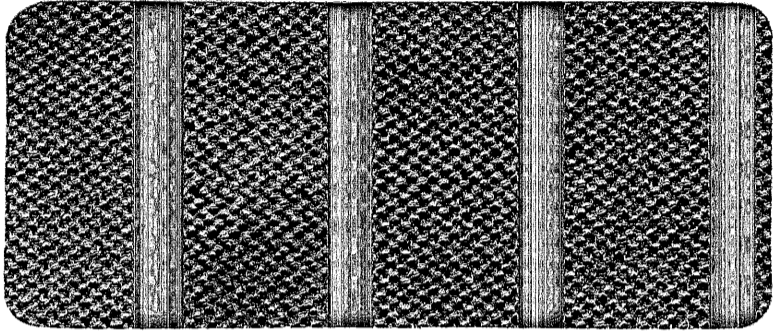
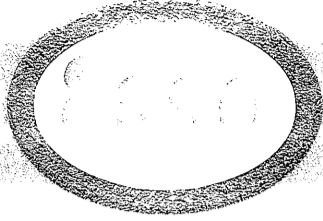


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BREPM - 5

VOL 1

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

W.C.R

WELL COMPLETION REPORT

BREAM 5

VOLUME 1 17 MAY 1983

OIL and GAS DIVISION

**GIPPSLAND BASIN
VICTORIA**

ESSO AUSTRALIA LIMITED

WELL COMPLETION REPORT

VOLUME 1

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COMPLETION REPORT

1. WELL DATA RECORD

LOCATION

WELL NAME BREAM#5	STATE VICTORIA	PERMIT or LICENCE VIC/P1	GEOLOGICAL BASIN GIPPSLAND	FIELD BREAM
CO-ORDINATES LATITUDE 38° 30' 55.03"S LONGITUDE 147° 51' 58.95"E X 575531ME Y 5736640MN		MAP PROJECTION TRANSVERSE MERCATOR AMG ZONE 55	GEOGRAPHICAL LOCATION GIPPSLAND BASIN SE VICTORIA	
<u>ELEVATIONS & DEPTHS</u>				
ELEVATIONS KB 21m RT	WATER DEPTH 59.6m	TOTAL DEPTH 3322m MEASURED DEPTH 3322m	Average Angle ---	
	PLUG BACK TYPE P & A	REASONS FOR PLUGGING BACK ABANDONMENT		
<u>DATES</u>				
MOVE IN 1/8/82	RIG UP 2/8/82	SPUDED 3/8/82		
RIG DOWN COMPLETE 14/9/82	RIG RELEASED 14/9/82	PRODUCTION UNIT - RIG UP --		
PRODUCTION UNIT - RIG DOWN --		INITIAL PRODUCTION ESTABLISHED --		
<u>MISCELLANEOUS</u>				
OPERATOR ESSO AUSTRALIA LTD.	PERMITTEE or LICENCE HEMATITE PETROLEUM PTY.LTD.	ESSO INTEREST 50%	OTHER INTEREST 50%	
CONTRACTOR S.S.D.C.	RIG NAME SOUTHERN CROSS	EQUIPMENT TYPE OILWELL E-2000		
TOTAL RIG DAYS 44.18 days	DRILLING AFE NO. 308 232 007	COMPLETION NO. ---	TYPE COMPLETION ---	
WELL CLASSIFICATION	Before Drilling After Drilling	Outpost extension Outpost extension		

2. OPERATIONS SUMMARY

BREAM - 5

Move and Moor

The semi submersible Southern Cross departed the Seahorse-2 location at 2045 hours on 31 July, 1982 and arrived at the Bream 5 location at 1345 hours on 1 August, 1982. The rig was towed 28 km (20 nautical miles) by the Lady Vera workboat in 17 hours at an average speed of 1.64 km/hr (1.18 knots).

Anchor No. 1 was dropped by the rig with the remaining anchors run by the Southern Tide, Bass Tide and Atlas Dampier workboats in 6-1/2 hours. Anchor No. 5 was reset after it slipped while pretensioning (200 kips).

26 inch Hole for 20 inch Conductor

The drilling template was landed at the seafloor depth of 80.6m RKB. The 26" hole was drilled to 220m using seawater and high viscosity gel pills (deviation at 220m was 3/4°).

The 18-3/4" wellhead and 20" casing were run and set at a shoe depth of 200m. The casing was cemented with a lead and tail slurry which differed from slurries programmed on previous wells. The BOP stack and riser were run and the 20 inch, shear rams, and collet connector were successfully pressure tested.

17-1/2 inch Hole for 13-3/8 inch Surface Casing

After drilling out cement in the 20 inch casing, a 17-1/2" hole was drilled to 805m (deviation at 805m was 1/4°). The hole was logged before 13-3/8" casing was run and cemented at 786m. The 13-3/8" seal assembly was set and tested along with the BOP and casing.

12-1/4 inch Hole for 9-5/8 inch Intermediate Casing

The cement and float equipment in the 13-3/8" casing along with 6m of new hole were drilled and a Phase II P.I.T. was conducted to 1.62 S.G. (13.5 ppg) EMW without leakoff. The hole was drilled to 1702m where the mud weight was increased to 1.13 S.G. (9.5 ppg) before drilling into the Latrobe formation. This mud weight increase was programmed so that a 2100 kPa (300 psi) overbalance would be present if the 37 metres of the objective were assumed to be gas filled. After drilling to 1952m, two cores were cut to 1964m with recoveries of 88.6% and 100%. Drilling continued to 2070m, where logs, 5 RFTs, and sidewall cores were run. The hole was conditioned before 169 joints of 9-5/8" casing were run and cemented at 2054m. Two seal assemblies were run but neither would make up properly into the hanger. One of the seal assemblies was rerun and successfully pressure tested after its make up threads were modified. The BOP and casing was successfully pressure tested.

8-1/2 inch Hole

The cement and float equipment in the 9-5/8" casing and 8m of new hole were drilled before a Phase II P.I.T. was run to leak off at 1.58 S.G. (13.2 ppg) EMW. The hole was drilled to 2568m where Core No. 3 was cut to 2574.6m with a recovery of 59.5%. Drilling continued to 2707m where logs and 9 RFTs were run. Immediately following logging operations, Core No. 4 was cut to 2726m with a recovery of 97.6%. The 8-1/2" hole was drilled to 2758.4m where Core No. 5 was cut to 2776.4m with a recovery of 100%. Drilling continued to 3017m where logs and 11 RFTs were run. Two HWDP washouts were encountered while the 8-1/2" hole was deepened to the final total depth of 3322m. Logs, a velocity survey, dipmeter, 2 RFTs and side wall cores were run prior to setting the first abandonment plug.

There was no abnormal pressure detected or any signs of H₂S, however a high I.S.I.P. of 5064 PSIA (9.29 ppg) was recorded on RFT No. 26 at 3197.2m. The tested sand was believed to be supercharged.

Plug and Abandonment

To cover hydrocarbon bearing zones, five open hole plugs were set over the intervals of 3300-3140m, 3130-2960m, 2950-2785m, 2775-2615m, and 2600-2465m. The top of the top plug was tagged with 10,000 bbbls 35m below the calculated TOC. Because the actual TOC was 18m below the minimum depth required by law, another open hole plug was set from 2457 to 2357m. The 9-5/8" casing shoe was sealed off with a balanced cement plug set from 2104 to 2004m and was pressure tested to 13,800 kPa (2000 psi). A bridge plug was set in the 9-5/8" casing at 1637m. The 9-5/8" casing was cut at 250m with an explosive cutter. The casing stub, hanger and seal assembly were retrieved with a casing spear. To seal the 13-3/8" x 9-5/8" annulus, a balanced cement plug was set from 285 to 200m and 7-1/2 barrels of cement were bradenhead squeezed into the annulus. A 13-3/8" bridge plug was set at 182m but would not pressure test. After unsuccessfully attempting to test the casing for leaks with a RTTS packer, a 13-3/8" cement retainer was set at 175m. The retainer was successfully pressure tested. The 13-3/8" casing was perforated with a 4" casing gun from 160 - 160.5m and an injection rate was established. A cement retainer was set at 150m. Cement was squeezed below the retainer into the 20" by 13-3/8" annulus and dumped on top of the retainer (calculated TOC at 110m). After displacing the riser with seawater, the BOP stack and riser were pulled and the rig was deballasted. A 15kg explosive charge blew free the wellhead and casing stubs. The wellhead, casing stubs, four poster and drilling template were retrieved.

Pulling Anchors

The Lady Vera and Bass Tide retrieved all anchors except anchor No. 1 which was retrieved by the rig. New anchor chains were fitted on the No. 5 and No. 1 anchors before the rig departed at 0100 hours, 14th September, 1982 for the Wirrah-1 well location.

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4. CEMENT DATA

WELL BREAM-5

DATE	DEPTH . METRES	TYPE JOB	TYPE CEMENT	AMOUNT	ADDITIVES	REMARKS
3 AUG	200	20" CSG LEAD	CLASS N	630 sx	3.33% GEL 0.5% CFR-2	50% FRESHWATER 50% SEAWATER SLURRY WT 12.3ppg
3 AUG	200	20" CSG TAIL	CLASS N	350 sx	-	SEAWATER SLURRY WT 15.6ppg
5 AUG	786	13-3/8" CSG LEAD	CLASS N	950 sx	-	FRESHWATER SLURRY WT 15.5ppg
5 AUG	786	13-3/8" CSG TAIL	CLASS N	250 sx	-	SEAWATER SLURRY WT 15.4 - 15.7 ppg
14 AUG	2054	9-5/8" CSG	CLASS N	600 sx	0.6% CFR2 2.4% HR6L	FRESHWATER SLURRY WT 15.6ppg
9 SEPT	3300 - 3140	P & A OPEN HOLE BAL. PLUG	CLASS N	209 sx	0.6% CFR-2 2.25% HR6L	SLURRY WT 15.6ppg
9 SEPT	3130 - 2960	P & A OPEN HOLE BAL. PLUG	CLASS N	213 sx	0.6% CFR-2 2.25% HR6L	SLURRY WT 15.6ppg
9 SEPT	2950 - 2785	P & A OPEN HOLE BAL. PLUG.	CLASS N	219 sx	0.6% CFR-2 2.25% HR6L	SLURRY WT 15.6ppg
9 SEPT	2775 - 2615	P & A OPEN HOLE BAL. PLUG.	CLASS N	186 sx	0.6% CFR-2 2% HR6L	SLURRY WT 15.6ppg
10 SEPT	2600 - 2465	P & A OPEN HOLE BAL. PLUG.	CLASS N	193 sx	0.6% CFR-2 1.1% HR6L	TAGGED W/10k lbs AT 2465m SLURRY WT 15.6ppg
10 SEPT	2457 - 2357	P & A OPEN HOLE BAL. PLUG.	CLASS N	116 sx	0.6% CFR-2 1.1% HR6L	SLURRY WT 15.6ppg

WELL: BREAM 5

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

<u>INTERVAL</u>	<u>TYPE</u>
200 - 1939m	5 sets of washed and dried cuttings, 1 set of washed and bagged cuttings.
1939 - 1952.2m	Conventional Core No. 1 (Recovered 11.7m)
1952.2 - 1964.2m	Conventional Core No. 2 (Recovered 12.0m)
1964.2 - 2568m	5 sets of washed and dried cuttings, 1 set of washed and bagged cuttings.
2568 - 2574.6m	Conventional Core No. 3 (Recovered 3.93m)
2574.6 - 2707.6m	5 sets of washed and dried cuttings, 1 set of washed and bagged cuttings.
2707.6 - 2726m	Conventional Core No. 4 (Recovered 17.96m)
2726 - 2758.4m	5 sets of washed and dried cuttings, 1 set of washed and bagged cuttings.
2758.4 - 2776.4m	Conventional Core No. 5 (Recovered 18.0m)
2776.4 - 3322m	5 sets of washed and dried cuttings, 1 set of washed and bagged cuttings.
200 - 3322m	Geochem. samples 15m composite canned cuttings.
1125 - 3320m	Sidewall Cores: Attempted 174, recovered 116.

WELL: BREAM 5

WIRELINE LOGS AND SURVEYS

<u>Type and Scale</u>	<u>From</u>	<u>To</u>	<u>Type and Scale</u>	<u>From</u>	<u>To</u>
<u>Suite 1</u>					
ISF BHC CAL GR 1:500 1:200	805	80m			
<u>Suite 2</u>					
DLL MSFL GR 1:500 1:200	2059.6	788.5m	LDL CNL GR 1:500 1:200	2062	788.5m
BHC SP GR 1:500 1:200	2060	788.5m	HDT 1:200	2060.5	1800m
RFT Runs 1-5	Attempted 28 pretest pressure seats, recovered 4 samples		CST Run 1, 1:200		
<u>Suite 3</u>					
DLL MSFL GR 1:500 1:200	2703.0	2055m	LDL CNL GR 1:500 1:200	2706.5	2055m
RFT Runs 6-14	Attempted 52 pretest pressure seats, recovered 9 samples				
<u>Suite 4</u>					
DIL CAL GR 1:500 1:200	3016	2600m	LDL CNL GR 1:500 1:200	3019.0	2675.0m
RFT Runs 15-25	Attempted 69 pretest pressure seats, recovered 12 samples				
<u>Suite 5</u>					
DLL MSFL GR 1:500 1:200	3320.0	2675m	LDL CNL GR 1:500 1:200	3324.0	2985.0m
BHC GR 1:500 1:200	3325	2055m	HDT 1:200	3325	2055m
RFT Runs 26 & 27	Attempted 18 pretest pressure seats, recovered 3 samples		CST Runs 2-4 1:200	3320	2077m

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7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		HORIZONTAL PERMEABILITY	REMARKS
				OIL	COND.	GAS	FORMATION WATER		MPaa	Psia	MPaa	Psia	millidarcies	
			Litres	Litres	Litres	m ³	Litres							
1	1	2023.0	Pretest						19.70	2857.5	23.59	3422		Valid pretest
1	2	1999.0	"						19.47	2823.3	23.23	3370		Valid pretest
1	3	1977.0	"						19.25	2791.3	22.93	3325		Valid pretest
1	4	1966.0	"						19.14	2776.1	22.75	3300		Valid pretest
1	5	1949.5	"						-	-	22.56	3272		Tight, invalid
1	6	1949.0	"						19.08	2767.1	22.56	3272		Valid pretest
1	7	1946.0	"						19.01	2757.6	22.51	3264		" "
1	8	1945.0	"						19.01	2756.5	22.51	3265		" "
1	9	1943.0	"						18.99	2754.6	22.48	3261		" "
1	10	1940.0	"						18.98	2752.0	22.41	3250		" "
1	11	1937.0	"						18.97	2751.9	22.39	3247		" "
1	12	1935.0	"						18.97	2750.6	22.36	3243		" "
1	13	1933.5	"						18.96	2750.0	22.35	3241		" "
1	14	1932.0	"						18.96	2749.7	22.33	3238		" "
2	15	1937.0	22.7		0.01	1.422		6.00	18.97	2751.5	22.47	3259		Took segregated
2	15	1937.0	10.4		0.05	0.782		1.25	18.97	2751.5	22.47	3259		samples
3	16	1940.0	22.7	14.0				0.50	18.98	2752.3	22.53	3268		Took segregated
3	16	1940.0	3.8	Preserved for full analysis					18.98	2752.3	22.53	3268		samples
4	17	1951.5	Pretest						-	-	22.68	3289		Tight, invalid
4	18	1951.3	22.7	2.50		0.232	7.50(water+emulsion)		19.08	2766.6	22.63	3282		Took segregated
4	18	1951.3	10.4	2.50(oil+		0.136	emulsion+filtrate)		19.08	2766.6	22.63	3282		samples
4	19	1962.0	Pretest						19.10	2770.7	22.62	3281		Valid pretest
4	20	1957.1	"						-	-	22.53	3267		Tight, invalid
4	21	1957.2	"						-	-	22.55	3270		Tight, invalid
4	22	1954.0	"						-	-	22.52	3266		Tight, invalid
5	23	1962.0	"						-	-	22.82	3309		Tight, invalid
5	24	1961.9	22.7			0.020		21.50	19.11	2771.9	22.78	3304		Took segregated
5	24	1961.9	10.4			0.014		9.30	19.11	2771.9	22.78	3304		samples

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

<u>TEST</u>	<u>SEAT</u>	<u>DEPTH</u> (METRES) K.B.	<u>CHAMBER</u>	<u>RECOVERY (LITRES)</u>				<u>FILTRATE</u>	<u>HEWLETT-PACKARD</u> <u>FORMATION PRESSURE</u>		<u>HEWLETT-PACKARD</u> <u>HYDROSTATIC PRESSURE</u>		<u>HORIZONTAL</u> <u>PERMEABILITY</u>	<u>REMARKS</u>
				<u>OIL</u>	<u>COND.</u>	<u>GAS</u>	<u>FORMATION</u> <u>WATER</u>		<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>	<u>Psia</u>	<u>millidarcies</u>	
			Litres	Litres	Litres	m ³	Litres							
5	25	1960.5	Pretest								22.57	3274		Tight, invalid
5	26	1957.0	"								22.54	3269		Tight, seal failed
5	27	1953.8	"								22.48	3260		Tight, invalid
5	28	1959.8	"								22.58	3275		Tight, invalid
6	29	2694.0	"								31.06	4505		Tight, invalid
6	30	2692.0	"					26.21	3800.7		36.08	4499		Valid pretest
6	31	2661.5	"					26.19	3798.1		30.65	4445		" "
6	32	2665.5	"								30.67	4448		No seal
6	33	2665.5	"					26.18	3797.0		30.66	4447		Valid pretest
6	34	2621.5	"					25.61	3714.6		30.17	4375		" "
6	35	2592.5	"					25.37	3679.0		29.85	4329		" "
6	36	2583.0	"					25.43	3688.2		29.76	4316		" "
6	37	2562.5	"					25.06	3634.3		29.46	4273		" (tight)
6	38	2562.0	"					25.08	3636.7		29.52	4282		" "
6	39	2558.0	"					25.05	3633.4		29.44	4270		" "
6	40	2526.5	"								29.08	4217		No seal
6	41	2526.5	"					24.53	3557.1		29.10	4220		Valid pretest
6	42	2507.0	"					24.40	3538.5		28.86	4186		" "
6	43	2500.0	"					24.39	3536.8		28.80	4177		" "
6	44	2495.0	"					24.36	3532.6		28.77	4172		" "
6	45	2488.0	"					24.29	3522.7		28.66	4157		" "
6	46	2456.0	"					23.93	3471.1		28.94	4197		" "
6	47	2398.5	"					23.38	3391.0		27.67	4013		" "
6	48	2292.7	"								26.51	3845		Tight, invalid
6	49	2292.6	"					22.33	3238.2		26.49	3842		Valid pretest
6	50	2203.0	"					21.46	3111.8		25.48	3696		" "
6	51	2116.5	"					20.60	2988.0		24.51	3555		" "
7	52	2513.0	"					24.48	3550.0		28.99	4205		" "

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

TEST	SEAT	DEPTH (METRES) K.B.	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		HORIZONTAL PERMEABILITY	REMARKS	
			CHAMBER Litres	OIL Litres	COND. Litres	GAS m ³	FORMATION WATER Litres	FILTRATE	MPaa	Psia	MPaa	Psia		millidarcies
7	53	2674.5	"											
7	54	2672.5	"											Tight, invalid
7	55	2662.0	"											" "
7	56	2662.0	22.7		0.30	2.180		8.50	26.20	3799.9	30.62	4441		Took segregated
7	56	2662.0	3.8		0.03	0.575		0.40	26.20	3799.9	30.62	4441		samples
8	57	2678.0	"								30.90	4481		Tight, leaking
			"											packer
8	58	2677.0	"						26.35	3821.5	30.79	4465		Valid pretest
9	59	2630.0	Pretest						26.28	3810.8	30.78	4464		" "
9	60	2674.5	"						26.33	3818.1	30.83	4471		" "
9	61	2692.0	22.7	19.00	(emul-	1.634		26.23	3803.5	31.00	4496			
9	61	2692.0	10.4	5.60	sion)	0.858		26.23	3803.5	31.00	4496			Took segregated
10	62	2670.0	22.7			0.045		20.50	26.27	3810.4	30.74	4459		samples
10	62	2670.0	10.4			0.023		8.60	26.27	3810.4	30.74	4459		Took segregated
11	63	2608.0	Pretest						25.50	3698.5	29.98	4348		samples
11	64	2535.0	"						25.28	3666.5	29.70	4308		Valid pretest
11	65	2558.0	22.7		0.50	3.565		2.00	25.05	3633.5	29.38	4261		" "
11	65	2558.0	10.4		0.17	1.654		0.19	25.06	3634.0	29.39	4263		Took segregated
12	66	2538.0	Pretest						24.69	3580.9	29.21	4237		samples
12	67	2519.0	"						24.51	3554.6	28.96	4200		Valid pretest
12	68	2477.2	"						-	-	28.47	4129		" "
12	69	2477.3	"						-	-	28.50	4133		Tight, invalid
12	70	2477.0	"						24.32	3526.9	28.49	4132		" "
12	71	2495.5	22.7	14.75	(oil &	0.765		6.25	24.37	3533.8	28.70	4163		Valid pretest
12	71	2495.5	10.4	7.00	emulsion)	0.546		1.25	24.36	3533.7	28.70	4162		Took segregated
13	72	2477.0	22.7		0.06	3.075		6.35	24.33	3528.7	28.54	4139		samples
13	73	2488.0	10.4		0.02	1.263		1.75	24.30	3524.0	28.55	4140		Took unsegregated

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

		<u>HEWLETT-PACKARD</u>		<u>HEWLETT-PACKARD</u>			<u>HORIZONTAL</u>							
		<u>RECOVERY (LITRES)</u>		<u>FORMATION PRESSURE</u>			<u>HYDROSTATIC PRESSURE</u>		<u>PERMEABILITY</u>					
<u>TEST SEAT</u>	<u>DEPTH</u>	<u>CHAMBER</u>	<u>OIL</u>	<u>COND.</u>	<u>GAS</u>	<u>FORMATION</u>	<u>FILTRATE</u>	<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>	<u>Psia</u>	<u>millidarcies</u>	<u>REMARKS</u>	
	<u>(METRES)</u>					<u>WATER</u>								
	<u>K.B.</u>	Litres	Litres	Litres	m ³	Litres								
14	74	2559.0	Pretest					25.07	3636.5	29.46	4272		Valid pretest	
14	75	2561.0	"					25.09	3638.2	29.37	4259		" "	
14	76	2571.0	"					25.13	3644.6	29.50	4279		" "	
14	77	2563.5	22.7	}	}	}	}	}	}	}	}	}	Took unsegregated sample. Opened same chamber at 3 seats	
14	78	2568.2	22.7											
14	79	2568.0	22.7											
14	80	2562.0	10.4	0.10	1.642		0.28	25.06	3633.8	29.35	4257			
15	81	2456.0	Pretest					23.94	3471.8	27.71	4019		Valid pretest	
15	82	2692.0	"					26.19	3798.5	30.32	4398		" "	
15	83	3015.0	"					-	-	33.97	4927		No seal	
15	84	3015.0	"					-	-	33.97	4927		Tight, invalid	
15	85	3010.0	"					-	-	33.95	4924		Seal failed	
15	86	3010.0	"					-	-	33.86	4911		" "	
15	87	3010.5	"					-	-	33.90	4916		Tight, invalid	
15	88	3009.5	"					-	-	33.86	4911		" "	
15	89	2994.0	"					30.06	4359.0	33.61	4875		Valid pretest	
15	90	2986.5	"					-	-	33.59	4871		Seal failed	
15	91	2987.0	"					-	-	33.60	4873		" "	
15	92	2983.0	"					-	-	33.56	4868		" "	
15	93	2984.0	"					29.96	4345.4	33.53	4863		Valid pretest	
15	94	2976.5	"					29.83	4326.0	33.46	4853		" "	
15	95	2966.8	"					29.84	4326.7	33.31	4831		" "	
15	96	2948.0	"					29.60	4293.2	33.08	4797		" "	
15	97	2935.5	"					29.42	4266.5	32.99	4785		" "	
15	98	2889.0	"					-	-	32.43	4703		Tight, invalid	
15	99	2888.7	"					28.75	4170.1	32.52	4716		Valid pretest	
15	100	2875.0	"					-	-	32.34	4691		Tight, invalid	
15	101	2849.0	"					28.42	4121.7	32.01	4643		Valid pretest	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

