the basal Upper Cretaceous Waare sandstone and from the underlying Lower Cretaceous Eumeralla Formation.

As Tertiary and late Upper Cretaceous reservoirs were found to be fresh-water flushed and as considerable drilling efforts failed to prove a petroleum accumulation within the sealed early Upper Cretaceous porous Waare sandstone, the Tertiary and Upper Cretaceous sequences were no longer considered an objective throughout the permits.

However, the sandstones of the Lower Cretaceous Otway Group (Pretty Hill sandstone/Geltwood Beach Formation), sealed by the Eumeralla Formation were only tested near the Victorian basin margin (Encl. 2). The more basinward Eumeralla -1 structure, drilled in 1962, had been defined on poor single fold data and multifold lines shot across the area in 1970 and 1973 showed that the test was not structurally valid.

As it was believed that hydrocarbons might have been generated in the deep basin section in the south of the permits and that the absence of petroleum near the basin margin could be due to the strong faulting which affected Lower Cretaceous sediments, preventing up-dip migration, it was decided to concentrate drilling efforts on the coastal strip, where the Lower Cretaceous objective was thought to be in a favourable position to be charged by hydrocarbons postulated to have been generated nearby.

North Eumeralla -1, abandoned as a dry hole in February 1974, was proposed to test a basinward structure of PEP 5 and Ross Creek -1 was intended to test the sequence in a similar structure in PEP6, 110 km to the East, in the area of the good shows.

3. Ross Creek -1 Stratigraphy

(Surface = + 501 ft., D.F. = + 528 ft., all depths b.D.F.)

a). HEYTESBURY GROUP (Surface to ? 480 ft.)

a1) Surface deposits (surface to ? 50 ft.)

These sediments appear to consist of marine lime packestones to wackestones.

On the basis of their probable Pliocene age (Appendix 4) they are unlikely to represent the Port Campbell Limestone.

a2) ? Gellibrand Marl (? 50 ft. to ? 280 ft.)

Lithology: soft marls; mainly grey; abundant fossil debris and Foraminifera; traces of glauconite, pyrite and quartz.

Age: ? Miocene.

Environment: Shallow marine.

Note: Although the Foraminiferal content is rather confusing (Appendix 3) the sequence is thought to be Miocene and to represent the Gellibrand Marl.

a3) Clifton Formation (? 280 ft., to ?480 ft.)

Lithology: soft clayey marls; grey to brown; abundant fossil debris and Foraminifera; presence of glauconite, pyrile, limonite and quartz. Interbeds of quartz sandstones; greenish to brown; fine to coarse; generally subrounded and moderately sorted; calcareous and sideritic; moderately hard; presence of limonite, glauconitic pellets, ooliths, pyrite and fossil debris.

Age: Miocene

Environment Shallow marine, near shore.

Note: Although the Foraminiferal content above 450 ft., is again rather confusing (Appendix 3), the entire section is believed to be Miocene and to represent the Clifton Formation.

UNCONFORMITY

b) NIRRANDA GROUP (? 480 ft. to ? 990 ft.)

Mepunga Formation (? 480 ft. to ? 990 ft.)

Lithology: Quartz sandstones; light grey to light green and brown at the bottom of the section; medium to coarse and fine at the bottom of the section; subrounded to well rounded and subangular at the bottom of the section; moderately to well sorted; generally friable and porous; chloritic, limonitic, or carbonate cemented; presence of pyrite, glauconite, fossil debris and Foraminifera.

- Interbeds of clayey marls as above.

Age: Upper Eocene

Environment: Shallow, marine, near shore.

Note: The Narrawaturk Marl generally overlying the Mepunga Formation in the area appears to be absent at Ross Creek.

UNCONFORMITY

c) WANGERRIP GROUP (? 990 ft. to 1670 ft.)

c1) Dilwyn Formation (?990 ft. to 1220 ft.)

Lithology: Quartz sandstones; mainly grey; predominantly medium to coarse; occasionally conglomeratic; rounded to subrounded; moderately to well sorted; friable and silty; generally porous with a few carbonate cemented interbeds; presence of pyrite; minor feldspar, chert, metaquartzite, and chloritic schist fragments; traces of limonite, glauconite, pyrite and micas.

- Interbeds of siltstones and shales; dark grey to dark brown; generally friable; occasionally calcareous; often carbonaceous; presence of pyrite; traces of glauconite and fossil debris.

Age: Lower Eocene

Environment Paralic.

c2) Pebble Point Formation (1220 ft. to 1670 ft.)

Lithology: siltstones; dark brown, dark grey to dark green, slightly carbonaceous; often loaded with limonite and chloritic pellets and ooliths; traces of pyrite, micas, glauconite, fossil debris and Foraminifera.

- Interbeds of sandstones in the lower part of the sequence; brown to green; medium to coarse; subangular to subrounded; generally porous; moderately sorted; composed of quartz, minor metaquartzite debris, micas and feldspar often coated with chlorite, limonitic and chloritic pellets and ooliths; silty and friable but with a few carbonate cemented and harder interbeds; traces of limonite, pyrite, glauconite, phosphate, fossil debris and Foraminifera.

Age: Upper Paleocene

Environment Inter-tidal

Note: The Pebble Point Formation is characterized by relatively high G. Ray reading probably due to Th and U associated with a phosphate mineral (Appendix 7).

UNCONFORMITY

d) SHERBROOK GROUP (1680 ft. to 2670 ft.)

d1) Curdies Formation (1680 ft. to 2550 ft.)

Lithology: Quartz sandstones; light grey; medium to very course; friable; subangular to subrounded; moderately to well sorted; silty with rare carbonate cemented beds; generally porous; presence of lithic fragments (metaquartzite, schists, aphanitic siliceous rocks); traces of feldspar, micas, pyrite, limonite and carbonaceous matter.

- subordinated siltstones and shales; dark grey to dark brown, often pyritic, micaceous and carbonaceous; moderately hard.

- Presence of coal interbeds.

Age: Santonian/Coniacian

Environment Paralic to alluvial

d2) Paaratte Formation (2550 ft. to 2670 ft.)

Lithology: sandstones; generally dark green; medium to coarse; subangular to subrounded; poorly to well sorted; composed of quartz and chloritic pellets; presence of feldspar and lithic grains (metaquartzite, chloritic rock debris); often silty and friable; generally porous; presence of a few carbonate cemented layers; traces of pyrite, micas, feldspar, limonite and fossil debris

- subordinate siltstones and shales; dark grey, brown or green, slightly carbonaceous, pyritic with traces of fossil debris, glauconite and chloritic pellets

Age: Santonian/Coniacian

Environment Marginal marine

Note: The lower most Upper Cretaceous (Belfast Mudstone, Flaxman Beds and Waare Sandstone) was not encountered in Ross Creek -1. It is not known whether this absence is due to erosion or non deposition.

UNCONFORMITY

e) OTWAY GROUP (2670 ft. to 12005 ft. - T.D. -)

e1) Eumeralla Formation (2670 ft. to ~~11,140~~ 10,410 ft.)

Lithology: Claystones; predominantly light green above 8,000 ft. and predominantly grey below this depth; loose; chloritic; often carbonaceous and pyritic.

- siltstones; predominantly light green above 8,000 ft. and predominantly grey below this depth; loose to moderately hard; composed of lithic fragments, quartz, feldspar, kaolinite and chloritic clay; presence of micas, carbonaceous matter and pyrite.

- sandstones: light coloured; fine to very fine; angular to subangular; poorly to moderately sorted; loose to moderately hard; tight except in the Upper section; composed of lithic fragments (mainly volcanic), feldspar and quartz; more frequent in the upper section; silty to kaolinitic with a few carbonate cemented beds; presence of pyrite, micas and carbonaceous matter.

- Presence of coal interbeds

Age: Aptian - Albian

Environment Continental

Note: As elsewhere in the basin diagenetic changes have strongly affected the sandstones, especially in the lower part of the formation (development of chlorite, interaction between quartz grains and development of secondary silica, recrystallization of carbonate minerals, etc.), The process is attributed to a reaction of fresh volcanic detritus in the admixture of material in these sediments, as well as the interaction between constituents of different origin under the conditions of burial.

* UNCONFORMITY

* This unconformity is not paleontologically confirmed. Evidence for its existence is based on seismic reflection data. This depth corresponds to the Intra-Eumeralla horizon which locally truncates underlying events, elsewhere in the basin.

From 10,420 ft. to 11,140 ft.

Lithology: As between 8,000 and 10,500 ft.

Age: Aptian

Environment Continental.

e2) Pretty Hill Sandstone (11,140 ft. to 12,005 ft. - T.D.)

Lithology: Quartz sandstones; fine to medium; light grey; angular to subangular; with traces of lithic components; carbonate cemented in the upper part of the section and silica cemented (quartz overgrowths) in the lower part of the section; moderately to well sorted; hard, tight, traces of micas and pyrite.

- Interbeds of siltstones and claystones as above.

Age: Aptian

Environment Continental.

4. Ross Creek Structure

Three horizons were mapped at Ross Creek:

i. Top Otway
ii. Intra-Eumeralla
iii. Top Basement

In the Port Campbell area the Top Otway horizon reflects structure in the overlying Waare sandstone, the only sealed reservoir within post Lower Cretaceous sediments. Although the Waare sandstone was no longer considered a primary objective, a reflection interpreted as Top Otway was mapped, as the Waare formation could be expected to be present in the Ross Creek area.

A small culmination broken by a north hading fault was mapped at Top Otway level.

Drilling has shown that the Waare sandstone was not present and that the mapped Top Otway reflection was in fact an Intra-Otway event, 300 msecs below the top of the Otway Group (Encl. 9), which is at 2670 feet.

The Intra-Eumeralla horizon reflects structure at the objective level, the underlying Pretty Hill sandstone. On the basis of seismic evidence (local truncation of underlying events seen elsewhere) the horizon is regarded as representing a regional unconformity in the area.

The hiatus however, could not be confirmed palaeontogically (Appendix 5) either in Ross Creek -1 or in previous wells which bottomed below the reflection. Well velocity data (Appendix 2) show that the Intra-Eumeralla unconformity is at approximately 10,450 feet in Ross Creek -1. This depth corresponds to a sandstone bed which is taken to represent the base of the following sedimentary phase.

At Intra-Eumeralla level Ross Creek is a dip-fault closure (Encl. 8). A major north hading normal fault separates an upthrown block in the south, on which the well was drilled, from a downthrown block in the north. The Pretty Hill sandstone closed by dip to the west, south and east on the upthrown block abuts against the sealing Eumeralla Formation in the downthrown block. The fault zone which was to be cut by the well slightly above the Intra-Eumeralla reflection is confirmed to occur at ± 10,200 feet by the dipmeter log. Hexagonal quartz crystals and calcite were also observed in cuttings at that level as well as strong gas shows. The direction of dip shown by seismic below the Intra-Eumeralla horizon is corroborated by the dipmeter survey.

As Ross Creek -1 was abandoned before planned total depth, basement was not reached. Extrapolation from the TZ Curve (Appendix 2) indicates that crystalline basement could be as deep as 15,000' at the well location. Mapped reflections at that level closely conform to the Intra-Eumeralla structure.

The Ross Creek area appears to have been effected by two tectonic phases (Encl. 9). A first uplift associated with faulting took place during the deposition of the Eumeralla Formation. Subsequent erosion produced the Intra-Eumeralla unconformity. This was followed by renewed sedimentation. A second uplift probably Upper Cretaceous to Tertiary in age caused gentle folding and reactivation of pre Intra-Eumeralla faulting.

5. Relevance to Occurrence of Petroleum

Apart from fair to good gas shows (up to (C4)) recorded below 7500 feet (Encl. 4) from the Lower Cretaceous Eumeralla Formation and Pretty Hill sandstone, no hydrocarbons were noted in Ross Creek -1. Electric log interpretation did not reveal the presence of any hydrocarbon bearing intervals (Appendix 1). The gas shows are all thought to have originated from carbonaceous beds and gas filled fractures.

The porous marine to paralic Tertiary and uppermost Upper Cretaceous section, as elsewhere in PEP 6 and in the eastern part of PEP 5 are fresh-water flushed.

Water salinities in the continental Lower Cretaceous Otway Group are believed to be around 6,000 ppm in the Eumeralla Formation and 6,000 ppm in the Pretty Hill sandstone.

6. Reservoirs

Porosities in the Tertiary and uppermost Upper Cretaceous fresh-water flushed reservoirs are of approximately 23% (Appendix 1).

Porosities in the lithic sandstones of the Lower Cretaceous Eumeralla Formation are fair to nil. They appear to reach a maximum of 20% in the shallow part of the sequence, where the quartz content is relatively high, but do not seem to exceed 5% in the lower part of the formation where lithic elements are more abundant. As noticed in previous wells, where the facies was encountered, extensive diagenetic alteration of the volcanic detritus, generally destroyed all reservoir potential in the sandstones. The formation is a good seal for the underlying Pretty Hill sandstone objective in the basin.

The Pretty Hill sandstone was found to consist of approximately 500 feet

of very tight quartz sandstones alternating with silstones and shales. As these sandstones were cemented by silica overgrowths and as no better porosities could be expected below, drilling was discontinued at 12,005 feet.

7. Contribution To Regional Geology

Broadly speaking Ross Creek -1 corroborates the stratigraphy which had been inferred to exist in this part of the basin from previous wells and water bores drilled nearby (Encl. 7).

However, the Upper Eocene Narrawaturk Marl and the lowermost Upper Cretaceous Belfast Mudstone, Flaxman Beds and Waare Sandstone were absent from the well. It is not known whether this absence is due to non deposition or erosion.

The Tertiary and Upper Cretaceous sequence as a whole appears to reflect near basin margin sedimentary conditions.

The Pretty Hill sandstone, which was not present in Ferguson's Hill -1, to the south, is demonstrated to exist at least locally in the Port Campbell Embayment.

ROSS CREEK -1 STRATIGRAPHIC SUMMARY

Group	Formation	Env.	Age	Top b.d.f. (ft.)	Thickness (ft.)	Lithology
HEYTESBURY	Surface deposits	Marine	Plio.	27	? 23	? Limestones
	? Gellibrand Marl	Sh.Mar.	? Mio.	? 50	?230	Marls
	Clifton	Mar.near-shore	Mio.	?280	?200	Marls, Sst.
				Unconformity		
NIRR-ANDA	Mepunga	Mar.near-shore	U.Eo.	?480	?510	Sst. (porous); marls
				Unconformity		
WANGERRIP	Dilwyn	Paralic	L.Eo.	?990	?230	Sst. (porous), shales
	Pebble Point	Inter-tidal	U.Pc	1220	460	Shales, pell. & ool. Sst.(porous)
				Unconformity		
SHERBROOK	Curdies	Par./All	Sa/Co	1680	870	Sst. (porous) rare shales,coal
	Paaratte	Marg.mar.	Sa/Co	2550		Pell. Sst.(porous) shales
				Unconformity		
	Eumeralla	Contin.	Ap-Ab	2670	7750	Tight lithic (volc.) Sst., shales, Coal
				Seismic unconformity		
		Contin.	Ap.	10,420	720	idem
	Pretty Hill Sst.	Contin.	Ap.	11,140 12,005(T.D.)	865	Tight siliceous qz. Sst., shales

TABLE 5.

