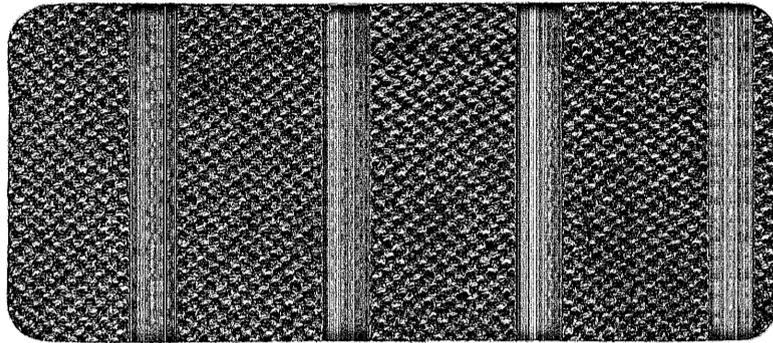


Esso

DEPT. NAT. RES & ENV



PE902517



WCR VOL 1

SUNFISH-2

W833

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

W833

WELL COMPLETION REPORT

SUNFISH 2

26 APR 1984

VOLUME 1

OIL and GAS DIVISION

**GIPPSLAND BASIN
VICTORIA**

ESSO AUSTRALIA LIMITED

**Compiled by: R.KEY
M.FITTALL**

MARCH, 1984

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SUNFISH-2

WELL COMPLETION REPORT

VOLUME 1

(BASIC DATA)

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1. ESSO AUSTRALIA LTD

COMPLETION REPORT

WELL : SUNFISH 2

LOCATION : Latitude : 38° 08' 23.49"S
Longitude : 148° 14' 40.31"E
X = 609 061mE
Y = 5 777 921mN
Map Projection: UTM Zone 55
Geographical Location: Bass Strait
Field: Sunfish

PERMIT : VIC/P1

ELEVATION : 21 m ASL

WATER DEPTH : 59m

TOTAL DEPTH : 2647mKB

PLUG BACK TYPE : Balanced Plug

REASONS FOR PLUGGING BACK : Plug & Abandonment

MOVE IN : 22nd September 1983

RIG UP : 23rd September 1983

SPUDED : 23rd September 1983

RIG DOWN COMPLETE : 14th October 1983

RIG RELEASED : 14th October 1983

OPERATOR : Esso Exploration and Production Australia Inc.

PERMITTEE OR LICENCEE : B.H.P. Petroleum Pty. Ltd.

ESSO INTEREST : 50%

OTHER INTEREST : 50%

CONTRACTOR : South Seas Drilling Co.

RIG NAME : Southern Cross

EQUIPMENT TYPE : Semi-submersible

TOTAL RIG DAYS : 21.98

DRILLING AFE NO. : 233 009

TYPE COMPLETION : Plug and Abandonment

WELL CLASSIFICATION : Before Drilling : Outpost/Extension Test
After Drilling : New Pool Discovery

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2. SEQUENTIAL OPERATIONS

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SUNFISH 2

Move and Moor

The semi-submersible Southern Cross departed the Snapper-4 location at 1500 hours on 22nd September, 1983 and arrived at the Sunfish-2 location at 2000 hours the same day. The rig was towed 22km (12 nautical miles) by the workboat Atlas Dampier in 5 hours at an average speed of 4.45 km/hr (2.40 knots).

Anchor No. 8 was dropped by the rig with the remaining seven anchors being run by the workboats Lady Vera and Bass Tide in 7-1/2 hours. All anchors were successfully pretensioned to 200 kips.

26" Hole for 20" Conductor

The drilling template was run and landed at a seafloor depth of 80m RKB. The 26" hole was drilled to 218m with seawater and displaced at TD with high viscosity gel mud. A short trip to the mudline was made which necessitated a bridge at 206m having to be worked. An unsuccessful attempt to run the 20" casing was made. The casing would not pass below 84.5m. The casing was laid down and the hole was reamed and washed to TD and displaced with two slugs of high viscosity gel mud.

The 18-3/4" wellhead and 20" casing were then successfully run and cemented at a shoe depth of 201.3m RKB. The BOP stack and riser were run and the casing and collet connector tested against the shear rams to 500 psi.

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

The 20" casing shoe was drilled out and the 17-1/2" hole was drilled to 809m, using seawater with slugs of high viscosity gel mud. The Sonic-GR-Cal log was then run from 806m to surface.

The 13-3/8" casing was run and cemented at a shoe depth of 794m RKB. The 13-3/8" seal assembly was then set and pressure tested along with the BOP stack to 5000 psi. Cement plugs and cement were drilled to 785m where a Phase I PIT to 1500 psi was conducted.

12-1/4" Hole

After drilling out the remaining cement and 6m of new hole a Phase II PIT was conducted to 1200 psi (17.2 ppg EMW) without leak off. A J1 bit was used to drill to 1611m while building the mud weight to 9.3 ppg by 1435m. This mud weight was programmed to provide approximately 300 psi overbalance into the top of the Latrobe Formation.

After drilling to 2259m a wiper trip was made. The trip gas reading was 1-190-6 units. The hole was then drilled with two J-22's and one J-33 to 2504m, with a volcanics section encountered at 2308m, where the BOP stack was successfully pressure tested to 200/3500/5000 psi.

Drilling continued with a J-22 to 2578m with a significant reduction in ROP due to the presence of dolomite and chert in the formation. There were no hole stability problems encountered in drilling this section.

A team was set up on the rig to detect the anticipated over pressure below approximately 2400m RKB. There was no abnormal pressure detected.

A J-44 was used to drill to 2647m. It was decided to run logs at this depth.

The usual suite of final logs were run with the addition of CNT-A and CNT-H logs. The Strzelecki Group was interpreted from the logs at 2609m and the decision was made to stop drilling operations and call 2647m total depth. Two RFT's, a velocity survey and three sidewall core runs were made prior to plug and abandonment procedures.

Plug and Abandonment

Three open hole balanced plugs were set across 2560-2460m, 2100-2000m and 1660-1520m with the top plug being tagged with 15 kips. Balanced Hole Plug No. 4 was set across the 13-3/8" casing shoe from 844-744m and successfully pressure tested to 1500 psi and tagged with 15 kips. The 13-3/8" casing was cut using the Pengo cutter at 191m and retrieved with the casing spear. Balanced Hole Plug No. 5 was set across the 13-3/8" casing stub from 201-110m and successfully pressure tested to 500 psi.

The riser and BOP were retrieved and the 20" casing cutter was run to sever the 20" casing. The casing was cut at 90.41m and the wellhead, permanent guide base and drilling template were all retrieved.

Pulling Anchors

The workboats Lady Vera and Bass Tide retrieved all eight anchors. The rig was towed by the Atlas Dampier and departed for the rig inspection location at Two Fold Bay, Eden, N.S.W., at 1430 hours 14th October, 1983.

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4. CEMENT DATA

WELL SUNFISH-2

DATE	DEPTH METRES	TYPE JOB	TYPE CEMENT	AMOUNT	ADDITIVES	REMARKS
25-9-83	201.32	20" CASING PRIMARY LEAD	BLUE CIRCLE TYPE 101	750 SX	8% PREHY- DRATED GEL	50% FRESHWATER 50% SEAWATER SLURRY WT = 13.2 PPG
25-9-83	201.32	20" CASING PRIMARY TAIL	BLUE CIRCLE TYPE 101	350 SX		SEAWATER SLURRY WT = 15.8 PPG
27-9-83	794.09	13-3/8" CASING PRIMARY	BLUE CIRCLE TYPE 101	1110 SX		SEAWATER SLURRY WT = 15.8 PPG
11-10-83	2560 - 2460	P&A OPEN HOLE BAL. PLUG	BLUE CIRCLE TYPE 101	260 SX	1% HR6L	FRESHWATER SLURRY WT = 15.8 PPG
11-10-83	2100 - 2000	P&A OPEN HOLE BAL. PLUG	BLUE CIRCLE TYPE 101	260 SX	1% HR6L	FRESHWATER SLURRY WT = 15.8 PPG
11-10-83	1660 - 1520	P&A OPEN HOLE BAL. PLUG	BLUE CIRCLE TYPE 101	390 SX	0.2% HR6L	FRESHWATER TAGGED W/15 KIPS SLURRY WT = 15.8 PPG
12-10-83	844 - 744	P&A BAL. PLUG ACROSS 13-3/8" SHOE	BLUE CIRCLE TYPE 101	315 SX		SEAWATER PRESS. TESTED TO 1500 PSI SLURRY WT = 15.8 PPG TAGGED W/15 KIPS
12-10-83	201 - 110	P&A BAL. PLUG ACROSS 13-3/8" CSG STUB	BLUE CIRCLE TYPE 101	515 SX		SEAWATER PRESS. TESTED TO 500 PSI SLURRY WT = 15.8 PPG

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WELL: Sunfish 2

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

<u>INTERVAL</u>	<u>TYPE</u>
220 - 810m	Cuttings Samples: 3 sets washed and dried, and 3 sacks washed and bagged, every 10 metres.
810 - 2647m	Cuttings Samples: 3 sets washed and dried, and 3 sacks washed and bagged every 5 metres.
220 - 2647m	Unwashed canned samples every 15 metres.
810.7-2639.0m	Sidewall Cores: Shot 141 - Recovered 136, No Recovery 4, Misfire 1.

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WELL: Sunfish 2

6. WIRELINE LOGS AND SURVEYS

<u>Type and Scale</u>		<u>From</u>	<u>To</u>
<u>Suite 1</u>			
BHC GR	1:200 1:500	806.0	80.0m
<u>Suite 2</u>			
DLL MSFL GR (+ CNTA)	1:200 1:500	2643.0	794.0m
LDL CNL GR	1:200 1:500	2646.0	794.0m
BHC GR	1:200 1:500	2644.0	794.0m
HDT	1:200	2646.0	1550.0m
Velocity Survey (19 Levels)		2645.0	80.0m
SHDT	1:200	2646.0	1550.0m
RFT HP Pressure Record		2634.0	1617.0m

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7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - SUNFISH 2

TEST SEAT	DEPTH (METRES)	CHAMBER	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS	
			OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	MPaa	Psia	MPaa	Psia		
	<u>K.B.</u>		Litres	Litres	Litres m ³	Litres	Litres						
1	1	2634.0	Pretest						-	-	29.44	4269.2	Seal Failure
	2	2634.5	Pretest						-	-	29.45	4272.0	Seal Failure
	3	2632.5	Pretest						26.53	3848.5	29.42	4266.7	Valid (Overpressure or supercharged)
	4	2605.5	Pretest						25.84	3748.0	29.11	4221.6	Valid
	5	2596.3	Pretest						25.76	3736.8	29.01	4206.9	Valid
	6	2588.8	Pretest						25.69	3725.8	28.93	4196.6	Valid
	7	2559.5	Pretest						25.41	3685.9	28.60	4148.6	Valid, tight
	8	2527.0	Pretest						25.15	3647.6	28.23	4094.9	Valid
	9	2532.2	Pretest						25.15	3647.9	28.30	4104.2	Valid
	10	2495.0	Pretest						25.11	3641.2	27.89	4045.3	Valid (?Supercharged)
	11	2449.0	Pretest						25.10	3639.8	27.39	3972.5	Valid (?Supercharged)
	12	2440.0	Pretest						25.01	3627.5	27.29	3957.9	Valid (Supercharged)
	13	2427.0	Pretest						24.89	3609.3	27.14	3936.6	Valid (Supercharged)
	14	2281.0	Pretest						22.70	3292.0	25.55	3705.7	Valid
	15	2236.5	Pretest						22.23	3223.8	25.05	3632.8	Valid
	16	2198.0	Pretest						21.78	3158.7	24.62	3571.2	Valid
	17	2188.0	Pretest						21.69	3146.0	24.51	3555.0	Valid
	18	2133.0	Pretest						-	-	23.90	3467.0	Tight
	19	2130.0	Pretest						21.13	3064.9	23.88	3463.3	Valid
	20	2119.0	Pretest						21.02	3049.4	23.75	3444.6	Valid
	21	2070.5	Pretest						20.51	2975.4	23.20	3365.2	Valid
	22	2041.5	Pretest						20.21	2931.0	22.87	3317.0	Valid
	23	2007.0	Pretest						19.89	2885.2	22.52	3266.8	Valid
	24	1973.0	Pretest						19.55	2835.8	22.14	3211.4	Valid
	25	1907.5	Pretest						18.94	2746.6	21.42	3107.2	Valid
	26	1875.0	Pretest						18.54	2689.5	21.06	3054.1	Valid
	27	1804.0	Pretest						17.82	2583.9	20.26	2937.9	Valid
	28	1790.0	Pretest						-	-	20.11	2917.0	Tight
	29	1745.0	Pretest						-	-	19.60	2843.0	Seal failure
	30	1744.5	Pretest						17.23	2498.9	19.60	2843.4	Valid

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - SUNFISH 2

TEST SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS	
			OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	MPaa	Psia	MPaa		Psia
			Litres	Litres	Litres m ³	Litres	Litres					
31	1717.0	Pretest						16.96	2459.8	19.32	2801.6	Valid
32	1685.0	Pretest						16.65	2414.4	18.96	2749.9	Valid
33	1630.0	Pretest						16.11	2336.2	18.34	2660.7	Valid
34	1617.0	Pretest						15.99	2318.7	18.21	2640.5	Valid
2 35	1617.0	22.7						-	-	18.21	2641.0	Seal failure
36	1617.0	22.7						-	-	18.21	2640.9	Seal failure
37	1617.5	22.7						-	-	18.22	2641.9	Seal failure
38	1617.5	22.7						-	-	18.22	2642.0	Seal failure
39	1616.8	22.7						-	-	18.21	2640.7	Seal failure
40	1616.8	22.7	10.25	-	1.148	4.75	0.50	16.00	2320.4	18.21	2641.0	Valid pretest, 10.4 lit. chamber would not open.

SUNFISH-2

KB = 21m

RFT 2/40

1616.8m RKB

Formation Pressure 2320 psia

40.5 ft³ gas

10.25 litres 48.5 API oil

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8. TEMPERATURE RECORD - SUNFISH 2

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>						
BHC GR	806.0	40.0	0.75	3.33		
<u>Suite 2</u>						
DLL MSFL GR	2643.0	89.7	1.50	6.17		
LDL CNL GR	2646.0	95.5	1.50	12.00		
BHC GR	2644.0	101.0	1.50	17.50	119.0	42.48
HDT	2646.0	104.0	1.50	23.00		