<u>TEST</u>	<u>SEAT</u>	<u>DEPTH</u> <u>(METRES)</u> <u>K.B.</u>	<u>CHAMBER</u>	<u>RECOVERY (LITRES)</u>			<u>FORMATION</u> <u>WATER</u>	<u>FILTRATE</u>	<u>HEWLETT-PACKARD</u> <u>FORMATION PRESSURE</u>		<u>HEWLETT-PACKARD</u> <u>HYDROSTATIC PRESSURE</u>		<u>HORIZONTAL</u> <u>PERMEABILITY</u>	<u>REMARKS</u>
				<u>OIL</u>	<u>COND.</u>	<u>GAS</u>			<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>	<u>Psia</u>	<u>millidarcies</u>	
			Litres	Litres	Litres	m ³	Litres							
15	102	2838.0	"					28.34	4110.0	31.89	4625		Valid pretest	
15	103	2834.0	"					28.29	4102.5	31.90	4626		" "	
15	104	2830.0	"					-	-	31.88	4623		Tight, invalid	
15	105	2830.5	"					28.25	4097.1	31.88	4624		Valid pretest	
15	106	2823.5	"					28.13	4079.8	31.78	4609		" "	
15	107	2821.5	"					28.12	4078.4	31.75	4605		" "	
15	108	2817.5	"					28.13	4079.9	31.72	4600		" "	
15	109	2814.5	"					28.12	4079.0	31.72	4601		" "	
15	110	2806.5	"					-	-	31.59	4582		Seal failed	
15	111	2806.7	"					-	-	31.59	4582		Tight, invalid	
15	112	2793.0	"					27.67	4012.7	31.44	4560		Valid pretest	
15	113	2776.5	"					-	-	31.23	4529		Tight, invalid	
15	114	2776.3	"					27.54	3994.8	31.25	4532		Valid pretest	
15	115	2767.0	"					-	-	31.19	4523		No seal	
15	116	2766.7	"					27.51	3989.6	31.18	4522		Valid pretest	
15	117	2761.5	"					-	-	31.08	4508		Tight, invalid	
15	118	2762.0	"					-	-	31.10	4510		Seal failed	
15	119	2759.0	"					-	-	31.08	4508		Tight, invalid	
15	120	2756.0	"					27.46	3982.8	31.03	4501		Valid pretest	
15	121	2736.5	"					-	-	30.81	4469		Poor seal, invalid	
15	122	2736.3	"					27.18	3941.5	30.86	4476		Valid pretest	
15	123	2728.5	"					-	-	30.76	4461		Tool failed	
16	124	2728.5	"					-	-	30.71	4454		Tight, invalid	
16	125	2722.3	"					-	-	30.68	4450		Seal failed	
16	126	2722.8	"					-	-	30.66	4446		Tight, invalid	
16	127	2716.0	"					-	-	30.59	4436		Seal failed	
16	128	2715.6	"					-	-	30.59	4436		Tight, invalid	
16	129	2716.5	"					26.99	3914.7	30.59	4437		Valid pretest	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

TEST SEAT	<u>HEWLETT-PACKARD</u>		<u>HEWLETT-PACKARD</u>			<u>HORIZONTAL</u>		<u>PERMEABILITY</u>		REMARKS			
	<u>RECOVERY (LITRES)</u>		<u>FORMATION PRESSURE</u>			<u>HYDROSTATIC PRESSURE</u>							
	<u>DEPTH</u> <u>(METRES)</u> <u>K.B.</u>	<u>CHAMBER</u> <u>Litres</u>	<u>OIL</u> <u>Litres</u>	<u>COND.</u> <u>Litres</u>	<u>GAS</u> <u>m³</u>	<u>FORMATION</u> <u>WATER</u> <u>Litres</u>	<u>FILTRATE</u>	<u>MPaa</u>	<u>Psia</u>		<u>MPaa</u>	<u>Psia</u>	<u>millidarcies</u>
16 130	2706.5	"											
16 131	2701.5	"											
16 132	2695.5	"						26.45	3835.6	30.48	4421		Fluctuating, invalid
16 133	2920.5	"						26.20	3800.3	30.41	4410		Valid pretest
16 134	2981.0	"								30.34	4401		" "
16 135	2984.0	"								33.87	4912		
16 136	2924.5	22.7								33.54	4864		Slow leak, invalid
16 137	2968.0	10.4			0.003					33.52	4862		Tight, invalid
					trace	0.742		3.70		33.52	4862		Slow leak, invalid
								5.50	29.82	4324.6	33.32	4832	Pretest invalid,
17 138	2948.0	Pretest											took unsegregated
17 139	2947.8	22.7											samples
17 139	2947.8	10.4		0.020	2.444		7.25	29.61	4294.4	33.20	4815		Seal failed, invalid
18 140	2830.5	22.7		0.025	1.685		1.00	29.61	4294.4	33.14	4807		Took segregated
18 141	2830.7	22.7								33.14	4807		sample
18 142	2830.6	22.7								31.85	4620		Pretests invalid.
19 143	2834.0	Pretest								31.85	4620		Took unsegregated
19 144	2833.0	"								31.84	4618		sample from 3 seats
19 145	2833.5	22.7								31.96	4635		Tight, invalid
19 146	2833.5	22.7						28.22	4092.6	31.98	4638		Valid pretest
19 146	2833.5	10.4			0.340		12.00	28.24	4095.5	31.95	4634		Attempted seg. sample
20 147	2701.5	22.7			trace	0.470				31.94	4633		Took segregated
20 147	2701.5	10.4								31.94	4633		sample
21 148	2706.2	22.7					6.50	26.31	3816.1	30.50	4424		Took segregated
21 149	2706.5	22.7					9.50	26.31	3816.1	30.50	4424		samples
21 150	2706.5	22.7								30.48	4420		Too tight to sample
21 151	2706.2	22.7								30.48	4420		Too tight to sample
21 151	2706.2	22.7								30.49	4422		Too tight to sample
21 151	2706.2	10.4					4.50	26.44	3834.1	30.50	4423		Took segregated
							6.25	26.44	3834.1	30.50	4423		samples

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - BREAM 5

<u>TEST SEAT</u>	<u>DEPTH</u> <u>(METRES)</u> <u>K.B.</u>	<u>RECOVERY (LITRES)</u>					<u>FILTRATE</u>	<u>HEWLETT-PACKARD</u> <u>FORMATION PRESSURE</u>		<u>HEWLETT-PACKARD</u> <u>HYDROSTATIC PRESSURE</u>		<u>HORIZONTAL</u> <u>PERMEABILITY</u>	<u>REMARKS</u>
		<u>CHAMBER</u>	<u>OIL</u>	<u>COND.</u>	<u>GAS</u>	<u>FORMATION</u> <u>WATER</u>		<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>	<u>Psia</u>	<u>millidarcies</u>	
		Litres	Litres	Litres	m ³	Litres							
22	152	2716.0	Pretest					-	-	30.62	4441		Tight, invalid
22	153	2715.5	22.7		0.003		11.50	26.76	3881.6	30.62	4441		Took segregated
22	153	2715.5	10.4		0.013		8.90	26.76	3881.6	30.62	4441		samples
23	154	2756.2	22.7		0.006		9.50	-	-	31.26	4534		Took segregated
23	154	2756.2	10.4		0.177		4.25	-	-	31.26	4534		samples
24	155	2695.5	22.7		0.002		9.00	26.24	3805.6	30.57	4433		Took segregated
24	155	2695.5	10.4		0.0003		9.00	26.24	3805.6	30.57	4433		samples
25	156	2849.0	22.7					-	-	33.22	4673		Too tight to sample
25	157	2849.2	22.7	0.02	0.807		9.50	28.50	4133.5	32.21	4672		Took segregated
25	157	2849.2	10.4	0.02	1.169		1.25	28.50	4133.5	32.21	4672		sample
26	158	3200.0	Pretest					-	-	36.07	5232		Tight, invalid
26	159	3198.0	"					33.30	4829.7	36.00	5221		Valid pretest
26	160	3196.1	"					33.41	4845.7	35.98	5218		"
26	161	3196.2	"					34.95	5069.1	35.97	5217		"
26	162	3197.7	"					-	-	35.98	5218		Tight, invalid
26	163	3198.4	22.7				} 1.75	33.35	4836.5	35.95	5216		Took unsegregated
26	164	3196.2	22.7					34.92	5064.3	35.94	5213		
26	165	3080.0	Pretest					30.98	4492.5	34.63	5023		Valid pretest
26	166	3080.5	"					31.03	4500.0	34.68	5030		"
26	167	3066.7	"					31.13	4515.4	-	-		Slow leak
26	168	3070.2	"					-	-	34.59	5017		Seal failed
26	169	3070.2	"					-	-	-	-		Tight, invalid
26	170	3080.5	10.4					-	-	34.71	5034		Too tight to sample
26	171	3066.7	10.4		0.005		4.75	31.14	4516.4	-	-		Took unseg. sample
26	172	3026.2	Pretest					-	-	-	-		Tight, invalid
26	173	3016.1	"					30.44	4414.4	-	-		Valid pretest
26	174	3197.7	"					-	-	35.99	5219		Tight, invalid
27	175	3016.1	"					-	-	34.01	4933		Seal failed
27	176	3016.2	22.7		0.009		10.00	30.48	4421.2	34.00	4931		Took segregated
27	176	3016.2	10.4				6.75	30.48	4421.2	34.00	4931		samples

8. BREAM 5 TEMPERATURE RECORD

LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (°C)	CIRCULATION TIME (t_k) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER TEMPERATURE (°C)	GEO THERMAL GRADIENT (°C/km)
<u>Suite 1</u>						
ISF BHC CAL GR	805	33.8	1	2-3/4		
<u>Suite 2</u>						
DLL MSFL GR	2060	75.5		4-1/4		
LDL CNL GR	2062	79.0	1-1/4	10-1/4	92.5	198.5°F 44.7
BHC SP GR	2060	83.2		14-1/2		0.0447
HDT	2061	85.5		18-1/2		
<u>Suite 3</u>						
DLL MSFL GR	2703	108.8		7-1/2		
LDL CNL GR	2707	118.6	1	12-1/2	136.0	50.3
<u>Suite 4</u>						
DLL MSFL GR	3016	115.0		5-3/4		
LDL CNL GR	3019	124.4	1-1/4	12	135.0	275°F 44.6
<u>Suite 5</u>						
DLL MSFL GR	3320	128.8		7		
LDL CNL GR	3324	133.3		15		
BHC GR	3325	135.0	1	18-3/4	138.0	280°F 41.3
HDT	3325	135.0		26-1/2		

35.5
17.7

FIGURES

BREAM-5 LOCALITY MAP

SCALE - 1:250 000

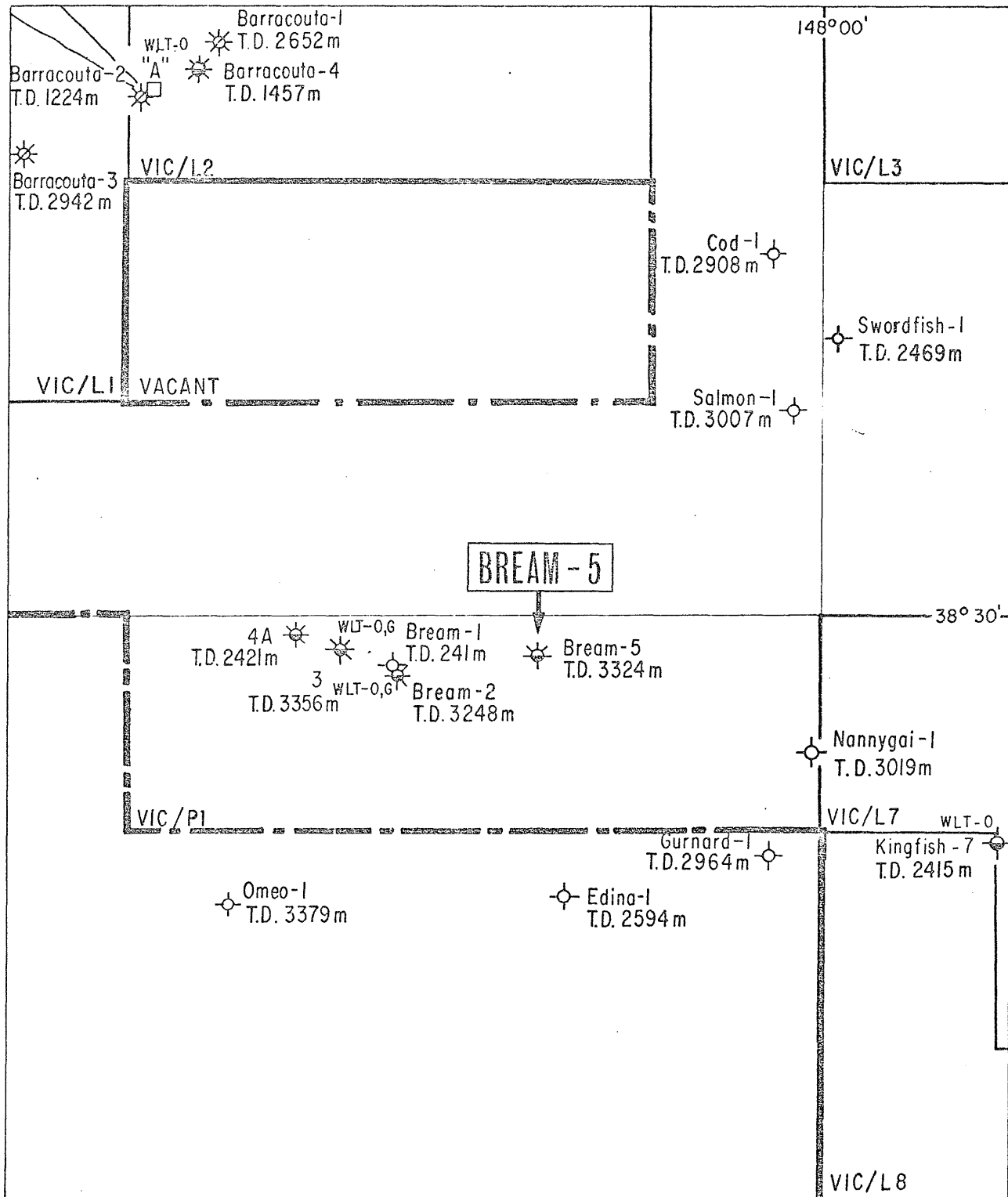


Figure 1

FIGURE 2

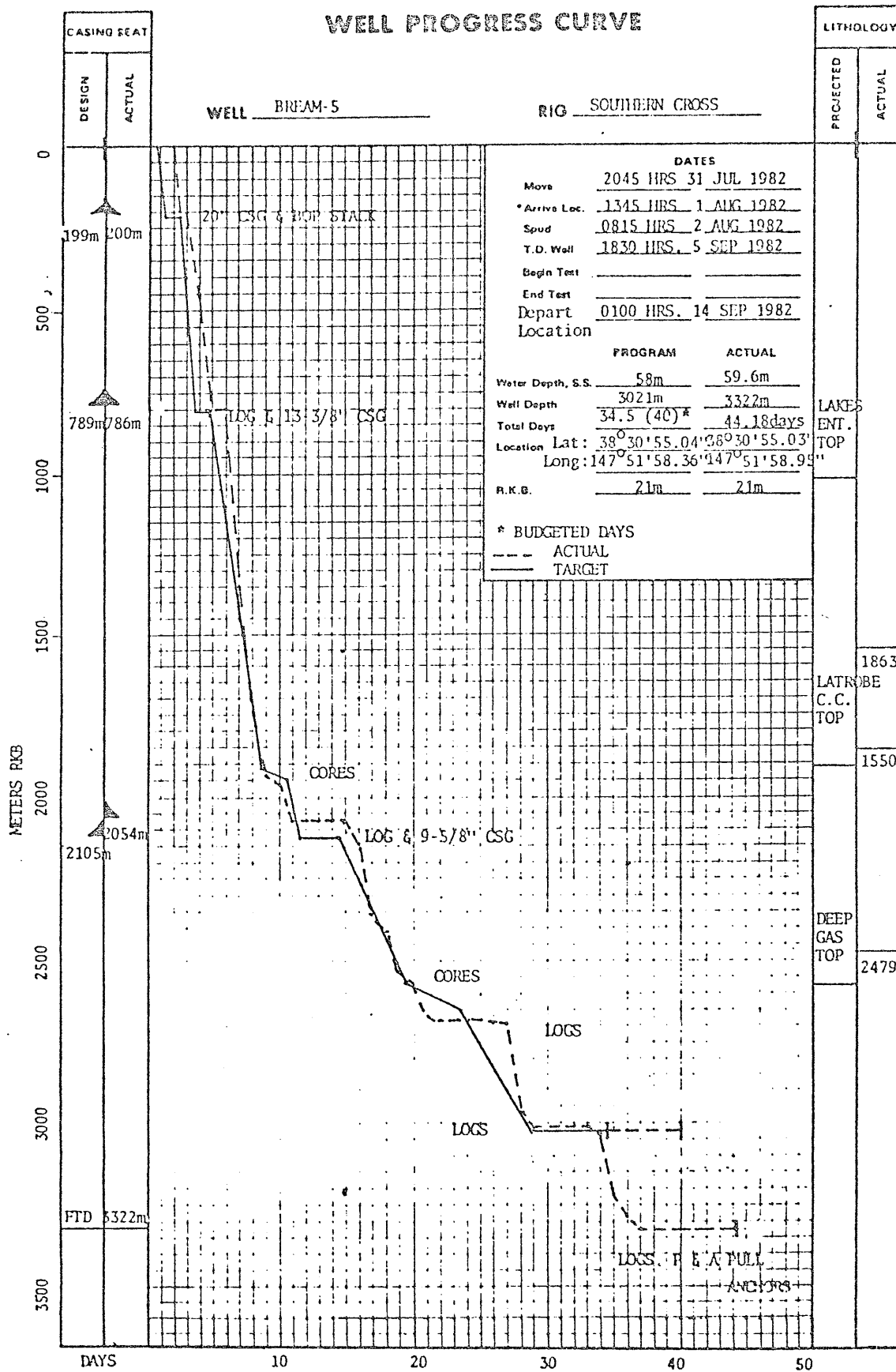


FIGURE 3.

RKB

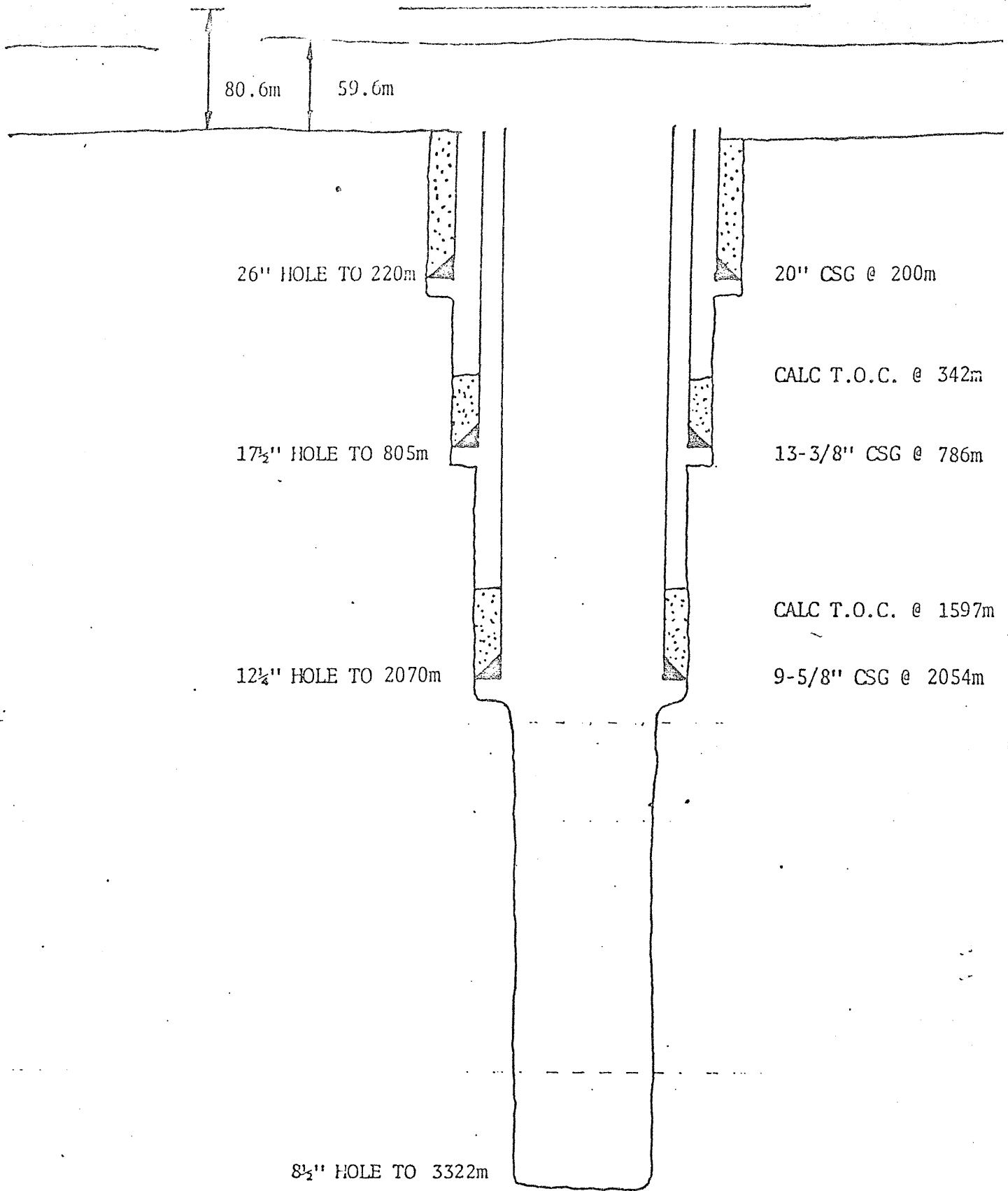
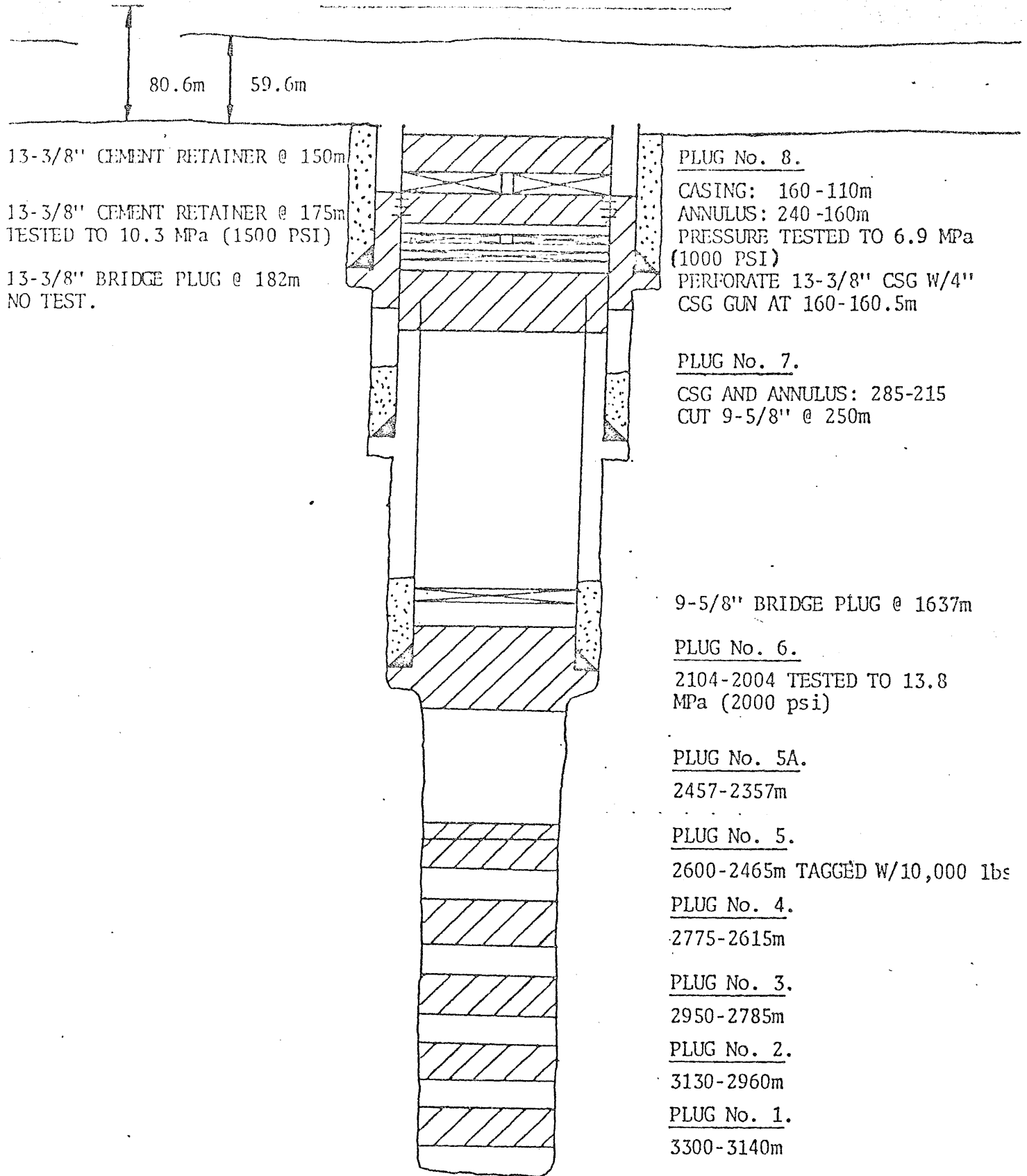


FIGURE 4.

RKB



13-3/8" CEMENT RETAINER @ 150m

13-3/8" CEMENT RETAINER @ 175m
TESTED TO 10.3 MPa (1500 PSI)

13-3/8" BRIDGE PLUG @ 182m
NO TEST.

PLUG No. 8.

CASING: 160-110m
ANNULUS: 240-160m
PRESSURE TESTED TO 6.9 MPa
(1000 PSI)
PERFORATE 13-3/8" CSG W/4"
CSG GUN AT 160-160.5m

PLUG No. 7.

CSG AND ANNULUS: 285-215
CUT 9-5/8" @ 250m

9-5/8" BRIDGE PLUG @ 1637m

PLUG No. 6.

2104-2004 TESTED TO 13.8
MPa (2000 psi)

PLUG No. 5A.

2457-2357m

PLUG No. 5.

2600-2465m TAGGED W/10,000 lbs

PLUG No. 4.

2775-2615m

PLUG No. 3.

2950-2785m

PLUG No. 2.

3130-2960m

PLUG No. 1.