IV CONCLUSIONS

The Tertiary and uppermost Upper Cretaceous porous section was again found to be fresh water flushed and hence not prospective in the Central Otway Basin.

The sandstones of the Uppermost Lower Cretaceous Eumeralla Formation had fair porosities. The sequence is comparable to the one penetrated in the wells drilled near Port Campbell and from which part of the good gas and oil shows were recorded. The fair porosities are attributed in both areas to the relatively high quartz content and to the shallow depth. These reservoirs however, appear to be of very limited extent and cannot be considered a primary objective.

The Lower Cretaceous Pretty Hill sandstone which was encountered between 11,140 feet and T.D. (12,005 feet) was tight due to quartz diagenesis. This fact tends to downgrade the remaining Lower Cretaceous prospects, recognised further to the west (Wangoom, Yambuk, Terka) where the objective is expected to be deeper.

The fair to good gas shows (up to C4) recorded from the basal Eumeralla Formation and from the Pretty Hill sandstone confirm the idea that at least some hydrocarbon generation has occurred in the Port Campbell Embayment.

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APPENDIX 1.

PETROPHYSICAL EVALUATION - ROSS CREEK NO. 1.

LOGS AVAILABLE

DATE	LOG	INTERVAL
26/2/74	LL 9 D/SP	3678' - 1220'
	FDC/CAL	3689' - 1220'
	GR	3682' - 30'
	BHC	3682' - 1220'
	CST Shot 30	Recovered 28
27/3/74	BHC/GR	8874' - 3688'
	FDC/CAL	8878' - 3688'
	LL 9 D/SP	8868' - 2688'
	HDT	8878' - 3688'
	CST Shot 47	Recovered 45
29/4/74	FDC/CAL	11,977' - 8847'
	LL 9 D/SP	11,965' - 8847'
	Proximity Log	11,972' - 8847'
	BHC/GR	11,944' - 8847'
	SNP	11,954' - 8847'
	CNL	11,952' - 8840'
	HDT	11,966' - 8850'
	CST Shot 49	Recovered 40.

STRATIGRAPHIC UNITS

Unit 1: Surface - 2,670'.
Sherbrook, Wangerrip, Nirranda and Heytesbury Groups.

Unit II: 2,670' - 11,140'
Eumeralla formation.

Unit III: 11,140' - TD
Pretty Hill sandstone.

RESERVOIR PROPERTIES

Unit I: Reservoirs in this unit appear to be freshwater flushed. The sandstones have a porosity of approximately 23%.

Unit II: The porosity of sandstones in this unit decreases from some 20% at the top of the unit to some 5% near the bottom. The sandstones are waterbearing with water salinities around 6,000 ppm. Below 7,500 feet some gas indications were encountered which appear to be associated with coal beds.

Unit III: The Pretty Hill sandstone formed the primary objective of the well.

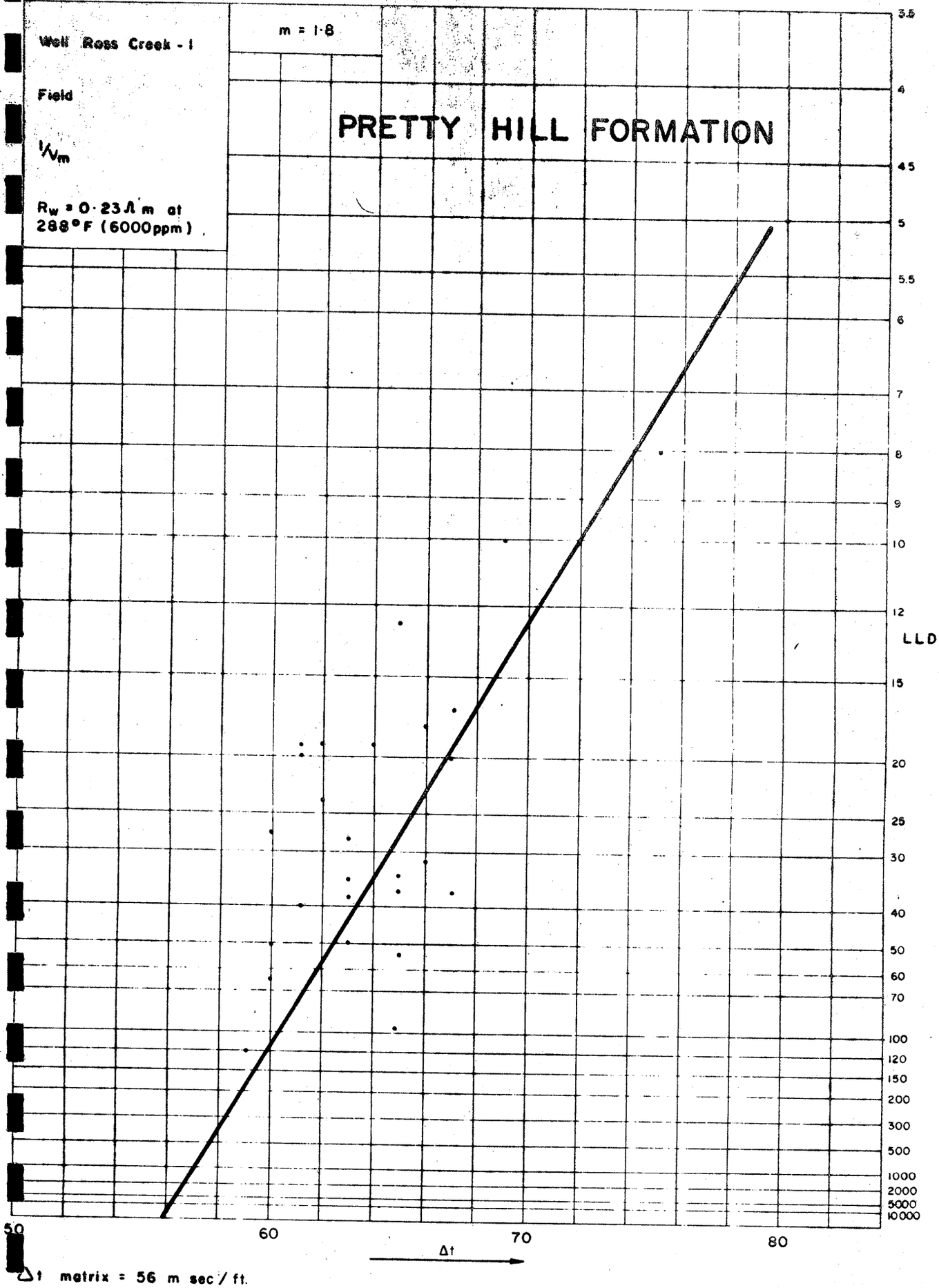
Figure 7 gives a plot of sonic transit time against resistivity of sandstones in this interval. The hole condition over this interval was rather bad and as a result large corrections for hole conditions had to be made to the FDC log, rendering it less reliable than the sonic log which is rather insensitive to hole conditions. From this plot it is apparent that all intervals are waterbearing. Salinity of the formation water is 6,000 ppm.

Intervals having a small shale content exhibit a somewhat lower resistivity than clean intervals, due to the low salinity and consequently high resistivity of the formation water. Average porosity of the sandstone intervals was found to be 6%.

Microscopic examination of sidewall samples reveals that the reduction in porosity has been caused by quartz overgrowth. Recorded maximum temperature in this unit was 288°F.

LOG DATA - PRETTY HILL SANDSTONE

Depth ft	Sonic Transit time sec/ft	Resistivity Latero log deep	Porosity %
11170	63	36	5
11194	61	40	4
11211	59	120	2
11220	75	8	14
11232	67	17	8
11250	65	38	7
11283	69	10	10
11287	61	19	4
11299	64	19	6
11312	62	24	5
11385	63	28	5
11393	60	65	3
11484	61	19	4
11495	60	27	3
11607	67	37	8
11615	65	34	7
11627	65	90	7
11717	63	50	5
11727	60	50	3
11763	63	38	5
11774	67	20	8
11789	66	18	8
11796	72	10	12
11808	65	55	7
11813	65	13	7
11819	62	19	4
11878	66	31	7



Δt matrix = 56 m sec / ft.

Fig: 7
Drawing No.: 8152

APPENDIX 2

WELL VELOCITY SURVEY (by J. Frazer)

On 29th March 1974 the Ross Creek - 1 Well Velocity Survey was conducted at an intermediate casing depth by personnel from Austral United Geophysical. Small dynamite charges in the mud pit were the primary energy source. Two well geophones were used, a velocity sensitive wall-lock type and a pressure sensitive type.

Good breaks were obtained for all levels and all check shots tied. A T-Z (encl. 10) curve was computed using the integrated sonic log tied to velocity survey shots.

An uphole survey and a tie shot with the well geophone near sea level were used for weathering and datum corrections.

SURVEY INFORMATION

Date of Survey	29th March, 1974
Interval Surveyed	500' to 8874' BDF
Number of Shots	23
Levels Shot	13
Levels Checked	6
Charge Size	10 lb. in shot holes 1 lb. in mud pit.
Depth of Shot	100' in shot holes 1 to 3' in mud pit
Equipment	Amplifiers - PT100 (SIE) Well Geophones - Wall-lock velocity sensitive (geospace), WLS-1000 - Pressure sensitive, SSC-100 Reference Geophones - HSJ-14 Cable - Schlumberger Explosives - Anzite Blue Gelignite - Boosters and Detonators Drill - "Foxmobile"
Personnel	Observer - John Larsen Shooter - Gary Mathews
Trace Arrangement	Trace No. 1 - Well Geophone - high gain Trace No. 2 - " " - medium gain Trace No. 3 - " " - low gain Trace No. 4 - Reference Geophone Trace No. 5 - Uphole Geophone Trace No. 6 - Timebreak Trace No. 7 - 100 HZ Reference Signal

OPERATIONS

Three holes were drilled near the well, two to 100' for check shots and one to 150' for uphole shots. Their position and the location of the mud pit shots is indicated on the enclosed shot location diagram (figure 3).

As the velocity wall-lock geophone was run into the hole 15 shots were taken at 12 levels from 1240' BDF to 8874' BDF (bottom hole) from the mud pit using 1 lb. charges at a depth of about 2'. On the way out another 6 shots were taken including two shots of 10 lbs. at 100' from the shot holes checking the 8300' BDF level.

The pressure sensitive geophone was then run in to the hole to find the datum correction (previous experience with the "velocity" geophone showed that casing breaks obscure formation arrivals at shallow levels). A level near 1240' BDF was reshot to check that times recorded with both geophones would tie, then the 500' BDF level (near datum) was shot.

A 150' uphole survey and a reversed refraction spread were then recorded for near surface velocity data (figure 4).

COMPUTATIONS

Corrected times for each level were computed, using a standard form (table 7). These times were plotted against depth below sea level and the T-Z curve computed from integrated sonic times was tied to the 6720' level. Interval velocities from the integrated sonic times were then plotted (encl. 10).

CONCLUSIONS

For future surveys on land, it is recommended that small charges in the mud pit be used in conjunction with at least one shot from a deeper level for control. It is recommended that the use of the wall-lock geophone be restricted to deeper levels as opening and closing the arm takes quite a large proportion of the total time in the hole. If it is necessary to run the wall-lock geophone at least two previous levels should be checked.

PE907116

This is an enclosure indicator page.
The enclosure PE907116 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907116 has the following characteristics:

ITEM_BARCODE	= PE907116
CONTAINER_BARCODE	= PE902301
NAME	= Well Velocity Calculation Form
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Well Velocity Calculation Form (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

OBSERVERS LOG

ROSS CREEK - 1
Date of Survey 2/6/74

A. Well Velocity Survey

Record Number	Geophone Depth (kb)	Shot Depth	Charge (lb)	Time	Remarks
1	1240	1	1	1200	Velocity wall-lock geophone
2	1650	2	1	1210	
3	2400	2	1	1220	
4	2400	2	1	1225	
5	2670	2	1	1240	
6	3500	2	1	1255	
7	4000	2	1	1305	
8	4700	2	1	1315	
9	5020	2	1	1330	
10	5700	2	1	1350	
11	6720	2	1	1410	
12	7700	3	1	1430	
13	7700	3	1	1445	
14	8300	3	1	1500	
15	8874	3	1	1510	
16	8300	100	10	1600	Shothole to West
17	8300	100	10	1620	" " " East
18	6720	3	1	1635	
19	4700	3	1	1650	
20	4700	3	1	1705	
21	3500	3	1	1720	
22	1200	3	1	1820	Pressure Geophone
23	500	3	1	1830	" "