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FIGURES

LOCALITY MAP

SUNFISH-2

SCALE - 1:250,000

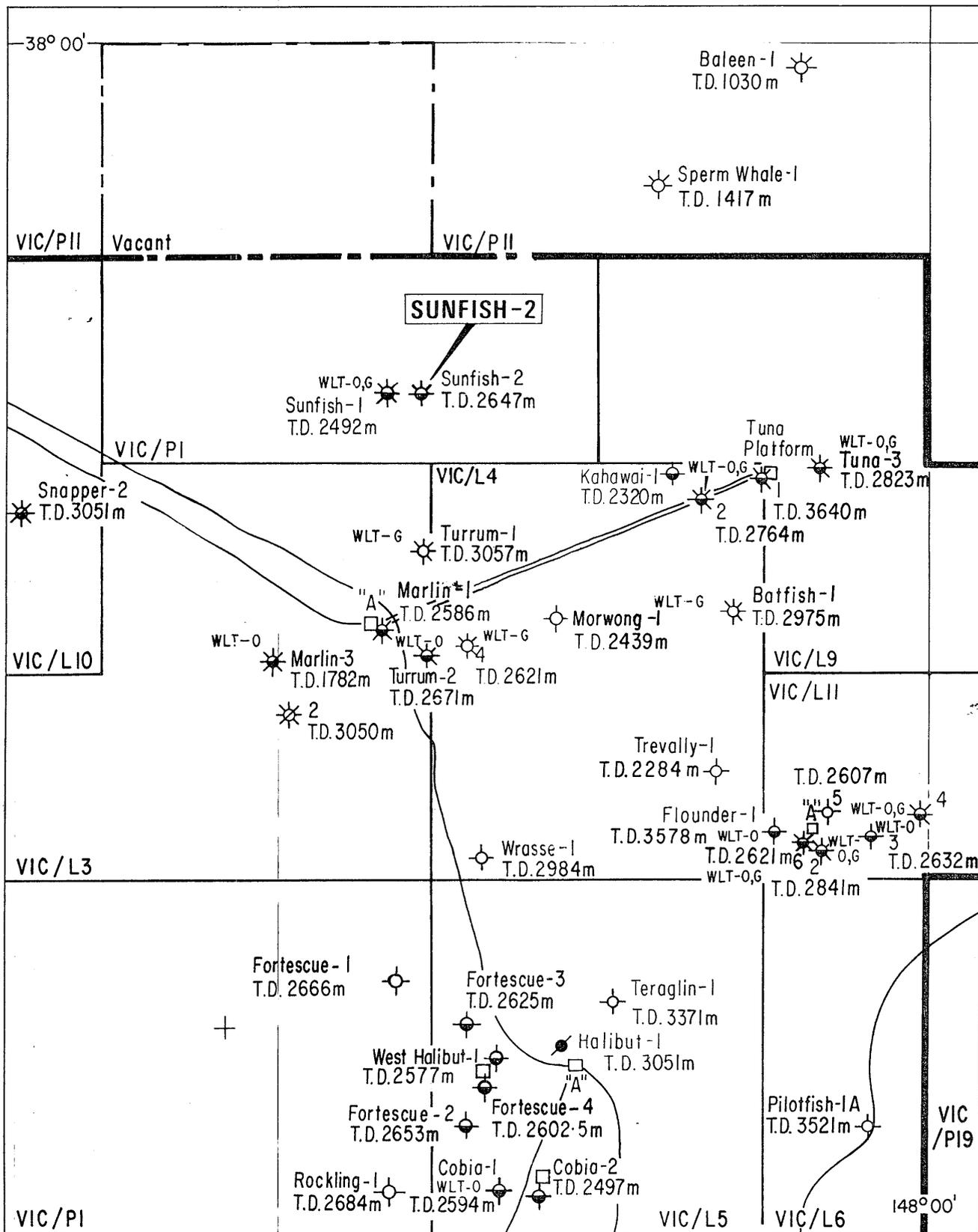


Figure 1

WELL PROGRESS CURVE

FIGURE 2

WELL SUNFISH-2

RIG: SOUTHERN CROSS

LITHOLOGY

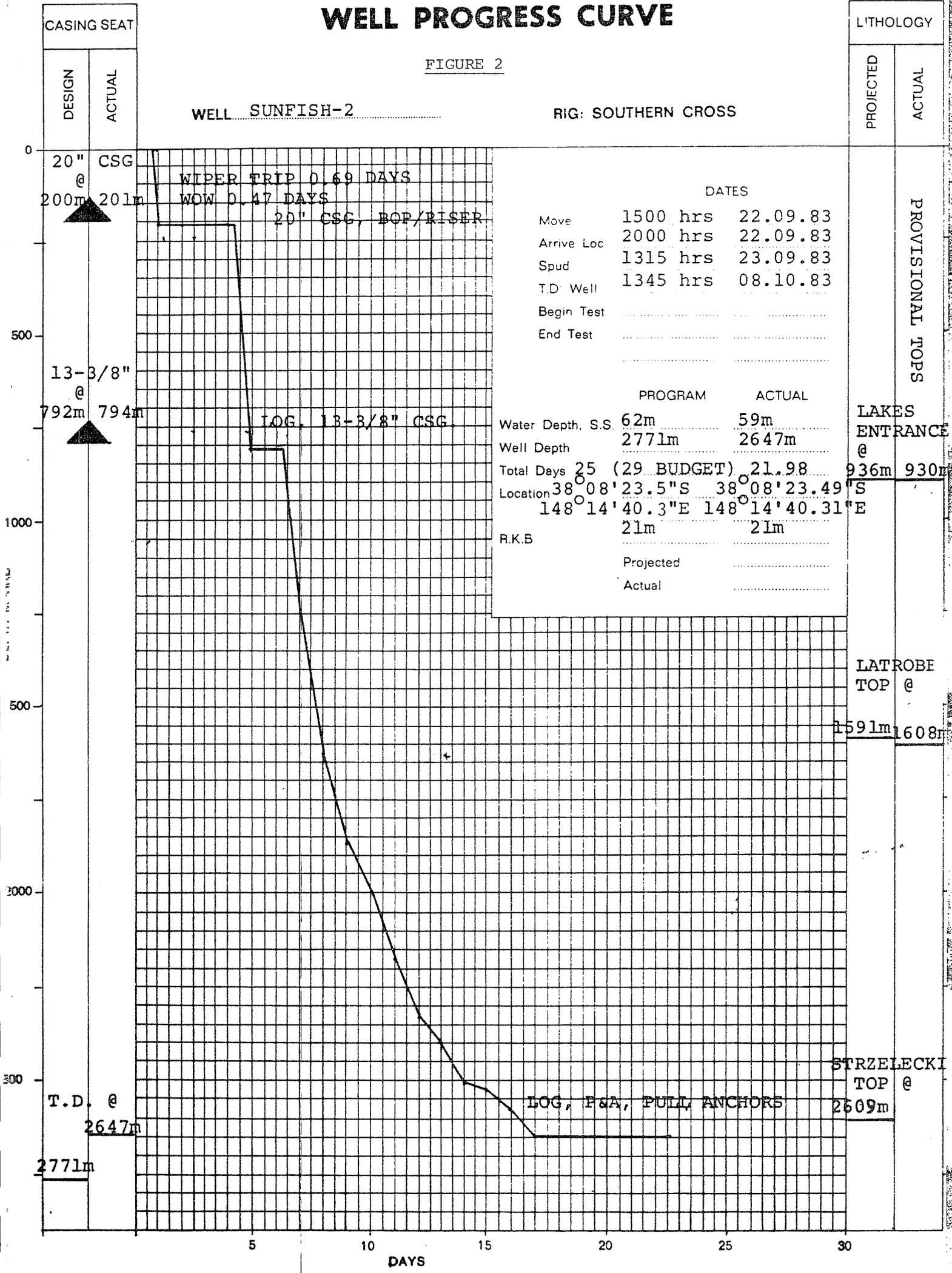
PROJECTED
ACTUAL

PROVISIONAL TOPS

LAKES
ENTRANCE
@
936m 930m

LATROBE
TOP @
1591m 1608m

STRZELECKI
TOP @
2609m



DATES	
Move	1500 hrs 22.09.83
Arrive Loc	2000 hrs 22.09.83
Spud	1315 hrs 23.09.83
T.D. Well	1345 hrs 08.10.83
Begin Test
End Test

	PROGRAM	ACTUAL
Water Depth, S.S.	62m	59m
Well Depth	2771m	2647m
Total Days	25 (29 BUDGET)	21.98
Location	38°08'23.5"S 148°14'40.3"E	38°08'23.49"S 148°14'40.31"E
R.K.B.	21m	21m
	Projected
	Actual

CASING SEAT

DESIGN | ACTUAL

20" CSG @ 200m 201m

13-3/8" @ 792m 794m

T.D. @ 2647m

2771m

WIPER TRIP 0.69 DAYS
WOW 0.47 DAYS
20" CSG, BOP/RISER

LOG, 13-3/8" CSG

LOG, P&A, PULL ANCHORS

DAYS

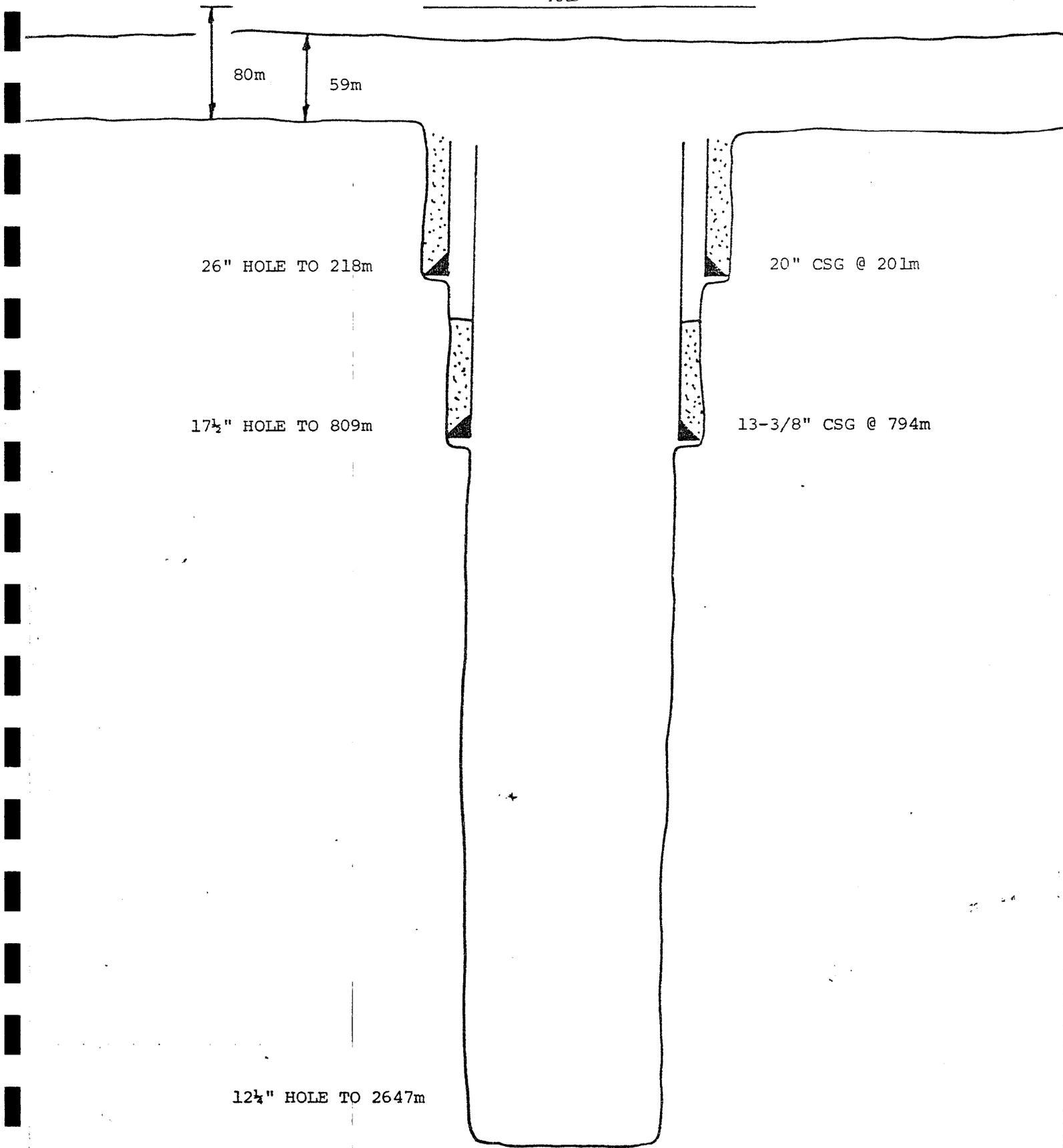


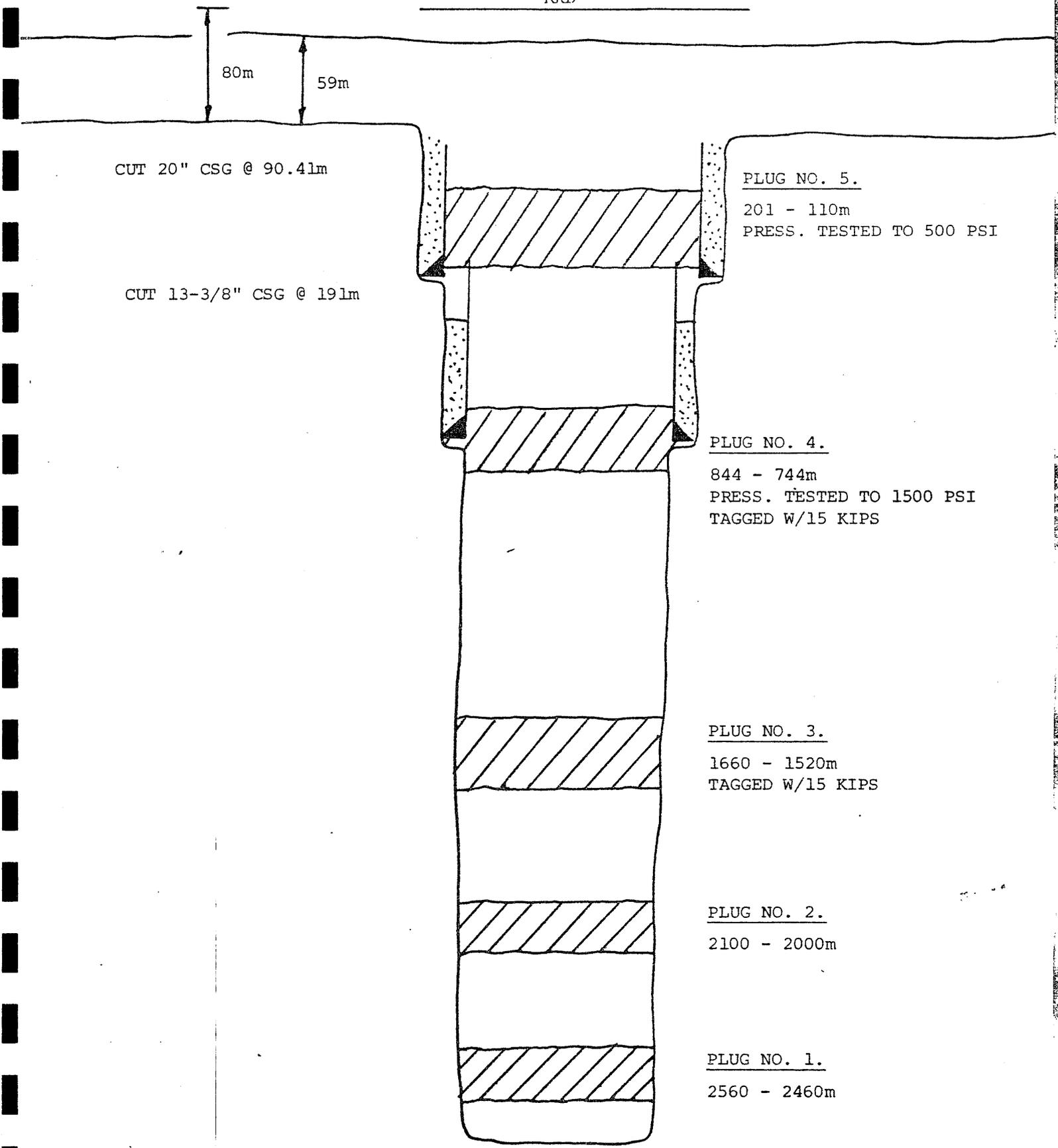
FIGURE 3.

ABANDONMENT SCHEMATIC

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Well: SUNFISH-2

RKB



CUT 20" CSG @ 90.41m

CUT 13-3/8" CSG @ 191m

PLUG NO. 5.

201 - 110m
PRESS. TESTED TO 500 PSI

PLUG NO. 4.

844 - 744m
PRESS. TESTED TO 1500 PSI
TAGGED W/15 KIPS

PLUG NO. 3.

1660 - 1520m
TAGGED W/15 KIPS

PLUG NO. 2.

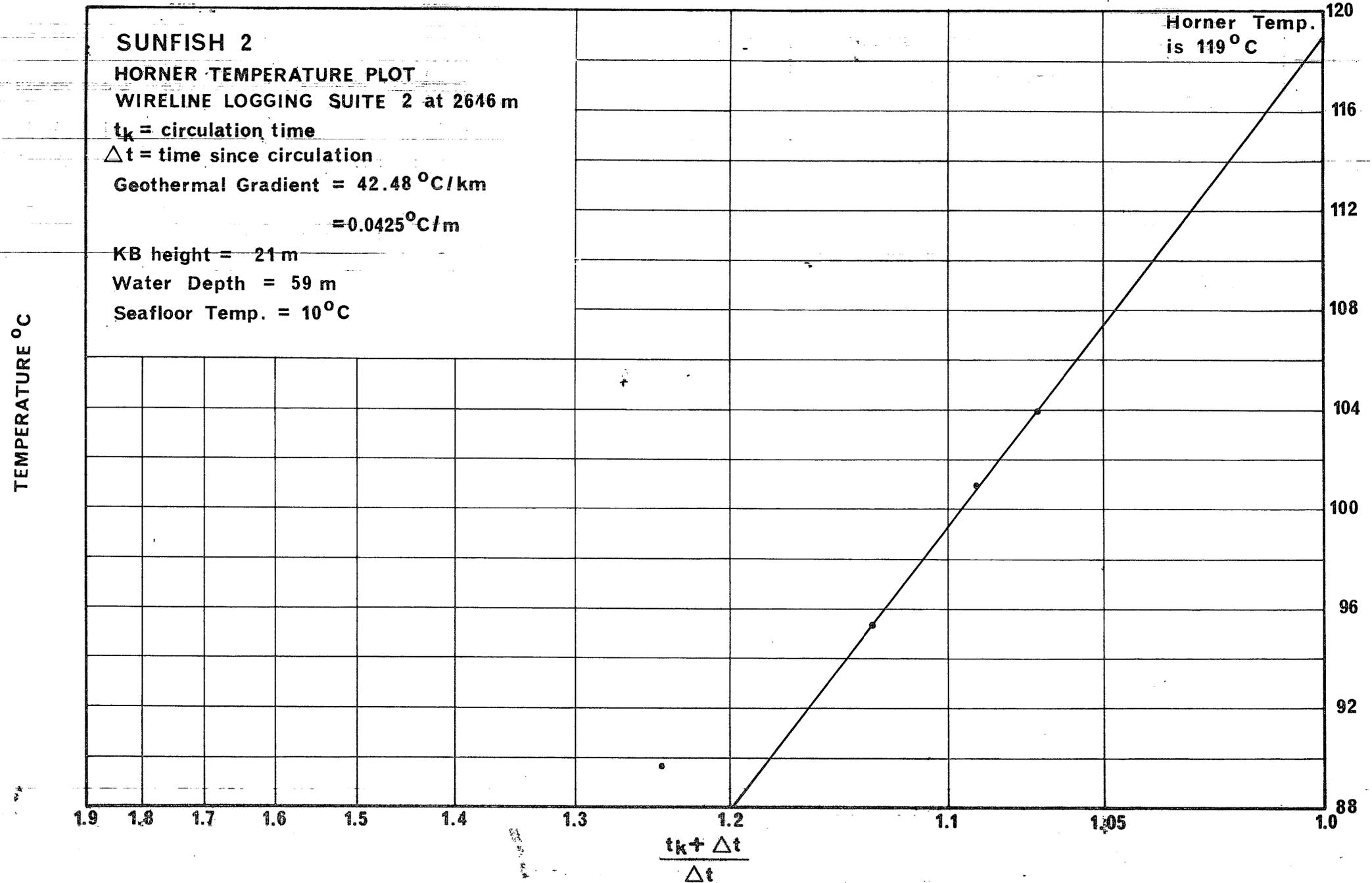
2100 - 2000m

PLUG NO. 1.