3300-3140m

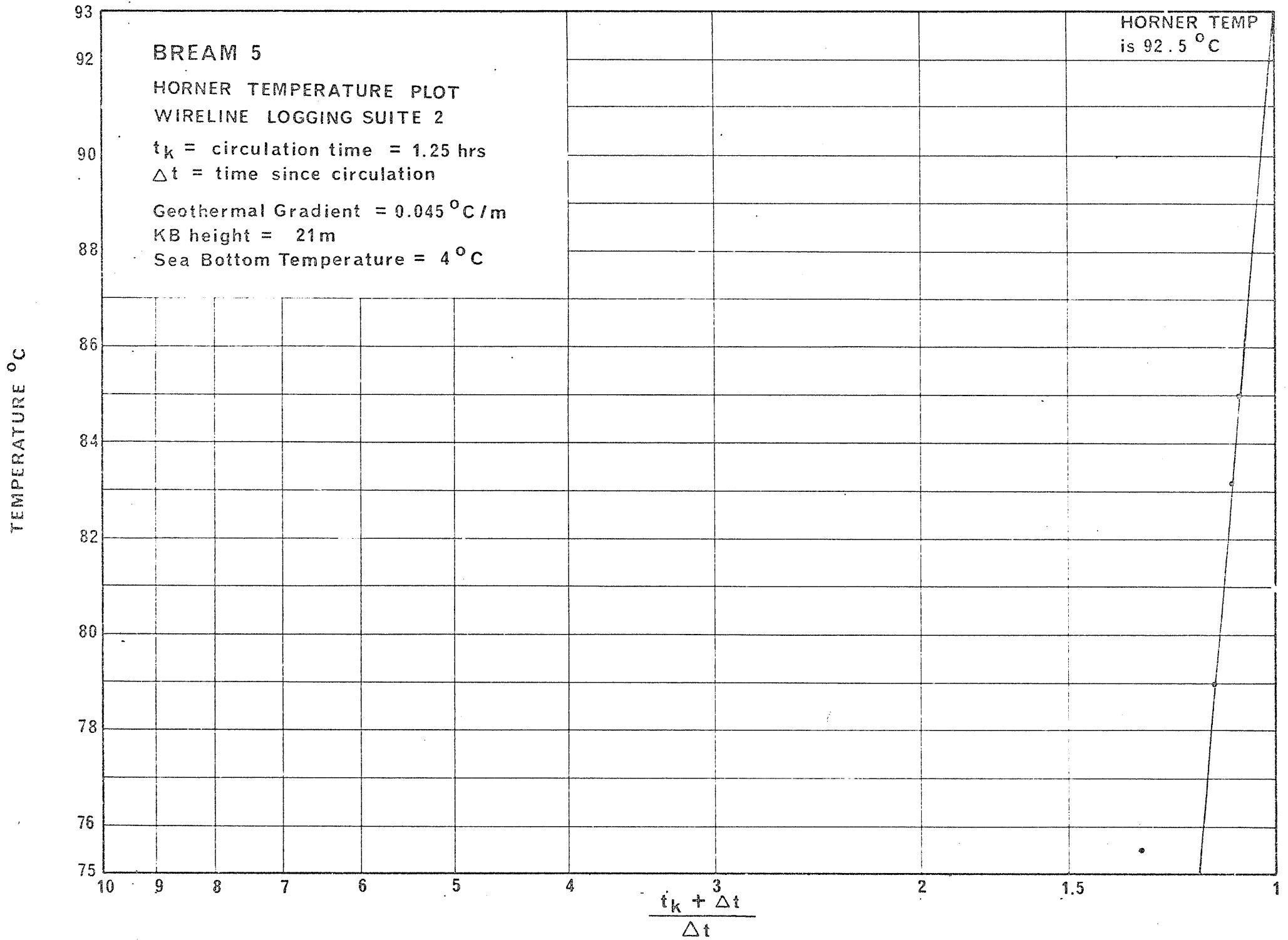
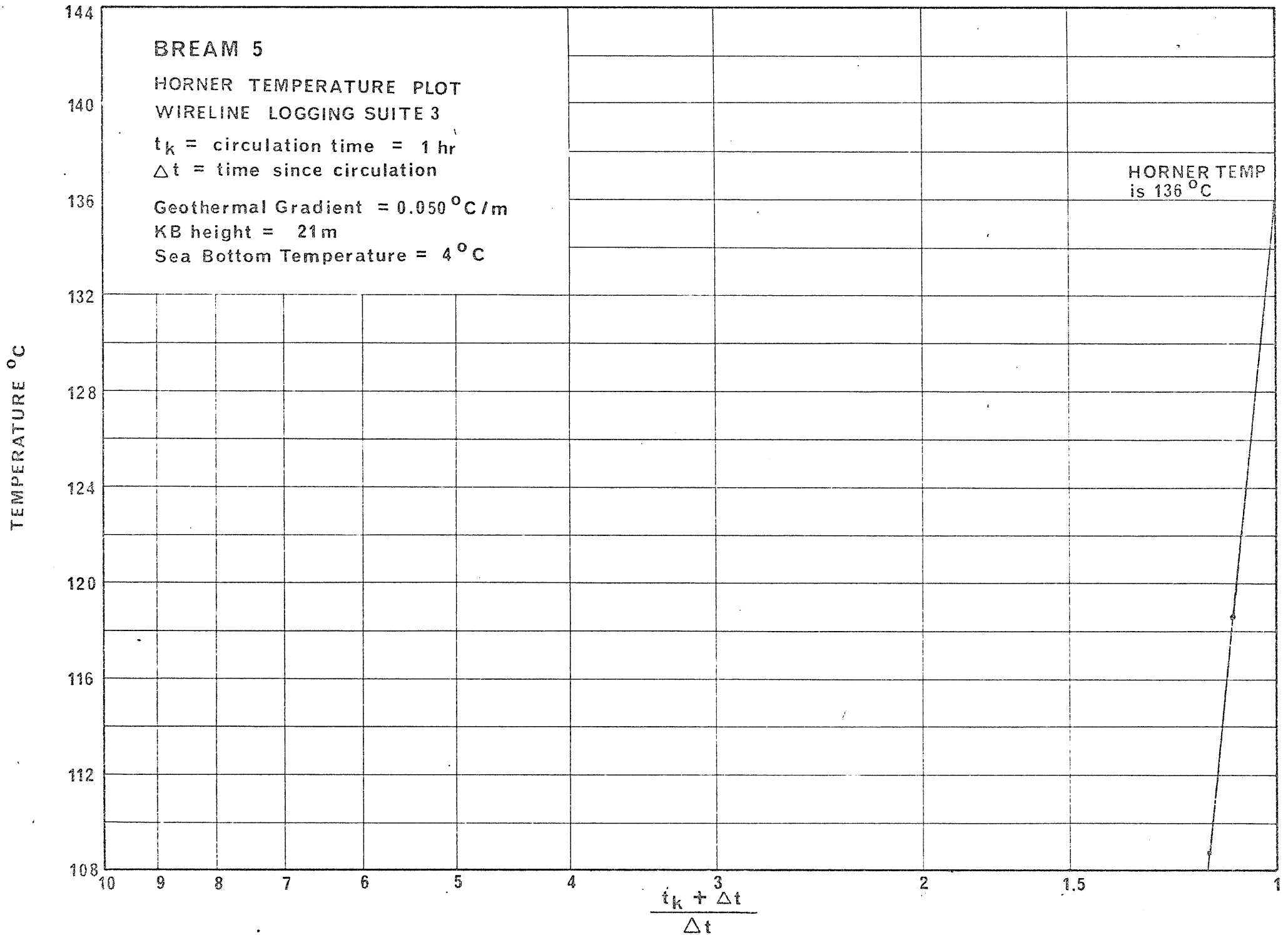
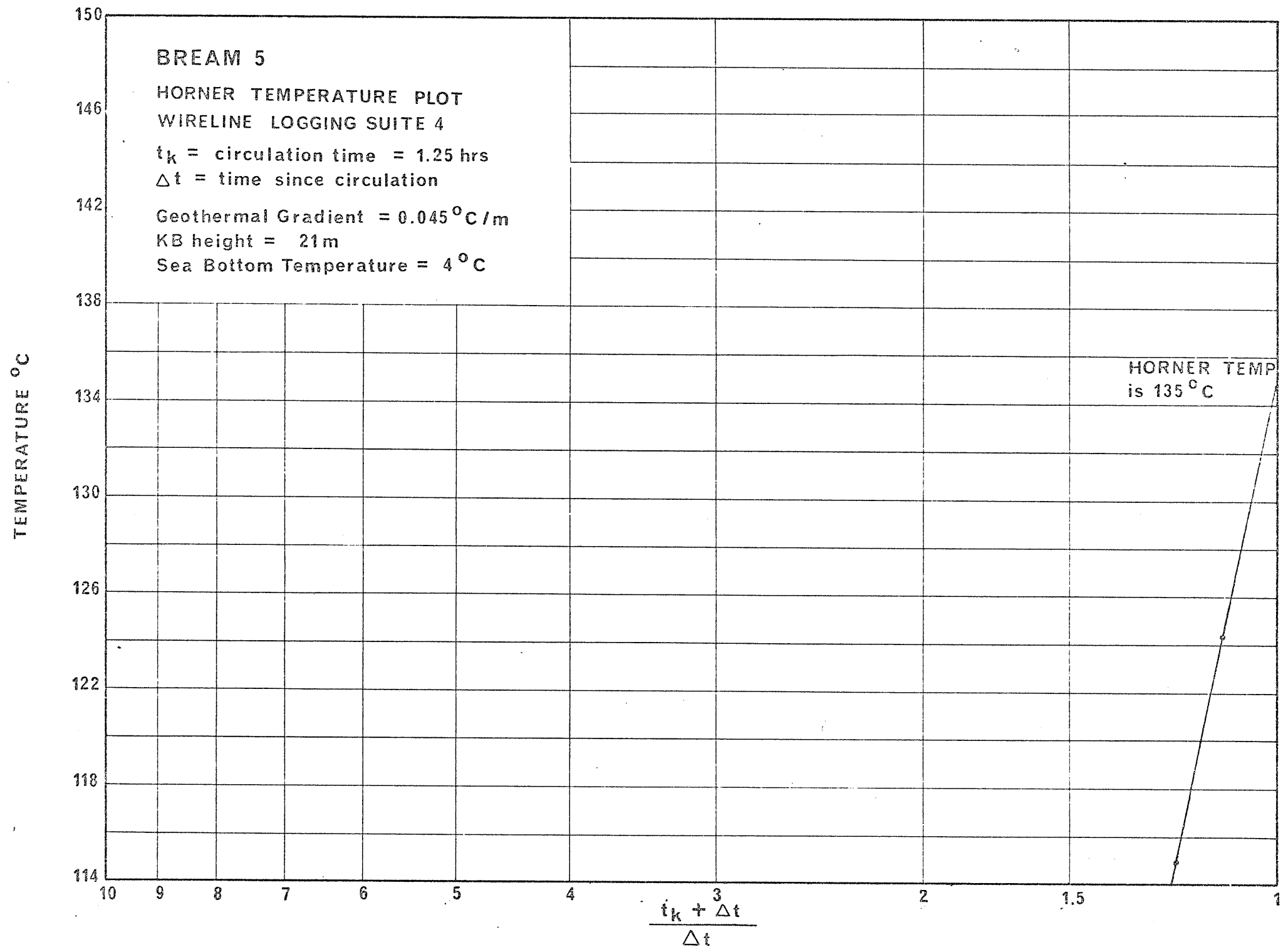
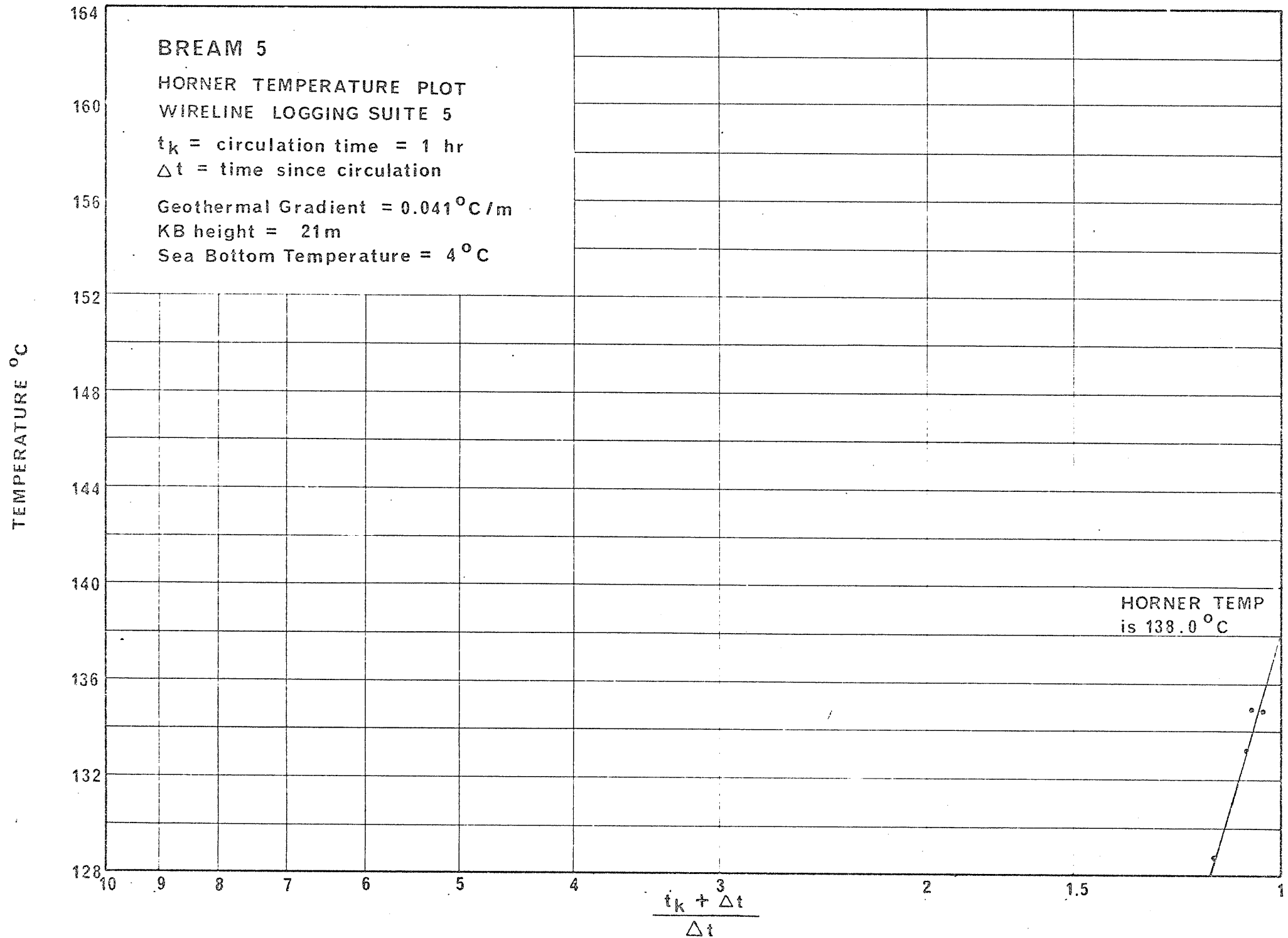
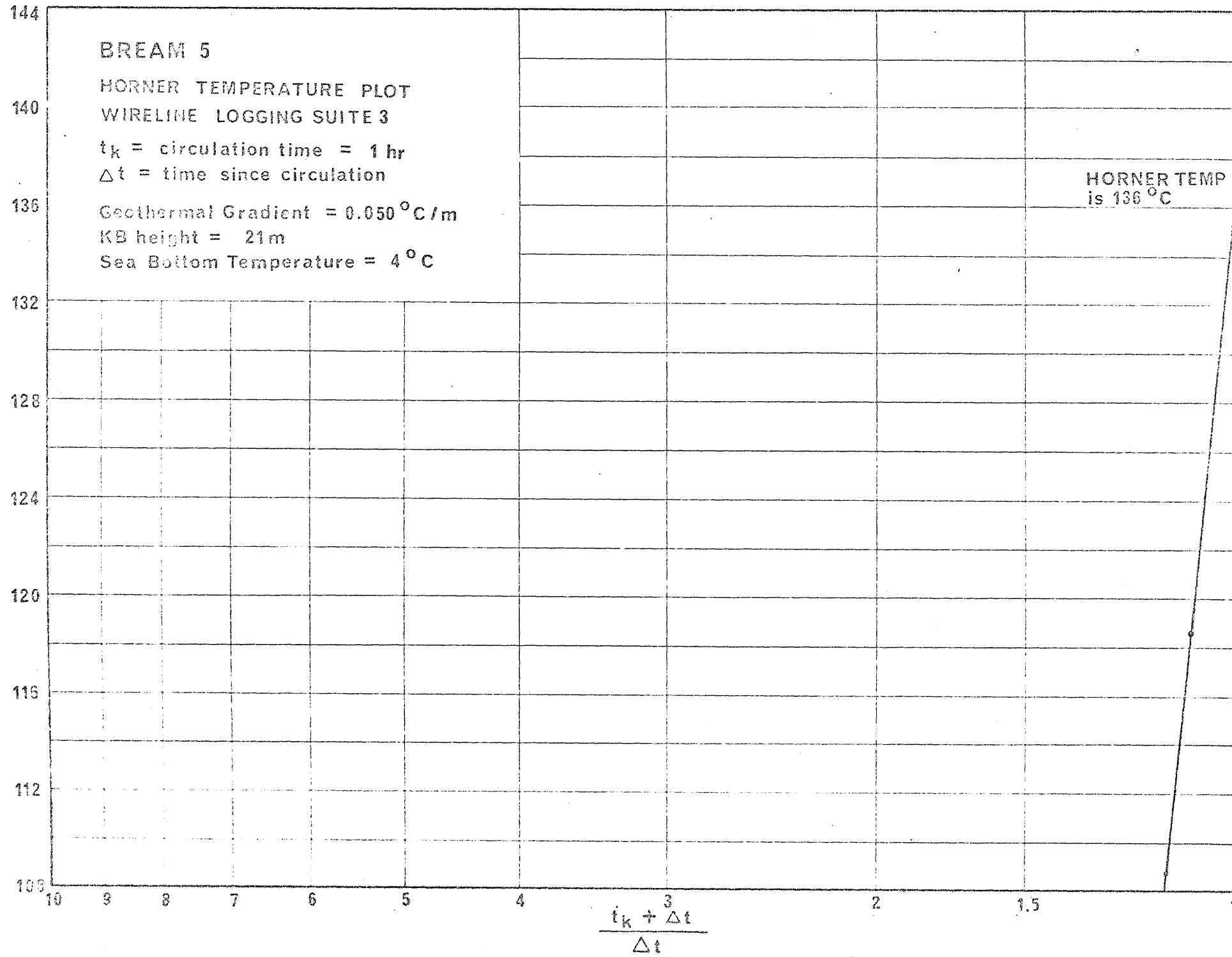


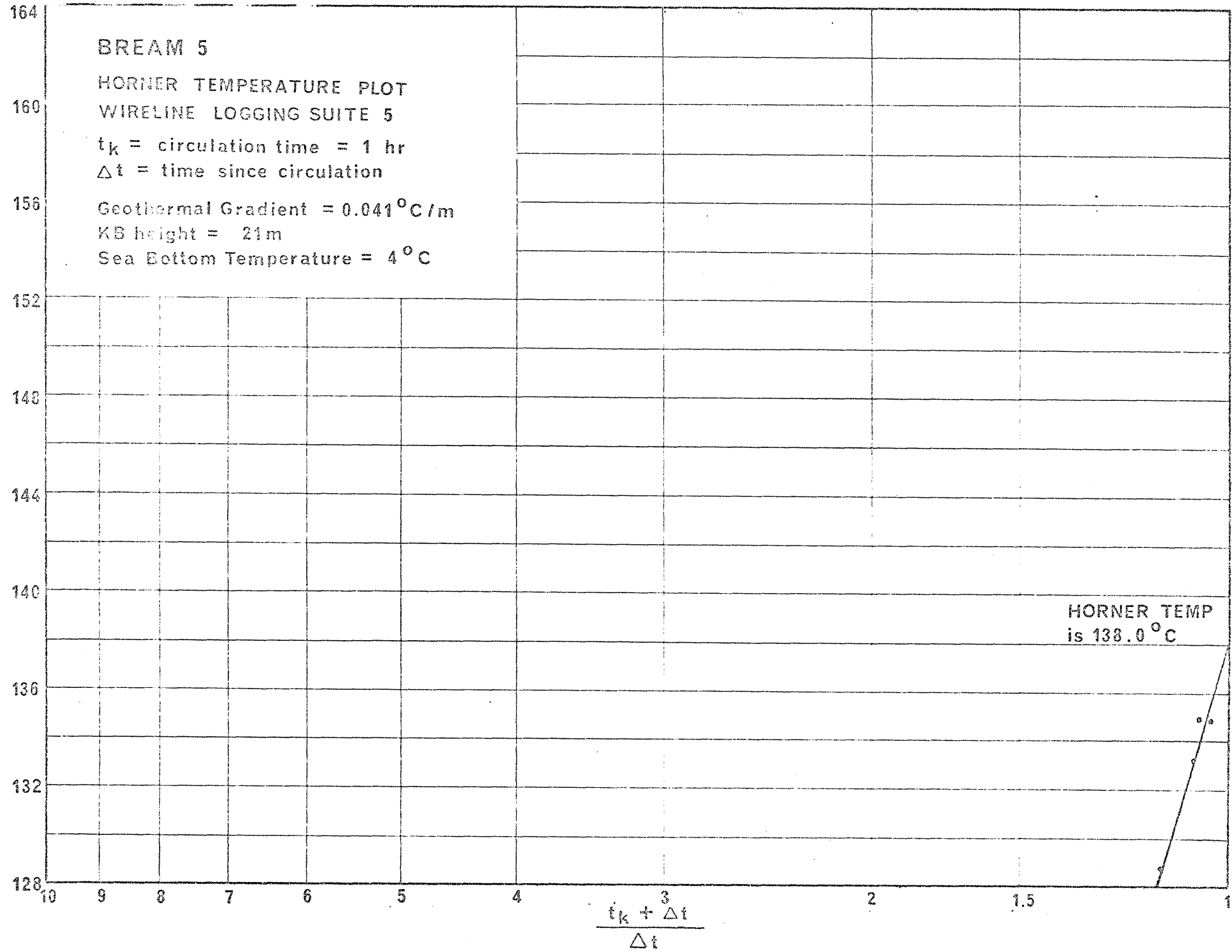
FIGURE 5A.