B. Uphole survey commenced 2000, completed 2040.

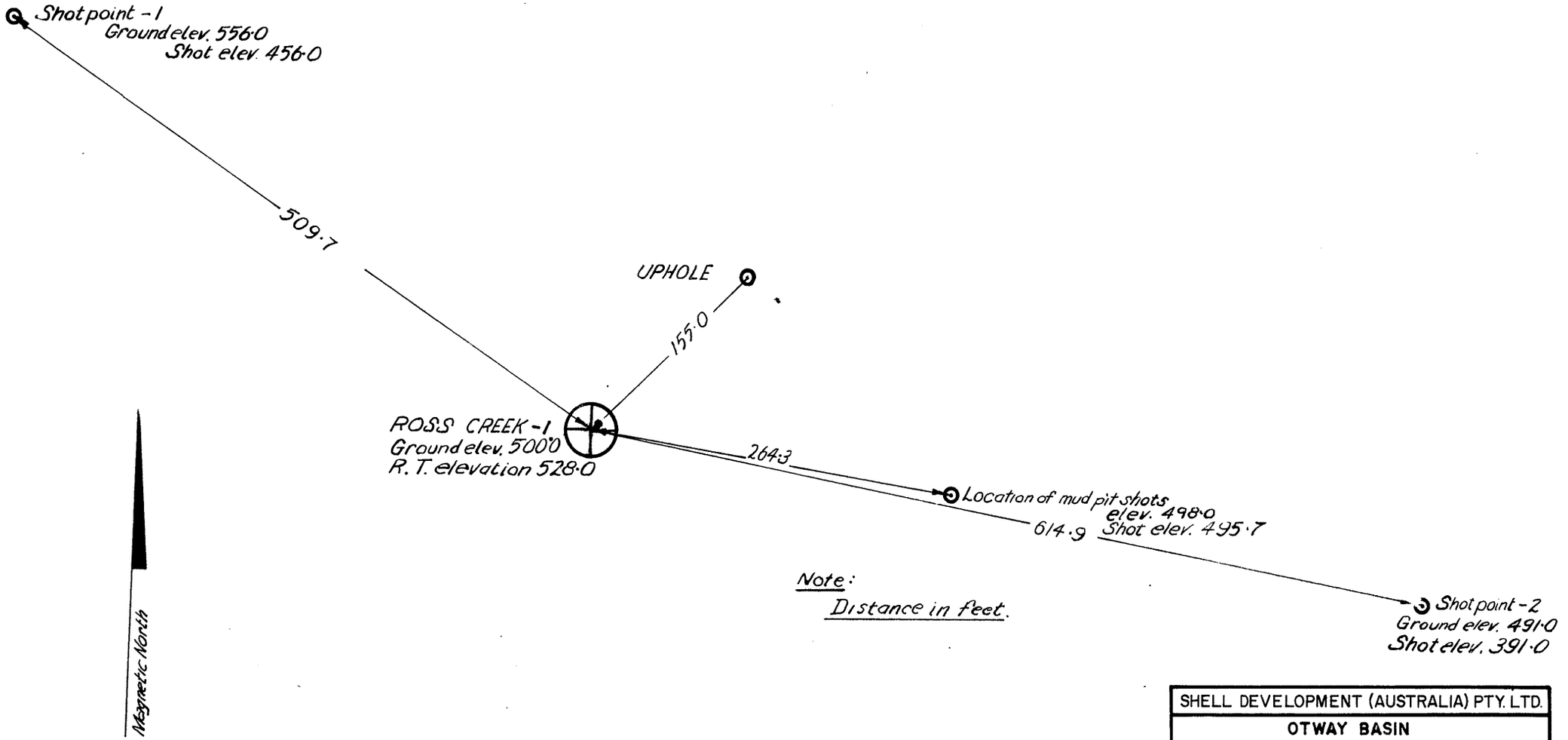
shots 11
levels 10,20,30,40,50,60,70,90,110,130,150.
charge 1 booster

C. Refraction survey commenced 2400, completed 230.

shots 2
charges 5 boosters
geophones 12
interval 50'

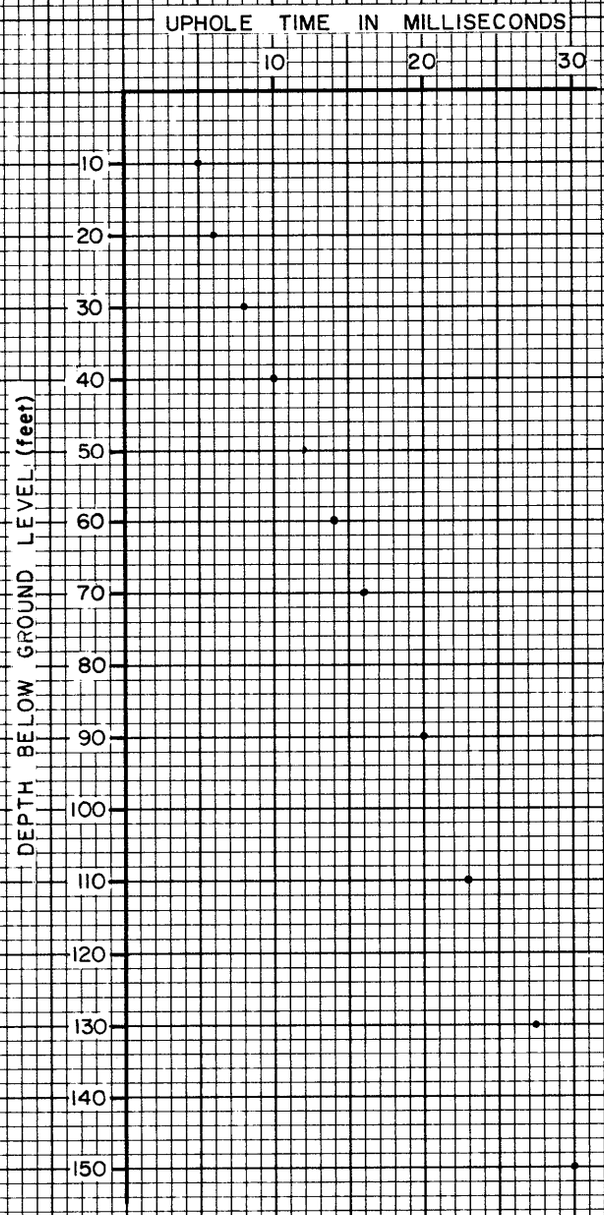
OBSERVER: J. Larsen
SHOOTER: G. Mathews

TABLE 6.



SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.		
OTWAY BASIN		
ROSS CREEK — 1 SHOT LOCATION DIAGRAM		
Author · S. Aust. Team		Date: July 1974
Report No: SDA 184	Fig. 3	Draw No.: 8092

UPHOLE SURVEY
ROSS CREEK-1



Author: S. Aust. Team	Date: July 1974	Fig. 4.
Report No: S.D.A. 184	Drawing No: 8093	

APPENDIX 3

SIDEWALL SAMPLES DESCRIPTION

- 1250' mudstone; dark green, silty, loaded with chloritic pellets.
- 1320' mudstone idem 1250'
- 1425' mudstone idem 1250'
- 1534' siltstone; green to grey, chloritic pellets
- 1620' siltstone; dark brown, loaded with limonitic ooliths and chloritic pellets.
- 1658' mudstone; dark brown, silty.
- 2198' sandstone; grey, fine, clayey.
- 2393' sandstone idem 2198'
- 2506' sandstone idem 2198'
- 2670' mudstone, light green
- 2745' mudstone idem 2670'
- 2830' mudstone idem 2670'
- 2930' siltstone; grey, clayey, presence of feldspar and lithic elements.
- 3010' mudstone; light green
- 3104' mudstone idem 3010'
- 3148' siltstone; green, clayey
- 3210' sandstone; dark grey, fine, clayey, presence of carbonaceous material and lithic elements.
- 3310' sandstone idem 3210'
- 3316' mudstone; dark grey, silty
- 3363' sandstone; green, fine, clayey, abundant lithic components.
- 3396' sandstone idem 3363'
- 3411' sandstone idem 3363'
- 3455' sandstone; fine, green, clayey, abundant lithic components, presence of feldspar.
- 3502' sandstone idem 3455'
- 3520' sandstone idem 3455'
- 3570' sandstone idem 3455'
- 3611' mudstone; green
- 3728' sandstone; light green, fine grained, angular to subangular, moderately sorted; moderately hard; composed of lithic fragments (mainly volcanic), feldspar and quartz; silty matrix.
- 3810' sandstone idem 3728' but medium grained and dark green.
- 3823' sandstone idem 3728' but dark green.
- 3996' sandstone idem 3728'
- 4165' siltstone; dark green
- 4286' mudstone; light green
- 4504' mudstone idem 4286'
- 4602' siltstone; medium grey

APPENDIX 5

PALYNOLOGICAL REPORT (by J.G. Wilschut)

SUMMARY

Palynological investigations predominantly of sidewall samples taken in well Ross Creek-1 have resulted in the recognition of Aptian to Upper Paleocene strata.

No age determinations could be made in the well section above 1250' where no sidewall samples were available and below 11650' where sidewall samples proved barren.

A major hiatus between Lower and Upper Cretaceous could be determined. The Tertiary/Cretaceous contact could not be studied in detail due to a wide sample gap.

For a significant hiatus on seismic evidence present in the Lower Cretaceous no time break could be established.

The investigations confirmed environmental evidence observed in earlier wells in the basin.

INTRODUCTION

A total of 95 sidewall samples suitable for palynological investigations were analysed in well Ross Creek-1. They were complimented by 2 ditch cuttings and one junk basket core. All investigated samples are listed below.

The samples were subjected to a standard chemical treatment by means of hydrochloric and hydrofluoric acid and zinc bromide. Usually one standard slide of 4 x 2 cm was counted yielding sufficient sporomorphs for identification and in only few instances had the number of slides to be increased.

Determinations were made using types published in various palynological publications on South and Southeastern Australia (see references). All determinations are plotted on a distribution chart presented in Enclosure 12 showing the actual amounts counted.

For early Cretaceous and Tertiary sediments use was made of the zonal scheme presented by Stover and Evans (Ref. 43) while in the remainder of the Cretaceous the one established by Dettmann and Playford (Ref. 34) and Dettman (Ref. 32) applies. The biostratigraphy derived from these schemes is presented in Text Figure 5 together with hiatuses determined palynologically but placed on marked lithologic breaks between the limits. To facilitate comparison with nearby wells Port Campbell 1-4, Ferguson Hill-1 and Sherbrook-1 and recently reviewed wells Eumeralla-1, North Eumerally-1 and Pretty Hill-1 a penetration chart is presented in Text Figure 6 using the same palynological criteria in these wells.

LIST OF SAMPLES STUDIED

SWS 1250'	SWS 1320'	SWS 1425'	SWS 1534'	SWS 1620'
SWS 1658'	DC 2000'	SWS 2198'	SWS 2392'	SWS 2506'
SWS 2670'	SWS 2745'	SWS 2830'	SWS 2930'	SWS 3010'
SWS 3104'	SWS 3210'	SWS 3310'	SWS 3316'	SWS 3363'
SWS 3396'	SWS 3411'	SWS 3418'	SWS 3455'	SWS 3502'
SWS 3520'	SWS 3570'	SWS 3586'	SWS 3611'	SWS 3810'

8904'	mudstone; dark green.
9006'	mudstone; grey; carbonaceous.
9136'	mudstone; grey to brown; calcareous.
9336'	siltstone; green to grey.
9625'	siltstone; light green.
9722'	siltstone; light grey.
9832'	siltstone; light green.
9911'	siltstone; light green; calcareous.
10010'	siltstone; grey; carbonaceous.
10164'	siltstone; dark grey; carbonaceous.
10319'	siltstone; grey to brown.
10386'	mudstone; dark grey.
10416'	mudstone; dark grey.
10454'	mudstone; grey to green; silty
10487'	mudstone; grey; silty.
10613'	mudstone; dark grey; carbonaceous; silty.
10677'	mudstone; dark grey; calcareous, silty.
10724'	sandstone; light green; fine grained; angular to subangular; moderately sorted; moderately hard; composed of lithic fragments, feldspar and quartz; silty matrix.
10735'	sandstone idem 10724'
10784'	mudstone, light green, silty.
10797'	mudstone idem 10784'
10820'	mudstone idem 10784'
10824'	mudstone idem 10784'
10922'	sandstone idem 10724'
10940'	mudstone idem 10784'
11031'	siltstone, light green
11123'	sandstone idem 10724'
11221'	siltstone, light grey, sandy.
11358'	mudstone, dark grey.
11516'	mudstone, light green.
11562'	sandstone; fine to medium grained; light grey; angular to subangular; moderately sorted; hard; silica cemented (overgrowths); composed of quartz and rare lithic elements.
11625'	sandstone idem 11562' but whiter and harder; composed of quartz only.
11636'	mudstone; dark grey.
11724'	sandstone idem 11625'
11752'	mudstone, grey, silty.
11764'	mudstone idem 11752'
11795'	sandstone idem 11625'
11800'	sandstone idem 11625'

APPENDIX 4

PALAEONTOLOGICAL REPORT (by D. J. TAYLOR, SYDNEY)

27 side wall cores were examined between 1250' and 3611', but no fauna was found in any of these samples. Ditch cutting samples were examined at 20' intervals (sometimes at 10' intervals) between 450' and 1200' and after that at 50' intervals to 3000'. Despite sporadically intense down-hole contamination, at least 3 biostratigraphic horizons were recognised down to 1200'. Below 1200' no new fauna was reported and the section below 1200' is believed to be barren of foraminifera. Fauna above 450' were highly contaminated and rather confusing and have been ignored. The distribution chart lists grains (including fauna) retained in a 78μ screen.

Some of the planktonic foraminifera, present as obvious contaminants, down to 1200', are indicative of the Pliocene. Such species as *Globotalia inflata, G. crassiformis* and *G. tosaensis* were recorded. This suggests Pliocene sediment at or near the surface Ross Creek-1, but the presence of Pliocene at a height of 500' above sea level is anomalous for the weak Pliocene transgression into southern Australia. However the possibility of laboratory contamination has been eliminated.

In the Ross Creek sequence, the fauna at 450' is no younger than early Miocene because of the presence of *Globigerina woodi connecta* and the total absence of the ultimate members of the *Orbulina* lineage (even as contaminants). Between 450' and 500' the fauna is no older than Zone H (basal Miocene). The environment was near-shore with deposition probably on the inner continental shelf. The percentage of planktonic foraminifera increased rapidly upwards (from 5% to 20%) between 500' and 450', reflecting the peak in sealevel rise at the top of the early Miocene.

No Oligocene planktonic foraminifera were identified and foraminifera were extremely rare between 500' and 740' where the sediment was dominantly quartz sand. The Oligocene may have been represented by a non-marine facies or, more likely, there was an Oligocene hiatus.

A distinct fauna, with late Eocene planktonic components, was recognised at 740'. The association of *Globigerina pseudoampliapertura, G. linaperta, G. angioporoides, Globigerapsis index* and *Chiloguembelina cubensis* is suggestive of Zone L (Taylor, REF. 1). This very thin horizon is the only one that contains a late Eocene fauna in the sequence. The sediment is silty and weakly calcareous in contrast to the high percentage carbonate sediment of Zone L in the coastal Eocene enclaves within the Otway Ranges (e.g Browns Creek - Carter, REF. 2) where the silty sediment is older (i.e. Zone N). The environment was close shore with the presence of turritellid gastropods suggesting a tidal flat. This late Eocene fauna is a short lived, marginal expression of the peak, of the late Eocene transgressive pulse which declined in the succeeding Zone K.

Only contaminants were found between 750' and 1100' which probably represents late to early Eocene deltaic sands. Between 1100' and 1200' there are rare

benthonic foraminifera, representing species described by McGowran (REF. 3) from the lower Eocene and Paleocene outcrops of the Otway Basin. Most of this fauna was associated probably with the "Rivernook" ingressive event at the base of the early Eocene (Taylor, REF. 1). The environment was lagoonal.

No fauna older than early Eocene was found.

The Ross Creek sequence is an extremely marginal one as the three marine events present represent only the transgressive maxima of Bock & Glenie's (REF. 4) transgressive-regressive cycles 2, 3 and 4.