2560 - 2460m

FIGURE 4.

FIGURE 5.



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APPENDIX 1

APPENDIX 1

Lithological Descriptions

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SUNFISH - 2

Lithology Descriptions

<u>Depth</u>	<u>%</u>	<u>Descriptions</u>
		Set 20" casing with shoe at 201m. Cleaned out rathole to 218m.
220 - 230m	100	LIMESTONE: calcarenite, fossiliferous - shell fragments, bryozoa, ostracods. White, yellow, grey, hard. Trace of silt and clay.
230 - 240m	100	LIMESTONE: calcarenite - white, yellow and grey in part, friable, fossil fragments as above, grey clay matrix.
240 - 250m	100	LIMESTONE: as above.
250 - 260m	100	LIMESTONE: calcarenite - white to light grey, very calcareous, medium size grains, moderately friable, granular texture, minor grey clay matrix.
	trace	LOOSE SHELL FRAGMENTS, FORAMS, BRYOZOA.
260 - 270m	100	LIMESTONE: as above.
	trace	SHELL FRAGMENTS, FORAMS, BRYOZOA.
270 - 280m	100	LIMESTONE: calcarenite as above, coarse gritty texture, minor clay matrix, contains bryozoa, shell fragments, rare glauconite grains.
	trace	FORAMS, SHELL FRAGMENTS.
280 - 290m	100	LIMESTONE: as above.
	trace	CLAYSTONE: very soft, sticky.
	trace	SHELLS, FORAMS, BRYOZOA.
290 - 300m	100	LIMESTONE: as above.
	trace	CLAYSTONE: as above.
	trace	FORAMS, SHELLS, BRYOZOA.
300 - 310m	100	LIMESTONE: calcarenite as above, smaller cuttings.
	trace	CLAYSTONE: as above.
	trace	FORAMS, SHELLS, BRYOZOA.
310 - 320m	100	LIMESTONE: as above.
	trace	FORAMS, SHELLS, BRYOZOA.
320 - 330m	100	LIMESTONE: as above, occasional quartz grains, rare pyrite cement.
	trace	CLAYSTONE: as above.
	trace	FORAMS, SHELLS, BRYOZOA.
330 - 340m	100	LIMESTONE: as above, slightly more clayey.
	trace	CLAYSTONE: as above.
	trace	FORAMS, BRYOZOA.
340 - 350m	100	LIMESTONE: calcarenite, as above.
	trace	CLAYSTONE: as above.
	trace	FORAMS, BRYOZOA.
350 - 360m	100	LIMESTONE: as above.
	trace	CLAYSTONE: as above.
	trace	FORAMS, SHELL FRAGMENTS.

360 - 370m	100	LIMESTONE: as above, smaller cuttings due to increased clay matrix.
	trace	CLAYSTONE: as above.
	trace	FORAMS, SHELLS.
370 - 380m	100	LIMESTONE: calcarenite - light grey, firm to hard, very calcareous, coarsely granular texture. Clear, light grey, occasional dark grey carbonate grains, occasional ostracod shells, bryozoan fragments, planktonic forams - all medium grain size with light grey carbonate clay matrix. Rare dark grains are carbonaceous, some possibly lithic.
	trace	CLAYSTONE: as above.
	trace	SHELL FRAGMENTS.
380 - 390m	100	LIMESTONE: as above, forams, bryozoa and shell fragments now rare.
	trace	CLAYSTONE: as above.
390 - 400m	100	LIMESTONE: as above, better sorted.
	trace	CLAYSTONE: as above.
400 - 410m	90	LIMESTONE: as above, becoming more clayey. Cuttings over shakers are sticky.
	10	CLAYSTONE: light grey, very soft, very sticky, dispersive, gumbo, very calcareous.
410 - 420m	80	LIMESTONE: as above.
	20	CLAYSTONE: as above.
420 - 430m	70	LIMESTONE: as above.
	30	CLAYSTONE: as above.
	trace	SHELL FRAGMENTS, BRYOZOA.
430 - 440m	60	CLAYSTONE: as above.
	40	LIMESTONE: as above.
	trace	SHELL FRAGMENTS, BRYOZOA.
440 - 450m	70	CLAYSTONE: as above.
	30	LIMESTONE: as above.
	trace	BRYOZOA
	rare	PYRITE
450 - 460m	60	CLAYSTONE: as above.
	40	LIMESTONE: as above.
460 - 470m	50	CLAYSTONE: as above.
	50	LIMESTONE: as above.
470 - 480m	60	LIMESTONE: calcarenite - as above.
	40	CLAYSTONE: as above.
480 - 490m	70	LIMESTONE: light grey calcarenite as above, becoming harder, better cemented, partly crystalline; dominantly fine grained.
	30	CLAYSTONE: as above.
490 - 500m	70	LIMESTONE: as above.
	30	CLAYSTONE: as above.
500 - 510m	60	LIMESTONE: as above, rare glauconite grains.
	40	CLAYSTONE: as above.
510 - 520m	60	LIMESTONE: as above, occasional ostracod shells.
	40	CLAYSTONE: as above.

520 - 530m	70	LIMESTONE: as above, shell fragments and bryozoa now rare.
	30	CLAYSTONE: as above.
530 - 540m	60	LIMESTONE: as above.
	40	CLAYSTONE: as above.
540 - 550m	50	LIMESTONE: as above.
	50	CLAYSTONE: as above.
	trace	FORAMS: large, benthonic.
550 - 560m	50	LIMESTONE: as above.
	50	CLAYSTONE: as above.
560 - 570m	60	LIMESTONE: as above, rare glauconite.
	40	CLAYSTONE: as above.
570 - 580m	70	LIMESTONE: as above, glauconite more common, becoming harder and crystalline.
	30	CLAYSTONE: as above.
	trace	FORAMS: loose.
580 - 590m	70	LIMESTONE: calcarenite as above, slightly coarser, fine to medium; more granular texture; occasional shell fragments.
	30	CLAYSTONE: as above.
590 - 600m	70	LIMESTONE: as above.
	30	CLAYSTONE: as above.
	trace	FORAMS: loose.
600 - 610m	70	LIMESTONE: calcarenite as above.
	30	CLAYSTONE: as above.
610 - 620m	60	LIMESTONE: as above.
	40	CLAYSTONE: as above.
620 - 630m	50	LIMESTONE: as above.
	50	CLAYSTONE: as above.
630 - 640m	60	LIMESTONE: calcarenite as above; occasional very hard cuttings, well cemented, ostracod shells, bryozoan fragments, forams.
	40	CLAYSTONE: very soft and sticky as above.
	trace	LOOSE FORAMS.
640 - 650m	80	LIMESTONE: calcarenite as above, also light to medium grey skeletal calcarenite with common biogenic fragments - shells, bryozoa, forams, well cemented.
	20	CLAYSTONE: as above.
	trace	LOOSE FORAMS.
650 - 660m	80	LIMESTONE: calcarenite and skeletal calcarenite as above.
	20	CLAYSTONE: as above.
	trace	FORAMS
660 - 670m	80	LIMESTONE: dominantly skeletal calcarenite, as above.
	20	CLAYSTONE: as above.
670 - 680m	60	LIMESTONE: as above.
	40	CLAYSTONE: as above.
680 - 690m	70	LIMESTONE: calcarenite as above.
	30	CLAYSTONE: as above.

690 - 700m	50	LIMESTONE: minor skeletal calcarenite; light grey calcarenite is fine to very fine grained.
	50	CLAYSTONE: as above.
700 - 710m	70	LIMESTONE: calcarenite and skeletal calcarenite as above.
	30	CLAYSTONE: as above.
	trace	LOOSE FORAMS AND BRYOZOA
710 - 720m	80	LIMESTONE: as above.
	20	CLAYSTONE: as above.
720 - 730m	70	LIMESTONE: as above.
	30	CLAYSTONE: as above.
	trace	LOOSE FORAMS
730 - 740m	80	LIMESTONE: as above.
	20	CLAYSTONE: as above.
	trace	FORAMS
740 - 750m	80	LIMESTONE: calcarenite as above.
	20	CLAYSTONE: as above.
750 - 760m	70	LIMESTONE: as above.
	30	CLAYSTONE: as above.
760 - 770m	80	LIMESTONE: calcarenite, light grey, firm to hard, very calcareous, blocky, fine grained, clay matrix, very slightly glauconitic, common small planktonic forams, granular texture.
	20	CLAYSTONE: very light grey, very soft, sticky.
770 - 780m	80	LIMESTONE: as above.
	20	CLAYSTONE: as above.
780 - 790m	90	LIMESTONE: as above.
	10	CLAYSTONE: as above.
790 - 800m	90	LIMESTONE: as above.
	10	CLAYSTONE: as above.
800 - 810m	80	LIMESTONE: as above.
	20	CLAYSTONE: as above.
		Set 13-3/8" casing with shoe at 794m.
810 - 815m		CEMENT
815 - 820m	90	LIMESTONE: as above, slightly glauconitic.
	10	CLAYSTONE: as above.
	common	CEMENT
820 - 825m	90	LIMESTONE: calcarenite, light grey to olive grey, firm to hard, blocky, very calcareous, granular texture, consists of fine grained carbonate grains, common very small planktonic forams, minor glauconite, clay matrix, rare sponge spicules.
	10	CLAYSTONE: as above.
	trace	LOOSE FORAMS
825 - 830m	100	LIMESTONE: calcarenite, as above, occasional bryozoa and ostracod shells.
	trace	CLAYSTONE: as above.
830 - 835m	100	LIMESTONE: calcarenite, as above.
	trace	LOOSE QUARTZ GRAINS - probably cavings.

835 - 840m	100	LIMESTONE: as above, occasional very hard angular cuttings, well cemented with crystalline texture.
	trace	QUARTZ: as above.
	trace	CLAYSTONE: as above.
840 - 845m	100	LIMESTONE: as above.
	trace	QUARTZ: as above.
	trace	LIMESTONE: orange, coarse, cavings.
845 - 850m	100	LIMESTONE: light olive grey calcarenite as above.
	common	CEMENT
850 - 855m	100	LIMESTONE: as above.
	trace	CAVINGS: quartz, shell fragments, cement.
855 - 860m	100	LIMESTONE: as above, becoming better cemented, more crystalline, glauconite slightly more common, larger grains.
	trace	GLAUCONITE: loose.
860 - 865m	100	LIMESTONE: as above.
	common	CAVINGS: cement, quartz, shells, forams.
	trace	GLAUCONITE: as above.
865 - 870m	100	LIMESTONE: mottled white to dark grey skeletal limestone, very hard, very calcareous, very well cemented - crystalline texture, common bryozoa including dark grey cylindrical fragments, common white crystalline carbonate material.
	trace	GLAUCONITE: as above.
870 - 875m	100	LIMESTONE: white and dark grey as above, coarse skeletal texture, dark fragments have recrystallised silty texture.
875 - 880m	100	LIMESTONE: as above, white material is microcrystalline calcite.
	trace	CALCARENITE: as above.
880 - 885m	100	LIMESTONE: white crystalline and skeletal grains, very few dark grey bryozoan fragments with silt replacement, minor white bryozoan fragments.
	trace	CALCARENITE: as above.
885 - 890m	100	LIMESTONE: white and grey bryozoan limestone as above.
890 - 895m	100	LIMESTONE: bryozoan limestone as above, grading to olive grey calcarenite as previously described.
	trace	FORAMS: loose.
895 - 900m	100	LIMESTONE: white to light grey bryozoan limestone as above, minor calcarenite, trace of glauconite.
	trace	FORAMS
900 - 905m	100	LIMESTONE: light to dark grey, olive grey, bryozoan limestone grading to calcarenite in part, glauconite slightly more common.
	trace	FORAMS

APPENDIX 2.

APPENDIX 3.

905 - 910m	100 trace	LIMESTONE: white to grey as above, slightly glauconitic. FORAMS
910 - 915m	100 common	LIMESTONE: as above. FORAMS
915 - 920m	100 common	LIMESTONE: light to dark grey, olive grey skeletal limestone - forams and bryozoan fragments. Some byrozoa fragments infilled with glauconite. Limestone has heterogeneous character. FORAMS
920 - 925m	100 abundant	LIMESTONE: as above, some dark grey silt replacement of forams and fragments. FORAMS
925 - 930m	100 trace trace	LIMESTONE: as above, grading to calcarenite, trace glauconite. CLAYSTONE: samples over shakers are slightly sticky. FORAMS
930 - 935m	80 20 common trace	LIMESTONE: as above. SILTSTONE/CLAYSTONE: light grey, soft to friable, very calcareous, sticky in part, lithology grades between silty claystone and clayey siltstone. PYRITE: microcrystalline aggregates. FORAMS
935 - 940m	60 40 trace trace	LIMESTONE: as above, trace glauconite. CLAYSTONE: light grey, silty, soft, calcareous, pyritic in part. PYRITE: as above. FORAMS +
940 - 945m	50 50	LIMESTONE: as above. CLAYSTONE: as above.
945 - 950m	100 trace trace	CLAYSTONE: as above. Silty claystone grades to firm calcisiltite. LIMESTONE FORAMS
950 - 955m	100	CLAYSTONE/CALCISILTITE: light to medium grey, as above, contains occasional sponge spicules and forams. Claystone grades to argillaceous calcisiltite.
955 - 960m	100 trace	CLAYSTONE/CALCISILTITE: as above, sandy texture in part due to carbonate grains. FORAMS
960 - 965m	100	CLAYSTONE/CALCISILTITE: as above, contains occasional shell fragments and sponge spicules.
965 - 970m	100 trace trace	CLAYSTONE/CALCISILTITE: as above, becoming more granular. FORAMS SHELL FRAGMENTS
970 - 975m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS

975 - 980m	100 common	CLAYSTONE/CALCISILTITE: as above. Occasional bryozoan fragments, slightly pyritic, slightly glauconitic. FORAMS
980 - 985m	100 trace trace	CLAYSTONE/CALCISILTITE: as above. FORAMS SHELL FRAGMENTS
985 - 990m	100	CLAYSTONE/CALCISILTITE: as above.
990 - 995m	100 trace	CLAYSTONE/CALCISILTITE: as above, rarely pyritic. FORAMS
995 - 1000m	100	CLAYSTONE/CALCISILTITE: as above.
1000 - 1005m	100	CLAYSTONE/CALCISILTITE: as above, more clayey.
1005 - 1010m	100	CLAYSTONE/CALCISILTITE: as above, less claystone, more firm calcisiltite/calcareous siltstone.
1010 - 1015m	100 trace trace	CLAYSTONE/CALCISILTITE: trace pyrite, as above. FORAMS SHELL FRAGMENTS
1015 - 1020m	100 trace trace	CLAYSTONE/CALCISILTITE: as above, slightly pyritic. FORAMS SHELL FRAGMENTS
1020 - 1025m	100	CLAYSTONE/CALCISILTITE: as above.
1025 - 1030m	100 trace	CLAYSTONE/CALCISILTITE: firm, as above. FORAMS
1030 - 1035m	100 trace	CLAYSTONE/CALCISILTITE: as above, but some cuttings harder, more cemented - proper calcisiltite (argillaceous). Slightly more granular texture due to carbonate grains. FORAMS
1035 - 1040m	100	CALCISILTITE: rare pyrite, as above.
1040 - 1045m	100	CALCISILTITE: as above.
1045 - 1050m	100	CALCISILTITE/CLAYSTONE: as above, common, cuttings very hard, well cemented with crystalline texture, angular.
1050 - 1055m	100 trace	CALCISILTITE: as above, minor calcareous claystone. FORAMS
1055 - 1060m	100	CALCISILTITE/CLAYSTONE: as above, but with common claystone cuttings.
1060 - 1065m	50 50 trace trace	CALCISILTITE: as above. CLAYSTONE: light grey, very soft, very calcareous, sticky. FORAMS SHELL FRAGMENTS