BREAM 5

HORNER TEMPERATURE PLOT

WIRELINE LOGGING SUITE 4

t_k = circulation time = 1.25 hrs

Δt = time since circulation

Geothermal Gradient = $0.045^\circ\text{C}/\text{m}$

KB height = 21m

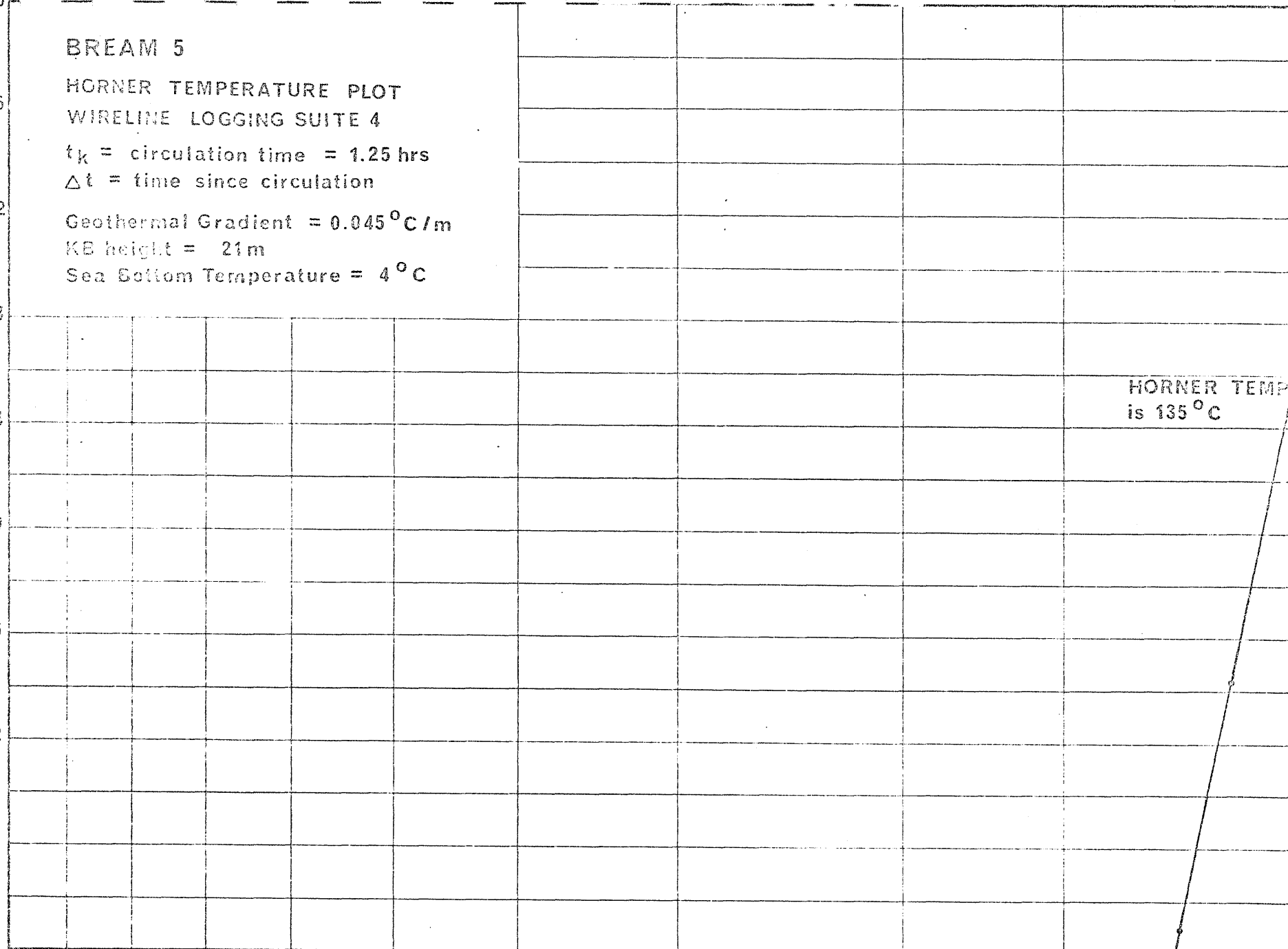
Sea Bottom Temperature = 4°C

TEMPERATURE $^\circ\text{C}$

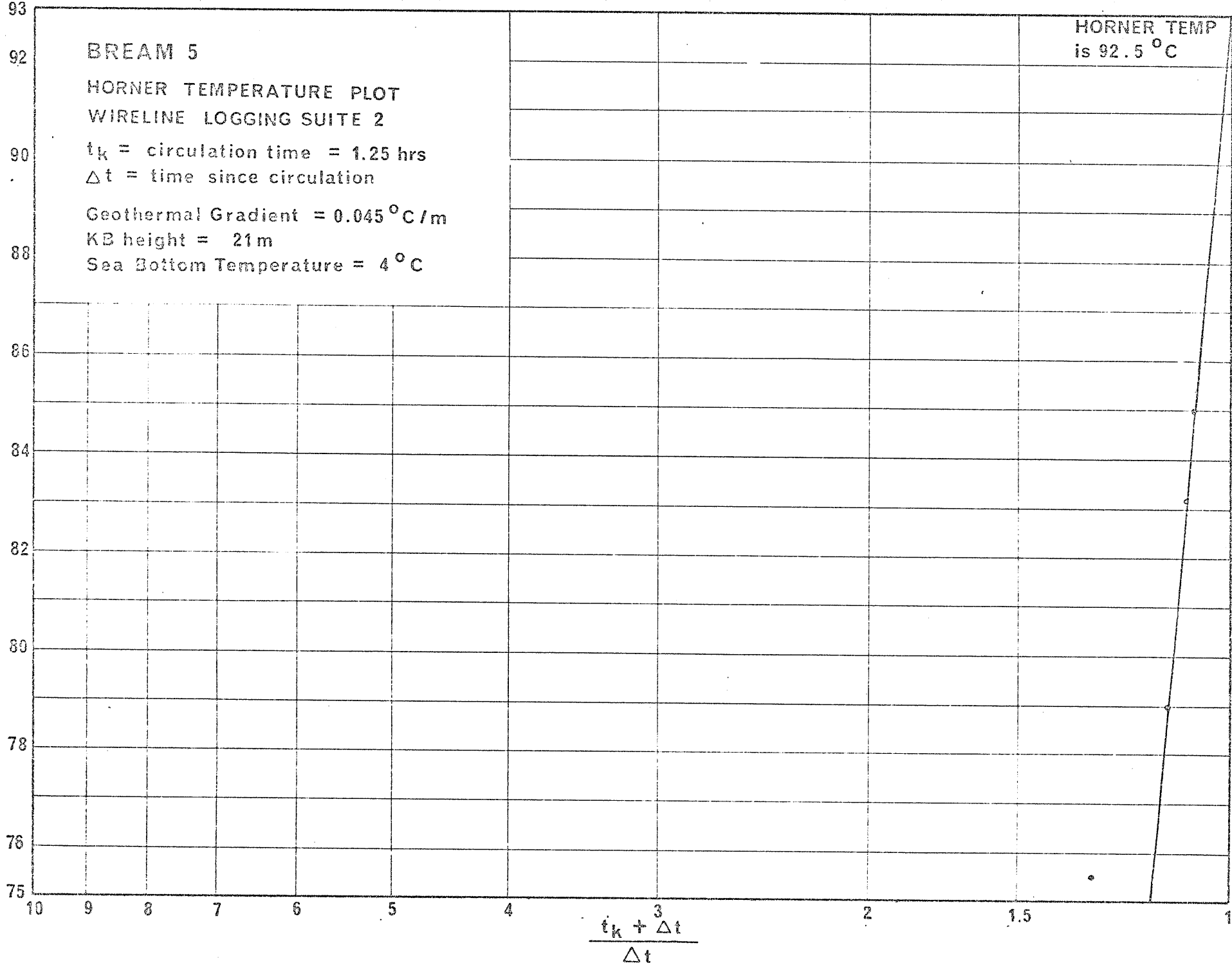
146
142
138
134
130
126
122
118
114

10 9 8 7 6 5 4 $\frac{t_k + \Delta t}{\Delta t}$ 3 2 1.5 1

HORNER TEMP
is 135°C



TEMPERATURE °C



APPENDIX 1

APPENDIX 1

Lithological Descriptions

OIL and GAS DIVISION

17 MAY 1983

BREAM 5

LITHOLOGY DESCRIPTION

<u>Depth</u>	<u>%</u>	<u>Description</u>
		17 1/2" hole and 26" hole opener to 220m with returns to seafloor. 20" casing shoe at 202m.
220 - 230m	100	CALCILUTITE: white to light grey, loose to well cemented shell fragments, coarse, angular, moderately sorted, fossil types include forams, bryozoans, sponge fragments; cement cavings also, trace white mica lumps.
230 - 240m	100	CALCILUTITE: as above.
240 - 250m	100	CALCILUTITE: as above.
250 - 260m	100	CALCILUTITE: as above.
260 - 270m	100 trace	CALCILUTITE: as above. SANDSTONE: loose quartz grains.
270 - 280m	100	CALCILUTITE: as above.
280 - 290m	100 trace	CALCILUTITE: grades from loose very coarse shell fragments to medium grained cemented shell material. SANDSTONE: loose quartz grains.
290 - 300m	100	CALCILUTITE: as above.
300 - 310m	100	CALCILUTITE: predominantly very fine grained cemented calcareous sand.
310 - 320m	100	CALCILUTITE: as above.
320 - 330m	100	CALCILUTITE: as above.
330 - 340m	100	CALCILUTITE: as above.
340 - 350m	100	CALCILUTITE: as above.
350 - 360m	100	CALCILUTITE: as above.
360 - 370m	100	CALCILUTITE: as above.
370 - 380m	100	CALCILUTITE: as above.
380 - 390m	100	CALCILUTITE: white to grey, coarse loose shell fragments to predominantly sand sized cemented calcareous grains, trace quartz grains.
390 - 400m	100	CALCILUTITE: as above.
400 - 410m	100	CALCILUTITE: as above.
410 - 420m	100	CALCILUTITE: as above.
420 - 430m	100	CALCILUTITE: as above, with white to light grey mud binding cuttings together (decline in ROPs also).
430 - 440m	100	CALCILUTITE: as above, but less mud.

440 - 450m	100	CALCILUTITE:	as above, slightly muddy.
450 - 460m	100	CALCILUTITE:	as above.
460 - 470m	100	CALCILUTITE:	as above.
470 - 480m	100	CALCILUTITE:	as above, very rich in forams.
480 - 490m	100	CALCILUTITE:	as above.
490 - 500m	100	CALCILUTITE:	white to grey, with some sand sized calcareous grains cemented as subangular to subrounded cuttings, hard, glauconitic flecking common, matrix often muddy, well preserved, forams common.
500 - 510m	100	CALCILUTITE:	as above.
510 - 520m	100	CALCILUTITE:	as above.
520 - 530m	100	CALCILUTITE:	as above.
530 - 540m	100	CALCILUTITE:	as above.
540 - 550m	100	CALCILUTITE:	as above, becoming muddier.
550 - 560m	100	CALCILUTITE:	as above.
560 - 570m	100	CALCILUTITE:	as above.
570 - 580m	100	CALCILUTITE:	as above.
580 - 590m	100	CALCILUTITE:	as above.
590 - 600m	100	CALCILUTITE:	as above.
600 - 610m	100	CALCILUTITE:	as above.
610 - 620m	100	CALCILUTITE:	as above.
620 - 630m	100	CALCILUTITE:	as above.
630 - 640m	100	CALCILUTITE:	as above.
640 - 650m	100	CALCILUTITE:	as above.
650 - 660m	100	CALCILUTITE:	as above.
660 - 670m	100	CALCILUTITE:	as above.
670 - 680m	100	CALCILUTITE:	as above.
680 - 690m	100	CALCILUTITE:	as above.
690 - 700m	100	CALCILUTITE:	as above.
700 - 710m	100	CALCILUTITE:	as above.
710 - 720m	100	CALCILUTITE:	as above.
720 - 730m	100	CALCILUTITE:	white to grey, medium to fine calcareous grains cemented together, predominantly very hard, glauconite common and ranges from flecks to medium sand sized, well preserved forams also.
730 - 740m	100	CALCILUTITE:	as above.

740 - 750m	100	CALCILUTITE: as above.
750 - 760m	100	CALCILUTITE: as above.
760 - 770m	100	CALCILUTITE: as above, but fine grained, less glauconite.
770 - 780m	100	CALCILUTITE: very fine grained.
780 - 790m	100	CALCILUTITE: as above, grades to siltstone.
790 - 800m	100	CALCILUTITE: as above.
800 - 805m	100	CALCILUTITE: as above.
		Drilled 17-1/2" hole to 805m. Set 13-3/8" casing at 786m. Drilled out with 12-1/4" bit.
805 - 810m	100	CALCILUTITE: as above, cement casing also.
810 - 815m	100	CALCILUTITE: as above, well preserved forams.
815 - 820m	100	CALCILUTITE: grades to a calcareous siltstone, ie. part carbonate, part quartzose material.
820 - 825m	100	CALCILUTITE/SILTSTONE: as above.
825 - 830m	100	CALCILUTITE/SILTSTONE: as above.
830 - 835m	100	CALCILUTITE/SILTSTONE: as above.
835 - 840m	100	CALCILUTITE/SILTSTONE: as above.
840 - 845m	100	CALCILUTITE/SILTSTONE: as above.
845 - 850m	100	CALCILUTITE/SILTSTONE: as above.
850 - 855m	100	CALCILUTITE: little siltstone.
855 - 860m	100	CALCILUTITE: as above.
860 - 865m	100	CALCILUTITE/SILTSTONE: light to medium grey, soft to hard, very fine to medium grained, well sorted, calcareous cement; grain material in part calcareous, part quartzose.
865 - 870m	100	CALCILUTITE/SILTSTONE: as above.
870 - 875m	100	CALCILUTITE/SILTSTONE: as above.
875 - 880m	100	CALCILUTITE/SILTSTONE: as above.
880 - 885m	100	CALCILUTITE/SILTSTONE: as above.
885 - 890m	100	CALCILUTITE/SILTSTONE: as above.
890 - 895m	100	CALCILUTITE/SILTSTONE: as above.
895 - 900m	100	CALCILUTITE/SILTSTONE: as above.
900 - 905m	100	CALCILUTITE/SILTSTONE: as above.
905 - 910m	100	CALCILUTITE/SILTSTONE: as above.
910 - 915m	100	CALCILUTITE/SILTSTONE: as above.
915 - 920m	100	CALCILUTITE/SILTSTONE: as above.

920 - 925m	100	CALCILUTITE/SILTSTONE:	as above.
925 - 930m	100	CALCILUTITE/SILTSTONE:	as above.
930 - 935m	100	CALCILUTITE/SILTSTONE:	as above.
935 - 940m	100	CALCILUTITE/SILTSTONE:	as above.
940 - 945m	100	CALCILUTITE/SILTSTONE:	as above.
945 - 950m	100	CALCILUTITE/SILTSTONE:	as above.
950 - 955m	100	CALCILUTITE/SILTSTONE:	white to medium grey, very soft to hard, very fine to medium grained, moderately sorted, calcareous cement; grains are calcareous and quartzose, trace forams.
955 - 960m	100	CALCILUTITE/SILTSTONE:	as above.
960 - 965m	100	CALCILUTITE/SILTSTONE:	as above.
965 - 970m	100	CALCILUTITE/SILTSTONE:	as above.
970 - 975m	100	CALCILUTITE/SILTSTONE:	as above.
975 - 980m	100	CALCILUTITE/SILTSTONE:	as above.
980 - 985m	100	CALCILUTITE/SILTSTONE:	as above.
985 - 990m	100	CALCILUTITE/SILTSTONE:	as above.
990 - 995m	100	CALCILUTITE/SILTSTONE:	as above.
995 - 1000m	100	CALCILUTITE/SILTSTONE:	as above.
1000 - 1005m	100	CALCILUTITE/SILTSTONE:	as above.
1005 - 1010m	100	CALCILUTITE/SILTSTONE:	as above.
1010 - 1015m	100	CALCILUTITE/SILTSTONE:	as above.
1015 - 1020m	100	CALCILUTITE/SILTSTONE:	as above.
1020 - 1025m	100	CALCILUTITE/SILTSTONE:	as above, with trace lumpy pyrite.
	trace	SANDSTONE:	coarse quartz grains.
1025 - 1030m	100	CALCILUTITE/SILTSTONE:	as above.
1030 - 1035m	100	CALCILUTITE/SILTSTONE:	light to medium grey, soft to firm, calcareous cement, becoming predominantly siltstone, trace coarse quartz grains, forams.
1035 - 1040m	100	CALCILUTITE/SILTSTONE:	as above.
1040 - 1045m	100	CALCILUTITE/SILTSTONE:	as above.
1045 - 1050m	100	CALCILUTITE/SILTSTONE:	as above.
1050 - 1055m	100	CALCILUTITE/SILTSTONE:	as above.
1055 - 1060m	100	CALCILUTITE/SILTSTONE:	as above.
1060 - 1065m	100	CALCILUTITE/SILTSTONE:	as above.
1065 - 1070m	100	CALCILUTITE/SILTSTONE:	as above.

1070 - 1075m	100	CALCILUTITE/SILTSTONE:	as above, mud content increasing.
1075 - 1080m	100	CALCILUTITE/SILTSTONE:	as above, trace carbonaceous matter.
1080 - 1085m	100	CALCILUTITE/SILTSTONE:	as above, continuing to become muddier.
1085 - 1090m	100	CALCILUTITE/SILTSTONE:	as above, cuttings engulfed by muddy material.
1090 - 1095m	100	CALCILUTITE/SILTSTONE:	as above, less muddy.
1095 - 1100m	100	CALCILUTITE/SILTSTONE:	as above, less muddy.
1100 - 1105m	100	CALCILUTITE/SILTSTONE:	as above, very muddy.
1105 - 1110m	100	CALCILUTITE/SILTSTONE:	as above, very muddy.
1110 - 1115m	100	CALCILUTITE/SILTSTONE:	as above, very muddy.
1115 - 1120m	100	CALCILUTITE/SILTSTONE:	as above.
1120 - 1125m	100	CALCILUTITE/SILTSTONE:	as above.
1125 - 1130m	100	CALCILUTITE/SILTSTONE:	as above, very muddy.
1130 - 1135m	100	CALCILUTITE/SILTSTONE:	as above, muddy.
1135 - 1140m	100	CALCILUTITE/SILTSTONE:	as above, less muddy.
1140 - 1145m	100	CALCILUTITE/SILTSTONE:	as above, very muddy.
1145 - 1150m	100	CALCILUTITE/SILTSTONE:	as above.
1150 - 1155m	100	CALCILUTITE/SILTSTONE:	as above.
1155 - 1160m	100	CALCILUTITE/SILTSTONE:	as above, muddy.
1160 - 1165m	100	CALCILUTITE/SILTSTONE:	as above, less muddy.
1165 - 1170m	100	CALCILUTITE/SILTSTONE:	as above.
1170 - 1175m	100	CALCILUTITE/SILTSTONE:	as above.
1175 - 1180m	100	CALCILUTITE/SILTSTONE:	as above.
1180 - 1185m	100	SILTSTONE:	medium grey, firm to hard, subangular to angular cuttings, calcareous, with some calcilutite and muddy material.
1185 - 1190m	100	SILTSTONE:	as above.
1190 - 1195m	100	SILTSTONE:	as above.
1195 - 1200m	100	SILTSTONE:	as above.
1200 - 1205m	100	SILTSTONE:	as above.
1205 - 1210m	100	SILTSTONE:	as above.
1210 - 1215m	100	SILTSTONE:	as above.
1215 - 1220m	100	SILTSTONE:	as above.
1220 - 1225m	100	SILTSTONE:	as above.

1225 - 1230m	100	SILTSTONE: as above.
1230 - 1235m	100	SILTSTONE: as above.
1235 - 1240m	100	SILTSTONE: as above.
1240 - 1245m	100	SILTSTONE: as above.
1245 - 1250m	100	SILTSTONE: as above.
1250 - 1255m	100	SILTSTONE: as above.
1255 - 1260m	100	SILTSTONE: as above.
1260 - 1265m	100	SILTSTONE: as above.
1265 - 1270m	100	SILTSTONE: as above.
1270 - 1275m	100	SILTSTONE: as above.
1275 - 1280m	100	SILTSTONE: as above.
1280 - 1285m	100	SILTSTONE: as above.
1285 - 1290m	100	SILTSTONE: as above.
1290 - 1295m	100	SILTSTONE: as above.
1295 - 1300m	100	SILTSTONE: medium grey, firm to hard, subangular to angular cuttings, platy, calcareous, trace coarse quartz grains, trace well preserved forams, cuttings sticky and stack together.
1300 - 1305m	100	SILTSTONE: as above.
1305 - 1310m	100	SILTSTONE: as above.
1310 - 1315m	100	SILTSTONE: as above, cuttings engulfed in a white - grey fluffy mud.
1315 - 1320m	100	SILTSTONE: as above, muddy.
1320 - 1325m	100	SILTSTONE: as above, muddy.
1325 - 1330m	100	SILTSTONE: as above, muddy.
1330 - 1335m	100	SILTSTONE: as above, muddy.
1335 - 1340m	100	SILTSTONE: as above, muddy.
1340 - 1345m	100	SILTSTONE: as above, muddy.
1345 - 1350m	100	SILTSTONE: as above, muddy.
1350 - 1355m		Cuttings difficult to describe as they are engulfed by mud.
1355 - 1360m	100	SILTSTONE: as above.
1360 - 1365m	100	SILTSTONE: as above, very muddy.
1365 - 1370m	100	SILTSTONE: as above, very muddy.
1370 - 1375m	100	SILTSTONE: as above, very muddy.
1375 - 1380m	100	SILTSTONE: as above, very muddy.

1380 - 1385m	100	SILTSTONE: as above.
1385 - 1390m	100	SILTSTONE: as above.
1390 - 1395m	100	SILTSTONE: less mud, otherwise as above.
1395 - 1400m	100	SILTSTONE: as above.
1400 - 1405m	100	SILTSTONE: as above, trace coarse angular pyrite lumps.
1405 - 1410m	100	SILTSTONE: as above.
1410 - 1415m	100	SILTSTONE: as above, cuttings become shalier in nature as depth increases.
1415 - 1420m	100	SILTSTONE: as above.
1420 - 1425m	100	SILTSTONE: as above.
1425 - 1430m	100	SILTSTONE: as above.
1430 - 1435m	100	SILTSTONE: as above.
1435 - 1440m	100	SILTSTONE: medium to dark grey, firm to hard, platy subangular to angular cuttings, calcareous, sample still rich in mud.
1440 - 1445m	100	SILTSTONE: as above.
1445 - 1450m	100	SILTSTONE: as above.
1450 - 1455m	100	SILTSTONE: as above, little mud in sample.
1455 - 1460m	100	SILTSTONE: as above.
1460 - 1465m	100	SILTSTONE: as above.
1465 - 1470m	100	SILTSTONE: as above.
1470 - 1475m	100	SILTSTONE: medium to dark grey, hard to firm, platy subangular to angular cuttings, calcareous, trace pyrite, with some coarse quartz grains.
1475 - 1480m	100	SILTSTONE: as above.
1480 - 1485m	100	SILTSTONE: as above.
1485 - 1490m	100	SILTSTONE: as above, muddy.
1490 - 1495m	100	SILTSTONE: as above, muddy.
1495 - 1500m	100	SILTSTONE: as above.
1500 - 1505m	100	SILTSTONE: as above, little mud, cuttings becoming very shaley, (angular and flat).
1505 - 1510m	100	SILTSTONE: as above, little mud.
1510 - 1515m	100	SILTSTONE: as above, little mud.
1515 - 1520m	100	SILTSTONE: as above.
1520 - 1525m	100	SILTSTONE: as above, trace glauconite.
1525 - 1530m	100	SILTSTONE: as above.

1530 - 1535m	100	SILTSTONE: as above.
1535 - 1540m	100	SILTSTONE: as above, however high mud content.
1540 - 1545m	100	SILTSTONE: as above, less mud.
1545 - 1550m	100	SILTSTONE: light to dark grey, soft to hard, platy, subrounded to angular cuttings, calcareous, trace very hard, red to brown (volcanic?) grains.
1550 - 1555m	100	SILTSTONE: as above, muddy.
1555 - 1560m	100	SILTSTONE: as above.
1565 - 1570m	100	SILTSTONE: as above.
1570 - 1575m	100	SILTSTONE: as above.
1575 - 1580m	100	SILTSTONE: as above, less muddy.
1580 - 1585m	100	SILTSTONE: as above.
1585 - 1590m	100	SILTSTONE: as above.
1590 - 1595m	100	SILTSTONE: as above.
1595 - 1600m	100	SILTSTONE: as above.
1600 - 1605m	100	SILTSTONE: as above.
1605 - 1610m	100	SILTSTONE: as above.
1610 - 1615m	100	SILTSTONE: medium grey, firm, platy subangular cuttings, calcareous, fine black flecking, no mud/clay material associated with sample, trace shell material, forams, trace calcilutite - cavings?
1615 - 1620m	100	SILTSTONE: as above.
1620 - 1625m	100	SILTSTONE: as above.
1625 - 1630m	100	SILTSTONE: as above.
1630 - 1635m	100	SILTSTONE: as above.
1635 - 1640m	100	SILTSTONE: as above.
1640 - 1645m	100	SILTSTONE: as above.
1645 - 1650m	100	SILTSTONE: as above.
1650 - 1655m	100	SILTSTONE: as above.
1655 - 1660m	100	SILTSTONE: light to medium grey, soft to medium, occasionally hard, subrounded cuttings, calcareous, trace shell material, forams.
1660 - 1665m	100	SILTSTONE: as above.
1665 - 1670m	100	SILTSTONE: as above.
1670 - 1675m	100	SILTSTONE: as above.
1675 - 1680m	100	SILTSTONE: as above.
1680 - 1685m	100	SILTSTONE: as above.

1685 - 1690m		Not circulated out, pumps down, POOH to 13 3/8" shoe.
1690 - 1695m	100	SILTSTONE: as above.
1695 - 1700m	100	SILTSTONE: as above.
1700 - 1705m	100	SILTSTONE: as above.
1705 - 1710m	100	SILTSTONE: as above.
1710 - 1715m	100	SILTSTONE: as above.
1715 - 1720m	100	SILTSTONE: as above, trace glauconite.
1720 - 1725m	100	SILTSTONE: as above, muddy.
1725 - 1730m	100	SILTSTONE: as above.
1730 - 1735m	100	SILTSTONE: as above.
1735 - 1740m	100	SILTSTONE: as above.
1740 - 1745m	100	SILTSTONE: as above.
1745 - 1750m	100	SILTSTONE: light to medium grey, soft to hard, predominantly less shale-like now, cuttings predominantly subrounded, some grade to fine sand, calcareous, trace coarse quartz, pyrite.
1750 - 1755m	100	SILTSTONE: as above.
1755 - 1760m	100	SILTSTONE: as above.
1760 - 1765m	100	SILTSTONE: as above, muddy.
1765 - 1770m	100	SILTSTONE: as above.
1770 - 1775m	100	SILTSTONE: as above.
1775 - 1780m	100	SILTSTONE: as above.
1780 - 1785m	100	SILTSTONE: medium to dark grey, firm to hard, cuttings grain 'shale like', platy, subangular to angular cuttings, calcareous, trace shell material.
1785 - 1790m	100	SILTSTONE: as above, muddy.
1790 - 1795m	100	SILTSTONE: as above.
1795 - 1800m	100	SILTSTONE: as above.
1800 - 1805m	100	SILTSTONE: as above.
1805 - 1810m	100	SILTSTONE: as above.
1810 - 1815m	100	SILTSTONE: as above, trace glauconite.
1815 - 1820m	100	SILTSTONE: as above.
1820 - 1825m	100	SILTSTONE: as above.
1825 - 1830m	100	SILTSTONE: as above.
1830 - 1835m	100	SILTSTONE: as above.
1835 - 1840m	100	SILTSTONE: as above.