REFERENCES

REF. 1. TAYLOR, D. J., 1971. Foraminifera and the Cretaceous and Tertiary depositional history in the Otway Basin in Victoria. *Geol. Surv. South Aust. & Vict., Spec. Bull*; 217-234.

REF. 2. CARTER, A. N., 1958. Tertiary foraminifera from the Aire District, Victoria. *Geol. Surv. Vict., Bull.* 55.

REF. 3. McGOWRAN, B., 1965. Two Paleocene foraminiferal faunas from the Wangerrip Group, Pebble Point coastal section, western Victoria. *Proc. Roy. Soc. Vict.*, 79; 9-74.

REF. 4. BOCK, P. E., & GLENIE, R. C., 1965. Late Cretaceous and Tertiary depositional cycles in south western Victoria. *Proc. Roy. Soc. Vict.*, 79; 153-163.

- 4747' siltstone; light green
- 4870' siltstone; dark grey; carbonaceous
- 4950' sandstone; light green to light grey; very fine grained; composed of lithic fragments; feldspar and quartz; silty matrix; presence of carbonaceous matter.
- 5066' mudstone; dark grey; carbonaceous.
- 5154' mudstone; light green.
- 5264' mudstone; light grey.
- 5349' mudstone; dark grey; carbonaceous.
- 5460' mudstone; light green.
- 5588' siltstone; light grey; kaolinitic
- 5720' sandstone; light grey; fine grained; angular to subangular; moderately sorted; moderately hard; composed of lithic fragments; feldspar and quartz; sily, kaolinitic matrix; presence of carbonaceous matter.
- 5805' mudstone; light green.
- 5905' sandstone idem 5720'
- 6032' sandstone idem 5720'
- 6232' mudstone; light green
- 6379' siltstone, light grey, sandy
- 6442' mudstone; light green
- 6552' mudstone; light green
- 6749' mudstone; light green
- 6963' mudstone; light green
- 7049' siltstone; dark green
- 7155' siltstone; dark green
- 7261' mudstone; light green
- 7378' mudstone; light green
- 7486' mudstone; light green
- 7610' siltstone; light green
- 7728' siltstone; light grey
- 7815' sandstone; light grey; fine grained; angular to subangular; moderately sorted; friable; composed of lithic fragments, feldspar and quarts; silty matrix.
- 7956' siltstone; light green
- 8088' mudstone; light green
- 8092' siltstone; light grey
- 8199' mudstone; black; lightly carbonaceous.
- 8378' mudstone; light green.
- 8490' sandstone idem 7815'
- 8706' siltstone, dark grey, calcareous.
- 8801' siltstone; light grey.
- 8831' siltstone; light grey; calcareous.

PE907117

This is an enclosure indicator page.
The enclosure PE907117 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907117 has the following characteristics:

ITEM_BARCODE	= PE907117
CONTAINER_BARCODE	= PE902301
NAME	= Distribution Chart
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Distribution Chart (Figure 6 from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE900507

This is an enclosure indicator page.
The enclosure PE900507 is enclosed within the container PE902301 at this location in this document.

The enclosure PE900507 has the following characteristics:

ITEM_BARCODE	= PE900507
CONTAINER_BARCODE	= PE902301
NAME	= Distribution Chart
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Ross Creek-1 Distribution Chart of Sporomorphs and Microplankton (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE900508

This is an enclosure indicator page.
The enclosure PE900508 is enclosed within the container PE902301 at this location in this document.

The enclosure PE900508 has the following characteristics:

ITEM_BARCODE	= PE900508
CONTAINER_BARCODE	= PE902301
NAME	= Distribution Chart
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Ross Creek-1 Distribution Chart of Microfaunas (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

TEXT FIGURE 5

BIO-STRATIGRAPHY ROSS CREEK-1

(based on palynological data)

0' - 1245'		no data, no sidewall samples available.
1250' - 1658'		Upper Paleocene
disconformity	~~~~~~~~~~~~	circa 1680'
1680' - 2198'		no data, no sidewall samples available coal in cutting samples barren.
2198' - 2506'		Santonian - Coniacian
disconformity	~~~~~~~~~~~~	circa 2670'
2670' - 7378'		Albian
7486' - 11636'		Aptian
disconformity	~~~~~~~~~~~~	circa 10420' (on seismic evidence only)
11752' - 12005'	(TD)	Lower Cretaceous (? Aptian).

SWS 4165'	SWS 4286'	SWS 4504'	SWS 4602'	SWS 4747'
SWS 4870'	SWS 4950'	SWS 5066'	SWS 5154'	SWS 5264'
SWS 5349'	SWS 5460'	SWS 5588'	SWS 5720'	SWS 5805'
SWS 6232'	SWS 6379'	SWS 6442'	SWS 6552'	SWS 6749'
SWS 6963'	SWS 7049'	SWS 7155'	SWS 7261'	SWS 7378'
SWS 7486'	SWS 7610'	SWS 7728'	SWS 7815'	SWS 7956'
SWS 8088'	SWS 8092'	SWS 8199'	SWS 8378'	SWS 8490'
SWS 8600'	SWS 8706'	SWS 8904'	SWS 9006'	SWS 9136'
SWS 9336'	JBC 9665'	SWS 9722'	SWS 9832'	SWS 9911'
SWS10164'	SWS10319'	SWS10386'	SWS10416'	SWS10454'
SWS10487'	SWS10613'	SWS10677'	SWS10735'	SWS10784'
SWS10797'	SWS10820'	SWS10824'	SWS10940'	SWS11031'
SWS11221'	SWS11358'	SWS11516'	SWS11562'	SWS11636'
SWS11752'	SWS11764'	DC12005'		

For lithological descriptions see under Appendix 3.

MICROFLORAL SUBDIVISION

Generally speaking samples were fair to very rich with the exception of those in the Upper Cretaceous interval and below 11640' in the well. Below 10500' carbonisation of sporomorphs gradually limits identification.

Reworked sporomorphs from Permian-Triassic were noted in a considerable number of samples of Cretaceous and Tertiary age indicating at least partly the source material for these sediments. They have not been included in the counts and as a result are not represented on the distribution chart.

Only the Tertiary, Upper Cretaceous and the uppermost part of the Lower Cretaceous sediments contained some microplankton although often very scarce. In the thick Lower Cretaceous section below 3300' no microplankton was noticed at all despite special efforts to detect it.

On basis of the microfloras determined the following subdivisions could be established (from young to old):

1250' - 1658' Upper Paleocene

This interval was generally rich in sporomorphs. Microplankton occurred regular. Significant sporomorphs recorded are:

Camarazonosporites amplus, Dilwynites granulatus, D. tuberculatus, Latrobosporites crassus, Nothofagidites brachyspinuLosus, N. emarcidus, Ornamentifera sentosa, Parvisaccites catastus, Peromonolites densus, Proteacidites crassus, Stepnanopollenites obscurus, Tricolpites gillie, T. fissilus, T. pachyexinus, T. pannosus, Triorites edwardsii, Tripunctisporites sp.

Microplankton species recorded are:

Achomosphaera ramulifera, Cyclonephelium retiintextum, Deflandrea dilwynensis, D. medcalfi, Diphyes colligerum, Kenleyia fimbriata, Paralecaniella sp., Wetzeliella articulata.

The microfloras in this interval compare with those described from Paleocene outcrops in the Princetown area of Victoria (Harris, Ref. 36). Triorites edwardsii is not observed in quantities in this interval and Triorites harrisii was absent. Co-occurrences of Triorites edwardsii and Cupaneidites orthoteidius were not observed. The presence of Dilwynites granulatus and Tripunctisporite sp. in the deepest sample at 1658' and the absence of Tricolpites longus still indicate an Upper Paleocene at that depth.

MICROFLORAL ZONATION : LYGISTEPOLLENITES BALMEI ZONE

DEPOSITIONAL ENVIRONMENT : LAGOONAL - NEAR SHORE FACIES

No sidewall samples could be taken in the interval 1680' - 2190' due to washouts of the coarse sandstones in this interval. Coal particles present were floated off the cuttings but unfortunately did not contain sporomorphs. On lithological grounds the interval is regarded to belong to the Curdies formation of Upper Cretaceous age.

2198' - 2506' Santonian-Coniacian

Samples in this interval were generally poor in part due to unfavourable lithologies. Poor microplankton was also observed. Significant sporomorphs recorded are:

Camarozonosporites amplus, Ornamentifera sentosa, Proteacidites parvus, P.cf rectomarginus, Stephanopollenites obscurus, Tricolpites gillie, T. pachyexinus, T. pannosus.

Microplankton species recorded are:

Deflandrea sp., Hystrichosphaeridium conjunctum, Nelsoniella aceras, Odontochitina operculata, Spiniferites furcata.

Microplankton species Odontochitina operculata was found throughout indicating the interval to be of a Campanian or older age. Tricolpites lillie and Nothofagidites senectus were not observed pointing to the absence of the upper two Mesozoic zones (Nothofagidites microflora of Dettmann '69). Uppermost Cretaceous sediments could, however, be present in the sandy interval mentioned above which prevented deliniation of the Cretaceous/Tertiary boundary. The interval contains a number of types such as Camarozonosporites amplus and Tricolpites pachyexinus which do not occur in underlying Upper Cretaceous zones any more.

MICROFLORAL ZONATION : TRICOLPITES PACHYEXINUS ZONE

DEPOSITIONAL ENVIRONMENT : NEAR SHORE FACIES

2670' - 7378' Albian

With only few exceptions most samples were fair to rich in sporomorphs. A few microplankton specimen, e.g. Ascodinium parvum and Odontochitina operculata together with Veryhachium spp were observed only in the top part of this interval down to 3210'. Below this depth no microplankton was observed any more. Significant sporomorphs recorded are:

Aequitriradites spinulosus, Cicatricosisporites hughesi, C. ludbrooki, C. pseudotripartitus, Classopollis spp, Coptospora sp. A, C. paradoxa, Coronatispora perforata, C. telata, Cribelosporites striatus, Densoisporites velata, Dictyophylledites concavus, Dictyotosporites complex, Foraminisporis asymmetricus, F. dailyi, F. wonthaggiensis, Ischyosporites punctatus, Krauselisporites major, Klukisporites scaberis, Leptolepidites major, L. verrucosus, Pilosisporites grandis, P. notensis, Rouseisporites reticulatus, R. simplex, Schizosporis parvus, Trilobosporites trioreticulatus.

The first introduction of angiospermous elements in the microfloras is observed in the upper part of this interval, allowing for the recognition of the Tricolpites pannosus zone. A regular feature of the microfloras is Cicatricosisporites australiensis, often in dominating quantities.

Trilobosporites trioreticulatus was found regular down to 5460', Pilosisporites grandis only scattered between 5264' and 5805'. Below 6749' Pilosisporites notensis was observed regularly extending its range into the underlying zones. A few specimens of Dictyotosporites speciosus which indicated the underlying zone of that name were found below 6936'. A hiatus at the top of this interval is indicated by the absence of the overlying Appendicisporites distocarinatus and Clavifera triplex zones. The absence of Appendicisporites distocarinatus from this interval could indicate the absence of the uppermost part of the Tricolpites pannosus zone too.

MICROFLORAL ZONATION : 2670' - 3210' TRICOLPITES PANNOSUS ZONE
3310' - 3586' ?COPTOSPORA PARADOXA ZONE
3611' - 7155' COPTOSPORA PARADOXA ZONE
7161' - 7378' DICTYOTOSPORITES SPECIOSUS ZONE
(CRIBELOSPORITES STRIATUS SUB ZONE)

DEPOSITIONAL ENVIRONMENT : CONTINENTAL, WITH POSSIBLY MARGINAL MARINE INFLUENCES IN THE UPPERMOST PART

7486' - 11636' Aptian

Samples in this interval were in general rich in sporomorphs. However carbonisation which gradually increases as from 10500' influences the preservation and greatly hampered identification in the deeper part of the interval. No microplankton has been observed. Significant sporomorphs are:

Contignisporites cooksonii, Cooksonites variabilis, Cyclosporites hughesi, Dictyotosporites filosus, D. speciosus, Foraminispora asymmetricus, Januasporis spinulosus, Pilosisporites notensis Rouseisporites reticulatus, Schizosporis reticulatus, Trilobosporites purverul, Tsugaepollenites dampieri, Velosporites triquetrus.

Cicatricosisporites australienesis occurs in most samples although in much lesser frequencies than in the overlying Albian strata. Pilosisporites notensis occurs regular and has a base occurrence at 10784'. An overlap of the ranges of Cribelosporites striatus and Cyclosporites hughesi in the top section of this interval is noted. Dictyotosporites filosus, usually only present in the upper part of the Cyclosporites hughesi subzone was observed as deep as 10784'. Murospora florida which indicates amongst others approximately the top Neocomian was not observed.

Seismic records indicate a hiatus intersected in this well at 10420'. Palynological investigations were unable to detect any break in the sequence at that level although a weak darkening of sporomorphs was observed from 10500' downwards.

MICROFLORAL ZONATION : DICTYOTOSPORITES SPECIOSUS ZONE
(FORAM ASYMMETRICUS/ROUS RETICULATUS UNIT)

DEPOSITIONAL ENVIRONMENT : CONTINENTAL

11752' - 12005' (TD) Lower Cretaceous (?Aptian)

Sidewall samples in this interval were poor in part due to reasons mentioned before. Cicatricosisporites australiensis is still present indicating that the well bottomed in Lower Cretaceous sediments. The absence of any microfloral change with the previous interval would still suggest an Aptian age at total depth.

CONCLUSIONS

All suitable sidewall samples analysed in well Ross Creek-1 contained microfloras and only few samples proved barren or practically so.

The Tertiary section studied palynologically entirely belonged to the Upper Paleocene which reaches a thickness of ± 400'. No Lower Paleocene or Maastrichtian sediments could be determined. Unfavourable facies conditions could be responsible for this as a wide sample gap between 1680' and 2190' limits palynological control there.

Over 300' of Santonian-Coniacian sediments could be established in the well. In view of the uniform development they may represent only a very short time period which, due to the broad nature of the palynological zonation, could not be detailed. Cenomanian-Turonian strata were absent.

Lower Cretaceous sediments represent over 9300' of section in the well, which at total depth, was still in the upper part of the Lower Cretaceous. The section consists entirely of continental deposits and only in its upper 500' do sparce microplankton indicate possible marginal massive influences.

A number of important regional hiatuses were recognised in the well. Sedimentation during Aptian - Albian times is believed continuous as for the only clearly indicated hiatus on seismic evidence no time gap could be determined palynologically.