1065 - 1070m	60	CALCISILTITE: dominantly medium grey, firm, very argillaceous as previously described. Minor very hard angular limestone.
	40	CLAYSTONE: light grey, as above.
1070 - 1075m	100	CLAYSTONE/CALCISILTITE: medium grey, soft to firm, very calcareous as above.
	trace	CALCISILTITE: very hard, very well cemented.
1075 - 1080m	100	CLAYSTONE/CALCISILTITE: as above.
1080 - 1085m	90	CLAYSTONE/CALCISILTITE: as above.
	10	CALCISILTITE: light grey to olive, very hard, crystalline, as previously described.
	trace	FORAMS
1085 - 1090m	100	CLAYSTONE/CALCISILTITE: as above.
	trace	CALCISILTITE: as above.
	trace	FORAMS
1090 - 1095m	100	CLAYSTONE/CALCISILTITE: as above.
	rare	PYRITE: as above.
	trace	FORAMS
1095 - 1100m	100	CLAYSTONE/CALCISILTITE: as above.
1100 - 1105m	90	CLAYSTONE/CALCISILTITE: as above.
	10	CALCISILTITE: olive grey, very hard, angular.
	trace	FORAMS
1105 - 1110m	100	CLAYSTONE/CALCISILTITE: as above.
	trace	CALCISILTITE: as above.
	trace	FORAMS
1110 - 1115m	100	CLAYSTONE/CALCISILTITE: as above.
	trace	CALCISILTITE: as above.
	trace	FORAMS +
1115 - 1120m	100	CLAYSTONE/CALCISILTITE: medium grey, soft to firm, rounded to blocky cuttings, very calcareous, very argillaceous, silty to gritty texture, common small forams.
	trace	FORAMS: loose.
1120 - 1125m	80	CLAYSTONE/CALCISILTITE: as above.
	20	LIMESTONE: calcisiltite; buff to olive grey, very hard, well cemented, very calcareous, angular cuttings, microcrystalline.
1125 - 1130m	60	CLAYSTONE/CALCISILTITE: as above.
	40	LIMESTONE: calcisiltite; as above.
1130 - 1135m	70	CLAYSTONE/CALCISILTITE: as above.
	30	LIMESTONE: as above.
1135 - 1140m	90	CLAYSTONE/CALCISILTITE: as above, but common forams and carbonate grains giving granular texture.
	10	LIMESTONE: calcisiltite; as above.
1140 - 1145m	90	CLAYSTONE/CALCISILTITE: as above.
	10	LIMESTONE: calcisiltite; as above.
	trace	FORAMS
1145 - 1150m	100	CLAYSTONE/CALCISILTITE: as above.
	trace	LIMESTONE: as above.

1150 - 1155m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1155 - 1160m	100	CLAYSTONE/CALCISILTITE:	as above.
1160 - 1165m	100	CLAYSTONE/CALCISILTITE:	as above, common claystone.
1165 - 1170m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1170 - 1175m	100	CLAYSTONE/CALCISILTITE:	as above.
1175 - 1180m	100 trace	CLAYSTONE/CALCISILTITE: LIMESTONE:	as above. as above.
1180 - 1185m	100	CLAYSTONE/CALCISILTITE:	as above; less claystone.
1185 - 1190m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1190 - 1195m	100	CLAYSTONE/CALCISILTITE:	as above.
1195 - 1200m	100	CLAYSTONE/CALCISILTITE:	as above.
1200 - 1205m	100	CLAYSTONE/CALCISILTITE:	as above.
1205 - 1210m	100	CLAYSTONE/CALCISILTITE:	as above.
1210 - 1215m	100	CLAYSTONE/CALCISILTITE:	as above.
1215 - 1220m	100	CLAYSTONE/CALCISILTITE:	as above.
1220 - 1225m	100 rare	CLAYSTONE/CALCISILTITE: PYRITE:	as above. as above.
1225 - 1230m	100	CLAYSTONE/CALCISILTITE:	as above.
1230 - 1235m	100	CLAYSTONE/CALCISILTITE:	as above.
1235 - 1240m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above; silty texture.
1240 - 1245m	100 trace	CLAYSTONE/CALCISILTITE: LIMESTONE:	as above. as above.
1245 - 1250m	100 trace	CLAYSTONE/CALCISILTITE: LIMESTONE:	as above. as above.
1250 - 1255m	100	CLAYSTONE/CALCISILTITE:	as above, common claystone.
1255 - 1260m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1260 - 1265m	100 common trace	CLAYSTONE/CALCISILTITE: FORAMS PYRITE:	as above. as above.
1265 - 1270m	100 common	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1270 - 1275m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, less claystone, trace pyrite.

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1275 - 1280m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS
1280 - 1285m	90 10	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: white to light grey, crystalline, hard, brittle.
1285 - 1290m	80 20 trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above, some bryozoan and skeletal fragments. Also olive grey calcarenite. FORAMS
1290 - 1295m	70 30 trace	CLAYSTONE/CALCISILTITE: mostly calcisiltite - harder than previously. LIMESTONE: calcisiltite - medium grey to olive grey, very hard, very well cemented. FORAMS
1295 - 1300m	100 trace common	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above. FORAMS
1300 - 1305m	100 common	CLAYSTONE/CALCISILTITE: as above. FORAMS
1305 - 1310m	100 trace trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above. FORAMS
1310 - 1315m	100 common trace	CLAYSTONE/CALCISILTITE: as above, trace pyrite. FORAMS LIMESTONE: as above.
1315 - 1320m	100 trace trace	CLAYSTONE/CALCISILTITE: as above. FORAMS LIMESTONE: as above.
1320 - 1325m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS
1325 - 1330m	100 abundant	CLAYSTONE/CALCISILTITE: as above, trace pyrite. FORAMS
1330 - 1335m	100 abundant	CLAYSTONE/CALCISILTITE: as above, trace pyrite. FORAMS
1335 - 1340m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS
1340 - 1345m	70 30	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: calcisiltite/calculutite: olive grey, very hard, angular sharp cuttings, very well cemented, very fine to clay sized material, microcrystalline texture.
1345 - 1350m	90 10 trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above. FORAMS
1350 - 1355m	100 trace trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above. FORAMS

1355 - 1360m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1360 - 1365m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above. as above.
1365 - 1370m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1370 - 1375m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1375 - 1380m	100	CLAYSTONE/CALCISILTITE:	as above.
1380 - 1385m	100 trace	CALYSTONE/CALCISILTITE: FORAMS	as above, common claystone.
1385 - 1390m	100	CLAYSTONE/CALCISILTITE:	as above.
1390 - 1395m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, common claystone, trace pyrite.
1395 - 1400m	100	CLAYSTONE/CALCISILTITE:	as above.
1400 - 1405m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1405 - 1410m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above. as above.
1410 - 1415m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	medium grey, soft to firm, silty texture, very calcareous.
1415 - 1420m	100	CLAYSTONE/CALCISILTITE:	as above.
1420 - 1425m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1425 - 1430m	100	CLAYSTONE/CALCISILTITE:	very argillaceous, minor silt cuttings, claystone is light grey, very soft, sticky. Silty claystone is medium grey, firm to hard, blocky, silty homogeneous texture.
1430 - 1435m	100 trace	CLAYSTONE: FORAMS	silty, very calcareous, as above.
1435 - 1440m	100	CLAYSTONE:	as above, minor brown grey cuttings.
1440 - 1445m	100 trace	CLAYSTONE: FORAMS	as above.
1445 - 1450m	100	CLAYSTONE:	as above.
1450 - 1455m	100 trace	CLAYSTONE: FORAMS	as above.
1455 - 1460m	100	CLAYSTONE:	as above.
1460 - 1465m	100 common	CLAYSTONE/CALCISILTITE: FORAMS	as above, common silty cuttings.

1465 - 1470m	100	CLAYSTONE/CALCISILTITE:	as above.
1470 - 1475m	100	CLAYSTONE/CALCISILTITE:	as above, rare pyrite.
1475 - 1480m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1480 - 1485m	100	CLAYSTONE/CALCISILTITE:	as above.
1485 - 1490m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, some more cemented cuttings.
1490 - 1495m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, rarely pyritic.
1495 - 1500m	100 common	CLAYSTONE/CALCISILTITE: FORAMS	as above, occasional green grey cuttings.
1500 - 1505m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1505 - 1510m	100	CLAYSTONE/CALCISILTITE:	as above.
1510 - 1515m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above. as above.
1515 - 1520m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	common claystone.
1520 - 1525m	100	CLAYSTONE/CALCISILTITE:	as above.
1525 - 1530m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above.
1530 - 1535m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	medium grey, firm, blocky to subfissile, as above.
1535 - 1540m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above, trace pyrite. as above.
1540 - 1545m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above, trace pyrite. as above.
1545 - 1550m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above, trace pyrite. as above.
1550 - 1555m	100 trace trace	CLAYSTONE/CALCISILTITE: LIMESTONE: FORAMS	as above. as above.
1555 - 1560m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, dominantly calcisiltite, trace pyrite.
1560 - 1565m	100 trace	CLAYSTONE/CALCISILTITE: FORAMS	as above, trace pyrite.

1565 - 1570m	100	CLAYSTONE/CALCISILTITE: as above, rare carbonaceous specks.
1570 - 1575m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS
1575 - 1580m	100	CLAYSTONE/CALCISILTITE: as above.
1580 - 1585m	100 trace	CLAYSTONE/CALCISILTITE: as above. FORAMS
1585 - 1590m	100 trace	CLAYSTONE/CALCISILTITE: as above, rare carbonaceous specks, becoming more shaley, less silty, trace pyrite. FORAMS
1590 - 1595m	100 trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: white to buff, recrystallised texture, hard, occasionally glauconitic, contains shell fragments.
1595 - 1600m	100 trace trace	CLAYSTONE/CALCISILTITE: as above. LIMESTONE: as above. FORAMS
1600 - 1605m	100 trace trace	CLAYSTONE/CALCISILTITE: as above, becoming shaly, firm. LIMESTONE: as above. FORAMS
1605 - 1611m (Bottoms Up)	80 20 trace trace	CLAYSTONE/CALCISILTITE: as above. SANDSTONE: white to light grey, loose grains and aggregates, hard, well cemented, clear to frosty quartz grains, coarse to very coarse, subrounded (dominant) to well rounded, moderately sorted, grains commonly broken with glassy fracturing, aggregates are angular, broken up, brittle, common calcite (calcareous) and siliceous cement, occasional pyrite cement, very poor visible porosity, no shows. LIMESTONE: as above. FORAMS
1611 - 1615m	60 40 common trace	CLAYSTONE/CALCISILTITE: as above. SANDSTONE: a) 10% coarse to very coarse, well cemented, shattered grains, pyrite cemented as above; b) 30% also light grey to light brown grey, quartzose aggregates, moderately friable, very fine to fine grained, well sorted, subangular, moderately cemented, moderately calcareous - calcite cement, dull pale cream mineral fluorescence - no cut; moderate to poor visible porosity, no shows. FORAMS LIMESTONE: as above.
1615 - 1619m (Bottoms Up)	20 80 trace	CLAYSTONE/CALCISILTITE: as above. SANDSTONE: 20% very fine to fine grained aggregates as above; 60% loose quartz grains, coarse to dominantly very coarse, clear to frosty grains, subangular to dominantly subrounded, occasionally well rounded, moderately sorted, no shows; trace well cemented sandstone as above. SILTSTONE: light brown to brown grey, quartzose, argillaceous, carbonaceous.

1619 - 1620m	100	SANDSTONE: loose, coarse to very coarse grains, as above. No shows.
	trace	SILTSTONE
1620 - 1625m	90	SANDSTONE: loose coarse grains as above. No shows. Occasional pyrite cemented aggregates.
	10	SILTSTONE: light grey to grey brown, firm, argillaceous.
1625 - 1630m	100	SANDSTONE: loose grains as above, no shows.
	trace	SILTSTONE: as above.
	trace	PYRITE: as above.
1630 - 1635m	100	SANDSTONE: as above, but coarser, (coarse to granular), dominantly very coarse, common pyrite cemented aggregates.
1635 - 1640m	100	SANDSTONE: as above.
1640 - 1645m	100	SANDSTONE: very coarse to granule, as above.
1645 - 1650m	100	SANDSTONE: as above.
1650 - 1655m	100	SANDSTONE: as above, slightly less coarse.
1655 - 1660m	100	SANDSTONE: as above.
1660 - 1665m	100	SANDSTONE: loose quartz grains, clear to frothy, coarse to dominantly granule, subrounded to well rounded, dominantly rounded, moderately sorted, common pyrite cemented aggregates, inferred excellent porosity, no shows.
1665 - 1670m	100	SANDSTONE: as above.
1670 - 1675m	100	SANDSTONE: as above.
1675 - 1680m	100	SANDSTONE: as above.
1680 - 1685m	100	SANDSTONE: as above.
1685 - 1690m	100	SANDSTONE: as above.
1690 - 1695m	90	SANDSTONE: as above.
	10	COAL: brown black to black, firm to hard, dull earthy texture, silty grades to carbonaceous siltstone.
1695 - 1700m	90	SANDSTONE: as above.
	10	COAL: silty as above. One cutting gave instant blooming bright cream yellow cut fluorescence, brown residue. Another cutting gave fast streaming blue white cut fluorescence.
1700 - 1705m	90	SANDSTONE: as above.
	10	SILTSTONE: brown and brown grey, soft to firm, argillaceous, carbonaceous, platy to blocky. Weak slow streaming blue white cut fluorescence from one chip.
	trace	COAL
	common	CAVINGS - claystone, calcisiltite.

1705 - 1710m	60	SANDSTONE: as above.
	20	SILTSTONE: slightly to very carbonaceous, as above.
	10	COAL: black, hard, brittle.
	10	CLAYSTONE: buff, soft, blocky, homogeneous texture, partly water sensitive, slightly carbonaceous.
1710 - 1715m	60	SANDSTONE: as above, but finer, medium to very coarse, dominantly coarse grained.
	20	SILTSTONE: as above.
	20	COAL: as above. Instant blooming bright cream yellow cut from one coal cutting.
	trace	CLAYSTONE: as above.
1715 - 1720m	abundant	CALCISILTITE: cavings.
	80	SANDSTONE: coarse to granule, as above, instant blooming bright cream cut from sandstone in tray.
	10	SILTSTONE: as above.
	10	COAL: as above, cut as above.
1720 - 1725m	trace	CLAYSTONE: as above.
	abundant	CAVINGS - grey calcisiltite. Large pieces coming over shakers.
	100	SANDSTONE: dominantly coarse, very few granule sized grains, well sorted, as above.
	trace	COAL: as above.
1725 - 1730m	trace	SILTSTONE: as above.
	50	COAL: black, hard, brittle.
	30	SANDSTONE: as above.
	20	SILTSTONE: brown, argillaceous, carbonaceous in part.
1730 - 1735m	trace	CLAYSTONE: as above.
	50	COAL: as above, some cut as above.
	30	SANDSTONE: as above.
	20	SILTSTONE: brown, argillaceous, grading to buff silty claystone.
1735 - 1740m	common	CAVINGS
	50	SILTSTONE: brown to brown grey, carbonaceous, grades to claystone in part.
	20	COAL: as above.
	30	SANDSTONE: as above.
1740 - 1745m	common	CAVINGS
	80	SANDSTONE: loose quartz as above, dominantly coarse. Common pyrite cemented aggregates.
	10	SILTSTONE: as above.
	10	COAL: as above, and silty coal with trace of cut.
1745 - 1750m	70	SANDSTONE: as above.
	20	SILTSTONE: as above.
	10	COAL: as above.
1750 - 1755m	50	SILTSTONE: brown to brown grey, argillaceous, grading to claystone, also sandy in part, grading to very fine grained sandstone - quartz aggregates, moderately friable.
	50	SANDSTONE: as above.
	trace	COAL: as above.
	abundant	CAVINGS - calcisiltite and dolomite.