1840 - 1845m	100	SILTSTONE: light to medium grey, soft to firm, subangular to subrounded cuttings, calcareous, trace quartz grades in part to a brown sandy siltstone.
1845 - 1850m	100	SILTSTONE: as above, trace brown sandy siltstone, medium brown, soft to firm, subrounded cuttings, calcareous.
1850 - 1855m	100	SILTSTONE: as above.
1855 - 1860m	100	SILTSTONE: as above, no sign of glauconite, trace brown sandy siltstone.
1860 - 1865m	100	SILTSTONE: as above, but trace fine glauconite pellets in light grey siltstone, trace coal? also.
1865 - 1870m	100	SILTSTONE: as above, trace glauconite - predominantly in the soft or slightly sandy siltstone.
1870 - 1875m	70 30	SILTSTONE: as above. SILTSTONE: sandy, light grey to medium brown, soft to firm, subrounded cuttings, glauconite rich, dark green fine sand to sand pellets, trace pyrite, no shows.
1875 - 1878m	40 60	SILTSTONE: as above. SILTSTONE: sandy, glauconite also occurs as discrete grains, no shows.
1878 - 1880	40 60	SILTSTONE: as above, calcareous. SILTSTONE: sandy, as above, no shows, calcareous.
1880 - 1883m	40 60	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows, calcareous.
1883 - 1885m	80 20	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows, calcareous.
1885 - 1887m	10 90	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows, calcareous.
1887 - 1890m	20 80	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows, calcareous, trace coarse quartz grains, one only very coarse, brown, well rounded.
1890 - 1895m	10 90	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows, calcareous, no coarse quartz grains.
1895 - 1896m	20 80	SILTSTONE: as above. SILTSTONE: sandy, as above, no coarse quartz, no shows, calcareous.
1896 - 1900m	20 80	SILTSTONE: as above. SILTSTONE: sandy, as above, no shows.
1900 - 1903m	100	SILTSTONE: sandy, as above, no shows, no coarse quartz, calcareous.

1903 - 1905m	10	SILTSTONE: as above.
	90	SILTSTONE: sandy, as above, no coarse quartz, less calcareous.
1905 - 1911m	20	SILTSTONE: as above.
	80	SILTSTONE: sandy, as above, no coarse quartz, no shows, less calcareous.
1911 - 1915m	30	SILTSTONE: as above.
	60	SILTSTONE: sandy, as above.
	10	COAL: partly silt covered, reworked?
1915 - 1920	30	SILTSTONE: as above.
	60	SILTSTONE: sandy, as above.
	10	COAL: partly silt covered (reworked?).
1920 - 1925m	30	SILTSTONE: as above.
	70	SILTSTONE: sandy, as above, no shows, no coarse quartz, calcareous.
1925 - 1930	30	SILTSTONE: as above.
	70	SILTSTONE: sandy, as above, no shows, loose, slightly calcareous, trace coarse, angular, quartz grains and pyrite.
1930 - 1933m	10	SILTSTONE: as above.
	80	SILTSTONE: sandy, as above.
	10	SANDSTONE: loose quartz grains, clear to frosty, very coarse to coarse, subrounded to rounded, moderately sorted, no shows, trace pyrite.
1933 - 1935m	20	SILTSTONE: as above.
	20	SILTSTONE: sandy, as above.
	60	SANDSTONE: loose quartz sand, clear to frosty, subangular to subrounded, very coarse, no shows, trace pyrite.
1935 - 1939m	20	SILTSTONE: as above.
	20	SILTSTONE: sandy, as above.
	60	SANDSTONE: as above.
1939 - 1952.2m		See Core Description No. 1.
1952.2 - 1964.2m		See Core Description No. 2.
1964.2 - 1965m	100	COAL: black, shiny, brittle, hard, has conchoidal fracture.
	trace	SHALE: medium to light grey.
	trace	SANDSTONE: quartzose, clear to off white, medium to coarse grained, well rounded, some grains are encrusted with pyrite, no shows.
1965 - 1970	20	COAL: as above.
	70	SHALE: light grey, brown, also dark grey/black, carbonaceous variety, firm to hard, slightly quartzose, rich in muscovite.
	10	SANDSTONE: as above.
1970 - 1975m	65	SHALE: generally pale grey with some reddish brown cuttings, subfissile to blocky, moderately calcareous, trace pyrite, common muscovite.
	35	SANDSTONE: quartzose, clear to off white, friable, medium to very coarse grained, rounded to well rounded, moderately sorted, trace mineral fluorescence, no cut, no shows.

1975 - 1980m	70	COAL: black, shiny, brittle, hard, conchoidal fracture.
	30	SANDSTONE: as above.
	trace	SHALE: as above.
1980 - 1985m	65	SANDSTONE: quartzose, clear to off white, friable, medium to very coarse grained, moderately sorted, rounded to well rounded, no matrix visible, good porosity is indicated, no shows.
	25	SHALE: as above.
	10	COAL: as above.
1985 - 1990m	50	SANDSTONE: as above, becoming slightly finer.
	30	COAL: black, shiny to earthy.
	20	SHALE: as above, common pyrite clusters.
1990 - 1995m	10	SANDSTONE: as above.
	45	COAL/CARBONACEOUS SHALE
	45	SHALE: pale grey variety.
1995 - 2000m	85	SANDSTONE: quartzose, clear, milky, light grey, friable to firm, medium to very coarse, poorly sorted, subrounded to rounded, no cementing visible, trace pyrite, no shows.
	15	SHALE: as above.
	trace	COAL
2000 - 2005m	50	SANDSTONE: predominantly coarse to very coarse, clear to frosty, subangular quartz grains, loose, moderately sorted, trace pyrite, no shows (only a trace fluorescence).
	50	COAL: as above.
	trace	SILTSTONE: grey to dark brown, firm to hard, subrounded to subangular cuttings.
2005 - 2010m	60	SANDSTONE: as above.
	20	COAL: as above.
	20	SILTSTONE: as above.
2010 - 2015m	70	SANDSTONE: as above.
	10	COAL: as above.
	20	SILTSTONE: as above.
2015 - 2020m	70	SANDSTONE: as above.
	10	COAL: as above.
	20	SILTSTONE: as above.
2020 - 2025m	60	SANDSTONE: as above.
	40	SILTSTONE: as above.
	trace	COAL: as above.
2025 - 2030m	80	SANDSTONE: clear to frosty, subangular to angular, predominantly coarse loose quartz grains, trace pyrite, moderately sorted, no shows.
	20	SILTSTONE: predominantly dark brown, firm to hard, subangular cuttings, sometimes very carbonaceous.
	trace	COAL
2030 - 2035m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2035 - 2040m	30	SANDSTONE: as above.
	30	SILTSTONE: as above.
	40	COAL: as above.

2040 - 2045m	40	SANDSTONE: as above.
	30	SILTSTONE: as above.
	30	COAL: as above.
2045 - 2050m	40	SANDSTONE: as above.
	50	SILTSTONE: as above.
	10	COAL: as above.
2050 - 2055m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2055 - 2060m	40	SANDSTONE: approx 10% with bright white fluorescence, no cut, no crush cut, slow HCl reaction, dolomite cement associated with some cuttings.
	50	SILTSTONE: as above.
	10	COAL: as above.
2060 - 2065m	60	COAL: as above.
	40	SILTSTONE: as above.
	trace	SANDSTONE: as above.
2065 - 2070m	80	SILTSTONE: as above.
	20	SANDSTONE: as above, half sample appears to have dolomite cement.
	trace	COAL
Drilled 12-1/4" hole to 2070m, logged and ran 9-5/8" casing to 2056m. Drilled ahead with 8-1/2" bit.		
2070 - 2075m	95	SILTSTONE: medium light grey, firm, calcareous clay matrix, quartzose silt detritus, common carbonaceous matter, microcrystalline pyrite, and muscovite, highly contaminated with casing cement.
	5	COAL: black, shiny, brittle, conchoidal fracture, occasionally subfissile.
2075 - 2080m	95	SILTSTONE: as above, also highly contaminated with casing cement.
	5	COAL: as above.
2080 - 2085m	85	SANDSTONE: quartzose, clear to pale grey, friable, coarse to very coarse grained, subangular to subrounded, well sorted, trace pyrite cement, otherwise no cement visible, microcrystalline pyrite aggregates, good porosity indicated, no shows.
	10	SILTSTONE: as above, contaminated with casing cement.
	5	COAL: as above.
2085 - 2090m	90	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above, trace casing cement contamination.
2090 - 2095m	55	SANDSTONE: as above, no shows.
	40	SILTSTONE: many varieties, pale grey, medium grey, dark grey, buff, dark brown, hard to brittle, non calcareous, mostly quartzose silt detritus, some carbonaceous matter, mostly clay matrix, minor amounts of pyrite, microcrystalline, mica is common.
	5	COAL: as above.

2095 - 2100	80	COAL: black, brittle, bituminous, generally shiny, but dull in some cases.
	10	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above.
2100 - 2105m	35	SANDSTONE: as above, no shows.
	35	SILTSTONE: as above.
	30	COAL: as above, cavings?
2105 - 2110m	30	SANDSTONE: quartzose, clear, occasionally milky white to pale grey, coarse to very coarse grained, rounded to subangular, dominantly subrounded, well sorted, good intergranular porosity is implied, trace pyrite cement, no shows.
	70	SILTSTONE: as above.
	trace	COAL: as above, some cuttings have a bright milky white fluorescence, but no cut.
2110 - 2115m	35	SANDSTONE: as above, no shows.
	35	SILTSTONE: as above.
	30	COAL: as above.
	trace	METAL CUTTINGS (CASING?)
2115 - 2120m	30	SANDSTONE: as above, no shows.
	70	SILTSTONE: many varieties, off white, light medium grey to dark grey, brown, green grey, quartz silt detritus, trace calcareous cement, otherwise mainly clay cement, common pyrite clusters, also finely disseminated pyrite in the siltstone fabric, moderate amount of micromica.
	trace	COAL: as above, with trace milky white fluorescence.
2120 - 2125m	15	SANDSTONE: as above, no shows.
	70	SILTSTONE: as above.
	15	COAL: black, shiny, blocky to conchoidal fracture, bituminous.
2125 - 2130m	80	COAL: black, bituminous, shiny, blocky to conchoidal, trace milky white fluorescence, no cut.
	20	SILTSTONE: as above.
2130 - 2135m	65	SILTSTONE: as above, with abundant pyrite.
	30	SANDSTONE: as above, no shows.
	5	COAL: as above.
2135 - 2140m	85	SILTSTONE: as above.
	10	COAL: as above.
	5	SANDSTONE: as above, no shows.
	trace	SANDSTONE: quartzose, pale tan to grey, friable to firm, very fine, well rounded and well sorted, white non calcareous matrix/cement, common black opaque mineral grains, well rounded and well sorted, poor intergranular porosity and permeability, some carbonaceous streaks, no shows.
	trace	DOLOMITE: grey, hard, microcrystalline, dull orange mineral fluorescence.

2140 - 2145m	90	SILTSTONE: many varieties, white, pale grey to dark grey, brown, firm to soft, quartzose, occasionally carbonaceous, non calcareous clay matrix, abundant pyrite clusters, trace muscovite flecks.
	trace	DOLOMITE: as above.
	10	SANDSTONE: coarse grained, as above, no shows.
	trace	SANDSTONE: fine to very fine grained, as above, no shows.
2145 - 2150m	55	COAL: black, bituminous, shiny to dull, blocky to conchoidal fracture, trace bright yellow fluorescing amber, it has an unenthusiatic creamy white cut fluorescence.
	40	SILTSTONE: as above, with abundant pyrite.
	5	SANDSTONE: coarse grained, as above, no shows.
	trace	DOLOMITE: as above.
2150 - 2155m	90	SILTSTONE: as above, very carbonaceous in part.
	5	COAL: as above, no fluorescence.
	5	SANDSTONE: very coarse and very fine grained, no shows.
	trace	DOLOMITE: as above.
2155 - 2160m	90	SILTSTONE: as above.
	5	SANDSTONE: coarse grained, as above, no shows.
	5	COAL: as above.
2160 - 2165m	70	SANDSTONE: quartzose, clear to pale grey and off white, friable, medium to coarse grained, dominantly medium, well sorted, subangular to subrounded, trace pyrite cement, good intergranular porosity, no shows.
	30	SILTSTONE: as above.
2165 - 2170m	40	SANDSTONE: as above, no shows.
	60	SILTSTONE: as above, contains abundant pyrite clusters.
2170 - 2175m	20	SANDSTONE: as above, no shows.
	65	SILTSTONE: as above.
	15	COAL: black, bituminous, blocky, occasionally subfissile, shiny, trace blue white fluorescence.
2175 - 2180m	90	SANDSTONE: quartzose, clear, white to pale grey, friable, medium to coarse grained, subangular to subrounded, moderately sorted, trace pyrite cement, otherwise cement not visible, fair to good intergranular porosity, no shows.
	10	SILTSTONE: as above, abundant pyrite.
2180 - 2185m	85	SANDSTONE: as above, becoming subrounded to rounded, and well sorted, no shows.
	15	SILTSTONE: as above.
2185 - 2190m	75	SANDSTONE: as above, no shows.
	25	SILTSTONE: as above.
2190 - 2195m	10	SANDSTONE: as above, no shows.
	90	SILTSTONE: medium light grey, medium brown, quartzose, non calcareous cement, trace carbonaceous matter, abundant pyrite.
2195 - 2200m	40	SILTSTONE: as above.
	60	COAL: black, bituminous, shiny, trace fluorescent amber.

2200 - 2205m	90	SANDSTONE: quartzose, clear, occasionally white to pale grey, friable, medium to coarse grained, dominantly medium; rounded to subrounded, well sorted, trace pyrite cement, good porosity, no shows.
	10	SILTSTONE: as above.
2205 - 2210m	85	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above.
	5	COAL: as above.
2210 - 2215m	85	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above.
	5	COAL: as above.
2215 - 2220m	60	SANDSTONE: as above.
	40	COAL: as above.
2220 - 2225m	30	SANDSTONE: as above, no shows.
	30	SILTSTONE: as above.
	40	COAL: black, bituminous, shiny to vitreous, blocky to subfissile.
2225 - 2230m	100	SILTSTONE: many varieties, white, light to dark grey, brown, black, firm to hard, non calcareous.
2230 - 2235m	50	SILTSTONE: as above.
	50	COAL: grading into carbonaceous siltstone, as above.
2235 - 2240m	10	SANDSTONE: as above, no show.
	10	SILTSTONE: as above.
	80	COAL: as above.
2240 - 2245m	40	SANDSTONE: quartzose, clear, white to pale grey, firm to hard, medium to coarse grained, dominantly medium, subangular to subrounded, well sorted, possible silica cement, poor porosity, no shows.
	40	SILTSTONE: as above.
	20	COAL: as above.
2245 - 2250m	70	SANDSTONE: as above, no shows.
	20	SILTSTONE: as above.
	10	COAL: as above.
2250 - 2255m	60	SILTSTONE: quartzose, white, light grey to dark grey, off white to brown, firm to very soft, water sensitive, clay rich, non calcareous matrix, contains carbonaceous matter and pyrite.
	35	SANDSTONE: clear, friable, medium to coarse grained, dominantly medium, rounded to subrounded, well sorted, good intergranular porosity is indicated, no shows.
	5	COAL: as above.
2255 - 2260m	20	SANDSTONE: as above, no shows.
	80	SILTSTONE: as above.
	trace	COAL
2260 - 2265m	60	SANDSTONE: as above, no shows.
	35	SILTSTONE: as above
	5	COAL: as above.

2265 - 2270m	35	SANDSTONE: white, clear, pale grey, hard, well cemented, fine to coarse grained, poorly sorted, subangular to angular (crushed conglomerate or pebble stone?), no shows.
	65	SILTSTONE: as above.
2270 - 2275m	35	SANDSTONE: as above, no shows.
	65	SILTSTONE: as above.
2275 - 2280m	20	SANDSTONE: as above, no shows.
	80	SILTSTONE: as above.
2280 - 2285m	5	SANDSTONE: as above.
	75	SILTSTONE: predominantly quartzose, but some cuttings are carbonaceous, off white to dark grey, firm to soft, slightly calcareous, dominantly clay matrix.
	20	COAL: black, bituminous, shiny to vitreous, blocky to subfissile, occasionally with conchoidal fracture.
2285 - 2290m	95	SILTSTONE: as above, trace pyrite.
	5	COAL: as above.
2290 - 2295m	95	SILTSTONE: as above.
	5	COAL: as above.
2295 - 2300m	85	SILTSTONE: as above.
	15	SANDSTONE: quartzose, clear, friable, loose quartz grains, fine to coarse grained, bimodal, poorly sorted, fine grains well rounded, coarse grains, angular to subangular, poor porosity, no shows.
2300 - 2305m	90	SILTSTONE: as above.
	10	SANDSTONE: as above, no shows.
2305 - 2310m	95	SILTSTONE: as above.
	5	SANDSTONE: as above, no shows.
2310 - 2315m	95	SILTSTONE: many varieties, pale grey to dark grey, buff to dark brown, quartzose, non calcareous, clay matrix, iron oxide? cement in brown varieties, abundant pyrite chunks.
	5	SANDSTONE: as above, no shows.
2315 - 2320m	90	SILTSTONE: as above, trace muscovite flakes
	10	SANDSTONE: as above, no shows.
2320 - 2325m	45	SILTSTONE: as above.
	55	SANDSTONE: quartzose, clear, friable, medium to coarse grained, dominantly medium, well sorted, rounded to subrounded, no obvious cement, trace pyrite, good intergranular porosity, no shows.
2325 - 2330m	25	SANDSTONE: as above, no shows.
	75	SILTSTONE: as above.
2330 - 2335m	5	SANDSTONE: as above, no shows.
	95	SILTSTONE: as above.
2335 - 2340m	100	SILTSTONE: as above.
2340 - 2345m	100	SILTSTONE: as above.

2345 - 2350m	25	SANDSTONE: dolomitic, quartzose, pale grey brown, very hard, fine to medium quartz aggregates, subangular to subrounded, very well sorted, abundant dolomite cement; the dolomite has a very strong cream coloured mineral fluorescence, no cut, no porosity, no shows.
	75	SILTSTONE: as above.
2350 - 2355m	65	SANDSTONE: dolomitic, quartzose, as above, no porosity, no shows.
	35	SILTSTONE: as above.
2355 - 2360m	25	SANDSTONE: dolomitic, as above.
	30	SANDSTONE: quartzose, clear, white, pale grey, hard, coarse to very coarse grained, moderately sorted, angular to subangular, silica (?) cement, low porosity, no fluorescence, no shows.
	45	SILTSTONE: as above.
2360 - 2365m	40	SANDSTONE: dolomitic, as above.
	35	SANDSTONE: as above.
	25	SILTSTONE: as above.
2365 - 2370m	35	SANDSTONE: as above, no shows.
	25	SANDSTONE: as above, no shows.
	40	SILTSTONE: mainly dark grey, non calcareous, carbonaceous variety with some lighter coloured quartzose cuttings with slightly calcareous cement, also reddish variety with probably iron oxide cement, trace pyrite cement within siltstone fabric.
2370 - 2375m	90	SILTSTONE: as above.
	5	SANDSTONE: dolomitic, as above, no shows.
	5	SANDSTONE: as above, no shows.
	trace	COAL: black, shiny.
2375 - 2380m	85	SANDSTONE: quartzose, clear, occasionally translucent white to pale grey, hard, medium to coarse grained, subangular to rounded, mainly subrounded, well sorted, no cement visible, good intergranular porosity is implied, no fluorescence, no shows.
	15	SILTSTONE: as above.
	trace	SANDSTONE: dolomitic, as above.
2380 - 2385m	70	SANDSTONE: as above.
	25	SILTSTONE: as above.
	5	COAL: black, bituminous, shiny, blocky to subfissile, occasionally with conchoidal fracture.
2385 - 2390m	45	SILTSTONE: as above.
	50	COAL: as above, trace blue white fluorescence.
	5	SANDSTONE: as above, no shows.
2390 - 2395m	90	SILTSTONE: many varieties, mostly the dark carbonaceous type, also the lighter grey and reddish quartzose type as well, non calcareous, trace pyrite.
	10	COAL: as above.

2395 - 2400	65	SILTSTONE: as above.
	5	COAL: as above.
	30	SANDSTONE: quartzose, clear, occasionally white to pale grey translucent variety, firm to hard, medium to coarse grained, subangular to subrounded, dominantly subangular, poorly sorted, minor amounts of silica cement, trace pyrite, trace intergranular porosity, no fluorescence, no shows.
2400 - 2405m	95	SANDSTONE: as above, no shows.
	5	SILTSTONE: as above.
2405 - 2410m	95	SANDSTONE: as above, no shows.
	5	SILTSTONE: as above.
2410 - 2415m	90	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above.
2415 - 2420m	40	SANDSTONE: as above, no shows.
	60	SILTSTONE: as above, common pyrite clusters.
2420 - 2425m	50	SANDSTONE: as above, no shows.
	50	SILTSTONE: as above.
2425 - 2430m	85	SANDSTONE: quartzose, mostly clear, occasionally smokey, firm, medium to coarse grained, bimodal, well sorted, subangular to rounded, dominantly subrounded, no visible cement, trace pyrite, good porosity is indicated, no fluorescence, no shows.
	15	SILTSTONE: as above.
	trace	COAL: black, bituminous, shiny, subfissile to blocky.
2430 - 2435m	10	SANDSTONE: as above, no shows.
	90	SILTSTONE: dark grey brown mostly, some cuttings are light grey or light brown, hard, brittle, mostly fissile to subfissile, high carbonaceous content, non calcareous, interlaminated with : -
	trace	COAL: black, bituminous, blocky to subfissile, shiny to subvitreous.
2435 - 2440	15	SANDSTONE: as above.
	85	SILTSTONE: as above, becoming less carbonaceous, trace pyrite.
	trace	COAL
2440 - 2445m	90	SANDSTONE: as above, no shows.
	10	SILTSTONE: as above.
	trace	COAL: as above, with trace bright fluorescence.
2445 - 2450m	90	SILTSTONE: as above.
	10	SANDSTONE: as above, no shows.
	trace	COAL: as above.
2450 - 2455m	95	SILTSTONE: pale grey to medium light grey, mostly quartzose, occasional cuttings are dark grey carbonaceous, firm to hard, non calcareous, clay rich, moderate amount of pyrite.
	5	SANDSTONE: as above, no shows.
2455 - 2460m	100	SILTSTONE: as above, trace muscovite.
2460 - 2465m	100	SILTSTONE: as above.

2466m		Spot Sample
	60	SANDSTONE: quartzose, light grey brown, occasionally clear, white, firm to hard, fine to coarse grained, dominantly medium, mostly subangular, well sorted, trace pyrite, no shows.
	35	COAL: black, bituminous, shiny to vitreous, blocky to subfissile, trace bright blue white fluorescence.
	5	SILTSTONE: as above.
2465 - 2470m	30	SANDSTONE: as above.
	30	SILTSTONE: as above.
	40	COAL: as above.
2470 - 2475m	65	SILTSTONE: as above.
	30	COAL: as above.
	5	SANDSTONE: as above.
2475 - 2480m	100	SILTSTONE: as above.
2480 - 2485m	100	SILTSTONE: as above.
2485 - 2490m	100	SILTSTONE: medium light grey to dark grey, some cuttings are carbonaceous variety, the rest are quartzose, non calcareous, blocky, rounded cuttings, occasionally subfissile, rich in pyrite clusters and finely disseminated crystals, trace muscovite and biotite, trace carbonaceous matter.
2490 - 2495m	100	SILTSTONE: as above.
2495 - 2500m	50	SANDSTONE: quartzose, clear, firm, fine to coarse grained, dominantly medium, angular to subangular, moderate porosity, trace pyrite, has bright milky white fluorescence with weak slow milky white crush cut.
	20	SILTSTONE: as above.
	30	COAL: black, bituminous, shiny to subvitreous, mostly blocky, occasional cuttings are subfissile, trace fluorescence.
2500 - 2505m	90	SILTSTONE: as above.
	10	COAL: as above.
2505 - 2510m	60	SILTSTONE: as above.
	40	SANDSTONE: as above, no shows.
2510 - 2515m	90	SILTSTONE: as above.
	10	SANDSTONE: as above, no shows.
2515 - 2520m	80	SILTSTONE: as above.
	20	COAL: as above.
2520 - 2525m	75	SILTSTONE: many coloured varieties, light to very dark grey, off white, dark reddish brown, mostly quartzose, also carbonaceous variety, some white varieties are calcareous, the rest are non calcareous, numerous large pyrite clusters, also finely disseminated pyrite crystals, common micromica.
	25	SANDSTONE: quartzose, firm to hard, mainly clear, fine to very coarse grained, poorly sorted, angular to subangular, trace milky white mineral fluorescence, no cut.
	trace	COAL: as above.

2525 - 2530m	95	SILTSTONE: as above.
	5	SANDSTONE: as above, no shows.
2530 - 2535m	75	SILTSTONE: as above.
	25	SANDSTONE: quartzose, white to off white, firm to friable, fine to very fine grained, silt matrix with minor silica cement, poorly sorted, low porosity, no fluorescence, no cut.
2535 - 2540m	50	SILTSTONE: as above, contains feldspar fragments, white, soft, shows some cleavage.
	25	SANDSTONE: as above, no shows.
	25	COAL: black, bituminous, shiny to subvitreous, massive to subfissile, brittle, hard.
2540 - 2545m	80	SILTSTONE: as above.
	20	SANDSTONE: quartzose, two varieties: 1) fine to very fine grained, well sorted, subrounded, silt matrix, clay and silica cements, poorly sorted, very tight, low porosity, no shows. 2) medium to very coarse grained, perhaps conglomerate, angular to subangular, occasional partly broken rounded grains are visible, no shows.
2545 - 2550m	90	SILTSTONE: as above.
	10	COAL: as above.
2550 - 2555m	70	SILTSTONE: as above.
	30	SANDSTONE: quartzose, very light grey to tan, very hard, fine to very fine grained, subangular to subrounded, poorly sorted, silt matrix, clay and silica cements, trace muscovite, pyrite and carbonaceous material, trace to 5% dull blue white fluorescence which gives a slow, weak crush cut fluorescence, and a pale straw residue.
2555 - 2560m	70	SILTSTONE: as above, with abundant pyrite in the form of aggregates, as fine crystals contained within the silt fabric.
	20	SANDSTONE: quartzose, white, clear, very hard, medium to very coarse grained, dominantly coarse, angular to subangular, pyrite cement abundant, numerous rock fragments are visible which shows original sucrosic sand grains with pore spaces entirely replaced with cryptocrystalline pyrite, low porosity, no shows.
	10	SANDSTONE: quartzose, off white, very hard, fine to very fine grained, subangular to subrounded, poorly sorted, silt matrix, clay and silica cement, 5% moderate blue yellow fluorescence with a very weak crush cut, as above.
2560 - 2565m	85	SILTSTONE: as above, with abundant pyrite.
	5	SANDSTONE: medium to coarse grained, as above, no shows.
	10	SANDSTONE: fine to very fine grained, as above, with trace to 5% fluorescence and cut as above.
2565 - 2568m	55	SILTSTONE: as above.
	45	SANDSTONE: fine to very fine grained, as above, with 5% bright blue to milky white fluorescence with strong crush cut and a clear residue.