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APPENDIX 6

WEEKLY DRILLING REPORTS

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD	PERMIT: PEP-6 Ross Creek-1 WELL
WEEKLY DRILLING REPORT No 1-3 from 25-1 to 14-2-74	RIG NAT. 1320 DE.

R T. Elevation ft above MSL

Sea Bottom Depth ft below MSL

CASING

Size						
Depth						

DATE	DEPTH (PROGRESS) (feet)	MUD			OPERATIONS
		Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	
		pH	oil (%)	Cl (ppm)	
25/1					Moving rig from North Lumeralla-1 to Ross Creek location since 17.30 hrs. on 25th January, 1974.
14/2					

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek-1 WELL

WEEKLY DRILLING REPORT No. 4 from 15-2 to 22-2-74 | RIG NAT, 1320 DE

R.T. Elevation ± 500 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"					
Depth	1220'					

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	MUD Viscosity (MF secs) / oil (%)	MUD Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
15-2 16-2 17-2					Completed rig move. Total time moving rig 572½ hours.
18-2	246 (219)	8.8 8.0	42 NIL	22 250	Spudded Ross Creek-1 at 1400 hrs. on 18th February, 1974. Drilled to 246' with controlled drilling rate.
19-2	1008 (762)	9.1 8.0	41 NIL	19 250	Drilled to 1008' with controlled drilling rate.
20-2	1225	9.2	45	20	Drilled to 1225'. Made wiper trip. Ran 29 joints 20" 94 lb/ft. H-40 casing, to 1220'. Ran 3½" tubing stinger to 1160'.
21-2	1225	9.2	53	22	Cemented with 1200 sx class A cement + 2% prehydrated bentonite + 1% $CaCl_2$, slurry weight 13.3 lbs/gal. Tailed in with 200 sx class A cement + 1% $CaCl_2$, slurryweight 15.6 lbs/gal. Good cement returns at surface. Waited on cement 7 hrs. Pulled 3½" tubing stinger. Backed off landing joint. Nipplod up 20" Hydril.

DRILLING ASSEMBLIES

NO.1(RR) 26" OSC3A + 3 DC 10" + 6 DC 7¾" + 6 H/DP + 5" DP.

BIT RECORD

BIT.NO.	SIZE & TYPE	JOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET.V.L	ANN.V.L	PRESSURE
1(RR)	26" OSC3A	10	120	1198	41	29	65x6½	conv.	20	350
										CONDITION T4B601/8

CHEMICAL CONSUMPTION

Bentonite 180
Caustic Soda 7
Spersene 7
D-D Compound 1
Calcium Chloride 28
Class A Cement 1400

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 ROSS CREEK | WELL 1

WEEKLY DRILLING REPORT No. 5 from 22-2- to 28-2-74 | RIG NAT. 1320 DE

R.T. Elevation ±500 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220	3691				

DATE	DEPTH (PROGRESS) (feet)	MUD			OPERATIONS
		Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	
		pH	oil (%)	Cl (ppm)	
22-2	1827 (602)	9.3 10.0	42 NIL	19 250	Nippled up Hydril. Ran 17½" bit NO.2. Located top cement at 1190'. Successfully tested casing, Hydril choke line and all valves to 500 psi. Drilled cement and shoe. Drilled to 1827'.
23-2	2619 (792)	9.3 10.0	38 NIL	18 250	Drilled to 2485'. Ran 17½" bit NO.3. Drilled to 2619'.
24-2	3350 (731)	9.3 9.0	40 NIL	16 250	Drilled.
25-2	3695 (345)	9.3 9.0	52 NIL	18 250	Drilled to 3468'. Ran 17½" bit NO.4. Reamed 50' to bottom. Drilled to 3695'. Made check trip to 20" shoe. Circulated clean.
26-2	3695 (NIL)	9.3 9.0	50 NIL	18 250	Schlumberger ran LL-9(D)+SP 3678' - 1220' FDC + CAL 3689' - 1220' GR 3682' - 30' BHC 3682' - 1220' Took 1 gun sidewall samples. Fired 30, lost 2, recovered 28. Rigged down Schlumberger. Ran in for wiper trip.
27-2	3700 (5)	9.3 9.0	52 NIL	18 250	Reamed 40' to bottom. Drilled to 3700'. Ran 95 joints 13 3/8" 68 lb/ft. J55 casing, with shoe at 3691'. Cemented with 1800 sx class A + 2% prehydrated gel, slurry weight 13.3 lbs/gal. Tailed in with 200 sx class A, slurry weight 15.6 lb/gal. Bumped plug and successfully pressure tested casing to 2000 psi. Released pressure - float equipment O.K. WOC.
28-2	3700 (NIL)	9.3 9.0	52 NIL	18 250	Waited on cement total 10 hrs. Removed 20" Hydril, Nippling up 13 5/8" BOP's.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 ROSS CREEK WELL 1

WEEKLY DRILLING REPORT No. 5 from 22-2 to 28-2-74 | RIG NAT. 1320 DE

R.T. Elevation +527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	

DRILLING ASSEMBLIES

NO.2 17½" S3TJ + 3x10" DC + 6x7¾" DC + 6 HWDP + 5" DP.

NO.3 17½" OSC3AJ + 3x10" DC + 6x7¾" DC + 6 HWDP + 5" DP.

NO.4 17½" T3AJ + 3x10" DC 6x7¾" DC + 6 HWDP + 5" DP.

BIT RECORD

BIT NO.	SIZE & TYPE.	WOB 1000lbs	RPM	FOOT-AGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI	CONDITION T-B-G
2	17½"S3TJ	10-15	120	1260	21½	59	65x 6¾"	335	48	1250	4-6-0
3	17½"OSC3AJ	20	120	983	29¾	33	65x 6¾"	295	48	1100	4-4-0
4	17½"T3AJ	15-20	120	227	5¼	43	65x 6¾"	295	48	1100	1-1-0

CHEMICAL CONSUMPTION

Bentonite	120
Barytes	110
Spersene	7
Caustic Soda	9
Soda Ash	8
D-D Compound	½
Class A Cement	2000sx x 94lbs.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 ROSS CREEK WELL 1

WEEKLY DRILLING REPORT No. 6 from 1-3- to 7-3-1974 | RIG NAT. 1320 DE

R T. Elevation ± 527 ft above MSL

See Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	MUD Viscosity (MF secs) / oil (%)	MUD Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
1-3	3700 (NIL)	9.3 9.0	52 NIL	18 250	Nippled up BOP's. Successfully tested piperams blind rams, Hydril, choke and kill lines, all valves and upper and lower kelly cocks to 3000 psi. Layed down 6 joints damaged HWDP. Picked up 6 x 7¾" DC + 6 x 7" DC.
2-3	3940' (240)	9.2 10.5	38 NIL	18 250	Picked up 6 x HWDP. Ran 12¼" bit NO. 5. Tagged top cement at 3642'. Drilled shoetrack. Drilled to 3726'. Made formation intake test. Pumped away 1½ bbls at 750 psi. Equivelent to 0,686 psi/ft. gradient. Drilled to 3940'.
3-3	4167 (220)	9.3 10.0	40 NIL	16 250	Drilled to 4167'. Pulled out of hole. Ran in hole 13 3/8". RTTS packer and set at 650'. Pressure tested casing and casing head housing nipple to 1000 psi for 15 mins - O.K. Cemented 13 3/8"/20" annulus with 60sx class A + 3% $CaCl_2$ at 40'. Ran 12¼" bit NO.6 with bottom hole assembly.
4-3	4375 (208)	9.1 10.0	38 NIL	12 250	Reamed 270' to bottom. Drilled to 4375'.
5-3	4760' (385)	9.1 10.0	39 NIL	11 250	Drilled to 4481'. Ran 12¼" bit NO.7. Drilled to 4760'.
6-3	5166' (406)	9.3 9.2	43 NIL	8.2 250	Drilled to 5166'. Pulling out.
7-3	5557' (391)	9.4 9.5	43 NIL	7.8 250	Ran 12¼" bit NO.8 and modified bottom hole assembly. Drilled to 5557'. Drilling.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD	PERMIT: PEP-6 ROSS CREEK WELL 1
WEEKLY DRILLING REPORT No. 6 from 1-3- to 7-3-1974	RIG NAT. 1320 DE

R T Elevation ±527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	

DRILLING ASSEMBLIES

NO.5 12¼" OSC 3AJ + 12 x 7¾" DC + 6 x7" DC + 6 x HWDP + 5" DP.

NO.6 12¼" J-33 + stab. + 1x7¾" DC + stab. + 4x7¾" DC + stab. + 7x7¾" DC + 6x7"DC+ 6 x HWDP + 5" DP.

NO.7 12¼" XDG + stab. + 1x7¾" DC + stab. + 4x7¾" DC + stab. + 7x7¾" DC + 6x7" DC+ 6 x HWDP + 5" DP.

NO.8 12¼" XDG + 2x7¾" DC + stab. + 2x7¾" DC + 8x7¾" DC + 6x7" DC + 6xHWDP + 5"DP.

BIT RECORD

BIT.NO	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI	CONDITI T-B-G.
5	12¼"OSC 3AJ	15-20	100	467	18¼	25	50x 6¾"	350	82	2200	3-3-0
6	12¼"J33	40	40	314	23¾	13	60x 6¾"	340	97	1600	1-1-0
7	12¼"XDG	35	120	685	30¼	22	65x 6¾"	425	105	2100	3-3-0
8	12¼"XDG	37	120	391	18	18	65x 6¾"	425	105	2200	Drilling

CHEMICAL CONSUMPTION

Bentonite	296
Caustic Soda	11
Spersene	14
D-D Compound	½
Barytes	70
Soda Ash	6
CMC	62
Class A cement	60
Calcium chloride	3

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 7 from 8-3- to 14-3-74 | RIG NAT. 1320 DE

R T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	MUD Viscosity (MF secs) / oil (%)	MUD Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
8-3	5788 (231)	9.4 9.5	43 NIL	7.6 250	Drilled to 5788'. Ran 12¼" bit No. 9 to shoe. Hung string in casing head housing. Successfully repaired Hydril hydraulic seals.
9-3	5806 (18)	9.4 9.7	41 NIL	7.8 250	Repaired Hydril. Successfully tested to 2000 psi. Washed 30' to bottom. Drilled to 5806'. Lost 400 psi pump pressure. Pulled out of hole checking string. Layed out washed out 7¾" DC. Picked up 1x7¾" DC. Ran bit No. 9 breaking all DC's.
10-3	6242 (436)	9.5 9.7	42 NIL	7.7 250	Reamed last 30' to bottom. Drilled to 6242'.
11-3	6430 (188)	9.5 9.0	40 NIL	8.0 250	Drilled to 6319'. Ran 12¼" bit No. 10 (6RR). Drilled to 6430'.
12-3	6745 (315)	9.5 9.5	40 NIL	7.5 250	Drilled.
13-3	6908 (163)	9.5 9.7	38 NIL	8.0 250	Drilled to 6908'. Pulling out.
14-3	7101 (193)	9.5 10.0	48 NIL	7.0 250	Ran 12¼" bit No. 11. Washed 30' to bottom. Drilled to 7101'. Drilling.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD	PERMIT: PEP-6 Ross Creek	WELL 1
WEEKLY DRILLING REPORT No. 7 from 8-3- to 14-3-74		RIG NAT. 1320 DE

R.T. Elevation ±527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	

DRILLING ASSEMBLY

No.8 12¼" XDG + 2x7¾" DC + STAB + 2x7¾" DC + STAB + 8x7¾" DC + 6x7" DC + 6HWDP + 5"DP.

NO.9 12¼" S33 + 2x7¾" DC + STAB + 2x7¾" DC + STAB + 8x7¾" DC + 5x7" DC + 6xHWDP + 5"DP.

No.10 (6RR) 12¼" J33 + 2x7¾" DC + STAB + 2x7¾" DC + STAB + 8x7¾" DC + 5x7" DC + 6xHWDP + 5" DP.

No.11 12¼" XDG + 2x7¾" DC + STAB + 2x7¾" DC + STAB + 8x7¾"DC + 5x7"DC +6xHWDP + 5" DP.

BIT RECORD

BIT NO.	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET.VEL FT/SEC	ANN.VEL FT/MIN	PRESSURE PSI	CONDIT.
8	12¼"XDG	37	120	622	31½	20	65x6¾"	425	105	2200	4-4-0
9	12¼"S33	40	100	531	29	18	65x6¾"	425	105	2250	4-6-0
10(6RR)	12¼"J33	50	50	589	56	10	60x6¾"	390	98	2000	3-3-0
11	12¼"XDG	40	100	Drilling	Drilling	11	60x6¾"	390	98	2000	Drilling

CHEMICAL CONSUMPTION

Bentonite	377
Barytes	40
Spersene	56
CMC	54
Caustic	21

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 8 from 15-3- to 21-3-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	MUD Viscosity (MF secs)	MUD Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	
15-3	7257 (156)	9.5 9.7	50 NIL	7.0 250	Drilled to 7257'. Ran 12¼" bit No. 12 picking up 2 stabilizers.
16-3	7445 (188)	9.5 9.7	48 NIL	6.5 250	Reamed 60' to bottom. Drilled to 7445'.
17-3	7623 (178)	9.5 9.5	50 NIL	6.6 250	Drilled to 7623'. Repaired pumps.
18-3	7773 (150)	9.4 9.5	46 NIL	6.0 250	Drilled to 7630'. Layed out new bit and 30' stabilizer. Ran 12¼" bit No. 13. Repaired low clutch on drawworks. Drilled to 7773'.
19-3	7951 (178)	9.5 9.7	45 NIL	6.5 250	Drilled to 7951'. Ran 12¼" bit No. 14.
20-3	8042 (91)	9.5 10.0	46 NIL	6.0 250	Drilled to 8042'.
21-3	8183 (141)	9.5 10.0	45 NIL	6.2 250	Drilled to 8141'. Repaired rotary drive chain. Drilled to 8183'. Drilling.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 8 from 15-3- to 21-3-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) pH	MUD Viscosity (MF secs) oil (%)	MUD Waterloss (cc/30 mins) Cl (ppm)	OPERATIONS

DRILLING ASSEMBLIES

No.11 12¼" XDG + 2x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾" DC + 5x7" DC + 6xHWDP + 5" DP.

No.12 12¼" S84 + stab + 1x7¾" DC + stab + 1x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾" DC + 5x7" DC + 6xHWDP + 5" DP

No.13 12¼" XDG + 2x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾" DC + 5x7" DC + 6xHWDP + 5" DP.

No.14 12¼" J33 + 2x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾" DC + 5x7" DC + 6xHWDP + 5" DP.