1755 - 1760m	40	COAL: as above, silty, slightly pyritic.
	50	SILTSTONE: grey and brown, argillaceous, carbonaceous, giving speckled colour, soft to firm.
	10	SANDSTONE: as above.
1760 - 1765m	50	COAL: as above.
	40	SILTSTONE: as above.
	10	SANDSTONE: as above.
1765 - 1770m	70	SILTSTONE: as above.
	10	SANDSTONE: as above.
	20	COAL: as above, trace of cut as above.
	common	CAVINGS
1770 - 1775m	40	SILTSTONE: as above.
	50	COAL: as above.
	10	SANDSTONE: as above.
1775 - 1780m	80	COAL: as above.
	20	SILTSTONE: as above.
	trace	SANDSTONE: as above.
1780 - 1785m	90	SILTSTONE/SHALE: brown, soft to firm, blocky to subfissile, carbonaceous flecks and streaks, very carbonaceous in part, very argillaceous - not very silty.
	10	COAL: as above.
	trace	SANDSTONE: as above.
1785 - 1790m	50	SANDSTONE: loose quartz grains, transparent to translucent, medium to dominantly coarse grained, occasionally granule, subangular to dominantly subrounded, well sorted, inferred very good porosity, no shows.
	30	SILTSTONE: as above, with trace of instant bright cream cut from very carbonaceous cuttings.
	20	COAL: as above.
1790 - 1795m	80	SANDSTONE: as above, but finer grained - medium to coarse.
	20	SILTSTONE: as above, trace of cut as above.
	trace	COAL: as above.
	trace	CAVINGS: pyrite, calcisiltite.
1795 - 1800m	70	SILTSTONE: as above.
	20	SANDSTONE: as above.
	10	COAL: as above.
1800 - 1805m	60	SILTSTONE: shaly, carbonaceous as above.
	30	SANDSTONE: as above.
	10	COAL: as above.
1805 - 1810m	70	SANDSTONE: dominantly coarse, as above.
	20	SILTSTONE: as above.
	10	COAL: as above.
1810 - 1815m	40	COAL: black, hard, angular.
	30	SILTSTONE: as above, sandy in part.
	30	SANDSTONE: as above.
1815 - 1820m	70	SILTSTONE: as above.
	20	COAL: as above.
	10	SANDSTONE: as above.

1820 - 1825m	60 20 20	SILTSTONE: as above. COAL: as above. SANDSTONE: medium to coarse grained, as above.
1825 - 1830m	40 50 10	COAL: black, angular, conchoidal fracture. SILTSTONE: brown to brown grey, soft to firm, blocky to platy, very argillaceous, grading to shale, slightly to very carbonaceous. SANDSTONE: as above.
1830 - 1835m	50 30 20	SILTSTONE: as above. SANDSTONE: medium to coarse grained, dominantly subangular, as above. Rare medium grained aggregates. COAL: as above.
1835 - 1840m	60 30 10	SILTSTONE: as above. COAL: as above. SANDSTONE: as above.
1840 - 1845m	80 10 10	SILTSTONE: as above, shaly. SANDSTONE: as above, occasional medium grained, friable aggregates. No shows. COAL: as above.
1845 - 1850m	90 10 trace	SILTSTONE: as above. SANDSTONE: as above. COAL: as above.
1850 - 1855m	70 30 trace	SILTSTONE: as above, less shaly. SANDSTONE: loose grains, some aggregates, fine to dominantly medium grained, some coarse, aggregates are moderately friable, silty. COAL: as above.
1855 - 1860m	90 10 trace trace	SILTSTONE: brown to brown grey as above, sandy grading to very fine grained sandstone, rarely micaceous, friable. SANDSTONE: as above. COAL: as above. Instant blue white blooming cut in tray.
1860 - 1865m	100 trace trace common	SILTSTONE: as above. SANDSTONE: as above. COAL: as above. CAVINGS
1865 - 1870m	60 40 trace	SANDSTONE: loose grains, dominantly coarse to very coarse, angular to subangular, no shows. SILTSTONE: as above. COAL: as above.
1870 - 1875m	60 40 trace	SILTSTONE: as above. SANDSTONE: as above. COAL: as above.
1875 - 1880m	70 30	SILTSTONE: as above. SANDSTONE: as above.
1880 - 1885m	100 trace	SILTSTONE: brown grey, soft to firm, blocky to rounded cuttings, very argillaceous, microcarbonaceous to carbonaceous, sandy in part, grading to very fine grained sandstone, occasional laminations visible. SANDSTONE: as above.
1885 - 1890m	90 10	SILTSTONE: as above. SANDSTONE: as above.

1890 - 1895m	90 10	SILTSTONE: as above. SANDSTONE: as above.
1895 - 1900m	80 20	SILTSTONE: as above. SANDSTONE: as above; also minor medium grained aggregates, moderately friable, subangular, well sorted, minor clay matrix.
1900 - 1905m	80 20	SANDSTONE: loose quartz grains, medium to dominantly very coarse grained, occasionally granule sized, subangular to subrounded, moderately sorted. Inferred very good visible porosity, no shows. SILTSTONE: as above.
1905 - 1910m	90 10	SANDSTONE: as above. SILTSTONE: as above.
1910 - 1915m	20 80	SANDSTONE: as above. SILTSTONE: as above.
1915 - 1920m	60 30 10	SILTSTONE: as above. SANDSTONE: as above, occasional medium grained aggregates. COAL: as above.
1920 - 1925m	80 20 trace common	SILTSTONE: as above, very carbonaceous. SANDSTONE: medium to coarse grained, as above. COAL: as above. PYRITE: cavings?
1925 - 1930m	80 20 trace	SILTSTONE: as above, rarely pyritic. SANDSTONE: as above. COAL: as above.
1930 - 1935m	80 20 trace	COAL: as above. SILTSTONE: as above. SANDSTONE: as above.
1935 - 1940m	70 20 10	SILTSTONE: brown to brown grey, as above. SANDSTONE: as above. COAL: as above.
1940 - 1945m	80 20 common trace	SILTSTONE: as above, partly pyritic. SANDSTONE: as above. PYRITE: as above. COAL: as above.
1945 - 1950m	80 10 10 common	SILTSTONE: as above. SANDSTONE: as above. COAL: as above. PYRITE: as above.
1950 - 1955m	80 20 trace trace common	SILTSTONE: as above. COAL: as above. SANDSTONE: as above. PYRITE: as above. CAVINGS
1955 - 1960m	60 40 trace	SILTSTONE: as above. COAL: as above. SANDSTONE: as above.
1960 - 1965m	60 30 10 trace	COAL: as above. SILTSTONE: as above. SANDSTONE: as above. PYRITE: as above.

1965 - 1970m	90	SANDSTONE: loose quartz grains, transparent to translucent, dominantly coarse to very coarse grained, subangular to dominantly subrounded, well sorted, inferred very good visible porosity. No shows.
	10	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
1970 - 1975m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
1975 - 1980m	60	SANDSTONE: as above.
	30	SILTSTONE: soft to firm, as above, clayey, with some claystone in part.
	10	COAL: as above.
1980 - 1985m	60	SANDSTONE: as above.
	40	SILTSTONE: as above, also grading to very fine grained sandstone in part, very carbonaceous in part.
	trace	COAL: as above.
	trace	PYRITE: as above.
1985 - 1990m	40	COAL: black, hard, brittle.
	30	SANDSTONE: as above.
	30	SILTSTONE: as above.
1990 - 1995m	70	SILTSTONE: as above, also common white quartzose siltstone with white clay matrix, grades to white claystone in part, sandy in part, soft, blocky, slightly carbonaceous.
	20	SANDSTONE: as above.
	10	COAL: as above.
	trace	PYRITE: as above.
1995 - 2000m	70	SILTSTONE: brown grey and white to buff, grading to claystone as above.
	20	COAL: as above.
	10	SANDSTONE: as above.
	trace	PYRITE: as above.
2000 - 2005m	70	SANDSTONE: as above, no shows.
	30	SILTSTONE: as above.
	abundant	CAVINGS
2005 - 2010m	70	SANDSTONE: as above.
	30	SILTSTONE: brown grey and buff as above.
	trace	COAL: as above.
	common	CAVINGS
2010 - 2015m	80	SANDSTONE: loose grains, medium to granule, as above, some could be cavings.
	20	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2015 - 2020m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	PYRITE: as above.
	trace	COAL: as above.
	common	CAVINGS

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2020 - 2025m	70	SANDSTONE: as above.
	30	SILTSTONE: as above, common white clayey siltstone, probably mostly being washed out.
	trace	PYRITE: as above.
2025 - 2030m	70	SILTSTONE: dominantly white to buff, clayey.
	30	SANDSTONE: as above.
	trace	PYRITE: probably cavings.
2030 - 2035m	70	SILTSTONE: white to buff, grading to claystone, as above.
	20	SANDSTONE: as above.
	10	COAL: black, hard, angular.
2035 - 2040m	90	SILTSTONE/CLAYSTONE: white to buff, as above.
	10	SANDSTONE: as above.
	trace	COAL: as above.
2040 - 2045m	70	SILTSTONE/CLAYSTONE: as above.
	20	SANDSTONE: medium to very coarse grained, dominantly coarse.
	10	COAL: as above.
2045 - 2050m	60	SANDSTONE: loose quartz grains, transparent to translucent, dominantly medium to very coarse grained, dominantly subangular to subrounded, moderately sorted, inferred good porosity, no shows.
	40	SILTSTONE/CLAYSTONE: as above.
2050 - 2055m	50	SILTSTONE: white to buff, occasionally carbonaceous.
	30	SANDSTONE: as above.
	20	COAL: black, hard, silty in part, pyritic in part.
2055 - 2060m	50	SILTSTONE: brown grey, carbonaceous and buff, clayey.
	30	COAL: as above.
	20	SANDSTONE: as above.
2060 - 2065m	80	SANDSTONE: loose quartz, dominantly medium to very coarse grained, dominantly subangular to subrounded.
	20	SILTSTONE: as above.
2065 - 2070m	80	SANDSTONE: as above, but medium to granule grain size, much coarser.
	20	SILTSTONE: dominantly brown grey, carbonaceous.
	trace	COAL: as above.
	trace	PYRITE: as above.
2070 - 2075m	70	SANDSTONE: as above, dominantly coarse.
	20	COAL: as above.
	10	SILTSTONE: as above.
2075 - 2080m	60	SANDSTONE: as above.
	40	SILTSTONE: dominantly brown grey, carbonaceous, also white clayey siltstone.
	trace	COAL: as above.
2080 - 2085m	70	SANDSTONE: dominantly coarse, as above.
	30	SILTSTONE: as above.
	trace	COAL: as above.

2085 - 2090m	80 10 10	SILTSTONE: as above. SANDSTONE: as above. COAL: as above.
2090 - 2095m	70 30 trace	SILTSTONE: as above. SANDSTONE: as above. COAL: as above.
2095 - 2100m	60 40 trace	SANDSTONE: medium to very coarse grained, as above; rare fine grained aggregates, subrounded, well sorted, argillaceous matrix. SILTSTONE: as above. COAL: as above.
2100 - 2105m	70 30 trace	SILTSTONE: brown grey, very carbonaceous. SANDSTONE: as above. COAL: as above.
2105 - 2110m	40 60 trace trace	SANDSTONE: loose quartz as above, fine to very coarse grained, dominantly medium. SILTSTONE: brown grey, very carbonaceous, sandy in part. COAL: as above. PYRITE: as above.
2110 - 2115m	70 30 trace	SILTSTONE: brown grey, soft to firm, blocky to subfissile, very argillaceous grading to shale, very carbonaceous, sandy in part, grading to very fine grained, argillaceous sandstone, occasional very thin laminations visible, trace of instant bright cream cut. SANDSTONE: loose quartz grains, transparent to translucent, dominantly medium to very coarse grained, angular to subangular, poorly to moderately sorted, no shows. Rare well cemented aggregates. Occasional fine to medium grained quartzose aggregates, moderately friable, subangular, well sorted, no shows. COAL: as above.
2115 - 2120m	70 20 10 trace	SANDSTONE: as above, rare pyrite cemented aggregates, dominantly medium grain size. SILTSTONE: as above. COAL: black, earthy, angular. PYRITE: as above.
2120 - 2125m	60 40 trace trace	SILTSTONE: as above, also common white to buff clayey siltstone as previously described. SANDSTONE: as above. COAL: as above. PYRITE: as above.
2125 - 2130m	60 40 trace	SILTSTONE: as above. SANDSTONE: as above. COAL: as above.
2130 - 2135m	90 10 trace trace	SANDSTONE: loose quartz as above, medium to granule, dominantly very coarse grained. SILTSTONE: as above. PYRITE: as above. COAL: as above.
2135 - 2140m	70 30 trace	SANDSTONE: as above. SILTSTONE: as above. COAL: as above.

2140 - 2145m	70	SANDSTONE: as above.
	20	SILTSTONE: brown grey and buff, as above.
	10	COAL: as above.
2145 - 2150m	90	SANDSTONE: loose quartz, fine to granule, dominantly coarse grained, poorly sorted.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2150 - 2155m	80	SANDSTONE: fine to granule as above, occasional fine grained aggregates, moderately friable, rare pyrite cement.
	20	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2155 - 2160m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2160 - 2165m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2165 - 2170m	90	SANDSTONE: dominantly coarse as above, occasional fine to medium grained aggregates as above.
	10	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2170 - 2175m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2175 - 2180m	70	SANDSTONE: as above.
	20	SILTSTONE: as above.
	10	COAL: as above.
2180 - 2185m	70	SANDSTONE: as above.
	20	SILTSTONE: as above.
	10	COAL: as above.
2185 - 2190m	70	SANDSTONE: as above.
	20	SILTSTONE: brown grey, carbonaceous, as above.
	10	COAL: as above.
2190 - 2195m	90	SANDSTONE: dominantly coarse, loose quartz grains as above, fine grains from desander.
	10	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2195 - 2200m	70	SANDSTONE: as above.
	30	SILTSTONE: grey brown as above, common white to buff clayey siltstone.
	trace	COAL: as above.
2200 - 2205m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2205 - 2210m	90	SANDSTONE: fine to very coarse grained, dominantly coarse, as above.
	10	SILTSTONE: brown grey and buff, as above.
	trace	PYRITE: as above.
	trace	COAL: as above.

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2210 - 2215m	60 20 20	SANDSTONE: as above. SILTSTONE: as above. COAL: as above.
2215 - 2220m	80 20 trace	SANDSTONE: as above. SILTSTONE: brown grey and buff, also sandy in part, grading to fine grained sandstone. COAL: as above.
2220 - 2225m	60 30 10	SANDSTONE: as above. SILTSTONE: as above. COAL: as above.
2225 - 2230m	70 20 10	SANDSTONE: as above. COAL: black, hard, angular, shiny lustre. SILTSTONE: as above.
2230 - 2235m	60 30 10	SANDSTONE: as above, very coarse grains have angular, milky, waxy appearance. SILTSTONE: as above. COAL: as above.
2235 - 2240m	80 20 trace trace	SANDSTONE: as above, fine to dominantly coarse grained, probably dominantly finer because of fine grains coming out of desander only seeing the coarse fraction in cuttings. Occasional fine grained aggregates. SILTSTONE: as above, very carbonaceous. COAL: as above. PYRITE: as above.
2240 - 2245m	60 20 20	SANDSTONE: as above. SILTSTONE: as above. COAL: as above.
2245 - 2250m	50 50 trace trace	SILTSTONE: brown grey, carbonaceous with black specks, argillaceous, soft to firm, slightly pyritic, rounded to blocky cuttings, slightly sandy, micaceous in part. SANDSTONE: fine to very coarse grained, loose grains as above; also trace white quartz aggregates, fine to dominantly medium grained, subangular, well sorted, hard, well cemented, bright cream mineral fluorescence - dolomite cement, no shows. COAL: as above. PYRITE: as above.
2250 - 2255m	70 30 trace trace	SANDSTONE: as above, trace of dolomite cemented aggregates. SILTSTONE: as above. COAL: as above. PYRITE: as above.
2255 - 2260m	40 50 10 trace	SILTSTONE: as above. SANDSTONE: fine to granule, as above, trace dolomite cemented aggregates. COAL: as above. PYRITE: as above.
2260 - 2265m	50 40 10	SILTSTONE: brown grey and buff, as above. SANDSTONE: as above. COAL: as above. Samples heavily contaminated with cavings from wiper trip.