2568.0 - 2574.6		See Core Description No. 3 for more details. The description below (over the interval 2568m to 2573m) refers to cuttings obtained while coring.
2568 - 2569m	85	SILTSTONE/CLAYSTONE: various colours, off white, light to dark grey, buff to dark reddish brown, mostly firm and slightly brittle, a few are soft and water logged, non calcareous, some are quartzose, others are clay rich, and some are carbonaceous, there is abundant pyrite, trace muscovite.
	10	COAL: black, bituminous, hard, brittle, mainly shiny with conchoidal fracture, some cuttings are subfissile with a subvitreous lustre, trace pyrite.
	5	SANDSTONE: quartzose, fine to very fine grained, same hydrocarbon show as for 2565 - 2568m
2569 - 2570m	80	SILTSTONE/CLAYSTONE: as above.
	20	COAL: as above.
	trace	SANDSTONE: as above, (cavings?).
2570 - 2571m	50	SILTSTONE/CLAYSTONE: as above.
	50	COAL: as above.
2571 - 2572m	60	COAL: as above.
	40	SILTSTONE: as above.
2572 - 2573m	60	COAL: black, bituminous, hard, brittle, mostly with conchoidal fracture, otherwise subvitreous lustre with subfissile parting.
	40	SILTSTONE: as above.
2573 - 2574.6m		Not Circulated out.
2574.6 - 2575m		Sample badly contaminated as a result of reaming rathole.
2575 - 2580m	80	COAL: black, shiny to subvitreous, mainly conchoidal fracture, some cuttings are subfissile.
	20	SILTSTONE: carbonaceous and quartzose, firm, subfissile to blocky.
2580 - 2585m	15	COAL: as above.
	50	SILTSTONE: as above.
	35	SANDSTONE: quartzose, off white, firm to hard, fine grained, subangular to subrounded, abundant clay matrix with trace silt matrix, trace silica cement implied, low porosity and low permeability is indicated; the sandstone has 80% even to patchy pale greeny white fluorescence which gives a slow streaming milky white cut and a strong rapid milky white crush cut, and a pale to clear cut residue.
2585 - 2590m	15	COAL: as above.
	50	SILTSTONE: as above.
	25	SANDSTONE: as above, with show as above.
	10	SANDSTONE: quartzose, medium to coarse grained, angular to subangular, show inconclusive.

2590 - 2595m	35	SILTSTONE: as above.
	5	COAL: as above.
	10	SANDSTONE: fine sandstone aggregates with show as above.
	50	SANDSTONE: quartzose, medium to coarse, dominantly medium, angular to subangular, occasionally subrounded, loose quartz grains, trace spotty blue white fluorescence which gives a weak slow blue white cut fluorescence.
2595 - 2600	50	SILTSTONE: as above.
	5	COAL: as above.
	30	SANDSTONE: fine quartzose as above, becoming more friable, gave a spontaneous slow steaming milky white cut, plus a very good crush cut.
	15	SANDSTONE: (loose quartz grains), medium to very coarse grained, dominantly medium, trace fluorescence.
2600 - 2605m	35	SILTSTONE: as above.
	40	SANDSTONE: fine quartzose aggrgates as above, oil show as above, (slow streaming milky white cut with strong, crush cut).
	25	SANDSTONE: (loose quzrtz grains), medium to very coarse grained, dominantly medium, trace fluorescence, weak cut.
2605 - 2610m	45	SILTSTONE: as above, moderate pyrite.
	35	SANDSTONE: quartzose, firm to friable, fine to medium grained in aggregates, subangular to subrounded, books of mica, moderate porosity, 60% bright pale green yellow fluorescence, gives a moderate streaming milky white cut fluorescence and a very strong crush cut.
	20	SANDSTONE: loose quartz grains, medium to coarse grained, subangular to subrounded, trace blue white fluorescence and a faint blue white cut fluorescence, trace pyrite.
2610 - 2615m	60	SILTSTONE: light grey to dark grey, also reddish brown, quartzose to carbonaceous, non calcareous, pyrite common.
	20	SANDSTONE: fine to medium grained aggregates, dominantly fine, otherwise as above, 15% fluorescence as above.
	20	SANDSTONE: medium to coarse grained, loose quartz grains, as above, trace fluorescence.
2615 - 2620m	30	SILTSTONE: as above, pyrite common.
	60	SANDSTONE: fine to medium aggregates, dominantly fine, otherwise as above, 10% fluorescence, as above.
	10	SANDSTONE: medium to coarse, as above, no fluorescence visible.
2620 - 2625m	60	SILTSTONE: as above, carbonaceous, pyrite.
	10	COAL: black.
	30	SANDSTONE: as above, with 10% fluorescence, with crush cut as above.

2625 - 2628m	55	SILTSTONE: as above.
	30	SANDSTONE: quartzose aggregates, light brown overall, fine to medium grained, dominantly fine, firm to friable, subrounded, fair visual porosity, the sand has a 20% pale green yellow fluorescence that gives a moderate streaming milky white cut, and a very strong crush cut.
	15	SANDSTONE: loose quartz grains, medium to very coarse grained, poorly sorted, trace pyrite cement; the sand has trace faint blue white fluorescence with negligible cut.
2628 - 2631m	60	SILTSTONE: as above.
	30	SANDSTONE: fine grained, as above.
	5	SANDSTONE: coarse grained, as above.
	5	COAL: black, as above.
2631 - 2635m	70	SILTSTONE: many varieties, mostly dark grey and dark brown, fissile to subfissile, pyrite common, lighter coloured samples are quartzose.
	30	COAL: black, as above.
2635 - 2640m	95	SILTSTONE: as above.
	5	SANDSTONE: fine to very fine grained, quartzose, non calcareous, 10% of the sample has dull blue white fluorescence, giving a strong crush cut, but no spontaneous cut at all, very tight.
2640 - 2645m	100	SILTSTONE: as above.
2645 - 2650m	75	SILTSTONE: as above, very carbonaceous.
	15	SANDSTONE: quartz aggregates, trace fluorescence, inconclusive show, fine grained, tight.
	10	COAL: black, as above.
2650 - 2655m	60	SILTSTONE: very carbonaceous, otherwise as above.
	30	COAL: black, bituminous, subvitreous to shiny, subfissile to blocky with conchoidal fracture
	10	SANDSTONE: as above, fine grained, trace fluorescence (cavings?), insufficient sample to test show.
2655 - 2660m	90	SILTSTONE: as above, common pyrite.
	10	SANDSTONE: as above, fine grained, trace fluorescence (cavings?), otherwise no show.
	trace	COAL: as above.
2660 - 2665m	65	SILTSTONE: light grey to dark grey, also reddish variety, quartzose and carbonaceous, soft to firm, often brittle, common pyrite, non calcareous.
	30	SANDSTONE: as above, very hard, (silica cement?), fine grained, well sorted, moderate porosity, tight, 10% yellow gold fluorescence which gives a strong but reluctant milky white crush cut.
	5	COAL: black, as above.
2665 - 2670m	80	SILTSTONE: as above.
	20	SANDSTONE: as above, fine grained, with trace to 5% (cavings?) yellow gold fluorescence which gives a moderate creamy white crush cut.

2670 - 2675m	40	SILTSTONE: as above.
	30	SANDSTONE: as above, fine grained, hard to friable, 30% creamy white patchy fluorescence with a very slow streaming milky white cut and a strong to moderate crush cut (aggregates are hard).
	30	SANDSTONE: medium to very coarse grained, mostly angular to subangular, poorly sorted, loose quartz grains, the grains have 30% faint blue white fluorescence which gives an instant but pale milky white cut fluorescence.
2675 - 2680m	60	SILTSTONE: as above.
	20	SANDSTONE: fine grained, well sorted, quartz aggregates, firm to friable, moderate porosity, minor silica cement, the sand has 25% even bright yellow gold fluorescence which gives a slow streaming milky white cut fluorescence and a strong crush cut.
	20	SANDSTONE: loose quartz grains, medium to very coarse grained, poorly sorted, angular to subangular, 30% spotty pale blue white fluorescence which gives an instant weak creamy white cut fluorescence.
2680 - 2685m	40	SILTSTONE: as above, trace pyrite and glauconite.
	50	SANDSTONE: as above, fine grained, with moderate crush cut, hard aggregates.
	10	SANDSTONE: coarse grained, as above.
2685 - 2690m	60	SILTSTONE: as above.
	40	SANDSTONE: as above, very hard, silica cement, fine grained, 40% even yellow gold fluorescence, which gives a slow streaming milky white cut fluorescence.
2690 - 2695m	65	SILTSTONE: dark grey brown, also some light cuttings, mainly rounded cuttings, others are subfissile.
	30	SANDSTONE: quartz aggregates, light brown, very hard and brittle, very fine to medium grained, dominantly fine, well sorted, silica cement, very low permeability and moderate porosity; the sandstone has 50% even yellow gold fluorescence, which gives a slow streaming milky white cut fluorescence and gives a very strong crush cut, but aggregates are difficult to crush (silica cement?).
	5	SANDSTONE: coarse grained as above, show is inconclusive.
2695 - 2700m	100	SANDSTONE: loose quartz grains, coarse to very coarse grained, angular (shattered pebble, granules?) well sorted, 30% bright creamy white fluorescence, giving a weak, blue white cut fluorescence, and a moderate crush cut.
2700 - 2705m	100	SANDSTONE: coarse grained, as above.
2705 - 2707.6m	100	SANDSTONE: coarse grained, as above.
2707.6 - 2726m		See Core Description No. 4

2726 - 2730m	20	SANDSTONE: quartzose, white to clear, loose grains and aggregates, 75% of sandstone are loose grains, medium to coarse grained, angular to subangular; 25% of sandstone are aggregates, medium to fine grained, angular to subangular, moderate to poorly sorted, tight, yellow gold fluorescence, blue white crush cut.
	75	SILTSTONE: olive grey, quartzose, firm to hard, blocky.
	5	COAL: just like the core, black, fissile.
2730 - 2735m	20	SANDSTONE: as above, 75% of sandstone are loose grains, 25% are aggregates.
	80	SILTSTONE: as above.
	trace	COAL: as above.
2735 - 2740m	20	SANDSTONE: as above, equal proportions of loose grains and aggregates, as above.
	80	SILTSTONE: as above.
	trace	COAL
2740 - 2745m	20	SANDSTONE: as above, equal proportions of loose grains and aggregates, 5% fluorescence.
	80	SILTSTONE: as above.
	trace	COAL
2745 - 2750m	30	SANDSTONE: as above, one third of sand consists of loose grains, and two thirds consists of aggregates (15% fluorescence, trace slow streaming cut, as above).
	70	SILTSTONE: as above.
2750 - 2755m	50	SANDSTONE: 10% of the sandstone consists of loose grains, remainder consists of aggregates, as above, 15% fluorescence, trace streaming milky blue white fluorescence.
	50	SILTSTONE: carbonaceous, as above.
2755 - 2758.4m	70	SANDSTONE: quartzose, clear to white, loose grains and aggregates; loose grains: predominantly clear, angular to subangular, coarse to medium grained, aggregates: medium to fine grained, hard, angular to subangular, moderately sorted, poor visual porosity, 30% yellow gold fluorescence, strong crush cut .
	30	SILTSTONE: as above.
2758.4 - 2776.4		See Core Description No. 5.
2776.4 - 2780m	80	SHALE: black to greyish black, fissile, carbonaceous.
	20	COAL: black, fissile, shiny.
2780 - 2785m	80	SHALE: as above.
	20	COAL: as above.
2785 - 2790m	50	SANDSTONE: quartzose, white to clear, loose quartz grains, angular to subangular, 50% fluorescence.
	50	SILTSTONE: medium grey, firm, blocky, fissile in part, carbonaceous.
2790 - 2795m	40	SANDSTONE: as above, 50% fluorescence.
	60	SILTSTONE: as above.
2795 - 2800m	20	SANDSTONE: as above, 20% fluorescence.
	80	SILTSTONE: as above.

2800 - 2805m	trace	SANDSTONE:	as above.
	100	SILTSTONE:	as above, carbonaceous, medium grey to light grey.
2805 - 2810m	100	SILTSTONE:	as above.
	trace	SANDSTONE:	as above.
2810 - 2815m	10	SANDSTONE:	quartzose, loose grains, medium to coarse grained, angular to subangular, 5% fluorescence.
	80	SILTSTONE:	dark grey to light grey, carbonaceous, blocky, firm.
	10	COAL:	black, etc.
2815 - 2820m	50	SILTSTONE:	as above.
	30	SHALE:	medium grey, carbonaceous, fissile, firm.
	10	COAL:	black, as above.
	10	SANDSTONE:	as above.
2820 - 2825m	70	SILTSTONE:	as above.
	10	SHALE:	as above.
	20	COAL:	as above.
	trace	SANDSTONE:	as above.
2825 - 2830m	80	SILTSTONE:	as above.
	15	SHALE:	as above.
	5	COAL:	as above.
	trace	SANDSTONE:	as above.
2830 - 2835m	70	SILTSTONE:	dark grey to light grey, firm to hard, blocky, angular, non calcareous.
	20	SHALE:	dark grey to black, firm to hard, very carbonaceous, carbonaceous partings, fissile.
	5	SANDSTONE:	quartzose, loose grains, medium to coarse grained, angular to subangular, some yellow gold grain fluorescence.
	5	COAL:	black.
2835 - 2840m	75	SILTSTONE:	as above.
	20	SHALE:	as above.
	5	COAL:	as above.
	trace	SANDSTONE:	as above.
2840 - 2845m	85	SILTSTONE:	quartzose, green grey to medium grey, soft to hard, softer pieces clay rich, blocky cuttings, very carbonaceous.
	10	SHALE:	as above.
	5	COAL:	as above.
	trace	SANDSTONE:	
2845 - 2850m	95	SILTSTONE:	as above.
	5	SHALE:	as above.
	trace	COAL:	as above.
	trace	SANDSTONE:	as above.
2850 - 2855m	95	SILTSTONE:	as above.
	5	SHALE:	as above.
	trace	COAL:	as above.
	trace	SANDSTONE:	as above.
2855 - 2860m	75	SILTSTONE:	as above.
	20	SHALE:	as above.
	5	COAL:	as above.
2860 - 2865m	95	SILTSTONE:	as above.
	5	SHALE:	as above.

2865 - 2870m	90	SILTSTONE: as above.
	10	SHALE: as above.
	trace	SANDSTONE: loose quartz grains.
2870 - 2875m	60	SANDSTONE: white quartzose, fine to medium grained, poorly sorted, angular to subangular, well cemented, 80% pale yellow fluorescence, weak, pale yellow crush cut fluorescence.
	40	SILTSTONE: medium grey, fine grained, blocky cuttings, carbonaceous.
2875 - 2880m	10	SANDSTONE: as above, fluorescence as above, very weak crush cut.
	70	SILTSTONE: as above.
	15	CLAYSTONE/SHALE: subfissile, medium grey to brown, soft blocky cuttings.
	5	COAL
2880 - 2885m	40	SANDSTONE: as above, 30% fluorescence, as above, weak crush cut.
	40	SILTSTONE: as above.
	20	CLAYSTONE: as above.
2885 - 2890m	40	SANDSTONE: as above, 20% fluorescence, as above, very weak crush cut.
	30	SILTSTONE: as above.
	30	CLAYSTONE: as above.
2890 - 2895m	5	SANDSTONE: as above.
	80	SILTSTONE: as above, 5 - 10% pale yellow fluorescence, very weak crush cut.
	15	CLAYSTONE: as above.
	trace	COAL
2895 - 2900	100	SILTSTONE: as above.
	trace	COAL
	trace	SANDSTONE: trace pale yellow fluorescence, no cut.
2900 - 2905m	100	SILTSTONE: as above.
	trace	SANDSTONE: less than 2% pale yellow fluorescence, no cut.
2905 - 2910m	60	SILTSTONE: as above.
	40	COAL: as above.
	trace	SANDSTONE: trace pale yellow fluorescence.
2910 - 2915m	100	SILTSTONE: dark to medium grey, fine grained, firm to soft, blocky cuttings, carbonaceous.
	trace	COAL: as above.
	trace	SANDSTONE: trace fluorescence, no cut.
2915 - 2920m	80	COAL: as above.
	20	SILTSTONE: as above.
2920 - 2925m	60	COAL: as above.
	40	SILTSTONE: as above.
2925 - 2930m	75	SILTSTONE: dark to medium grey, firm to soft, quartzose, grading to fine grained sandstone, carbonaceous, blocky.
	20	SANDSTONE: quartzose, fine grained aggregates, angular to subangular, moderately sorted, tight, carbonaceous, very pale yellow fluorescence, no cut.
	5	COAL: black, as above.

2930 - 2935m	75	SILTSTONE:	as above.
	25	SANDSTONE:	as above.
	trace	COAL	
2935 - 2940m	80	SILTSTONE:	as above.
	20	COAL:	as above.
2940 - 2945m	90	SILTSTONE:	dark to medium grey, quartzose, firm to soft, argillaceous in part, carbonaceous, blocky.
	10	SANDSTONE:	quartzose, white to clear, loose grains to aggregates; aggregates grading to siltstone, fine to very fine grained, tight, very pale yellow fluorescence, angular to subangular, poorly sorted, crush cut; loose grains angular to subangular, medium to coarse grained.
2945 - 2950m	100	SILTSTONE:	as above.
	trace	SANDSTONE:	as above.
2950 - 2955m	95	SILTSTONE:	as above.
	5	SANDSTONE:	as above.
2955 - 2960m	95	SILTSTONE:	as above.
	5	SANDSTONE:	as above.
2960 - 2965m	60	SILTSTONE:	as above.
	40	SANDSTONE:	as above.
2965 - 2970m	100	SILTSTONE:	as above.
	trace	SANDSTONE:	as above.
2970 - 2975m	70	SILTSTONE:	light to medium grey, firm to soft, quartzose, carbonaceous, blocky.
	30	SANDSTONE:	quartzose, loose grains - aggregates, white to clear, aggregates fine grained, tight, angular grains, poorly sorted, loose grains are coarse, angular; 5 - 10% fluorescence, pale yellow, weak to moderate crush cut.
2975 - 2980m	50	SILTSTONE:	as above.
	50	SANDSTONE:	as above.
2980 - 2985m	60	SANDSTONE:	as above, aggregates well cemented, 30% fluorescence, weak crush cut.
	40	SILTSTONE:	as above.
	trace	PYRITE	
2985 - 2990m	40	SANDSTONE:	coarse loose grains and fine aggregates, 20% fluorescence, very weak crush cut.
	60	SILTSTONE:	as above.
	trace	PYRITE	
	trace	COAL	
2990 - 2995m	40	SANDSTONE:	loose grains and finer aggregates, grains clear, angular, medium grained, moderate sorting; aggregates are fine grained, clay matrix, dolomitic? cement, well sorted, 25% pale yellow fluorescence, moderate crush cut.
	60	SILTSTONE:	dark to medium grey, fine grained, angular cuttings, carbonaceous.
	trace	PYRITE	
	trace	COAL	

2995 - 3000m	10	SANDSTONE:	as above.
	90	SILTSTONE:	as above.
3000 - 3005m	100	SILTSTONE:	as above.
3005 - 3010m	100	SILTSTONE:	as above.
3010 - 3015m	90	SILTSTONE:	as above.
	10	SANDSTONE:	quartzose, loose grains and aggregates; loose grains are angular to subangular, medium to coarse grained; aggregates are fine grained, angular to subangular, moderately sorted, and have poor visual porosity, 15% fluorescence, and a moderate 5 second streaming cut.
3015 - 3017m	70	SILTSTONE:	as above.
	30	SANDSTONE:	as above.
3017 - 3020m	60	SILTSTONE:	light to dark grey, firm to hard, blocky to angular, quartzose.
	10	SHALE:	medium grey to dark grey, hard, fissile, angular, carbonaceous in part.
	20	SANDSTONE:	quartzose, aggregates, fine grained, firm to hard, poorly sorted, angular to subangular, poor visual porosity, trace loose grains, coarse, clear to white.
	10	COAL:	black, conchoidal fracture.
3020 - 3025m	60	SILTSTONE:	medium to light grey, firm, blocky, micromicaceous.
	10	SHALE:	medium grey, hard to firm, angular to fissile, micromicaceous, carbonaceous in part.
	20	SANDSTONE:	clear to milky, quartzose aggregates, hard, poorly sorted, angular to subangular, poor visual porosity, encrusted pyrite, 5% pale yellow to white fluorescence, 10 second very weak streaming cut, weak crush cut, also loose quartz, coarse, angular grains.
	10	COAL:	as above.
3025 - 3030m	70	SILTSTONE:	as above.
	10	SHALE:	as above.
	20	SANDSTONE:	as above, trace fluorescence.
3030 - 3035m	80	SILTSTONE:	as above.
	10	SHALE:	as above.
	10	SANDSTONE:	as above, tight.
3035 - 3040m	80	SILTSTONE:	as above.
	10	SHALE:	as above.
	10	SANDSTONE:	as above.
3040 - 3045m	90	SANDSTONE:	quartzose, clear to milky, aggregates and loose grains (40%) total sample fluorescence; 40% aggregates - fine to medium grained, angular to subangular, poorly sorted, tight, pale yellow fluorescence, 60% strong to weak crush cut: 50% loose grains, angular, coarse to medium grained.
	10	SILTSTONE:	as above.
3045 - 3050m	70	SANDSTONE:	as above, 30% fluorescence, trace streaming cut, tight.
	30	SILTSTONE:	as above.