BIT RECORD

BIT.NO	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET/VEL FT/SEC	ANN/VEL FT/MIN	PRESSURE PSI	CONDITION T-B-G
11	12¼"XDG	40	100	349	35¼	10	60x 6¾	390	98	2000	5-5-0
12	12¼"S84	50	60	373	45½	8	65x 6¾	425	105	2350	2-4-0
13	12¼"XDG	45	90	321	31¾	10	65x 6¾	425	105	2350	4-6-0
14	12¼"J33	50	60	Drilling		6	65x 6¾	425	105	2350	Drilling

CHEMICAL CONSUMPTION

Bentonite	290
Caustic Soda	19
Spersene	145
Barytes	40
CMC	12
XP-20	50

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 9 from 22-3- to 28-3-74 | RIG NAT. 1320 DE

R. T. Elevation ±527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	MUD Viscosity (MF secs) / oil (%)	MUD Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
22	8288 (105)	9.5 9.5	47 NIL	6.6 250	Drilled to 8186'. Ran 12¼" bit No. 15. Drilled to 8288'.
23	8474 (186)	9.5 9.0	46 NIL	6.5 250	Drilled to 8474'.
24	8595 (121)	9.5 9.0	47 NIL	6.5 250	Drilled to 8483'. Ran 12¼" bit No. 16. Drilled to 8595'.
25	8732 (137)	9.5 9.0	45 NIL	6.4 250	Drilled to 8732'. Pulling out.
26	8865 (133)	9.7 9.0	46 NIL	6.6 250	Ran 12¼" bit No. 17. Drilled to 8865'.
27	8887 (22)	9.7 10.0	55 NIL	6.5 250	Drilled to 8887'. Made 10 stand wiper trip. Circulated hole clean. Schlumberger ran BHC - GR 8874' - 3688'. FDC + CAL 8878' - 3688'
28	8887 (NIL)	9.7 10.0	55 NIL	6.5 250	Schlumberger ran LL9(D) + SP 8868' - 3688' Made velocity survey. ran HDT 8878' - 3688'. Took 2 guns side wall samples, fired 47, lost 2, recovered 45. Rigged down schlumberger. Making wiper trip.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 9 from 22-3- to 28-3-74 | RIG NAT. 1320 DE

R. T. Elevation +527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"				
Depth	1220'	3691'				

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	

DRILLING ASSEMBLY

No.14 12¼" J33 + 2x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾"DC + 5x7"DC + 6xHWDP +5"DP.

No.15 12¼" XDV + junk sub + 2x7¾" DC + stab + 2x7¾" DC + stab + 8x7¾" DC + 5x7"DC + 6xHWDP + 5" DP.

No.16 12¼" XDV + 2x7¾"DC + stab + 2x7¾" DC + stab + 8x7¾"DC + 5x7"DC + 6xHWDP +5"DP

No.17 12¼" XDV + 2x7¾" DC + stab + 2x7¾"DC + stab + 8x7¾"DC+ 5x7"DC + 6xHWDP +5" DP

BIT RECORD

BIT.NO	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET.VEL FT/SEC	ANN.VEL FT/MIN.	PRESSURE PSI.	CONDITION T-B-G
14	12¼"J33	50	60-70	235	40½	6	65x 6¾"	425	105	2350	8-6-0
15	12¼"XDV	40-45	100-120	297	38½	8	65x 6¾"	425	105	2350	4-6-0
16	12¼"XDV	40-45	110	249	33¼	7	65x 6¾"	425	105	2350	4-7-0
17	12¼"XDV	40	100	155	21¼	7	65x 6¾"	425	105	2350	2-4-0

CHEMICAL CONSUMPTION

Bentonite	655
Barytes	100
Spersene	60
Caustic Soda	16
XP-20	48

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 10 from 29-3 to 4-4-74 | RIG NAT. 1320 DE

R.T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) pH	MUD Viscosity (MF secs) oil (%)	MUD Waterloss (cc/30 mins) Cl (ppm)	OPERATIONS
29-3	8887 (NIL)	9.6 10.0	55 NIL	6.5 250	Made wiper trip. Circulated and conditioned mud. Pulled out of hole. Rigged up for and ran 9 5/8" casing.
30-3	8887 (NIL)	9.6 10.0	55 NIL	6.5 250	Completed running 218 joints, 47 & 43.5 lb/ft. N80 casing, shoe at 8871'. Cemented with 2300 sx Class F cement & 1% prehydrated gel & 0.2% Diacel LWL. Slurry weight 14.5 lbs/gal. Displaced with mud. Bumped plug with 1300 psi. Unable to pressure test casing due to leaking cementing head. Lifted BOP's.
31-3	8887 (NIL)	9.6 10.0	55 NIL	6.5 250	Installed slip seal assembly and set slips with 200,000 lbs. Installed 12" x 10" spool and x - bushing. Successfully tested x - bushing to 3000 psi. Installed BOP's. Schlumberger ran temperature survey - unable to locate top cement. Nippled up BOP's.
1-4	8887 (NIL)	9.6 10.0	55 NIL	6.5 250	Nippled up BOP's. Successfully tested casing and Hydril to 3000 psi. Successfully tested blind rams, pipe rams, choke abd kill lines and all valves to 5000 psi. Layed down 7 ¾" drill - collars and picked up 7" drill collars.
2-4	8887 (NIL)	9.6 10.0	55 NIL	6.5 250	Ran 8½" bit No. 18. Located top cement at 8720'. Drilled out cement and shoe. Unable to make connection due to 400 psi back pressure on drill-pipe. Circulated out. Continuous cement contamination. Drill pipe pressure reduced to 150 psi. Observed well, very slow flow on DP/ 9 5/8" annulus, suction on 9 5/8" / 13 3/8" annulus. Pumped pill. Pulled out of hole.
3-4	8887 (NIL)				Pulled out of hole. Ran in hole open ended drill pipe. Filled annulus with 62 bbls water. Closed pipe rams. Circulated down 9 5/8" casing and out 9 5/8" / 13 3/8" annulus with 500 psi at ½ bbl/min. Static pressure 400 psi. Ran in hole in stages circulating clean at 4750' + 6148' + 7785' + 8830'. Pumped down 9 5/8" / 13 3/8" annulus and circulated out cement.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 10 from 29-3 to 4-4-74 | RIG NAT. 1320 DE

R T. Elevation ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size						
Depth						

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF sec/qt)	Water loss (cc/30 min)	OPERATIONS
		pH	oil (%)	Cl (ppm)	
4-4	8871 (NIL)				Circulated out cement. Pulled back to 8327'. Closed pipe rams. Circulated down drill pipe and out 9 5/8" / 13 3/8" annulus with 600 psi at 6 bbl/min. Pumped total 200 bbls water. Recemented 9 5/8" casing with 1500 sx class A cement + 0.2% Diacel LWL + 0.1% HR-4. Slurry weight 14.6 lbs/gal. Closed in drill pipe with 1600 psi. Waiting on cement.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 11 from 5-4 to 11-4-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING					
Size	20"	13 3/8"	9 5/8"		
Depth	1220'	3691'	8871'		

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) pH	MUD Viscosity (MF sec) oil (%)	MUD Waterloss (cc/30 mins) Cl (ppm)	OPERATIONS
5-4	8887 (NIL)				Waited on cement 11½ hours. Released pressure. Pulled out drill pipe. Schlumberger ran temperature survey from hold up depth 8378'. Unable to locate top cement. Waited on cement 3½ hours. Schlumberger ran temperature survey from 8378', unable to locate top cement. Ran 8½" bit No. 18.
6-4	8900 (13)	8.9 11.0	45 NIL	13	Tagged top cement at 8735'. Washed out cement to 8758'. Drilled cement to 8769'. Schlumberger ran CBL 8735' to 4000'. Located top cement at 6572'. Rigged down Schlumberger. Ran 8½" bit No. 18. Drilled out cement, drilled to 8900'. Displaced to new mud.
7-4	9143 (243)	8.8 11.0	50 NIL	13 300	Circulated to new mud. Closed pipe rams and made formation intake test. Formation holding at .75 psi/ft. equivalent gradient. Drilled to 9143!
8-4	9364 (221)	8.8 11.0	50 NIL	12 300	Drilled to 9167'. Ran 8½" bit NO. 19. Drilled to 9364'.
9-4	9560 (196)	9.0 11.0	43 NIL	11 350	Drilled to 9462'. Ran bit No. 20. Drilled to 9560'.
10-4	9665 (105)	9.0 10.5	45 NIL	10 350	Drilled to 9665'. Lost 3 cones. Ran reverse circulation junk basket.
11-4	9665 (NIL)	9.1 9.5	45 NIL	9.0 350	Held up 4' off bottom. Reamed to bottom cut core. Pulled out of hole. No recovery. Ran bit No. 21 with junk sub. Drilled on junk. Recovered 1½ lbs junk. Ran reverse circulation junk basket & junk sub.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD	PERMIT: PEP-6 Ross Creek	WELL 1
WEEKLY DRILLING REPORT No. 11	from 5-4 to 11-4-74	RIG NAT. 1320 DE

R.T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD: Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
	DRILLING ASSEMBLY				
No.18	8½" X1G + 2x7" DC + stab + 2x7" DC + stab + 11x7" DC + 6xHWDP + 5" DP.				
No.19	8½" X1G as No. 18.				
No.20	8½" X1G as No. 18.				
No.21	8½" W7R-2J + junk sub + 2x7" DC + stab + 2x7" DC + stab + 11x7" DC + 6xHWDP + 5" DP.				

BIT RECORD.

BIT.NO	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI	CONDITION T-B-G
18	8½" X1G	30	60	280	22¾	12	55x 5¾"	360	167	1600	4-7-0
19	8½" X1G	30	60-100	295	22¾	13	55x 5¾"	360	167	1950	4-5-0
20	8½" X1G	30	65-100	203	19	11	55x 5¾"	360	167	1850	8-8-8
21	8½" W7R2J	5-10	65	NIL	2¾	-	50x 5¾"	330	154	1500	8-7-1

CHEMICAL CONSUMPTION

Bentonite	491
Caustic Soda	19
Spersene	127
Barytes	177
XP-20	66

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 12 from 12-4- to 18-4-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
12-4	9708'	9.1	40	8.5	Cut core. Recovered 6" core + 4 lbs junk.
	(43)	9.5	NIL	350	Ran 8½" bit No. 21 + junk sub. Drilled on junk. Drilled to 9708'. Ran 8½" bit No. 22 + junk sub.
13-4	9840'	9.2	46	8.8	Drilled to 9840'. Ran 8½" bit No. 23 with new
	(132)	9.5	NIL	350	bottom hole assembly.
14-4	9975'	9.2	47	8.0	Drilled to 9975'.
	(135)	9.5	NIL	350	
15-4	10057'	9.3	44	8.0	Drilled to 10004'. Lost 350 psi pump pressure.
	(82)	9.5	NIL	350	Bit washed out. Ran 8½" bit No. 24. Drilled.
16-4	10233	9.3	47	7.5	Drilled.
	(176)	9.5	NIL	400	
17-4	10361	9.5	41	8.0	Drilled to 10,346'. Checked drilling break - no
	(128)	9.5	NIL	400	flow. Drilled to 10,358', gas cut mud on surface. Lowest weight 6.2 lb/gal. Circulated bottoms up. Mud weight 9.2 lbs/gal in , 8.9 lbs/gal out. Increased mud weight to 9.5 lbs/gal. Drilled to 10,361'.
18-4	10536	9.5	45	8.5	Drilled to 10,386'. Made 10 stand check trip.
	(175)	9.5	NIL	400	Drilled to 10,536'.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek-1 WELL

WEEKLY DRILLING REPORT No. 12 from 12-4- to 18-4-74 | RIG NAT. 1320 DE

R.T. Elevation ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS

DRILLING ASSEMBLY

No.21 8½" H77S + junk sub + 2x7" DC + stab + 2x7" DC + stab + 11x7" DC + 6xHWDP + 5" DP.

No.22 8½" XD7 as No.21.

No.23 8½" J33 + stab + junk basket + 1x7" DC + stab + 2x7" DC + stab + 12x7"DC + 21 xHWDP 1 5".

No.24 8½" J33 as No. 23.

BIT RECORD

Bit NO.	SIZE & TYPE.	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI	CONDITION T-B-G
21	8½"H77S	25	85	43	4¼	9	50	340	154	1300	5-6-0
22	8½" XD7	30	70	132	15½	8	50	340	154	1400	3-3-0
23	8½" J33	30	50	164	22¼	7	60	495	185	2100	1-5-0
24	8½" J33	30	50	Drilling			55	455	168	Bit washed out 1900	Drilling

CHEMICAL CONSUMPTION

Bentonite	235
Barytes	637
Spersene	70
Caustic Soda	10
XP-20	35
D-D Compound	1

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 13 from 19-4- to 25-4-74 | RIG NAT. 1320 DE

R.T. Elevation ± 527ft above MSL

See Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	MUD Viscosity (MF secs) / oil (%)	MUD Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
19	10683 (147)	9.6 10.0	48 NIL	7.2 400	Drilled.
20	10749 (66)	9.7 9.5	48 NIL	7.0 400	Drilled to 10,698'. Ran 8½" bit No. 25. Circulated out. Drilled to 10,749'.
21	10917 (168)	9.7 9.5	43 NIL	6.6 400	Drilled.
22	11070 (153)	9.7 9.5	45 NIL	6.5 400	Drilled.
23	11246 (176)	9.7 9.5	46 NIL	6.4 400	Drilled to 11,123' made 5 stand check trip - hole O.K. Started losing 15 bbls/hr at 10,140'. Lost total 61 bbls.
24	11408 (162)	9.7 9.5	47 NIL	6.4 400	Drilled to 11,302' circulated out drilling break. Drilled to 11,408'.
25	11465 (57)	9.7 9.5	47 NIL	6.8 400	Ran 8½" bit No. 26 changing out 10 bent drillpipe Reamed last 45' to bottom. Drilled to 11,465'.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 13 from 19-4- to 25-4-74 | RIG NAT. 1320 DE

R.T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	

DRILLING ASSEMBLY

No.24 8½" J33 + stab + junk sub + 1x7" DC + stab + 2x7" DC + stab + 12x7" DC + 21 x HWDP + 5" DP.

No.25 8½" J33 + stab + 1x7" DC + stab + 2x7" DC + stab + 12x7" DC + 21 x HWDP + 5" DP.

No.26 8½" J33 as No.25.

BIT RECORD

Bit NO	SIZE & TYPE	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI	CONDITION T-B-G
24	8½" J33	30	50	694	99½	7	55	455	168	1950	2-4-0
25	8½" J33	30-40	50	710	99	7	50	415	152	1700	4-4-0
26	8½" J33	30	50	Drilling			55	455	168	2000	Drilling

CHEMICAL CONSUMPTION

Bentonite	103
Barytes	86
Spersene	91
Caustic Soda	13
Mica Fine	9
Mica Medium	3
XP-20	58

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 14 from 26-4- to 2-5-74 | RIG NAT. 1320 DE.