2265 - 2270m	60 40 trace trace	SANDSTONE: as above. SILTSTONE: as above. COAL: as above. PYRITE: as above.
2270 - 2275m	70 30 trace trace	SANDSTONE: loose grains and trace of dolomite cemented aggregates as above. SILTSTONE: as above. COAL: as above. PYRITE: as above.
2275 - 2280m	70 30 trace trace	SILTSTONE: brown grey and common white clayey siltstone. SANDSTONE: as above. COAL: as above. PYRITE: as above.
2280 - 2285m	60 40 trace trace	SILTSTONE: as above. SANDSTONE: fine to very coarse grained, as above; trace of dolomite cemented aggregates. COAL: as above. PYRITE: as above.
2285 - 2290m	70 30 trace	SANDSTONE: as above. SILTSTONE: as above. COAL: as above.
2290 - 2295m	70 30 trace trace	SANDSTONE: fine to very coarse grained, occasional fine to medium grained aggregates, moderately friable. SILTSTONE: as above. COAL: as above. PYRITE: as above.
2295 - 2300m	60 40 trace trace	SANDSTONE: as above. SILTSTONE: as above, brown grey and white. COAL: as above. PYRITE: as above.
2300 - 2305m	70 30 trace common	SANDSTONE: as above. SILTSTONE: as above. ALTERED VOLCANICS: buff to pale green, hard, angular; buff to pale yellow clay matrix, acicular crystals visible, crystalline texture. COAL: as above.
2305 - 2310m	70 20 10 trace	SANDSTONE: as above. VOLCANICS: as above, rarely pyritic. SILTSTONE: as above. COAL: as above.
2310 - 2315m	70 20 10	SANDSTONE: as above. VOLCANICS: as above, also occasional red brown clayey cuttings - altered volcanics. SILTSTONE: as above.
2315 - 2320m	50 30 20	VOLCANICS: buff to pale green, as above; red brown and blue green, mottled, soft to hard, very clayey, speckled silty texture. SANDSTONE: as above. SILTSTONE: as above.
2320 - 2325m	80 10 10	VOLCANICS: as above, buff and red brown; also dark grey, hard, crystalline cuttings. SANDSTONE: as above. SILTSTONE: as above.

2325 - 2330m	90 10 trace	VOLCANICS: multicoloured as above. SANDSTONE: as above. PYRITE: as above.
2330 - 2335m	80 10 10 trace	VOLCANICS: as above. SANDSTONE: as above. SILTSTONE: as above. PYRITE: as above.
2335 - 2340m		Dominantly cavings, some volcanic cuttings.
2340 - 2345m	70 30	CAVINGS: siltstone, Lakes Entrance Formation, etc. VOLCANICS: as above.
2345 - 2350m	100 trace trace	VOLCANICS: buff, dominantly green, red brown, dark grey, crystalline and weathered to clay as above. PYRITE: as above. SANDSTONE: as above.
2350 - 2355m	40 60 trace trace trace	SILTSTONE: mottled green and red brown, firm to moderately friable, rounded cuttings, silt to very fine grained quartz, common green and red brown matrix, slightly argillaceous to clayey grading to soft claystone. VOLCANICS: various colours as above, with microcrystalline texture, very hard, occasional green translucent grains. PYRITE: as above. SANDSTONE: as above. CLAYSTONE: as above.
2355 - 2360m	60 40 trace trace	VOLCANICS: as above, common white cuttings. SILTSTONE: as above, moderately to well cemented - probable siliceous cement. PYRITE: as above. SANDSTONE: as above.
2360 - 2365m	90 10 trace	VOLCANICS: dominantly green to dark grey, minor red brown, common white clayey cuttings, probable weathered volcanic material. SILTSTONE: volcanic as above. SANDSTONE: as above.
2365 - 2370m	80 20 trace trace	VOLCANICS: buff to pale green, firm to hard, rounded cuttings, acicular crystals visible, altered to buff clay matrix; white to buff, soft to firm, rounded irregular cuttings, very clayey (white) with translucent to green grains present, has altered appearance; dark green to red brown and dark grey, mottled and speckled, very hard, angular, microcrystalline texture with fresh appearance; red brown, soft, rounded cuttings, very clayey with minor visible grains, weathered basalt texture. SILTSTONE: green to red brown and grey, moderately friable, slightly clayey, granular sandy texture. SANDSTONE: as above. PYRITE: as above.
2370 - 2375m	90 10 trace trace	VOLCANICS: multicoloured, as above. SILTSTONE: as above. SANDSTONE: as above. PYRITE: as above.

2375 - 2380m	90	VOLCANICS: mixture as above.
	10	SANDSTONE: loose quartz, transparent to translucent, fine to very coarse, dominantly medium grained, angular to dominantly subangular, poorly sorted, no shows.
	trace	SILTSTONE: as above.
	trace	PYRITE: as above.
2380 - 2385m	80	VOLCANICS: as above, common dark grey to black basaltic cuttings.
	20	SANDSTONE: as above.
	trace	PYRITE: as above.
	60	VOLCANICS: as above.
2385 - 2390m	40	SANDSTONE: loose grains as above, angular grains appear to be broken by the bit rather than detrital grains; occasional very hard, well cemented aggregates, medium grained, siliceous and dolomite cement, slightly calcareous, faint dull yellow mineral fluorescence, little or no visible porosity, no shows.
	60	VOLCANICS: as above.
2390 - 2395m	40	VOLCANICS: as above.
	60	SANDSTONE: loose grains and aggregates as above, some very coarse cuttings are extremely well cemented aggregates with individual grains barely visible, slightly pyritic, mineral fluorescence as above.
2395 - 2400m	70	SANDSTONE: as above.
	30	VOLCANICS: as above.
2400 - 2405m	60	VOLCANICS: mixture as above, but dominantly white to buff, soft, clayey cuttings.
	40	SANDSTONE: dominantly aggregates as above.
2405 - 2410m	60	SANDSTONE: dominantly aggregates as above.
	40	VOLCANICS: as above.
2410 - 2415m	50	VOLCANICS: as above, including black cuttings showing light phenocrysts in dark fine grained groundmass.
	50	SANDSTONE: white to light grey aggregates, hard, very well cemented as above, with spotty dull yellow dolomite fluorescence.
2415 - 2420m	60	VOLCANICS: as above.
	40	SANDSTONE: as above.
2420 - 2425m	60	SANDSTONE: aggregates, as above.
	40	VOLCANICS: buff, clayey cuttings and dark grey to black, very hard, basaltic cuttings, as above.
2425 - 2430m	70	VOLCANICS: dominantly white to buff, very clayey cuttings. Probably weathered volcanics.
	30	SANDSTONE: as above.
2430 - 2435m	60	SANDSTONE: well cemented aggregates as above, trace of mineral fluorescence, minor dolomite cement, mostly siliceous cement, rare pyrite cement.
	40	VOLCANICS: mixture, as above.

2435 - 2440m	80	SANDSTONE: dominantly loose quartz grains, transparent to translucent, finer grained than previously - fine to medium grained, occasionally coarse; dominantly subangular to subrounded, poorly sorted. Occasional aggregates, moderately friable. No shows.
	20	VOLCANICS: as above.
	trace	COAL: as above.
2440 - 2445m	80	SANDSTONE: dominantly loose quartz as above, fine to coarse grained; occasional friable aggregates and dolomitic aggregates.
	20	VOLCANICS: as above.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2445 - 2450m	80	SANDSTONE: as above.
	10	VOLCANICS: as above.
	10	SILTSTONE: brown, soft to firm, rounded cuttings, very argillaceous, carbonaceous specks, sandy in part grading to very fine grained sandstone.
2450 - 2455m	90	SANDSTONE: loose grains as above, common well cemented aggregates with dolomite cement.
	10	VOLCANICS: as above.
	trace	SILTSTONE: as above.
2455 - 2460m	100	SANDSTONE: dominantly loose grains, finer grained - dominantly medium to coarse grained.
	trace	VOLCANICS
	trace	SILTSTONE: as above.
2460 - 2465m	80	SANDSTONE: loose quartz grains, transparent to translucent, medium to very coarse grained, dominantly coarse; angular to subangular, have broken appearance - some from broken aggregates; some dolomite cement - cream fluorescence, no cut, aggregates are hard, well cemented, common siliceous cement, moderately sorted, very poor visible porosity. No shows.
	20	SILTSTONE: as above.
	common	VOLCANICS
	trace	COAL: as above.
2465 - 2470m	80	SANDSTONE: loose grains and dominantly aggregates as above.
	20	SILTSTONE: brown, carbonaceous as above.
	trace	COAL: as above.
	trace	VOLCANICS
2470 - 2475m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2475 - 2480m	80	SANDSTONE: slightly finer grained - fine to coarse grained, as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
	trace	VOLCANICS: as above.
2480 - 2485m	100	SANDSTONE: slightly coarser - medium to very coarse grained, dominantly medium grain size, mostly loose grains.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
	trace	VOLCANICS: as above.

2485 - 2490m	90	SANDSTONE: dominantly well cemented aggregates, fine to coarse grain size, very poor visible porosity, no shows.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2490 - 2495m	80	SANDSTONE: as above.
	20	SILTSTONE: as above, probably being mostly washed out.
2495 - 2500m	80	SANDSTONE: as above.
	20	SILTSTONE: as above, grades to shale in part.
	trace	COAL: as above.
2500 - 2505m	40	SILTSTONE: medium light grey to brownish grey, soft to firm, argillaceous, carbonaceous laminations in part, grades to very fine grained sandstone in part, dominantly cavings.
	40	SANDSTONE: clear to translucent, loose to hard, medium to coarse grained, minor granule size, subrounded to angular, moderately to well sorted, frosted in part, dolomitic and siliceous cement - generally well cemented, minor pyritic matrix, very poor visual porosity, no shows.
	20	VOLCANICS: buff to cream, soft to firm, no real structure or grains visible - highly altered; white to translucent light grey, white is clayey, green is sometimes in form of grains (olivine?), sometimes whole mass - altered; red to dark grey, hard, very fine grained, essentially unaltered, some red translucent mineral in the form of very coarse grained vugs/phenocrysts.
	trace	COAL: as above. Note: Above are probably cavings from bit trip.
2505 - 2510m	50	VOLCANICS: as above.
	40	SANDSTONE: as above.
	10	SILTSTONE: as above.
2510 - 2515m	50	VOLCANICS: as above, olivine basalt?
	40	SANDSTONE: as above.
	5	SILTSTONE: as above.
	5	PYRITE: dominantly associated with sandstone.
2515 - 2520m	70	VOLCANICS: dominantly dark grey, microcrystalline, green translucent phenocrysts - olivine basalt, some altered - calcareously.
	30	SANDSTONE: as above.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
2520 - 2525m	80	VOLCANICS: dominantly dark green to black, phenocrysts in fine grained groundmass - olivine basalt?
	20	SANDSTONE: fine to coarse grained, dominantly medium grained aggregates, well cemented, minor dolomite cement with mineral fluorescence, some pyrite cement.
	common	COAL: as above.
	common	SILTSTONE: as above.

2525 - 2530m	60	VOLCANICS: as above, also common buff, altered, clayey cuttings, rarely pyritic.
	20	SILTSTONE: light brown to brown, occasionally brown grey, soft to firm, rounded cuttings, slightly carbonaceous, very argillaceous, occasionally pyritic.
	20	SANDSTONE: as above.
2530 - 2535m	50	VOLCANICS: dark green and buff cuttings, as above.
	20	SILTSTONE: dominantly brown, as above, sandy in part.
	30	SANDSTONE: as above, 20% of the sample has bright cream white fluorescence with slow diffuse cream white cut.
2535 - 2540m	20	VOLCANICS: as above.
	60	SANDSTONE: white to light grey, loose quartz grains and aggregates, transparent to dominantly translucent, fine to dominantly coarse grained, angular to subangular, hard, very well cemented, siliceous and minor dolomite cement, very slightly calcareous. 30% of whole sample has bright cream white fluorescence, with slow diffuse cream white cut, very poor visible porosity, occasionally pyritic.
	20	SILTSTONE: as above.
2540 - 2545m	70	SANDSTONE: dominantly aggregates as above, 40% of sample has cream white fluorescence and cut as above.
	20	SILTSTONE: as above.
	10	VOLCANICS: as above.
	trace	DOLOMITE: medium grey, very hard, angular, very fine grained.
2545 - 2550m	80	SANDSTONE: as above, very angular cuttings, very well cemented - siliceous cement, aggregates are being broken up into angular fragments.
	10	DOLOMITE: grey, very hard as above, dull gold fluorescence, no cut, microcrystalline texture.
	10	VOLCANICS: as above.
	trace	SILTSTONE: as above.
2550 - 2555m	70	SANDSTONE: very angular, very well cemented, quartzose aggregates, medium to coarse grained, as above. 50% show as above.
	20	DOLOMITE: as above.
	10	VOLCANICS: cavings, as above.
2555 - 2560m	80	SANDSTONE: aggregates and some loose grains, quartzose, medium to coarse grained, as above. 40% of sample has weak, spotty cream white fluorescence with slow diffuse cream white cut.
	10	DOLOMITE: as above.
	10	VOLCANICS: as above.
2560 - 2565m	90	SANDSTONE: as above, very well cemented, breaking into angular grains, 30% fluorescence and cut.
	10	DOLOMITE/CHERT: grey, very hard, commonly non reactive in HCl.
	common trace	VOLCANICS: as above. SILTSTONE: as above.

2565 - 2570m	90	SANDSTONE: clear to smoky, generally loose, medium grained to granule, angular, moderately to well sorted, some aggregates fine to coarse grained, subrounded to angular, moderately to well sorted, siliceous and dolomitic cement, 30% fluorescence, common slow streaming to diffuse milky white cut, very poor visible porosity.
	10	CHERT: grey, very hard, dominantly angular, rare grains have nodule (?) form, one angular grain was seen cemented in the sandstone.
	trace	VOLCANICS: as above.
2570 - 2575m	90	SANDSTONE: as above.
	10	CHERT: as above.
	trace	VOLCANICS: as above.
2575 - 2580m		Dominantly cavings: calcareous siltstone, coal, sandstone, siltstone and volcanics.
2580 - 2585m	30	SANDSTONE: as above.
	70	CAVINGS: as above.
	trace	CHERT: as above.
2585 - 2590m	40	SANDSTONE: as above, 10% fluorescence and weak cut as above.
	60	CAVINGS
2590 - 2595m	70	SANDSTONE: common loose quartz grains, fine to coarse grained, dominantly medium grained, dominantly transparent, subangular to subrounded, also aggregates as above, 10% fluorescence and cut.
	30	CAVINGS: volcanics, siltstone, coal.
	trace	CHERT: grey, very hard, occasionally seen as very coarse subrounded grains in sandstone.
2595 - 2600m	80	SANDSTONE: loose grains and aggregates as above, 10% fluorescence and weak cut as above.
	20	CAVINGS
	trace	CHERT: as above.
2600 - 2605m	80	SANDSTONE: loose grains, and aggregates as above, 10% fluorescence and cut as above.
	10	SILTSTONE: brown to brown grey, firm to hard, argillaceous, common carbonaceous specks, blocky to occasionally angular cuttings, sandy in part, possibly cavings.
	10	CAVINGS: volcanics, calcareous siltstone, coal.
	trace	CHERT: as above.
2605 - 2610m	70	SANDSTONE: as above.
	10	SILTSTONE: as above, possibly cavings.
	10	CHERT: light to medium grey, as above.
	10	CAVINGS
2610 - 2615m	70	SANDSTONE: as above.
	10	SILTSTONE: as above.
	10	CHERT: as above.
	10	CAVINGS: as above.
2615 - 2620m	80	SANDSTONE: loose grains and aggregates as above, 10% fluorescence as above.
	10	SILTSTONE: as above.
	10	CHERT: as above.
	common	CAVINGS: as above.

2620 - 2625m	70	SANDSTONE: as above, also minor moderately friable to hard aggregates, dominantly medium to coarse grained, subangular to subrounded, minor clay matrix, quartz grains, very slightly calcareous, minor dolomite cement, some siliceous cement, probably grades from sandy siltstone.
	20	SILTSTONE: light to dark brown grey, soft to firm, argillaceous to soft and clayey, carbonaceous specks and laminae, sandy in part.
	10	CHERT: as above.
	common	CAVINGS: especially volcanics.
2625 - 2630m	70	SANDSTONE: as above.
	20	SILTSTONE: soft, clayey as above, probably cavings.
	10	COAL: black, hard, earthy. Probably cavings.
	common	VOLCANICS: cavings
	trace	CHERT: as above.
	trace	SHALE: dark brown grey to dark grey, hard, angular, carbonaceous specks, homogeneous texture, silty. Probably Strzelecki Group.
2630 - 2635m	70	SANDSTONE: as above, occasionally moderately friable, quartzose aggregates, dominantly medium grained, subangular, silty, argillaceous matrix, slightly carbonaceous, brown to brown grey.
	30	SILTSTONE: light brown to brown grey, soft to firm, argillaceous, carbonaceous flecks and laminae, sandy, speckled colour and texture. Cuttings over shakers are sticky - clayey siltstone being washed out.
	trace	CHERT: as above.
	trace	CAVINGS: as above.
	trace	SHALE: as above.
2635 - 2640m	60	SANDSTONE: quartzose cemented aggregates and silty granular aggregates as above, (possibly Strzelecki Group).
	40	SILTSTONE: speckled brown to brown grey as above, (possibly Strzelecki Group).
	common	VOLCANICS: as above.
	common	CHERT: as above.
	common	PYRITE: as above.
2640 - 2645m	80	SILTSTONE: light to dark brown, brown grey, soft, as above. Has speckled heterogeneous texture, slightly laminated. Sandy in part, grading to argillaceous sandstone as above.
	20	SANDSTONE: quartzose, as above.
	trace	SHALE: as above.
	trace	CAVINGS - various.
2645 - 2647m	80	SILTSTONE: as above.
T.D.	20	SANDSTONE: as above.