3050 - 3055m	90	SANDSTONE: as above, encrusted pyrite, tight, 10% dull yellow fluorescence, streaming cut, instant to 5 seconds.
	10	SILTSTONE: as above.
3055 - 3060m	20	SANDSTONE: as above, fluorescence and cut, as above.
	80	SILTSTONE: as above.
3060 - 3065m	20	SANDSTONE: as above, less than 5% fluorescence, very weak crush cut.
	80	SILTSTONE: pale brown to medium grey, soft to firm, blocky, also darker carbonaceous fragments.
3065 - 3070m	80	SANDSTONE: clear to white, medium to fine grained, angular, poorly sorted grains, well cemented, trace to 2% dull yellow fluorescence, slow crush cut.
	20	SILTSTONE: as above trace pyrite.
	trace	COAL
3070 - 3075m	70	SANDSTONE: as above.
	30	SILTSTONE: as above, trace pyrite.
	trace	COAL
3075 - 3080m	60	SANDSTONE: as above, 10% fluorescence, very weak crush cut.
	30	SILTSTONE: as above, trace pyrite.
	10	COAL
3080 - 3085m	50	SANDSTONE: as above, quartz grains often encrusted with pyrite, 10% fluorescence, very weak crush cut.
	40	SILTSTONE: as above.
	10	COAL
3085 - 3090m	40	SANDSTONE: as above.
	50	SILTSTONE: as above.
	10	COAL
3090 - 3095m	30	SANDSTONE: white to clear, medium to fine grained aggregates, angular to subangular, dolomitic cement?, trace pyrite, trace fluorescence, very weak crush cut.
	55	SILTSTONE: medium to dark grey, fine grained, trace pyrite.
	15	COAL
3095 - 3100	20	SANDSTONE: as above, trace fluorescence, very weak crush cut.
	70	SILTSTONE: as above.
	10	COAL
3100 - 3105m	70	SANDSTONE: as above, 20% yellow fluorescence, limited to coarser aggregates, very weak, very slow streaming cut.
	30	SILTSTONE: as above.
3105 - 3110	30	SANDSTONE: as above, 10% dull yellow fluorescence, slow streaming cut.
	70	SILTSTONE: as above.
	trace	COAL
3110 - 3115m	50	SANDSTONE: as above, 20% fluorescence, weak crush cut.
	50	SILTSTONE: as above, trace pyrite.
	trace	COAL

3115 - 3120m	40	SANDSTONE: as above, 20% fluorescence (pale yellow), moderate crush cut, occasional slow streaming cut.
	60	SILTSTONE: as above, grading up to fine sandstone, trace pyrite.
	trace	COAL
3120 - 3125m	50	SANDSTONE: as above, 5% dull yellow fluorescence.
	50	SILTSTONE: as above, trace pyrite.
	trace	COAL
3125 - 3130m	30	SANDSTONE: medium to fine grained, white to clear, angular to subangular grains, poorly sorted, loose or in dolomite cemented aggregates, poor visible porosity, 30% dull yellow fluorescence, weak, immediate stream cut.
	70	SILTSTONE: light to dark grey, fine grained, angular cuttings.
	trace	COAL
3130 - 3135m	10	SANDSTONE: as above, 10% dull yellow fluorescence, most grains give a weak streaming cut, or crush cut.
	85	SILTSTONE: as above.
3135 - 3140m	50	SANDSTONE: as above, 5% dull yellow fluorescence, weak crush cut.
	50	SILTSTONE: as above.
	trace	COAL
3140 - 3145m	40	SANDSTONE: as above, 20% dull yellow fluorescence, occasionally streaming cut, mostly crush cut.
	60	SILTSTONE: as above.
	trace	COAL
3145 - 3150m	40	SANDSTONE: as above, 10% dull yellow fluorescence, occasionally streaming cut, mostly weak crush cut.
	60	SILTSTONE: as above.
	trace	COAL
3150 - 3155m	10	SANDSTONE: mostly aggregates in dolomite cement, trace loose grains, but mostly aggregates, dull yellow fluorescence, weak crush cut, occasional weak streaming cut.
	90	SILTSTONE: as above, occasionally mottled, micromicaceous and carbonaceous.
3155 - 3160m	50	SANDSTONE: as above, 10% dull yellow fluorescence, moderate crush cut.
	50	SILTSTONE: as above, trace pyrite.
3160 - 3165m	50	SANDSTONE: as above, 15% dull yellow fluorescence, moderate crush cut.
	50	SILTSTONE: as above, trace pyrite.
3165 - 3170m	90	SANDSTONE: quartzose, clear to milky, firm to hard, fine to medium grained, angular, poorly sorted, poor visual porosity, tight, also loose coarse grained, angular grains, 5 - 10% fluorescence, 5 - 10 second streaming cut, argillaceous cement.
	10	SILTSTONE: medium to dark grey, firm, blocky, calcareous.
	trace	COAL

3170 - 3175m	80	SANDSTONE:	as above.
	20	SILTSTONE:	as above.
	trace	COAL:	
3175 - 3180m	70	SANDSTONE:	as above, 5% fluorescence.
	30	SILTSTONE:	as above.
	trace	COAL	
3180 - 3185m	10	SANDSTONE:	as above.
	90	SILTSTONE:	as above.
3185 - 3190m	90	SANDSTONE:	quartzose, clear to milky, hard, fine to medium grained, angular, poorly sorted, poor to no visual porosity, 5 - 10% fluorescence, weak, 5 second streaming cut.
	10	SILTSTONE:	as above.
3190 - 3195m	95	SANDSTONE:	as above, grains are encrusted with pyrite.
	5	SILTSTONE:	as above.
3195 - 3200m	95	SANDSTONE:	as above, trace fluorescence (with cut?), abundant mineral fluorescence.
	5	SILTSTONE:	as above.
3200 - 3205m	20	SANDSTONE:	as above.
	80	SILTSTONE:	as above.
3205 - 3210m	40	SANDSTONE:	as above.
	60	SILTSTONE:	as above.
3210 - 3215m	70	SILTSTONE:	light to medium grey, firm, carbonaceous in part, blocky.
	30	SANDSTONE:	as above.
3215 - 3220m	90	SANDSTONE:	quartzose, clear to milky, firm to hard, fine to medium grained, angular, poorly sorted, tight, no visual porosity, 5% fluorescence, dull yellow to tan predominantly, weak crush cut.
	10	SILTSTONE:	as above.
3220 - 3225m	80	SANDSTONE:	as above.
	20	SILTSTONE:	as above.
3225 - 3230m	40	SANDSTONE:	as above.
	60	SILTSTONE:	as above.
3230 - 3235m	95	SANDSTONE:	as above.
	5	SILTSTONE:	as above.
3235 - 3240m	20	SANDSTONE:	as above, fluorescence less than 5%, trace streaming cut, very rare.
	80	SILTSTONE:	as above.
3240 - 3245m	40	SANDSTONE:	as above.
	60	SILTSTONE:	as above.
3245 - 3250m	40	SANDSTONE:	as above, grains are sometimes encrusted with pyrite, trace fluorescence.
	60	SILTSTONE:	as above.
3250 - 3255m	50	SANDSTONE:	as above.
	50	SILTSTONE:	as above.
3255 - 3260m	70	SANDSTONE:	as above.
	30	SILTSTONE:	as above.

3260 - 3265m	30	SANDSTONE:	as above, trace fluorescence, very weak crush cut.
	70	SILTSTONE:	as above, some light brown fragments.
3265 - 3270m	50	SANDSTONE:	as above.
	50	SILTSTONE:	as above.
3270 - 3275m	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above.
3275 - 3280m	70	SANDSTONE:	as above.
	30	SILTSTONE:	as above.
3280 - 3285m	20	SANDSTONE:	quartzose, clear to milky, hard, fine to medium grained with scattered coarse grains, angular, poorly sorted, tight to no visual porosity, 5% fluorescence, very weak crush cut.
	80	SILTSTONE:	as above, grades to shale.
	trace	COAL	
3285 - 3290m	50	SANDSTONE:	as above, 5 - 10% fluorescence, trace instantaneous streaming cut.
	50	SILTSTONE:	as above, becoming more carbonaceous.
	trace	COAL	
3290 - 3295m	40	SANDSTONE:	quartzose, clear to milky, hard, fine to medium grained, moderately to poorly sorted, possible argillaceous cement, no visual porosity, very tight, 5 to 10% very pale yellow fluorescence, instant milky white streaming cut.
	60	SILTSTONE:	as above.
3295 - 3300m	30	SANDSTONE:	as above, very weak crush cut, no streaming cut.
	70	SILTSTONE:	as above.
3300 - 3305m	100	SANDSTONE:	as above, 15% fluorescence, very slow streaming cut, no visual porosity.
	trace	SILTSTONE:	as above.
3305 - 3310m	80	SANDSTONE:	as above, 5% fluorescence, trace streaming cut, very slow.
	20	SILTSTONE:	as above.
3310 - 3315m	70	SANDSTONE:	as above.
	30	SILTSTONE:	as above.
3315 - 3320m	90	SANDSTONE:	as above, trace good crush cut.
	10	SILTSTONE:	as above.
3320 - 3322m	90	SANDSTONE:	as above, 15 - 20% fluorescence, good to weak crush cut.
	10	SILTSTONE:	as above.

Final T.D. at 3322m

AL/bjr
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21/3/83

APPENDIX 2

OIL and GAS DIVISION

17 MAY 1983

APPENDIX 2

Core Descriptions

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 1 (Page 2)

Well BREAM 5

1939.0-
Interval Cored 1952.2 m, Cut 13.2 m, Recovered 11.7 m, (88.6%) Fm. LATROBE

Bit Type CHRIST KC-4 Bit Size 8-1/2 in, Desc by L. FINLAYSON Date 9/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
25 15 5 0			1949	1949.7-1950.4m SHALE: as above, no shows.
		⊕	1950	1950.42-1950.60m SAND: brown, hard, fine quartz grains, non calcareous, interbedded with coal, fluorescence: 90% bright blue white, cut: instant bright milky yellow white.
		⊕	1950	1950.60-1950.70m COAL: hard, black, shiny.
			1951	1950.70-1952.2m No Recovery
			1952	
			1953	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 2 (Page 1)

Well BREAM 5

Interval Cored 1952.2-1964.2 m, Cut 12.0 m, Recovered 12.0 m, (100%) Fm. LATROBE

Bit Type CHRIST RC-4 Bit Size 8-1/2 in, Desc by LINDSAY Date 9.8.82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50			1952	1952.20-1952.40m COAL
				1952.40-1953.50m SHALE: medium grey, hard, brittle, slightly quartzose, rich in clay, common biotite and muscovite, trace carbonaceous matter, fissile to sub-fissile.
			1953	1953.50-1953.65m SANDSTONE: quartzose, medium grey, very hard, granules in a silt/clay matrix, possibly silica cement, well rounded, bimodal, trace pyrite and biotite, no porosity, no shows.
			1954	1953.65-1954.8m SHALE: as above.
			1955	1954.8-1956.20 BLACK COAL: shiny, black, brittle, conchoidal fracture.
				1956.20-1957.20m SHALE: as above.
			1956	1957.20-1957.30m SANDSTONE: quartzose, medium light grey, hard, fine to very fine grained, moderately sorted, matrix consists of silt, clay, mica, with a silica cement.
			1957	1957.30-1960.00m SHALE: medium brown grey, firm to hard, mostly clay, quartz silt, micromica, subfissile.
			1958	1960.00-1960.10m COAL
				1960.10-1960.20m SANDSTONE: as for 1957.2m
			1959	1960.20-1963.20m SHALE: medium dark grey, hard, brittle, trace quartz grains, clay rich, common muscovite.
				1963.20-1964.20 BLACK COAL: shiny, hard, conchoidal fracture.
			1960	
			1961	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 2 (Page 2)

Well BREAM 5

Interval Cored 1964.2 m, Cut 12.0 m, Recovered 12.0 m, (100%) Fm. LATROBE

Bit Type CHRIST. RC-4 Bit Size 8-1/2 in. Desc by A. LINDSAY Date 9/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 30 10 0	-----		1962	
	-----		1963	
	-----		1964	
	-----		1965	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 3

Well BREAM 5

Interval Cored 2568.0-2574.60 m, Cut 6.60 m, Recovered 3.93 m, (.59.5%) Fm. LATROBE

Bit Type CHRIST C-20 Bit Size 8.468" in, Desc by LINDSAY Date 19/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
20 10 0			2568	<u>2568.00-2569.46m SANDSTONE:</u> quartzose, pale grey with thin black shiny carbonaceous streaks with a dip of 20°. Quartz grains are fine, subangular to subrounded, moderately sorted, silt and clay matrix,
		↑	2569	with silica cement, pyrite and mica common, trace faint blue white and spotty pinky orange fluorescence,
		↓	2570	gives a moderate milky white cut fluorescence and a trace of very light clear residue. Very low porosity and low permeability. Note: crush cut is very strong.
		⊕	2571	<u>2569.46-2570.42 SANDSTONE:</u> quartzose, pale grey, same as above but no carbonaceous streaks, pores are totally filled with powdery white material
			2572	(kaolinite?), no shows.
			2573	<u>2570.42-2570.65m SANDSTONE:</u> quartzose, firm to friable, medium to coarse grained, fair porosity and permeability; the sandstone has 50% patchy orange gold fluorescence which gives a rapid streaming milky white cut fluorescence, a light straw residue and a pleasant hydrocarbon odour.
			2574	<u>2570.65-2571.93m COAL:</u> black, bituminous to anthracitic, mostly shiny, conchoidal fracture, hard, brittle, bleeding gas through fractures.
			2575	<u>2571.93-2574.60m</u> No Recovery

Note: 1. Evidence of cores rotating one against the other within the sandstone portion - possible non-recovery there.

2. Top of core has marks from previous button bit run. Thus top of core follows directly after the end of the normal drilling at 2568.0m.

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. ... 4 ... (Page 1)

Well **BREAM 5**

Interval Cored **2707.6-2726** m, Cut **18.4** m, Recovered **17.96** m, (.97.6%) Fm. **LATROBE**

Bit Type **C-22 FD** Bit Size **8.46** in., Desc by **W. MUDGE** Date **25/8/82**

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
20 0			2707	<u>2707.6-2707.8m</u> SHALE: dark grey, subfissile to fissile firm, micaceous.
			2708	<u>2707.8-2709.6m</u> SANDSTONE: white to clear, very coarse to medium grained, firm to hard, angular to subangular, poorly sorted, poor visual porosity, trace mica, pyrite: 100-20% yellow gold fluorescence, good
			2709	crush cut and milky white fluorescence, decreasing with depth, patchy below 2708.3m
			2710	<u>2709.6-2709.7m</u> COAL <u>2709.7-2710.35m</u> SILTSTONE: medium to dark grey, firm, very carbonaceous.
			2711	<u>2710.35-2711.21m</u> SANDSTONE: white to clear, quartzose, medium to fine grained, hard, angular to subangular, poorly sorted, tight, no shows.
			2712	<u>2711.21-2711.5m</u> SILTSTONE: as above. <u>2711.5-2712.33m</u> COAL <u>2712.33-2712.7m</u> SHALE: black, fissile, carbonaceous. <u>2712.7-2713.0m</u> COAL
			2713	<u>2713.0-2716.5m</u> SANDSTONE: as above, no shows. <u>2716.5-2717.8m</u> SILTSTONE: as above. <u>2717.8-2719.95m</u> SILTSTONE: as above, very micaceous, grades to mudstone.
			2714	<u>2719.95-2720.95m</u> SILTSTONE: as above, very sandy.
			2715	<u>2720.95-2722.58m</u> SANDSTONE: light to dark grey, quartzose, fine to medium grained, poorly sorted, angular to subangular, poor to moderate visual porosity, 5-90% bright yellow fluorescence with instant streaming yellow cut between 2721.8 and 2722.58m.
			2716	<u>2722.58-2725.56m</u> SANDSTONE: with SILTSTONE: as above, trace bright yellow fluorescence, no cut.

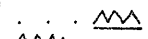
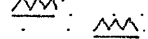
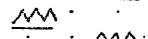
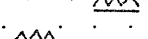
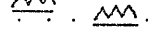
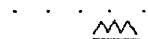

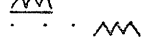
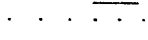
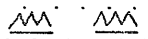

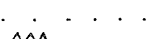


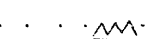



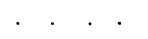


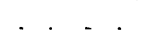

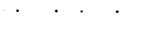
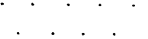

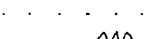
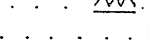


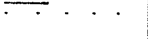
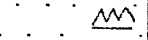

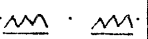

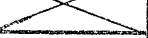





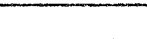
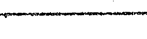



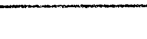




ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. ... 4 (Page 2)

Well ... BREAM 5

Interval Cored 2707.6-2726 ... m, Cut 18.4 ... m, Recovered 17.96 ... m, (97.6%) Fm. LATROBE

Bit Type C-22 FD Bit Size 8.46 in., Desc by W. MUDGE Date 25/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
20 10 0			2717	
				
				
			2718	
				
				
			2719	
				
				
			2720	
				
				
			2721	
				
				
			2722	
				
				
			2723	
				
				
			2724	
				
				
			2725	
				
				
			2726	
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 5 (Page 1)

Well BREAM 5

Interval Cored 2758.4-2776.4 m, Cut 18 m, Recovered 18 m, (100%) Fm. LATROBE

Bit Type CHRIST RC-4 Bit Size 8-1/2 in, Desc by MORETON/MUDGE Date 26/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
			2758	2758.4-2761.55m SANDSTONE: quartzose, light grey, poorly sorted, fine to medium grained, angular to subangular, moderately cemented, moderate visual porosity, trace pyrite, trace carbonaceous, -
			2759	massive to laminated.
			2760	2758.5m 20% patchy bright yellow fluorescence, slow streaming cut, pale yellow cut fluorescence.
			2761	2759.4m 90% bright yellow fluorescence, immediate streaming cut, pale yellow cut fluorescence. 2760.52m 60% bright pale yellow fluorescence immediate streaming cut, pale yellow cut fluorescence.
			2762	2761.55-2761.75m COAL/SHALE: shale dark grey, very fine grained, micaceous/carbonaceous - coal black 2761.75-2763.40m SANDSTONE: as above. 2762.03m 40% bright pale yellow fluorescence, moderate streaming cut, pale yellow cut fluorescence.
			2763	2763.40-2764.20m SILTSTONE/SHALE: siltstone dark grey, quartzose, carbonaceous, micaceous, very fine grained; shale: dark grey, subfissile, micromicaceous.
			2764	2764.2-2765.8m SANDSTONE: as above 2764.64m 60% bright pale yellow fluorescence, immediate streaming cut yellow fluorescence:
			2765	2765.31m 80% bright pale yellow fluorescence, immediate streaming cut yellow fluorescence. 2765.8-2766.3m SILTSTONE/SHALE: as above.
			2766	2766.3-2767.6m SANDSTONE: as above, 2766.8m 20% bright pale yellow fluorescence (spotty), slow streaming cut.
			2767	2767.05m 60% bright pale yellow fluorescence, immediate streaming cut, yellow cut fluorescence. 2767.6-2770.2m SHALE/SILTSTONE: as above. 2770.2-2770.5m SILTSTONE: dark grey, quartzose, carbonaceous, micaceous.

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 5. (Page. 2)

Well . BREAM 5

Interval Cored 2758.4-2776.4 m, Cut 18 m, Recovered 18 m, (100%) Fm. LATROBE

Bit Type. CHRIST RC-4 Bit Size 8-1/2 in., Desc by MORETON/MUDGE Date 26/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 25 0			2768	2770.5-2771.13m SANDSTONE: quartzose, white to clear, friable, medium to coarse grained, angular to subangular, moderately sorted, poor to moderate visual porosity; 90-100% yellow gold fluorescence, instantaneous milky white streaming cut.
			2769	2771.13-2774.30m SHALE: dark grey, black, carbonaceous, micromicaceous, fissile.
			2770	2774.30-2774.44m COAL
		●		2774.44-2775.19m SANDSTONE: as above.
		●	2771	2775.19-2775.80m SHALE: as above.
				2775.80-2776.04m SANDSTONE: as above, no shows.
				2776.04-2776.40m SHALE: as above.
			2772	
			2773	
			2774	
		●		
		●	2775	
			2776	
			2777	

ESSO AUSTRALIA LTD
CORE DESCRIPTION

Core No. 1 (Page 1)

Well BREAM 5

Interval Cored 1939.0-1952.2 m, Cut 13.2 m, Recovered 11.7 m, (88.6 %) Fm LATROBE
Bit Type CHRIST RC-4 Bit Size 8-1/2 in, Desc by L. FINLAYSON Date 9/8/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
25 15 5 0			1939	1939.0-1941.88m SAND: clear to frosty, subangular to subrounded, coarse quartz grains, moderately sorted, very friable, slightly calcareous, decreasing with depth.
34.3			1940	trace glauconite, pyrite, carbonaceous material, good to excellent visual porosity, fluorescence: 100% bright blue to white, cut: instant bright milky blue to white.
			1941	1941.88-1945.20m SAND: predominantly fine to occasional medium grained, clear to frosty, subangular to angular quartz grains, well sorted, friable, non-calcareous, trace glauconite, mica, pyrite, carbonaceous material, low visual porosity, fluorescence: 100% bright blue to white, cut: slow bright milky blue to white.
34.3			1942	1945.20-1947.00m SANDY SILTSTONE: light to medium grey, very fine to fine quartz grains, moderately hard, non calcareous, trace glauconite, mica, carbonaceous material, little visual porosity, trace fluorescence.
			1943	1947.00-1947.53m SANDY SILTSTONE: as above, fluorescence: 30% bright blue white, cut: very slow bright milky blue white.
			1944	1947.53-1947.67m SHALE: dark brown to black, hard, non calcareous, micaceous, no shows.
			1945	1947.67-1948.20m SAND: light grey brown, fine to medium quartz grains, occasional very coarse with silty matrix, friable to hard, low visible porosity, fluorescence: 30-60% bright blue white, cut: slow bright blue white.
			1946	1948.20-1949.59m SHALE: dark grey to brown, hard, very carbonaceous, micaceous, no shows.
			1947	1949.59-1949.75m SAND: light to medium grey, very fine quartz grains, moderately hard, non calcareous, contains very carbonaceous siltstone/coal inclusions, fluorescence: 70% bright blue white, cut: very slow bright milky blue white.
			1948	

APPENDIX 3

OIL and GAS DIVISION

17 MAY 1983

APPENDIX 3

Sidewall Core Descriptions

Sidewall Core Descriptions

No.	Depth	Lithology	Description
1	2042.4	Siltstone	Grey, hard, micaceous.
2	2029.0	Siltstone	Dark grey, hard, micaceous, carbonaceous.
3	2017.4	Siltstone	Dark grey, hard, micaceous, carbonaceous.
4	2008.0	Sandstone	White to grey, fine grained, well sorted, subangular, firm, slightly calcareous, micaceous, carbonaceous, quartzose.
5	2002.0	Mudstone	Grey, hard, slightly calcareous.
6	1986.9	Sandstone	White, fine grained, well sorted, subangular, hard, quartzose, pyritic.
7	1972.5	Siltstone	Blue grey, firm, carbonaceous.
8	1937.0	Sandstone	White to grey, fine grained, well sorted, subangular, soft, micaceous, quartzose, 30% spotty bright blue white fluorescence, weak white cut.
9	1935.0	Sandstone	White to grey, coarse grained, poorly sorted, subrounded, soft, slightly calcareous, quartzose.
10	1931.0	Sandstone	Brown to green, medium grained, moderately sorted, subrounded, firm, quartzose, glauconitic, silty.
11	1928.9	Sandstone	Brown to green, medium grained, moderately sorted, subrounded, firm, quartzose, glauconitic, silty.
12	1927.0	Sandstone	Brown to grey, fine grained, moderately sorted, subangular, firm, quartzose, silty.
13	1925.0	Sandstone	Brown to grey, fine grained, moderately sorted, subangular, firm, quartzose, silty, glauconitic.
14	1923.0	Sandstone	Brown to grey, fine grained, moderately sorted, subangular, firm, quartzose, silty, glauconitic.
15	1921.0	Siltstone	Dark grey, hard, carbonaceous?, glauconitic.
16	1917.0		Pulled Off
17	1912.9	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, slightly calcareous, quartzose, glauconitic, silty.

18	1909.0	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
19	1905.0	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
20	1900.9	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
21	1897.0	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
22	1893.0	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
23	1889.0	Sandstone	Grey to brown, fine grained, moderately sorted, subangular, hard, very calcareous, quartzose, glauconitic, silty.
24	1885.0	Siltstone	Grey, hard, very calcareous, quartzose, glauconitic.
25	1881.0	Siltstone	Dark grey, hard, very calcareous, micaceous, glauconitic.
26	1877.0	Siltstone	Dark grey, hard, glauconitic, very calcareous.
27	1873.0	Siltstone	Grey brown, hard, very calcareous, glauconitic, quartzose.
28	1869.0	Siltstone	Grey brown, hard, very calcareous, glauconitic, quartzose.
29	1865.0	Siltstone	Grey, hard, very calcareous, micaceous.
30	1860.0	Mudstone	Light grey, hard, very calcareous.
31	1855.0	Mudstone	Light grey, hard, very calcareous.
32	1850.0	Mudstone	Light grey, hard, very calcareous, micaceous, pyritic.
33	1844.9	Mudstone	Light grey, hard, very calcareous, micaceous.
34	1840.0	Siltstone	Light grey, hard, very calcareous.
35	1835.0	Mudstone	Grey, firm, very calcareous, clayey.
36	1830.0	Claystone	Grey, soft, very calcareous.
37	1825.0	Mudstone	Grey, firm, very calcareous.
38	1820.0	Siltstone	Light grey, firm, very calcareous.
39	1815.0	Siltstone	Light grey, hard, very calcareous.

40	1810.0	Siltstone	Grey, hard, very calcareous.
41	1805.0	Siltstone	Grey, hard, very calcareous.
42	1800.0	Mudstone	Grey, firm, very calcareous, pyritic.
43	1725.0	Siltstone	Grey, hard, very calcareous.
44	1650.0	Mudstone	Dark grey, hard, very calcareous.
45	1575.0	Siltstone	Grey, hard, very calcareous, micaceous.
46	1500.0	Siltstone	Grey, very hard, very calcareous.
47	1425.0	Siltstone	Grey, very hard, very calcareous.
48	1350.0	Mudstone	Grey, very hard, very calcareous.
49	1275.0		Shot Off
50	1200.0		Shot Off
51	1125.0	Mudstone	Grey, firm, very calcareous, micaceous.
52	3320.0	Coal	Black, well sorted, interbedded coal and shale.
		Shale	Medium light grey, well sorted, firm.
53	3313.0	Shale/ Coal	Medium grey to black, firm, carbonaceous, pyrite, coaly, trace bright yellow mineral fluorescence.
54	3305.0	Siltstone	Medium dark grey to dark grey, silty, well sorted, firm, quartzose, carbonaceous, coaly, trace yellow mineral fluorescence.
55	3290.5	Siltstone	Brownish grey, silty, well sorted, soft, quartzose, argillaceous.
56	3284.0	Siltstone	Brownish grey, silty, well sorted, medium to soft, quartzose, argillaceous, coaly.
57	3280.0	Shale	Dark grey, firm, carbonaceous, coaly, pyritic, shaley.
58	3272.5	Siltstone	Brownish grey, silty, well sorted, firm, carbonaceous, coaly, argillaceous.
59	3261.0	Shale	Brown, firm, silty.
60	3253.5		Bullet Retrieved - No Recovery.
61	3250.5	Sandstone	Light grey, medium to fine grained, poorly sorted, subangular to angular, friable, quartzose, with clay cement, 90% even bright yellow fluorescence, bright cream yellow cut, medium dull orangy yellow residue.
62	3233.5		Bullet Retrieved - No Recovery.

63	3225.0	Sandstone	Light grey, medium grained, poorly sorted, subangular to angular, friable, quartzose, 90% even, very bright, yellow fluorescence, bright cream yellow cut, medium dull orangy yellow residue.
64	3222.5		Bullet Retrieved - No Recovery.
65	3218.0		Bullet Retrieved - No Recovery.
66	3202.0	Shale	Dark grey, very hard, slightly silty.
67	3196.0		Bullet Shot Off.
68	3194.0	Clay	Brown, firm, subfissile, slightly silty.
69	3179.6	Siltstone	Dark grey, silty, well sorted, very hard.
70	3164.0	Sandstone	Light grey, fine to medium grained, poorly sorted, subangular to angular, friable, carbonaceous streaks, 30% patchy, dull yellow mineral fluorescence, poor visual porosity.
71	3145.9	Sandstone	Light grey, fine to medium grained, poorly sorted, subangular to angular, friable, 90% patchy bright yellow fluorescence, dull creamy yellow cut, medium yellow residue, poor visual porosity.
72	3135.5	Sandstone	Light grey, fine to medium grained, poorly sorted, subangular to angular, friable, slightly calcareous cement, trace patchy dull orange mineral fluorescence.
73	3109.0	Sandstone	Light grey, fine grained, poorly sorted, subrounded, friable to soft, slightly calcareous, white soft clay-like matrix.
74	3106.0	Siltstone	Brownish grey, fine grained, well sorted, firm, argillaceous, quartzose.
75	3104.0		Mud, black oily substance intermixed with mud. Greenish fluorescence when viewed under UV light when inside bottle. (Contamination?)
76	3090.0	Claystone	Very light grey, fine grained, poorly sorted, very soft, sand grains in slightly calcareous clay matrix.
77	3080.5	Sandstone	Light grey, medium to fine grained, very soft, poorly sorted, subangular to angular, sand grains in slightly calcareous clay matrix, trace patchy dull orangy yellow mineral fluorescence.
78	3065.5	Siltstone	Pale brown, soft, argillaceous.