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
26-4	11676 (211)	9.7 9.0	47 NIL	7.1 400	Drilled.
27-4	11883 (207)	9.7 10.0	47 NIL	7.2 400	Drilled.
28-4	12005 (122)	9.7 10.0	45 NIL	7.3 400	Drilled to 12005'. Made 10 stand check trip. Circulated clean.
29-4	12005 (NIL)				Schlumberger ran: BHC-GR tool failure due to cut bridle. FDC-CAL 11977' - 8847' LL-9(D)+SP 11965' - 8847' PML 11972' - 8847' HDT tool failure - bridle
30-4	12005 (NIL)				Schlumberger ran: HDT tool failure BHC-GR tool failure GR-SNP tool failure (BHT 298°F) Rigged down Schlumberger. Ran in hole for check-trip.
1-5	12005 (NIL)				Made checktrip. Schlumberger ran BHC-GR 11944' - 8847'. SNP 11954' - 8847'. CNT 11984' - 8847'
2-5	12005 (NIL)				Ran HDT. Held up at 10170'. Rigged down Schlumberger. Made wipertrip. Rigged up Schlumberger. Running in hole HDT.

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 14 from 26-4- to 2-5-74 | RIG NAT. 1320 DE

R. T. Elevation +527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS

DRILLING ASSEMBLY

No.26 8½" J33 + stab + 1x7" DC + stab + 2x7"DC + stab + 12x7"DC + 21 xHWDP + 5"DP

BIT RECORD

BIT NO.	SIZE & TYPE.	WOB 1000lbs	RPM	FOOTAGE	HOURS	FT/HR	SPM	JET VEL FT/SEC	ANN VEL FT/MIN	PRESSURE PSI.	CONDITION T-B-G
26	8½" J33	30-35	50	597	76¾	8	55	455	168	2000	5-3-1

CHEMICAL CONSUMPTION

Bentonite	20
Barytes	80
Spersene	42
Caustic	8
XP-20	11
D-D Compound	1

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek WELL 1

WEEKLY DRILLING REPORT No. 15 from 3-5- to 8-5-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal)	Viscosity (MF secs)	Waterloss (cc/30 mins)	OPERATIONS
		pH	oil (%)	Cl (ppm)	
3-5	12005 (nil)				Schlumberger ran HDT 11966' - 8850' CST-1 Fired 30, lost3, empty4, recovered 23. CST-2 Fired 19, empty2, recovered 17. Rigged down Schlumberger. Ran 3½" tubing stinger on DP to 9110'. Set plug No.1 from 9110' - 8340' with 400sx class F cement slurry weight 16.3 lbs/gal. Pulled back to 8180'. Waiting on cement.
4-5	12005 (nil)				Waited on cement for 18½ hours. Ran in hole to 8700'. No resistance. Pulled back to 8000'. Waiting on cement.
5-5	12005 (nil)				Waited on cement for 24½ hours. Ran in hole to 9045' without resistance. Circulated out neat cement. Ran in hole to 9110'. Reset plug No.1 with 280 sx class A cement, slurry weight 14.0 lbs/gal. Pulled back to 8180'. Circulated clean. Waited on cement - laying down excess DP. Waited on cement for 6 hours. Located top cement at 8300'. Successfully pressure tested to 1000 psi layed down excess drillpipe.
6-5	12005				Ran casing cutter and cut 9 5/8" casing at 5630'. Unable to circulate through casing. Changed cutterblades. Ran casing cutter and cut 9 5/8" casing at 4641'. Unable to circulate through casing. Removed BOP's . Attempted to pull 9 5/8" casing with 320,000 lbs without success. Removed 10" spools while waiting on new cutterblades.
7-5	12005				Ran casing cutter and cut casing at 4630'. Pulled out of hole casing cutter. Ran casing spear. Attempted to circulate. Pumping away at 1500 psi. No returns on surface. Attempted to pull 9 5/8" casing with 320,000 lbs without success. Pulled out of hole spear. Ran casing cutter and attempted to cut casing at 3600 ft. Casing cutter failed

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD | PERMIT: PEP-6 Ross Creek | WELL 1

WEEKLY DRILLING REPORT No. 15 from 3-5- to 8-5-74 | RIG NAT. 1320 DE

R. T. Elevation ± 527 ft above MSL

Sea Bottom Depth ft below MSL

CASING						
Size	20"	13 3/8"	9 5/8"			
Depth	1220'	3691'	8871'			

DATE	DEPTH (PROGRESS) (feet)	MUD Weight (lb/gal) / pH	Viscosity (MF secs) / oil (%)	Waterloss (cc/30 mins) / Cl (ppm)	OPERATIONS
8-5	12005				Abandoned attempts to retreive casing. Ran 3½" tubing on DP. Set plug No. 2 4700' to 4500' with 70 sx class A, slurry weight 15.5 lbs/gal. Pulled back to 3650'. Circulated clean. Set plug No. 3 3650' to 3450' with 70 sx class A cement, slurry weight 15.5 lbs/gal. Pulled back to 3290'. Circulated clean. Layed down DP. Ran 3½" tubing to 300'. Set plug No. 4, 300' to 50' with 90 sx class A cement, slurry weight 15.5 lbs/gal. Pulled back to 50'. Circulated clean. ROSS CREEK-1 ABANDONED 0200 9th MAY, 1974.

APPENDIX 7.

DETERMINATION OF CAUSE OF RADIOACTIVE ANOMALY IN CUTTINGS FROM ROSS CREEK -1 EXPLORATION WELL

1. INTRODUCTION

Two samples of ditch cuttings from exploration well Ross Creek -1 (from 1290 - 1300' and 1590 - 1600') were submitted by Shell Development (Australia) Pty. Ltd. The samples had been selected from an interval with extremely high gamma ray readings (250 A.P.I.) believed to be due to the presence of phosphates. It was originally requested that Amdel identify the radioactive mineral by X-ray diffraction, but initial examination of the samples with a Geiger Counter indicated that this would not be possible because of the relatively low level of radioactivity present (although high by oil well drilling standards). The samples were therefore chemically analysed in particular for Th, U, K and P.

2. RESULTS

The chemical analyses of the samples are as follows:-

Depth	Th ppm	U ppm	K %	P %
1290' - 1300'	36	10	0.45	0.78
1590' - 1600'	24	8	0.60	0.72

3. DISCUSSION

Comparison of these analyses with those of common rock types suggests that both Th and U are two to three times higher than normal and that P is about ten times higher than normal. There is nothing unusual in the K content and it appears that the high radioactivity is due to elevated levels of Th and U (which are, however, still very low from the view point of uranium exploration). The high value of P is interesting and it is probable that the U and Th are associated with a phosphate mineral.

APPENDIX 9

CUTTINGS			DESCRIPTIONS
0	-	30'	No cuttings collected.
30	-	240	100% CLAY; light grey, soft, plastic, calcareous, micaceous, abundent fossils and fossil debris, firmer with depth, occasional MARL.
240	-	290	100% SHALE; grey, brown plastic, occasionally fissile, fossils, occasional glauconite, pyrite and sand, calcareous.
230	-	480	90% SHALE; as above, becoming dark brown, less fossils. 10% SAND; clear to milky, coarse, round, sorted loose.
480	-	910	40% SHALE; as above. 60% SAND; as above.
910	-	1000	60% SHALE; as above, less fossils. 30% SAND ; as above. 10% SANDSTONE; brown, clear, angular, sorted, poor - moderate porosity.
1000	-	1220	50% SHALE; as above. 30% SAND; clear to while, red and pink, medium to coarse, rounded, sorted. 10% SILTSTONE; dark grey, brown, calcareous, hard. 10% SANDSTONE; white, fine to medium, sorted, calcareous, hard, tight, trace pyrite, granular quartz grains
1220	-	1390	50% SHALE; black, hard. 50% SILTSTONE; light to dark grey, hard.
1390	-	1820	70% SAND; white to clear, yellow, coarse, occasional gravel and granules, loose. 15% SILTSTONE; as above. 15% SHALE; as above.
1820	-	1960	60% SAND; as above. 10% SHALE; as above. 10% SILTSTONE; as above. 20% LIGNITE; soft to hard and brittle, pyrite in fissures.
1960	-	2510	90% SAND; as above, becoming coarser. 10% LIGNITE; as above.

2510	-	2610'	80% SANDSTONE; white to light grey, grading to SILTSTONE in parts, round to angular, sorted, calcareous cement, pyrite, micaceous, carbonaceous, with green and dark green mineral pellets from 2550'.
			20% SAND; as above.
2610	-	2710	60% SAND; white and yellow, medium to coarse, round, sorted.
			20% SILTSTONE; brown to grey, buff, hard, occasionally sandy, carbonaceous, with green mineral pellets.
			20% SANDSTONE; as above but brown to buff.
2710	-	3350	90% SHALE; light blue to grey, soft, pyrite.
			5% SILTSTONE;as above, green to light brown. 5% SANDSTONE; green to brown, clear, medium, angular, sorted.
3350	-	3460	90% SHALE: as above.
			5% SAND; as above.
			5% SILTSTONE; as above.
3460	-	3695	70% SHALE; as above with light grey, buff and light brown, pyritic and lignitic.
			15% SILTSTONE; blue, blue-green, grey to brown, carbonaceous, occasionally sandy, micaceous, pyritic.
			15% SANDSTONE; blue to white, angular to rounded, sorted, fine, tight, occasionally micaceous and pyritic, often multicoloured grains.
3695	-	3940	80-60% SANDSTONE; blue and white, fine to medium, angular, sorted, weakly cemented with silica and argillaceous cement, pyritic and micaceous, occasional mineral grains.
			10-20% SILTSTONE; blue to green, light grey to brown, rarely carbonaceous, sandy, micaceous, pyritic.
			10-20% SHALE; blue-grey, grey, light brown, firm to soft, occasionally lignitic.
			Trace SAND; clear, medium angular. CLAY, grey, soft.
3940	-	4080	90% CLAY; grey, soft. 10% SANDSTONE; SILTSTONE; SHALE; as above.

4080	-	4160'	60% CLAY; as above. 20% SANDSTONE; white, fine to medium, angular, sorted, well cemented with calcareous and silica cements, occasionally pyritic, lignitic, often stained brown, blue-green and occassionally red. 10% SILTSTONE; brown, grey, sandy, lignite, hard. 10% SHALE; grey to blue-grey. Trace COAL, black, hard.
4160	-	4370	40% SANDSTONE; grey, fine to medium, angular, sorted, moderately cemented with argillaceous and silica cements, traces of brown, green and black minerals, friable, low porosity. 30% CLAY; light grey, soft. 30% SILTSTONE; grey, sandy, red, brown, green and black mineral inclusions. Trace SHALE, SAND and LIGNITE.
4370	-	4750	0-40% CLAY; as above. 0-20% SHALE; as above. 0-20% SILTSTONE; as above. 100-20% SANDSTONE; as above. Trace LIGNITE and pyrite.
4750	-	5160	50% CLAY; as above. 10% SHALE; grey to blue, soft, silty, grading to claystone. 10% SILTSTONE; grey, poorly cemented, lignite, with light brown staining. 30% SANDSTONE; clear, white, grey-black, with occasional brown and blue-green staining, fine to medium, angular, moderately cemented by silica and argillaceous cements, calcareous, medium hard, lignitic, moderate porosity. Trace LIGNITE.
5160	-	5550	30% CLAY; as above. 10% SHALE; as above 10% SILTSTONE; as above. 50% SANDSTONE; as above.
5550	-	6200	90% SANDSTONE; grey, medium to fine, angular, sorted, moderate cementation with silica and argillaceous cements, medium hard, no porosity. 10% CLAY; light green, soft. Trace SILTSTONE, SHALE, LIGNITE.

6200 - 6240'	40% SANDSTONE; as above. 10% CLAY; as above. 50% SILTSTONE; grey, silica cemented, trace sand and lignite.
6240 - 6430	10% CLAY; as above. 10% SANDSTONE; as above. 40% SANDSTONE; grey, friable, angular, sorted,moderate cementation with silica cement, trace lignite, hard, very low porosity. 40% SILTSTONE; grey, silica cemented, rounded grains, trace lignite,
6430 - 6530	10% CLAY; as above. 90% SANDSTONE; as above.
6530 - 6740	10% CLAY; as above. 20% SILTSTONE; as above. 70% SANDSTONE; as above.
6740 - 6846	100% SANDSTONE; as above, with coal bed at 6780'.
6846 - 6890	80% SANDSTONE; as above. 20% SILTSTONE; grey to grey brown,angular, moderate cementation with argillaceous cement, hard, trace lignite and sand.
6890 - 6900	50% SILTSTONE; as above. 50% SHALE; grey, grading to claystone, lignitic.
6900 - 6920	30% SHALE; as above. 70% SILTSTONE; as above.
6920 - 7040	30% SHALE; as above. 40% SILTSTONE; as above. 30% SANDSTONE; grey, fine to medium, angular to rounded, sorted, silica and argillaceous cements, hard, trace lignite.
7040 - 7100	70% SANDSTONE; as above. 30% SILTSTONE; as above.
7100 - 7440	70% SANDSTONE; white, grey, fine to medium, angular to rounded, sorted , silica cemented, calcareous, hard, trace lignite, low porosity. 10% SILTSTONE; as above. 10% SHALE; as above. 10% CLAY; light grey, soft.
7440 - 7480	20% CLAY, light grey, white, soft. 10% SHALE; as above. 10% SILTSTONE; as above. 60% SANDSTONE; as above.

7480 - 7520' 10% SILTSTONE; as above.
20% CLAY; as above.
70% SHALE; as above, grading to mudstone.

7520 - 7580 10% CLAY; as above.
20% SHALE; as above.
70% SANDSTONE; as above.
Trace COAL.

7520 - 7620 10% CLAY; as above.
30% SILTSTONE;as above.
60% SANDSTONE as above.

7620 - 7770 10% CLAY; light grey, soft.
10% CLAY; white, firm.
20% MUDSTONE-SHALE; dark brown to light grey, trace carbonaceous and argillaceous material.

60% SANDSTONE; light grey, medium,angular to rounded, sorted, occasional argillaceous and calcareous cements, carbonaceous, micaceous. Trace COAL.

7770 - 7950 50% SANDSTONE; as above.
30% SHALE; as above.
10% CLAY; light grey, soft.
10% CLAY; white, firm.