APPENDIX 2

APPENDIX 2

Sidewall Core Descriptions

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SUNFISH 2

SIDEWALL CORE DESCRIPTIONS

<u>No.</u>	<u>Depth</u>	<u>Rec.</u> (mm)	<u>Rock</u> <u>Type</u>	<u>Description</u>
1	2639.0	15	Siltstone	Brown, hard, carbonaceous laminae, quartzose, very argillaceous, slightly sandy.
2	2636.0	35	Siltstone	Brown, firm, very argillaceous, slightly sandy, quartzose, minor carbonaceous flecks.
3	2630.5	20	Siltstone	Light brown, hard, argillaceous, quartzose, sandy, slightly carbonaceous.
4	2623.5	45	Sandstone	White, fine to coarse grained, poorly sorted, subangular, friable, quartzose, slightly pyritic, white clay matrix, slightly carbonaceous.
5	2621.1	25	Siltstone/ Shale	Light brown to dark brown, hard, quartzose, argillaceous, slightly carbonaceous.
6	2617.5	40	Sandstone	White, fine to very coarse grained, subangular, poorly sorted, hard, very slightly calcareous, rare dark grains, white clay matrix, rare buff clayey grains.
7	2611.0	30	Siltstone	Brown, hard, quartzose, slightly carbonaceous, argillaceous.
8	2599.6	30	Siltstone/ Coal	Dark brown, hard, very argillaceous, very carbonaceous, argillaceous and carbonaceous siltstone grading to coal.
9	2581.5	35	Siltstone	Brown, hard, argillaceous, quartzose, carbonaceous, slightly sandy.
10	2564.0	20	Siltstone	Brown, hard, very argillaceous, quartzose, slightly carbonaceous, sandy.
11	2559.4	30	Sandstone	White, fine to medium grained, poorly sorted, subangular, hard, quartzose, white clay matrix, (minor buff and dark grains), 70% spotty bright white fluorescence, slow diffuse white cut, slight colourless residue.
12	2556.5	20	Sandstone	White, very fine to very coarse grained, very poorly sorted, subangular to subrounded, hard, quartzose, cherty, 90% even bright cream white fluorescence, slow diffuse milky cut, slight colourless residue.
13	2553.4	20	Sandstone	White, fine to very coarse grained, poorly sorted, subangular to subrounded, hard, quartzose, chert grains, very slightly carbonaceous, 60% spotty faint cream white fluorescence, very slow weak milky cut.

14	2551.7	15	Sandstone	White to light grey, fine grained to granule, poorly sorted, subangular, quartzose, chert grains, moderately calcareous, extremely well cemented, 60% spotty dull cream white fluorescence, slow, very weak cream cut, mostly mineral fluorescence.
15	2549.5	20	Sandstone with Siltstone laminae	Sandstone - white to light grey, fine to coarse grained, poorly sorted, subangular, hard, quartzose, grey grains, white to buff, clay matrix, 30% spotty dull cream fluorescence, slow weak cream cut; Siltstone - brown, very hard, very argillaceous, quartzose, carbonaceous.
16	2547.6	25	Sandstone/ Conglomerate	White to light grey, fine grained to pebbles, very poorly sorted, subangular, hard, quartzose, white clay matrix, 10% spotty dull cream mineral fluorescence.
17	2546.1	20	Sandstone/ Conglomerate	White to light grey, fine grained to pebbles, very poorly sorted, subangular to subrounded, hard, quartzose, white to buff clay matrix, grey chert grains, 60% spotty bright cream fluorescence, instant diffuse cream white cut, slight colourless residue.
18	2541.7	25	Sandstone	White to light grey, fine to very coarse grained, subangular to subrounded, very poorly sorted, hard, quartzose, white to buff clay matrix, grey chert grains, 80% even bright cream fluorescence, slow diffuse cream white cut.
19	2534.8	20	Sandstone	White to light grey, fine grained to pebbles, very poorly sorted, subangular to subrounded, hard, quartzose, white clay matrix, 70% spotty bright cream white fluorescence, slow very weak diffuse cream cut; mineral fluorescence from clay?
20	2530.8	25	Siltstone	Brown, hard, argillaceous, slightly sandy, carbonaceous specks.
21	2527.1	20	Siltstone	Brown, hard, argillaceous, sandy, slightly carbonaceous.
22	2523.1	30	Siltstone	Light brown, hard, argillaceous.
23	2521.7	20	Siltstone	Brown grey, hard, very argillaceous, carbonaceous, slightly sandy.
24	2520.7	20	Shale	Brown grey, hard, silty, slightly pyritic.
25	2518.0			No Recovery.
26	2509.0	50	Volcanics	Light green to buff, firm to shattered, altered, olivine?, quartz.
27	2492.0	25	Sandstone	Yellow grey, very fine to fine grained, well sorted, subangular to subrounded, firm, quartzose, silty, trace carbonaceous material.

28	2477.7	30	Siltstone	Brown, firm, argillaceous, trace coaly flecks.
29	2459.6			No Recovery.
30	2437.0	30	Siltstone	Medium dark grey, firm to hard, argillaceous.
31	2421.2	20	Siltstone	Medium grey, soft to firm, quartzose, argillaceous.
32	2414.7	20	Siltstone	Brown, soft to firm, argillaceous, carbonaceous, grades to very fine grained sandstone.
			Sandstone	Very light grey, very fine grained to medium grained, well sorted, subangular to subrounded, soft to firm, carbonaceous flecks.
33	2393.6	15	Sandstone	Black to light brown to very light grey, very fine to coarse grained, soft to firm, poorly sorted, subangular to subrounded, carbonaceous in part, very argillaceous, very silty.
34	2378.1			No Recovery.
35	2361.1	35	Volcanic	Buff to light green, very fine grained with some granule size grains, subangular to subrounded, very clayey, altered, quartzose, olivine?
36	2349.4			No Recovery.
37	2341.1	45	Volcanic	Grey green, very fine grained, some granule quartz, some relict acicular habit, firm, altered, quartzose, clayey.
38	2328.0	40	Volcanic	Mottled, silty to granule, firm, altered, clayey.
39	2313.5	35	Volcanic	Brown to white, silt to rarely granule sized, zeolite(?) phenocrysts, firm, altered, clayey.
40	2296.0	20	Sandstone	Light brown, very fine to fine grained, well sorted, firm, silty, argillaceous, coaly laminations.
41	2295.1	20	Coal	Black, firm to hard, earthy.
42	2284.9	20	Siltstone	Brown, some coaly laminations, firm, argillaceous, trace quartz.
43	2269.5	23	Siltstone	Medium light grey, grades to very fine grained sandstone, soft to firm, quartzose, argillaceous.
44	2268.1	25	Siltstone	Brown to black, trace coaly material, firm, quartzose.
45	2254.6	25	Siltstone	Brown to black, trace fine grained quartz, firm to hard, carbonaceous, quartzose.

46	2241.9	23	Sandstone	Very light grey, very fine to medium grained, moderately to well sorted, subangular to subrounded, trace carbonaceous flecks, soft to firm, silty in part;
			Siltstone	Brown grey, soft to firm, grades to sandstone, quartzose, carbonaceous.
47	2224.8	30	Siltstone	Brown to black, soft to firm, trace coally flecks and laminations, quartzose.
48	2709.8	15	Sandstone	Light grey to light brown, very fine to medium grained, moderately sorted, subangular to subrounded, firm, carbonaceous in part, pyritic, silty in part, light and dark laminations, dark bands are carbonaceous.
49	2195.2	15	Siltstone	Brown, grades to very fine grained sandstone, some coarse grained, subangular to subrounded quartz grains, carbonaceous in part, firm.
50	2180.4			No Recovery.
51	2165.0	15	Sandstone	Light grey, very fine to fine grained, moderately to well sorted, subangular to subrounded, firm, scattered coally specks, grades to siltstone.
52	2150.2	20	Siltstone	Medium grey, soft to firm, quartzose, argillaceous.
53	2135.1	35	Siltstone	Black to brown, firm, carbonaceous.
54	2116.7	20	Sandstone	Light grey, very fine to fine grained, moderately to well sorted, subangular to subrounded, firm, quartzose, silty, pyritic.
55	2102.7	35	Siltstone	Black brown, firm, carbonaceous, argillaceous.
56	2089.0	35	Siltstone	Black brown, firm, carbonaceous, argillaceous.
57	2073.0	30	Siltstone	Black brown, firm, carbonaceous, argillaceous.
58	2060.7	35	Sandstone	Light grey, fine to coarse grained, moderately sorted, subangular to subrounded, soft.
59	2057.8	25	Sandstone	Medium grey, very fine to medium grained, moderately to well sorted, subrounded to angular, soft to firm, very argillaceous, silty in part, carbonaceous.
60	2045.2	20	Siltstone	Medium light grey, grades to very fine sandstone in part, firm, argillaceous.
61	2032.3	50	Siltstone	Light grey, firm to hard, argillaceous.
62	2014.6	40	Siltstone	Light grey, trace carbonaceous flecks, firm to hard, argillaceous.
63	1999.1	40	Siltstone	Light grey, firm, argillaceous, quartzose.

64	1978.0	40	Shale	Brown grey, firm, pyritic.
65	1966.0	35	Siltstone	Light grey, grades to very fine grained sandstone, firm to hard, quartzose, argillaceous in part.
66	1949.3	23	Siltstone	Brown grey, grades to very fine grained sandstone, firm, carbonaceous, quartzose.
67	1934.4			Misfire.
68	1396.9	40	Siltstone	Medium grey, hard, very calcareous.
69	1375.6	50	Siltstone	Medium grey, firm to hard, very calcareous.
70	1345.1	40	Siltstone	Medium grey, firm, very calcareous.
71	1330.2	40	Siltstone	Medium light grey, firm to hard, very calcareous, pyritic.
72	1314.9	35	Siltstone	Medium grey, soft to firm, very calcareous.
73	1300.0	40	Siltstone	Medium grey, hard, very calcareous, trace fossiliferous.
74	1283.0	60	Siltstone	Medium grey, firm, very calcareous, trace pyrite, forams.
75	1268.0	45	Siltstone	Medium grey, firm, very calcareous.
76	1251.0	45	Siltstone	Medium light grey, hard, very calcareous.
77	1234.0	40	Siltstone	Medium grey, firm, very calcareous.
78	1216.4	35	Siltstone *	Medium grey, firm to hard, very calcareous.
79	1199.0	40	Siltstone	Medium light grey, hard, very calcareous.
80	1180.6	35	Siltstone	Medium grey, very thin lense of medium to coarse grained quartz, subangular to subrounded, well cemented - dolomite cement, hard, very calcareous.
81	1160.7	35	Siltstone	Medium grey, firm to hard, very calcareous.
82	1659.0	30	Sandstone	Medium grey, fine to coarse grained, poorly sorted, subrounded to angular, soft, very argillaceous.
83	1634.6	40	Sandstone	Brown, firm, very fine to medium grained, moderately sorted, subangular to subrounded, very argillaceous, silty in part.
84	1623.9	25	Sandstone	Medium grey, fine to medium grained, (some coarse quartz grains), soft to firm, moderately sorted, subangular to subrounded, trace carbonaceous specks, argillaceous.

85	1618.8	30	Sandstone	Medium grey, medium to coarse grained, moderately to well sorted, subangular to subrounded, soft, argillaceous; 50% even dull blue fluorescence, instant dull blue/white cut.
86	1618.2	35	Sandstone	Medium grey, medium to coarse grained, moderately to well sorted, subangular to subrounded, soft, argillaceous in part, (some carbonaceous laminations), 50% even dull blue fluorescence, instant, dull blue/white cut.
87	1615.7	35	Sandstone	Medium grey, fine to coarse grained, moderately sorted, subangular to subrounded, soft; 30% even dull blue fluorescence, very slow diffuse dull blue cut.
88	1613.9	40	Siltstone	Medium grey, firm to hard, very calcareous, quartzose, argillaceous in part, some carbonaceous laminations.
89	1611.6	40	Siltstone	Medium grey, soft to firm, trace carbonaceous laminations, very calcareous, quartzose.
90	1610.0	25	Siltstone	Medium grey, firm, very calcareous, quartzose, argillaceous.
91	1607.5	40	Siltstone	Medium grey, firm to hard, very calcareous, argillaceous.
92	1602.7	40	Siltstone	Medium grey, firm, very calcareous, argillaceous.
93	1598.8	45	Siltstone	Medium grey, firm to hard, very calcareous, argillaceous.
94	1590.0	45	Siltstone	Medium grey, firm, very calcareous, argillaceous.
95	1581.1	45	Siltstone	Medium grey, firm, very calcareous, argillaceous.
96	1568.7	20	Siltstone	Medium light grey, soft to firm, very calcareous, argillaceous.
97	1560.6	20	Siltstone	Medium grey, firm, very calcareous, argillaceous.
98	1550.4	35	Siltstone	Medium grey, firm, very calcareous, argillaceous.
99	1530.0	30	Siltstone	Medium grey, firm to hard, very calcareous, argillaceous.
100	1514.5	40	Siltstone	Medium to medium dark grey, firm to hard, very calcareous, argillaceous.
101	1499.7	45	Siltstone	Medium grey, soft to firm, very calcareous, subfissile, argillaceous.
102	1477.7	25	Siltstone	Medium grey, firm, very calcareous, trace pyrite, argillaceous.

103	1934.0	30	Siltstone	Brown, some medium to very coarse quartz grains, subangular to subrounded, firm, carbonaceous, trace pyrite.
104	1915.0	35	Siltstone	Brown, some very fine grained silty white laminations, firm to hard, carbonaceous.
105	1898.1	25	Shale	Brown, firm, carbonaceous, trace pyrite.
106	1882.9	30	Siltstone	Brown, laminated - white very fine grained sand, subfissile, firm, argillaceous, carbonaceous, trace pyrite.
107	1867.5	25	Shale	Brown, firm, silty, carbonaceous.
108	1853.1	25	Siltstone	Brown, firm to hard, carbonaceous, pyritic.
109	1838.4	25	Shale	Brown, few laminations of very fine grained sandstone, firm, silty, carbonaceous, micaceous.
110	1819.5	30	Siltstone	Brown, firm, carbonaceous, argillaceous.
111	1800.2	25	Sandstone	Light grey, very fine to fine grained, well sorted, subangular to subrounded, soft to firm, silty.
112	1784.2	20	Sandstone	Light grey, very fine to fine grained, well sorted, subangular to subrounded, soft to firm, silty.
113	1768.5	20	Sandstone	Light grey, very fine grained, grades to siltstone, well sorted, subangular to subrounded, soft to firm, quartzose.
114	1748.2	25	Siltstone	Light grey to light brown, grades to very fine grained sandstone, laminated light and dark bands, firm, quartzose.
115	1721.2	25	Siltstone	Light grey to light brown, grades to very fine grained sandstone, laminated light and dark bands, soft to firm, micaceous.
116	1699.6	30	Siltstone	Light grey, firm, quartzose.
117	1683.8	55	Siltstone Sandstone	Light grey, firm, quartzose, micaceous: Medium grey, fine to very coarse grained, moderately sorted, subangular to subrounded, soft to firm, argillaceous, silty.
118	1608.8	30	Siltstone	Light grey to buff, firm to hard, very calcareous.
119	1460.4	30	Siltstone	Medium light grey, firm to hard, very calcareous.
120	1443.7	30	Siltstone	Medium grey, hard, very calcareous, trace of fossils, argillaceous.
121	1425.2	25	Siltstone	Medium grey, hard, very calcareous, argillaceous.
122	1409.8	30	Siltstone	Medium grey, firm to hard, very calcareous, argillaceous, trace of fossils.