79	3062.0	Siltstone	Medium dark grey, firm, well sorted, slightly calcareous, argillaceous, carbonaceous.
80	3047.5	Sandstone	Medium to light grey, fine to very fine grained, moderate sorting, firm, argillaceous, slightly calcareous, carbonaceous, 90% even dull orange mineral fluorescence.
81	3044.5	Sandstone	Light grey, fine to very fine grained, moderately sorted, soft, slightly calcareous, argillaceous, 40% patchy dull yellow mineral fluorescence.
82	3027.5		Bullet Retrieved - No Recovery.
83	3017.0	Siltstone	Brown, fine grained, with some coarse sized sand grains, poorly sorted, angular to subangular, soft, quartzose, argillaceous, trace patchy bright yellow fluorescence, very weak dull milky yellow cut.
84	3014.0		Bullet Retrieved - No Recovery.
85	3009.5	Shale	Greyish red, firm, silty, carbonaceous.
86	2994.0		Bullet Retrieved - No Recovery.
87	2979.5		Bullet Retrieved - No Recovery.
88	2950.0	Siltstone	Light grey, soft, argillaceous.
89	2920.1	Sandstone	Light grey, fine grained, well sorted, soft, argillaceous, white clay material is dominant in patches.
90	2883.0		Bullet Retrieved - No Recovery
91	2855.0	Siltstone	Medium grey, very hard, argillaceous, biotite flecks, carbonaceous, trace patchy dull yellow mineral fluorescence.
92	2848.0	Siltstone	Brownish grey, firm, carbonaceous, argillaceous.
93	2825.0	Siltstone	Medium grey, soft, carbonaceous, argillaceous.
94	2796.5	Sandstone	Light grey, medium to very fine grained, poorly sorted, subangular to subrounded, very soft, quartz in clay matrix, 50% patchy dull to bright yellow mineral fluorescence.
95	2792.9		Very Poor Sample
96	2740.5		Bullet Retrieved - No Recovery.
97	2730.0	Sandstone	Light grey, medium to fine grained, poorly sorted, subangular to subrounded, soft, very calcareous, argillaceous, carbonaceous, trace of specks of dull, orange mineral fluorescence, contains shale clasts.

98	2727.5		Bullet Retrieved - No Recovery.
99	2698.0	Sandstone/ Shale	Light grey to dark grey, fine to coarse grained, poorly sorted, subangular to subrounded, soft to firm, quartzose clay matrix, carbonaceous, 30% patchy bright yellow fluorescence, dull milky yellow cut, pale yellow residue.
100	2687.0	Siltstone	Dark grey, very hard, quartzose, argillaceous.
101	2673.0		Bullet Shot Off.
102	2647.9	Sandstone	Medium to light grey, fine to medium grained, poorly sorted, subangular to subrounded, soft, fine quartzose matrix, argillaceous.
103	2624.0	Shale	Brownish grey, firm, slightly silty.
104	2588.0	Shale	Brownish grey, firm, slightly silty.
105	2565.9	Sandstone	Medium grey, very fine grained, well sorted, soft, carbonaceous, quartzose.
106	2551.0	Siltstone	Medium grey, firm, quartzose, argillaceous.
107	2530.0	Shale	Medium light grey, firm, slightly calcareous, subfissile.
108	2504.0	Siltstone	Medium light grey, firm, well sorted, micromicaceous, carbonaceous, argillaceous.
109	2492.0	Sandstone	Medium light grey, fine to very fine grained, well sorted, subangular to subrounded, firm, quartzose, carbonaceous, argillaceous, 70% patchy, bright to dull yellow mineral fluorescence.
110	2472.0	Siltstone	Medium dark grey, moderately hard, slightly calcareous, argillaceous.
111			Misfire
112			Misfire
113			Misfire
114			Misfire
115			Misfire
116			Misfire
117			Misfire
118			Misfire
119			Misfire
120			Misfire
121			Misfire

122			Misfire
123			Misfire
124			Misfire
125			Misfire
126			Misfire
127			Misfire
128			Misfire
129			Misfire
130			Misfire
131			Misfire
132			Misfire
133	3233.5	Sandstone	Light grey, medium to fine grained, moderately sorted, angular to subangular, firm, slightly calcareous, quartzose, clay matrix, some coarse sand sized clasts of fine grained silt, medium grey siltstone, very hard.
134	3222.5		Bullet Retrieved - No Recovery.
135	3218.0	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to angular, firm, slightly calcareous, quartzose, coal, clayey, trace scattered very dull yellow fluorescence, one grit sized quartz clast.
136	3201.9	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to subrounded, soft, quartzose, clayey, biotite, micaceous.
137	3196.0	Siltstone	Brownish grey, moderately hard, quartzose, carbonaceous, argillaceous, subfissile, slightly calcareous.
138	3179.6		Bullet Shot Off
139	3103.9		Bullet Retrieved - No Recovery
140	3065.6	Siltstone	Dark grey, firm, quartzose, argillaceous, carbonaceous, trace speckled very dull yellow (mineral?) fluorescence, some inclusion of sandstone, some of these fluoresce.
141	3027.8	Siltstone	Brown, firm, slightly calcareous, quartzose, argillaceous, carbonaceous.
142	3013.9	Siltstone	Brown, firm, very slightly calcareous, quartzose, argillaceous, carbonaceous, subfissile.
143	2994.0		Bullet Retrieved - No Recovery.
144	2979.5		Bullet Retrieved - No Recovery.

145	2883.0		Bullet Retrieved - No Recovery.
146	2776.6	Siltstone	Medium dark grey, firm, argillaceous, quartzose, very poor sample.
147	2756.0		Bullet Retrieved - No Recovery.
148	2740.4	Sandstone	Medium grey, fine to very fine grained, subangular to subrounded, friable, slightly calcareous, quartzose, carbonaceous, argillaceous, 70% patchy bright to dull yellow fluorescence, pale yellow cut, pale cream residue.
149	2727.5	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to subrounded, friable, quartzose, carbonaceous, pyritic, 90% patchy bright yellow fluorescence, bright creamy yellow cut.
150	2694.9	Sandstone	Medium light grey, coarse to fine grained, poorly sorted, subangular to subrounded, friable, quartzose, carbonaceous, 90% even bright yellow fluorescence, pale yellow cut.
151	2687.0	Siltstone	Dark grey, hard, quartzose, argillaceous.
152	2673.0	Siltstone	Medium grey, moderately hard, quartzose, argillaceous.
153	2446.0		Bullet Retrieved - No Recovery.
154	2416.5	Sandstone	Light grey, fine grained, well sorted, subrounded, friable, quartzose, clayey, argillaceous, trace speckles of dull orange mineral fluorescence.
155	2374.9	Sandstone	Very Poor Sample.
156	2369.0	Sandstone	Light grey, very fine to fine grained, moderately sorted, subrounded to rounded, friable, quartzose, clayey, argillaceous.
157	2341.0		Bullet Retrieved - No Recovery
158	2317.0	Shale	Brown, firm, argillaceous, carbonaceous.
159	2289.0		Bullet Shot Off.
160	2267.0		Bullet Retrieved - No Recovery
161	2243.0		Bullet Shot Off.
162	2229.0		Bullet Retrieved - No Recovery
163	2219.4	Sandstone	Light grey, coarse to fine grained, poorly sorted, subrounded, friable, slightly calcareous, quartzose, clayey.
164	2209.0	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to subrounded, soft, quartzose, clayey.

165	2187.0		Bullet Shot Off
166	2174.0		Bullet Retrieved - No Recovery
167	2157.5	Sandstone	Brown, medium to fine grained, moderately sorted, subrounded, soft, slightly calcareous, argillaceous, quartzose, carbonaceous, 40% patchy dull orange mineral fluorescence.
168	2144.0		Bullet Retrieved - No Recovery
169	2127.5	Siltstone	Medium to dark grey, firm, quartzose, argillaceous, micaceous.
170	2119.0	Siltstone	Brown, firm, slightly calcareous, clayey, argillaceous, carbonaceous.
171	2114.0	Siltstone	Brown, firm, quartzose, pyritic, argillaceous, micaceous, carbonaceous.
172	2105.0		Bullet Retrieved - No Recovery
173	2090.0		Bullet Shot Off
174	2077.0	Sandstone	Light grey, fine grained, well sorted, rounded, friable, quartzose, carbonaceous, white clay, trace dull orange mineral fluorescence.

AL/bjr
02161/35-43
22/3/83

**APPENDIX
4**

OIL and GAS DIVISION

1 7 MAY 1983

APPENDIX 4

Velocity Survey Report

MARINE VELOCITY SURVEY

Well BREAM-5
Basin GIPPSLAND

INTRODUCTION

Esso Personnel BRETT HARDIMAN
Contractor VELOCITY DATA PTY LTD

Supplied (1) Instruments.
(2) Personnel

Seismic Observer..... John Larsen
Marine Shooter .. Mal O'Driscoll
Navigation..... N/A

(3) Licenced Shooting Boat

Name..... N/A
Date Loaded.....
Date Released.....
Agent.....

(4) Seismic Source

Gas Gun

Gas Pressures... 20 to 40 sec fill
Oxygen 90 psi
Propane 45 psi

Personnel and Instruments

assembled at ... SALE Date .. 5/9/82
Boarded (rig) .. SOUTHERN CROSS Date .. 5/9/82
Date of survey 6/9/82
Casing Depth ... 13 3/8" @ 786 m RKB,
9 5/8" @ 2054m RKB
.....
T.D. when shot 3321m RKB
water depth 59.6 metres

SURVEY PROCEDURE

Weather: Wind 30/35m gusting 55
Swell 1-2m max. 4m
Sea ROUGH
Rig Movement HIGH
Rig Noise MODERATE - HIGH

Hydrophones: Number..... 2

Depth below sea level 9.14metres

Position One at top of gun and one in
 moonpool

Gas Gun: number of shots per level Varied

gun depth 12.2metres

Well phone positioning:

No of depths 21

Time: first shot 1700 hrs

last shot 2023 hrs

Total rig time 4 hrs

RESULTS

Quality of results (good 17

(fair 15

(poor 5

(not used 5

Comparison of Interval Times with Sonic Log

/ / average 17.7microsec/metre

/ / max 33.3microsec/metre

CONCLUSION

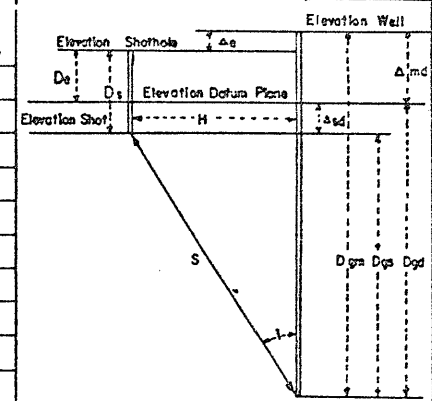
Reliability of T-D curve FAIR

COMMENTS

Survey is of generally high standard. Possible errors in check shots could apply due to bad weather conditions (Gun unable to stabilise and high rig movement).

Problems were encountered recording 5 levels, at depths of 300m, 500m, 750m, 1200m, 1350m RKB, this was believed to be caused by a poor cement casing bond and the riser movement of the rig.

Shot hole information: - Elevation, Distance & Direction from Well			Company ESSO EXPLORATION AUSTRALIA INC.														Well BREAM-5		Elevation (Derrick Floor) 21m		Total Depth 3321m RKB		LOCATION Coordinates Section, Township, Range County Area or Field DATUM : M.S.L. GIPPSLAND												
Record Number	Shot Number	Time of Shot	Dgm	Ds	tus	tr	T			Dgs	H	TAN i	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	ΔDgd	ΔTgd	Vi Interval Velocity	Va Average Velocity	Elevation Shot		Elevation Well									
							Reading	Rarity	Grade															De	Ds	Δe	Δmd								
9		1802	2963	9.14		.027	1.049		P	2933	40	OFFSET DOES NOT		9.14	6	1.055	1.055	2942	150	.0410	3659	2789													
10			"	"		"	"		F	"	"	"	"																						
7		1752	3150	"		"	1.090		"	3120	"	AFFECT TIME				1.096	1.096	3129	187	.0410	4561	2855													
8			"	"		"	"		G	"	"	"	"																						
5		1744	3319	"		"	1.131		F	3289	"	"	"	"	"	1.137	1.137	3298	169	.0410	4122	2900													
6			"	"		"	"		F	"	"	"	"																						



Dgm = Geophone depth measured from well elevation
 Dgs = " " " " shot "
 Dgd = " " " " datum "
 Ds = Depth of shot
 De = Shot hole elevation to datum plane
 H = Horizontal distance from well to shotpoint
 S = Straight line travel path from shot to well geophone
 tus = Uphole time of shotpoint
 T = Observed time from shotpoint to well geophone.
 tr = " " to reference geophone.
 Δe = Difference in elevation between well & shotpoint.
 Δsd = " " " " shot & datum plane
 Δsd = Ds - De
 Dgs = Dgm - Ds ± Δe; tan i = $\frac{H}{Dgs}$
 Tgs = COS i Ts Vert. travel time from shot elev. to geophone
 Tgd = $Tgs \pm \frac{\Delta sd}{V}$ = " " datum plane "
 Dgd = Dgm - Δmd
 Vi = Interval velocity = $\frac{\Delta Dgd}{\Delta Tgd}$
 Va = Average = $\frac{Dgd}{Tgd}$
 Surveyed by: Velocity Data P/L
 Date: 6.9.82
 Weathering Data:
 Casing Record

VELOCITY SURVEY ERROR CHECK

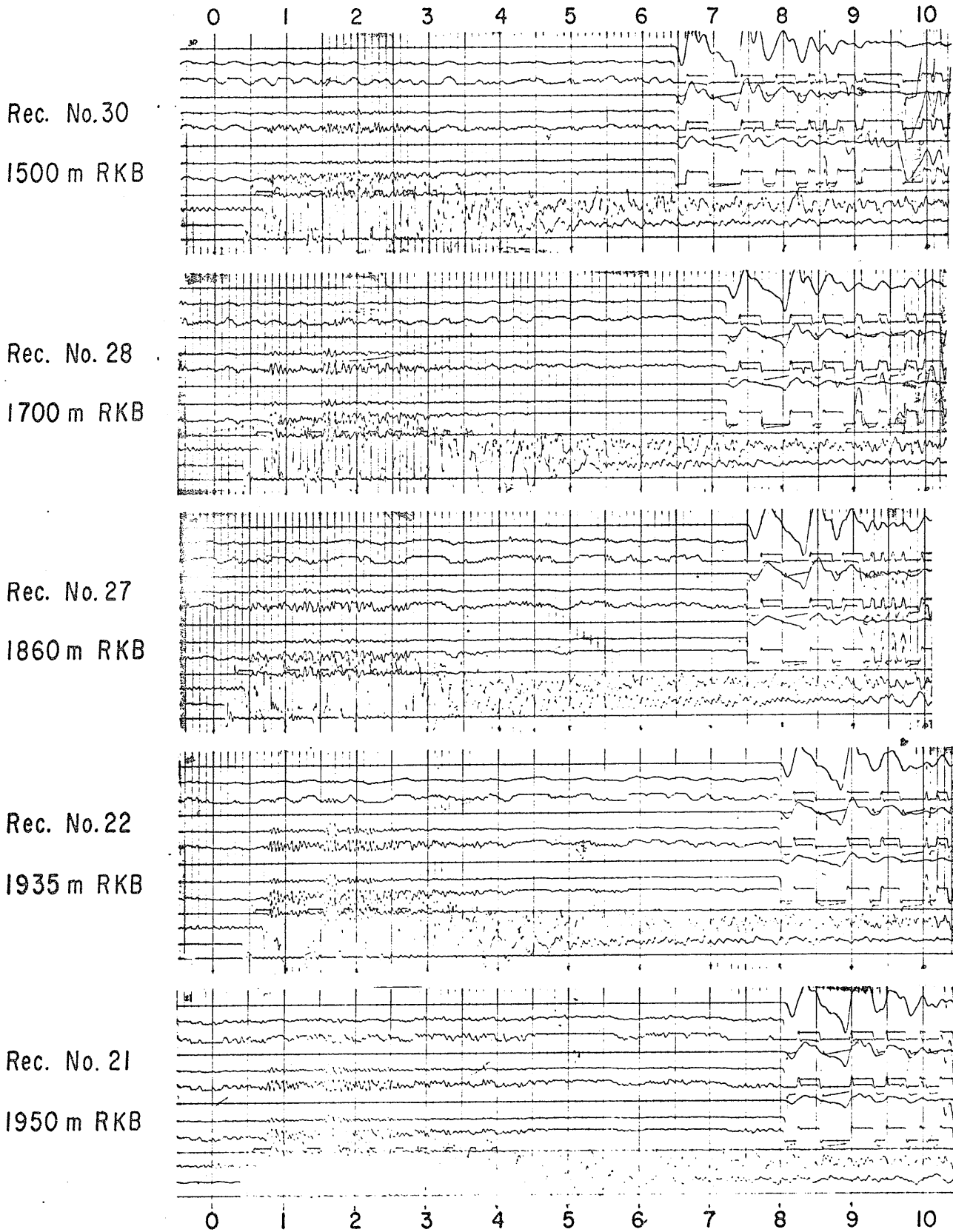
BREAM-5

Depth I.S.L. (m)	Av. Vertical Travel Time (check shots)	Ti Check Shots (sec.)	Ti Sonic Log (sec.)	Δ (Millisecs.)		Depth Interval (m.)	Error (Microsec. per m.)
				Ti Check	Ti Sonic		
129	0.062	.3457				857	
986	0.4077						
986	0.4077	.0800	.0738	6.2		193	32.1
1179	0.4877						
1179	0.4877	.0581	.0584	-0.3		150	2.0
1329	0.5458						
1329	0.5458	.0610	.0572	3.8		150	25.3
1479	0.6068						
1479	0.6068	.0740	.0711	2.9		200	14.5
1679	0.6808						
1679	0.6808	.0550	.0525	2.5		160	15.6
1839	0.7358						
1839	0.7358	.0170	.0163	0.7		53	13.2
1892	0.7528						
1892	0.7528	.0060	.0064	-0.4		22	18.2
1914	0.7588						
1914	0.7588	.0057	.0062	-0.5		21	23.8
1935	0.7645						
1935	0.7645	.0295	.0267	2.8		84	33.3
2019	0.7940						
2019	0.7940	.0810	.0786	2.4		271	8.9
2290	0.8750						
2290	0.8750	.0650	.0611	3.9		229	17.0
2519	0.940						
2519	0.940	.0420	.0387	3.3		142	23.2
2661	0.9820						
2661	0.9820	.0320	.0326	-0.6		131	4.6
2792	1.0140						
2792	1.0140	.0410	.0380	3.0		150	20.0
2942	1.0550						
2942	1.0550	.0410	.0452	-4.2		187	22.5
3129	1.0960						

BREAM 5

WELL VELOCITY RECORD

6-9-82

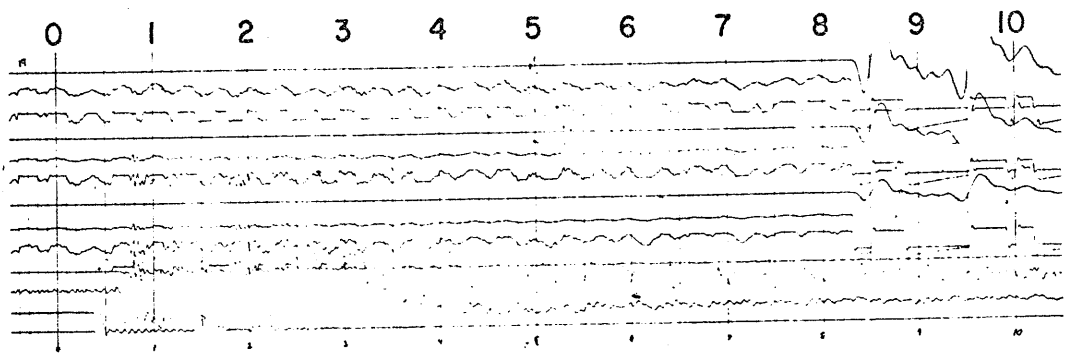


BREAM 5

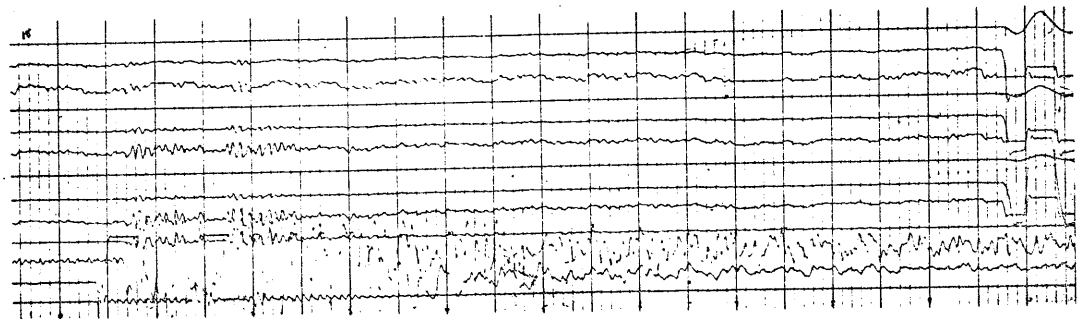
WELL VELOCITY RECORD

6-9-82

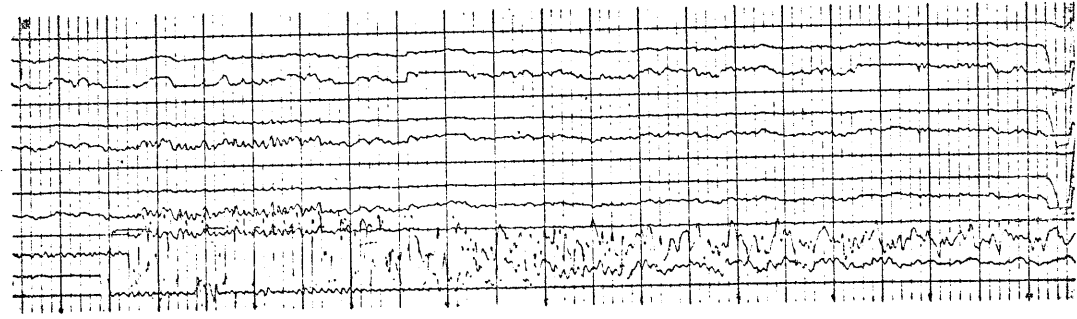
Rec. No. 19
2040m RKB



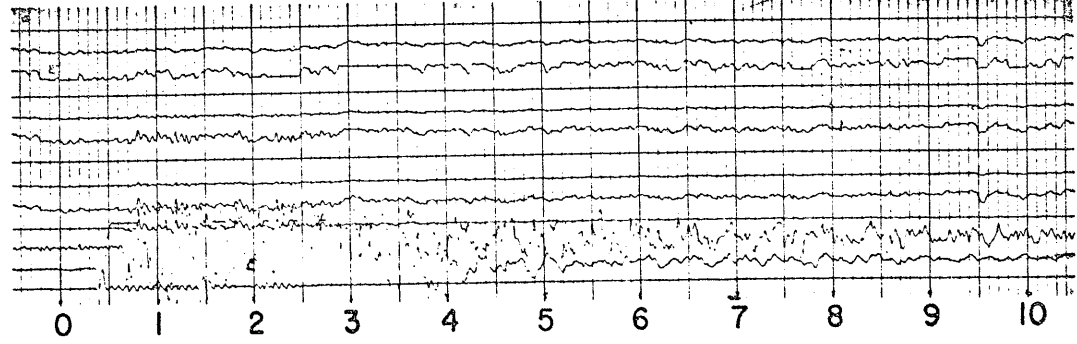
Rec. No. 15
2540m RKB



Rec. No. 13
2682m RKB



Rec. No. 12
2813m RKB



PE902628

This is an enclosure indicator page.
The enclosure PE902628 is enclosed within the
container PE902627 at this location in this
document.

The enclosure PE902628 has the following characteristics:

ITEM_BARCODE = PE902628
CONTAINER_BARCODE = PE902627
NAME = Sonic Calibration Curve
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Sonic Calibration Curve (from WCR) for
Bream-5
REMARKS =
DATE_CREATED = 30/11/1982
DATE_RECEIVED = 17/05/1983
W_NO = W781
WELL_NAME = Bream-5
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902629

This is an enclosure indicator page.
The enclosure PE902629 is enclosed within the
container PE902627 at this location in this
document.

The enclosure PE902629 has the following characteristics:

ITEM_BARCODE = PE902629
CONTAINER_BARCODE = PE902627
NAME = Time Depth Curve
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Time Depth Curve (from WCR) for Bream-5
REMARKS =
DATE_CREATED = 31/10/1982
DATE_RECEIVED = 17/05/1983
W_NO = W781
WELL_NAME = Bream-5
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)