7950 - 8040 20% CLAY; light grey, soft.
20% SHALE; as above.
60% SANDSTONE; as above.
Trace COAL. From 8000' trace DOLOMITE; light beige, crystalline, hard, no porosity, minimal fluorescence.

8040 - 8100 10% CLAY; as above.
60% SHALE; as above.
30% SANDSTONE; clear, white to grey, fine to medium, angular, sorted, silica and calcareous cements, black inclusion, hard, very low porosity.

8100 - 8280 20% CLAY; as above.
40% SHALE; light and dark grey, hard.
40% SANDSTONE; as above.
Trace COAL.

8280 - 8300 10% CLAY; white, firm.
20% SHALE: grey, hard.
20% SANDSTONE, grey, medium to fine, angular to rounded, sorted, argillaceous cement, medium hard to hard, trace black material, micaceous, very low porosity.

50% SILTSTONE - MUDSTONE. Trace CALCITE.

8300 - 8310 50% COAL
10% CLAY; as above.
10% SHALE; as above.
10% SANDSTONE; as above.
20% SILTSTONE-MUDSTONE; as above.

8470	-	8520'	80% SANDSTONE; as above. 10% SHALE; as above. 10% CLAY; as above.
8520	-	8530	70% SANDSTONE; as above. 10% SHALE; as above. 10% CLAY; as above. 10% COAL.
8530	-	8570	40% SANDSTONE as above. 50% SHALE; as above. 10% CLAY; as above.
8570	-	8590	60% SANDSTONE; as above. 20% SILTSTONE; 10% SHALE; as above. 10% CLAY; as above.
8590	-	8620	50% SANDSTONE; as above. 40% SILTSTONE; as above. 10% CLAY; as above.
8620	-	8730	30% SANDSTONE; as above. 30% SHALE; as above. 40% SILTSTONE; light grey, silica and argillaceous cements, consolidated, sandy. Trace COAL.
8730	-	8860	60% SANDSTONE; grey, fine to medium, angular, sorted, argillaceous and silica cements, calcareous, hard, trace, trace black inclusions, very low porosity. 20% SILTSTONE; as above. 20% SHALE; grey occasionally dark brown, lignitic, silty, grading to mudstone. Trace SAND.
8860	-	8887	60% SANDSTONE; as above. 40% SHALE; as above.
8887	-	8980	80% SANDSTONE; light grey, grading to siltstone, angular, moderate argillaceous cement, calcareous, hard, no porosity. 20% SHALE; grey to brown, silty to sandy, lignitic, hard. Trace LIGNITE.
8980	-	9140	80% SILTSTONE; white, light to dark grey, carbonaceous, occasionally calcareous, pyritic, friable. 20% SHALE; as above. Trace LIGNITE.
9140	-	9170	60% SANDSTONE; light grey to grey occasionally clear, fine to siltstone, sorted, angular, calcareous cement, carbonaceous, Kaolinitic, no porosity. 20% SHALE; as above. 20% SILTSTONE; as above.

9170 - 9320'	20% SANDSTONE; as above. 20% SHALE; as above, becoming black brown, hard, brittle, carbonaceous, grading to siltstone. 60% SILTSTONE; dark grey, dark brown to black, carbonaceous, argillaceous, occasionally calcareous, hard.
9320 - 9360	50% SANDSTONE; as above, occasionally light brown. 30% SILTSTONE; as above. 20% SHALE; as above.
9360 - 9560	10% SANDSTONE; as above. 80% SILTSTONE, dark grey, dark brown, hard, carbonaceous, abundent argillaceous cement, occasionally calcareous. 10% SHALE; as above. Trace COAL.
9560 - 9730	70% SILTSTONE; as above. 10% SANDSTONE; as above. 20% SHALE; as above. Trace COAL, PYRITE.
9730 - 9840	60% SANDSTONE; as above. 30% SILTSTONE; as above. 10% SHALE; as above.
9840 - 9890	20% SHALE; as above. 70% SILTSTONE; as above. 10% SANDSTONE; as above.
9890 - 9910	60% SILTSTONE; as above. 40% SANDSTONE; as above.
9910 - 9970	50% SHALE; as above. 40% SILTSTONE as above. 10% SANDSTONE: as above.
9970 - 10,180	60% SILTSTONE; as above. 40% SHALE; as above.
10,180 - 10,210	50% SANDSTONE; buff, brown, white, clear, grey, fine, angular, sorted, calcareous, kaolinitic, carbonaceous, with green and red little inclusions, hard, tight, no porosity. 40% SILTSTONE; as above. 10% SHALE: as above.
10,210 - 10,230	70% SILTSTONE; as above. 30% SHALE; as above.
10,230 - 10,300	10% SANDSTONE; as above. 80% SILTSTONE; as above. 10% SHALE; as above.
10,300 - 10,350	20% SANDSTONE, as above. 80% SILTSTONE; as above.
10,350 - 10,360	20% SANDSTONE; as above. 70% SILTSTONE; as above. 10% QUARTZ; clear and white crystals. Trace CALCITE.

10,360 - 10,460'	10% SANDSTONE; as above. 70% SILTSTONE; as above. 20% SHALE; as above.
10,460 - 10,530	70% SANDSTONE; light grey, off white, fine, sorted, angular, calcareous cement, kaolinitic, carbonaceous, friable, no porosity. 30% SILTSTONE; as above.
10,530 - 10,680	20% SANDSTONE; as above. 60% SILTSTONE; as above. 20% SHALE; as above. Trace LIGNITE.
10,680 - 10,720	10% SANDSTONE; as above. 50% SILTSTONE; as above. 40% SHALE; as above. Trace CALCITE.
10,720 - 10,750	10% SANDSTONE; as above. 40% SANDSTONE; light grey, white, brown, coarse, angular, sorted, calcareous, with green and brown inclusions, some mica, mottled. 40% SILTSTONE; as above. 10% SHALE; as above.
10,750 - 10,770	10% SHALE; as above. 10% SILTSTONE; as above. 80% SANDSTONE; as above.
10,770 - 10,910	20% SHALE; as above. 50% SILTSTONE; as above. 10% SANDSTONE; as above. 20% LIGNITE; black, lustrous, hard, brittle.
10,910 - 10,940	20% SHALE; as above. 60% SILTSTONE; as above. 20% SANDSTONE; as above.
10,940 - 11,160	20% SHALE; as above. 20% SILTSTONE; as above. 60% SANDSTONE; as above. Trace LIGNITE, CALCITE.
11,160 - 11,240	10% SHALE; as above. 10% SILTSTONE; as above. 80% SANDSTONE; white, medium, angular, sorted, occasional light blue staining, micaceous.
11,240 - 11,370	85% SANDSTONE; becoming silicified. 15% SILTSTONE; as above. Trace BITUMEN.
11,370 - 11,390	50% SANDSTONE; as above. 30% SILTSTONE; as above. 20% SHALE; as above.

11,390	-	11,400'	40% SANDSTONE; as above. 30% SILTSTONE; as above. 15% SHALE; as above. 15% BITUMEN.
11,400	-	11,460	50% SILTSTONE; as above. 50% SANDSTONE; white, grey, fine, angular, sorted, poor calcareous cement, silicified, minor coarse quartz grains.
11,460	-	11,490	40% SILTSTONE; as above. 40% SANDSTONE; as above. 20% SHALE; as above.
11,490	-	11,520	100% SANDSTONE; as above but becoming coarser with depth.
11,520	-	11,580	80% SANDSTONE; as above. 10% SILTSTONE; as above. 10% SHALE; as above.
11,580	-	11,670	100% SANDSTONE; medium to coarse, angular, silica cement and trace calcareous cement.
11,670	-	11,780	70% SANDSTONE; as above. 30% SILTSTONE; as above.
11,780	-	11,840	100% SANDSTONE; as above.
11,840	-	11,900	70% SANDSTONE; as above. 30% SILTSTONE; as above.
11,900	-	11,920	100% SANDSTONE; as above.
11,920	-	11,950	80% SANDSTONE; as above. 10% SILTSTONE; as above. 10% SHALE; as above.
11,950	-	11,970	100% SANDSTONE; as above.
11,970	-	12,005TD	60% SANDSTONE; as above. 30% SILTSTONE; as above. 10% SHALE; as above.

APPENDIX 10.

CORE DESCRIPTION

Type	Junk Basket Core
Interval	9665', recovery ~ 6" (in fragments).
Description	MUDSTONE; medium to dark grey, consolidated, some slight fissility, slightly calcareous, some clay and quartz, traces of calcite and coal, non swelling.
Age	A palynological study (see appendix 5) established an APTIAN age for this core.

PE907118

This is an enclosure indicator page.
The enclosure PE907118 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907118 has the following characteristics:

ITEM_BARCODE	= PE907118
CONTAINER_BARCODE	= PE902301
NAME	= Interpreted Seismic Line
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= SECTION
DESCRIPTION	= Interpreted Seismic Line, 71.34, SP 154-302, PEP/6, (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907123

This is an enclosure indicator page.
The enclosure PE907123 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907123 has the following characteristics:

ITEM_BARCODE	= PE907123
CONTAINER_BARCODE	= PE902301
NAME	= Play Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= MONTAGE
DESCRIPTION	= Play Map, Reflection Time Contours, Lower Cretaceous Intra-Eumeralla, PEP/5 & 6, (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907119

This is an enclosure indicator page.
The enclosure PE907119 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907119 has the following characteristics:

ITEM_BARCODE	= PE907119
CONTAINER_BARCODE	= PE902301
NAME	= Play Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= MONTAGE
DESCRIPTION	= Play Map, Reflection Time Contours, Lower Cretaceous Intra-Eumeralla, PEP/5 & 6, (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907120

This is an enclosure indicator page.
The enclosure PE907120 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907120 has the following characteristics:

ITEM_BARCODE	= PE907120
CONTAINER_BARCODE	= PE902301
NAME	= Unmigrated Reflection Time Contour Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Unmigrated Reflection Time Contours Map, Intra-Eumeralla (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907121

This is an enclosure indicator page.
The enclosure PE907121 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907121 has the following characteristics:

ITEM_BARCODE	= PE907121
CONTAINER_BARCODE	= PE902301
NAME	= Unmigrated Reflection Time Contours Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Unmigrated Reflection Time Contours Map, Top Basement (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907132

This is an enclosure indicator page.
The enclosure PE907132 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907132 has the following characteristics:

ITEM_BARCODE	= PE907132
CONTAINER_BARCODE	= PE902301
NAME	= Unmigrated Reflection Time Contours Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Unmigrated Reflection Time Contours Map, Near Top Otway (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907122

This is an enclosure indicator page.
The enclosure PE907122 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907122 has the following characteristics:

ITEM_BARCODE	= PE907122
CONTAINER_BARCODE	= PE902301
NAME	= Unmigrated Reflection Time Contours Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Unmigrated reflection Time Contours Map, Magnetic Basement (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907124

This is an enclosure indicator page.
The enclosure PE907124 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907124 has the following characteristics:

ITEM_BARCODE	= PE907124
CONTAINER_BARCODE	= PE902301
NAME	= Geological Framework Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= GEOL_MAP
DESCRIPTION	= Geological Framework Map (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907125

This is an enclosure indicator page.
The enclosure PE907125 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907125 has the following characteristics:

ITEM_BARCODE	= PE907125
CONTAINER_BARCODE	= PE902301
NAME	= Exploration Density Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= LOCATION_MAP
DESCRIPTION	= Exploration Density Map, PEP/5 & 6, (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907126

This is an enclosure indicator page.
The enclosure PE907126 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907126 has the following characteristics:

ITEM_BARCODE	= PE907126
CONTAINER_BARCODE	= PE902301
NAME	= Prospect Sheet
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= MONTAGE
DESCRIPTION	= Ross Creek Prospect Sheet (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/12/73
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907127

This is an enclosure indicator page.
The enclosure PE907127 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907127 has the following characteristics:

ITEM_BARCODE	= PE907127
CONTAINER_BARCODE	= PE902301
NAME	= Well Correlation
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= WELL_CORRELATION
DESCRIPTION	= Ross Creek Area Well Correlation Diagram (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907128

This is an enclosure indicator page.
The enclosure PE907128 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907128 has the following characteristics:

ITEM_BARCODE	= PE907128
CONTAINER_BARCODE	= PE902301
NAME	= Summary Sheet
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= MONTAGE
DESCRIPTION	= Ross Creek Summary Sheet (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907129

This is an enclosure indicator page.
The enclosure PE907129 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907129 has the following characteristics:

ITEM_BARCODE	= PE907129
CONTAINER_BARCODE	= PE902301
NAME	= T-Z Curve and Sonic Interval Velocities Chart
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= T-Z Curve and Sonic Interval Velocities (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907130

This is an enclosure indicator page.
The enclosure PE907130 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907130 has the following characteristics:

ITEM_BARCODE	= PE907130
CONTAINER_BARCODE	= PE902301
NAME	= Stratigraphic Summary Log
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= STRAT_COLUMN
DESCRIPTION	= Stratigraphy Summary Log (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 9/05/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE907131

This is an enclosure indicator page.
The enclosure PE907131 is enclosed within the container PE902301 at this location in this document.

The enclosure PE907131 has the following characteristics:

ITEM_BARCODE	= PE907131
CONTAINER_BARCODE	= PE902301
NAME	= Seimic Survey Location Map
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= SEISMIC
SUBTYPE	= LOCATION_MAP
DESCRIPTION	= Ross Creek Seismic Survey Map (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE605026

This is an enclosure indicator page.
The enclosure PE605026 is enclosed within the container PE902301 at this location in this document.

The enclosure PE605026 has the following characteristics:

ITEM_BARCODE	= PE605026
CONTAINER_BARCODE	= PE902301
NAME	= Master Log/Mud Log
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= MUD_LOG
DESCRIPTION	= Geoservices Master Log/Mud Log (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= ROSS CREEK-1
CONTRACTOR	=
CLIENT_OP_CO	= SHELL DEVELOPMENT (AUSTRALIA)PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE601432

This is an enclosure indicator page.
The enclosure PE601432 is enclosed within the container PE902301 at this location in this document.

The enclosure PE601432 has the following characteristics:

ITEM_BARCODE	= PE601432
CONTAINER_BARCODE	= PE902301
NAME	= Composite Well Log
BASIN	= OTWAY
PERMIT	= PEP/6
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Composite Well Log (enclosure from WCR) for Ross Creek-1
REMARKS	=
DATE_CREATED	= 31/07/74
DATE_RECEIVED	=
W_NO	= W680
WELL_NAME	= Ross Creek-1
CONTRACTOR	= SHELL DEVELOPMENT (AUSTRALIA) PTY LTD
CLIENT_OP_CO	= SHELL

(Inserted by DNRE - Vic Govt Mines Dept)