123	1139.3	30	Siltstone	Medium light grey, hard, very calcareous, argillaceous, trace of fossils.
124	1118.3	40	Siltstone	Medium grey, hard, very calcareous, trace of fossils.
125	1089.3	50	Siltstone	Medium grey, soft to firm, very calcareous, argillaceous.
126	1059.2	45	Siltstone	Medium grey, hard, very calcareous, argillaceous, trace glauconite.
127	1039.1	45	Claystone	Medium dark grey, soft to firm, very calcareous, silty.
128	1007.4	35	Siltstone	Medium light grey, hard, very calcareous.
129	973.3	35	Siltstone	Medium grey, hard, very calcareous.
130	950.3	35	Siltstone	Medium grey, hard, very calcareous, argillaceous.
131	925.7	35	Siltstone	Light grey, firm, very calcareous, argillaceous, glauconitic, fossils.
132	903.0	25	Siltstone	Medium light grey, firm, very calcareous, argillaceous, calcite, glauconite, fossils.
133	890.6	35	Siltstone	Medium grey, firm, calcite, trace of fossils, trace glauconite.
134	881.2	35	Siltstone	Light grey, grades to very fine grained sandstone, soft, very calcareous, very fossiliferous.
135	870.5	35	Sandstone	Light grey, fine to coarse grained, moderately sorted, subangular to subrounded, soft, very calcareous, argillaceous, trace glauconite, very fossiliferous (dark forams).
136	860.7	30	Sandstone Claystone	Very light grey, fine to coarse grained, moderately sorted, subangular to subrounded, soft, very calcareous, argillaceous, very fossiliferous; medium grey, soft, very calcareous, pyritic.
137	850.5	20	Siltstone	Medium light grey, soft, very calcareous, micaceous, argillaceous.
138	840.1	35	Siltstone	Medium grey, firm to hard, very calcareous, glauconite, fossiliferous.
139	831.6	30	Siltstone	Medium light grey, grades to very fine grained sandstone, soft, very calcareous, trace glauconite.
140	821.1	35	Siltstone	Medium light grey, firm, very calcareous, trace glauconite.
141	810.7	35	Siltstone	Light grey, hard, very calcareous, fossiliferous.

SIDEWALL CORE GAS ANALYSIS

<u>No.</u>	<u>Depth</u>	<u>C1</u> %	<u>C2</u> %	<u>C3</u> %	<u>C4</u> %	<u>C5</u> %	<u>C6</u> %	<u>C6+</u> %
11	2559.4	0.003	0.002	0.017	0.013	0.005	0.002	
12	2556.5	0.002	0.001	0.002	0.006	0.009	0.007	
13	2553.4	0.005	0.002	0.002	0.003	0.005	0.008	
14	2551.7	0.003	0.001	0.002	0.003	0.003	0.005	
16	2547.6	0.002	Trace	-	-	-	-	
17	2546.1	0.010	0.005	0.005	0.002	0.001	0.002	
18	2541.7	0.002	0.001	0.003	0.003	0.003	0.002	
19	2534.8	0.003	0.002	0.006	0.007	0.005	0.004	
21	2527.1	0.082	0.429	0.197	0.069	0.032	0.020	
58	2060.7	0.017	0.005	0.013	0.027	0.046	0.053	
71	1330.0	0.058	0.001	0.001	0.001	-	-	
72	1315.0	0.072	0.004	0.003	0.001	0.001	0.002	
75	1268.0	0.026	0.001	0.001	Trace	0.001	0.002	
85	1618.8	0.031	0.125	0.183	0.269	0.193	0.153	
86	1618.2	0.007	0.025	0.141	0.092	0.038	0.026	
87	1615.7	0.007	0.006	0.050	0.067	0.056	0.027	

13891/41-49

APPENDIX 3

APPENDIX 3

Velocity Survey Report

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SUNFISH - 2

OIL and GAS DIVISION

VELOCITY SURVEY REPORT

05 OCT 1984

1. Marine Velocity Survey report.
2. Schlumberger processing report.
3. Schlumberger field report.
4. Gun geometry sketch.
5. Check shot data - observed and corrected.

ENCLOSURES

1. Two Schlumberger Geograms
2. Schlumberger seismic calibration log
3. Schlumberger field log - WSS check shots, Suite 2
4. Time-Depth Curve.

0745L

MARINE VELOCITY SURVEY REPORT

WELL : Sunfish-2

BASIN : Gippsland

DATE OF SURVEY : 10.10.84

CONTRACTOR : Schlumberger

RECORDED BY : M. Aw

WITNESSED BY : R. Romanik

WATER DEPTH : 59m

KB ELEVATION : 21m

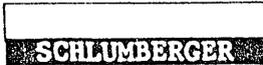
T.D. WHEN SHOT : 2647mKB

CASING DEPTHS : 20" @ 201mKB 13 3/8" @ 794mKB

NO. OF SHOOTING LEVELS : 22

0702L

62/652.



PROCESSING REPORT
SUNFISH #2

1. OPEN HOLE LOGS

The sonic logs run on 27th Sept. 1983 and 9th Oct. 1983 were spliced together. Sonic data was used from 2645 to 220 meters. Density data was used from 2623 to 812 meters. From 812 to 220 the last density reading was extrapolated.

2. SHOT DATA

Level 2645.0 stacked 12 shots	didn't use 10 shots	due to noise
Level 2635.0 stacked 3 shots		
Level 2609.0 stacked 3 shots		
Level 2462.0 stacked 2 shots	didn't use 2 shots	due to noise
Level 2307.0 stacked 2 shots	didn't use 2 shots	due to noise
Level 1908.0 stacked 3 shots	didn't use 1 shot	due to noise
Level 1730.0 stacked 5 shots		
Level 1700.0 stacked 3 shots		
Level 1608.0 stacked 2 shots	didn't use 3 shots	due to noise
Level 1430.0 stacked 6 shots		
Level 1349.0 stacked 3 shots		
Level 1293.0 stacked 4 shots		
Level 1130.0 stacked 5 shots		
Level 1127.0 stacked 2 shots	didn't use 1 shot	due to noise
Level 930.0 stacked 2 shots	didn't use 1 shot	due to noise
Level 806.0 stacked 3 shots	didn't use 1 shot	due to noise
Level 794.0 stacked 6 shots		
Level 363.0 stacked 4 shots		
Level 80.0 stacked 22 shots		
Level 0.0 (moon-pool) stacked 21 shots		

3. DATA PROCESSING INFORMATION

Well is assumed vertical. SRD is mean sea level (MSL).
 Rotary table (D.F.) = 20.7m above SRD
 Ground level (G.L.) = -59.0m from SRD
 Gun and shot sensor distance was calculated to be 34.04 meters from wellbore using the moonpool shot time of 23m/sec.
 Average velocity of water = 1480m/sec.

For adjusting the sonic log two knees were selected. One at 1349m and one at the top of the sonic data. These points were selected to prevent creating false reflectors.

Normal moveout distances of 1000, 2000, 3000m were used.

4. GEOGRAMS

Two geograms were computed. One using the density log and one using a constant density value of 2.3gm/cc. This was because of bad hole affecting the density readings in the lower part of the well.

The corresponding listings are attached for these two geograms.

T. L. Higgins,
LOG ANALYST.

63/65
3.

Schlumberger

WELL SEISMIC SERVICE FIELD REPORT

COMPANY	WELL	DATE	LOCATION	ENGINEER	WITNESSED BY
Esso Australia	SUNFISH 2	10.10.83	SEA	M. AW	ROMANICK SAITE
FEET <input type="checkbox"/> METRES <input checked="" type="checkbox"/>	JACK UP <input type="checkbox"/> PLATFORM <input type="checkbox"/>	SHIP <input type="checkbox"/> SEMI-SUB <input checked="" type="checkbox"/>	WEATHER:		
SCHLUMBERGER ZERO	KB	AT ELEVATION	21M	RELATIVE TO MEAN SEA LEVEL (M.S.L.)	
LOG MEASURED FROM	KB	AT ELEVATION	0 M	RELATIVE TO SCHLUMBERGER ZERO	
DRILLING MEASURED FROM	KB	AT ELEVATION	0 M	RELATIVE TO SCHLUMBERGER ZERO	

SOURCE			TIDEL INFORMATION			DISTANCE	HOUR	DATE
GUN TYPE	WATER <input type="checkbox"/>	AIR <input checked="" type="checkbox"/>	TIDE LEVEL TO M.S.L. (RECORD IF LEVEL VARIES MORE THAN 2 METRES DURING SURVEY)					
VOLUME	200	x _____ CU INCHES	CSU SOFTWARE VERSION: 24			MAX. HOLE DEV: 2 1/2° TD	AZIM: -	
PRESSURE	140	BARS _____						
VIBRATOR TYPE	_____							
SWEEP LENGTH	_____ SECONDS							
FROM	_____ HZ	TO _____ HZ						

NOTE: SHOTS HIGHLY RECOMMENDED AT TD, TOP EACH SONIC, ABOVE AND BELOW BAD HOLE INTERVALS

UNCORRECTED RESULTS

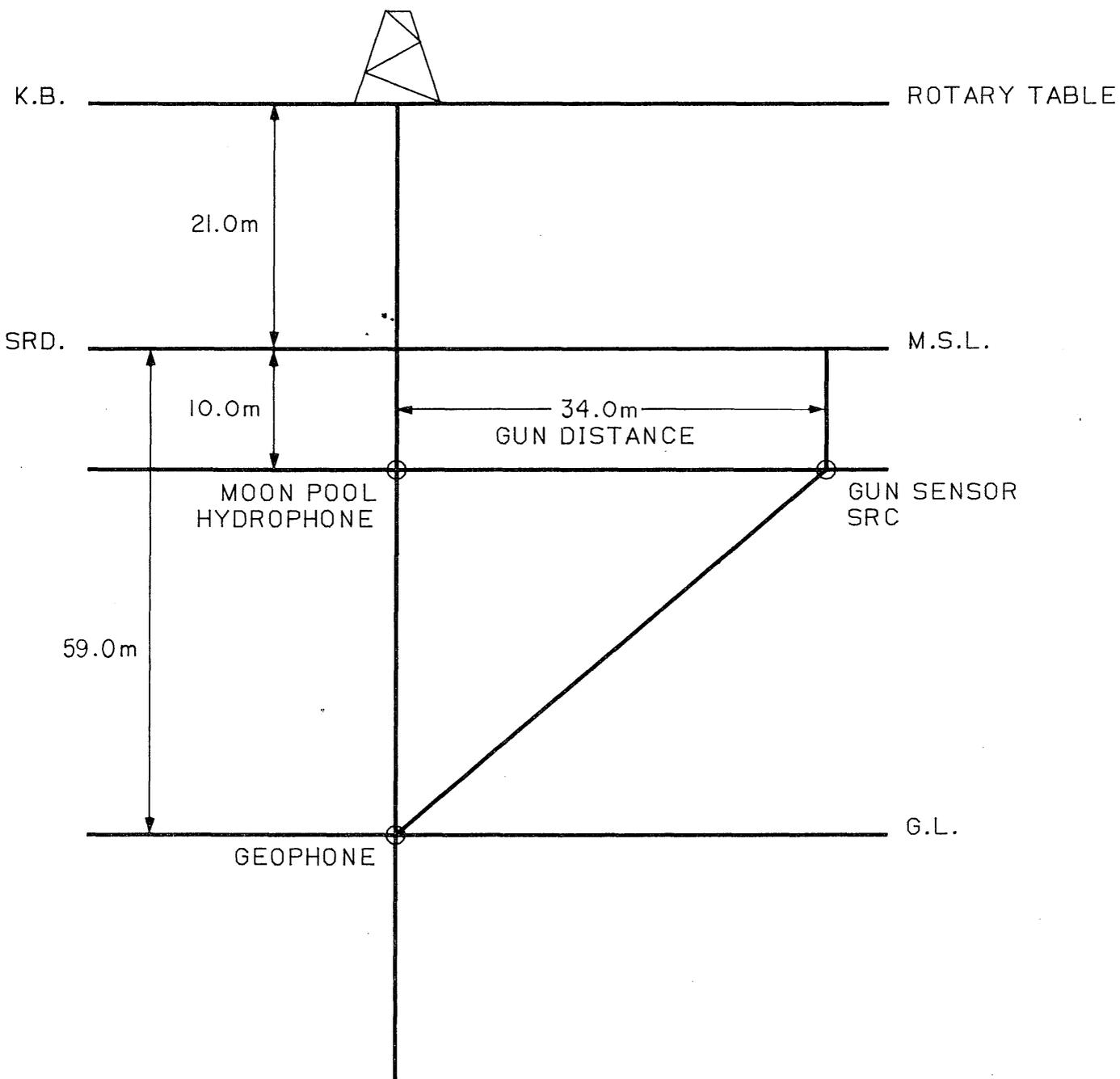
Quality: G = Good, P = Poor, U = Unsatisfactory
E = Excellent

SHOT NO.	DEPTH Metres	GUN PRESSURE	FILTERS	TRANSIT TIME (Ms)	HOUR SHOT	ANALOG GAIN	STACK	STACKED SHOTS	QUALITY / REMARKS
1	80	140 Bar		36.5	17:36	20 dB		8 - 17	G Good But noisy
2	794	140 Bar		323.3	17:57	60 dB		18 - 21	E
3	2645	140 Bar		911.6	19:27	70 dB		40 - 43	E
4	2635	140 Bar		909.1	19:38	60 dB		44 - 46	E
5	2609	140 Bar		902.1	19:45	60 dB		47 - 49	E
6	2462	140 Bar		866.0	19:57	60 dB		50 - 53	E
7	2307	140 Bar		825.1	20:09	60 dB		54 - 57	E
8	1908	140 Bar		708	20:31	60 dB		59 - 61	E
9	1730	140 Bar		651.2	20:56	60 dB		63 - 66	E
10	1700	140 Bar		641.8	21:08	60 dB		67 - 69	E
11	1608	140 Bar		613.8	21:20	60 dB		72 - 74	E
12	1430	140 Bar		549.4	21:27	60 dB		75 - 77	E
13	1349	140 Bar		520.1	22:08	50 dB		1 - 3	E
14	1293	140 Bar		499.3	22:15			5 - 7	E
15	1150	140 Bar		437.2	22:29	50 dB		9 - 12	E
16	1127	140 Bar		436.2	22:34	50 dB		13 - 15	E
17	930	140 Bar		365.1	22:41	50 dB		16 - 18	E
18	806	140 Bar		328.1	22:53	40 dB		20 - 22	E
19	794	140 Bar		324.1	23:07	40 dB		23 - 24	E
20	363	140 Bar		166.5	23:10	30 dB		26 - 28	E
21	80	140 Bar		36.7	23:30	20 dB		35 - 38	G Good but noisy
22	0	140 Bar		23.1				39 - 40	Hydrophone in Moonpool

Distribution: White = computing centre; Green = District; Pink = Location

SUNFISH-2

GUN GEOMETRY SKETCH



SUNFISH-2 VELOCITY SURVEY CHECK POINT DATA

<u>LEVEL NUMBER</u>	<u>MEASURED DEPTH FROM KB</u> (m)	<u>VERTICAL DEPTH FROM MSL</u> (m)	<u>OBSERVED TRAVEL TIME HYD/GEO</u> (ms)	<u>VERTICAL TRAVEL TIME MSL/GEOPHONE</u> (ms)	<u>AVERAGE VELOCITY MSL/GEOPHONE</u> (m/s)	<u>DELTA DEPTH BETWEEN SHOTS</u> (m)	<u>DELTA TIME BETWEEN SHOTS</u> (ms)	<u>INTERVAL VELOCITY BETWEEN SHOTS</u> (m/s)
1	80.00	59.00	40.31	39.86	1480			
2.	363.00	342.00	166.00	171.89	1990	283.00	132.03	2143
3	794.00	773.00	323.00	329.44	2346	431.00	157.54	2736
4	806.00	785.00	328.00	334.00	2347	12.00	5.01	2398
5	930.00	909.00	365.00	371.50	2447	124.00	37.05	3346
6	1127.00	1106.00	436.00	442.55	2499	197.00	71.05	2773
7	1130.00	1109.00	437.00	443.55	2500	3.00	1.00	2998
8	1293.00	1272.00	499.00	505.58	2516	163.00	62.03	2628
9	1349.00	1328.00	520.00	526.58	2522	56.00	21.01	2666
10	1430.00	1409.00	549.00	555.59	2536	81.00	29.01	2792
11	1608.00	1587.00	613.00	619.61	2561	178.00	64.02	2780
12	1700.00	1679.00	641.00	647.62	2593	92.00	28.01	3285
13	1730.00	1709.00	651.00	657.63	2599	30.00	10.00	2999
14	1908.00	1887.00	708.00	714.64	2640	178.00	57.01	3122
15	2307.00	2286.00	825.00	831.66	2749	399.00	117.02	3410
16	2642.00	2441.00	866.00	872.67	2797	155.00	41.01	3780
17	2609.00	2588.00	902.00	908.68	2848	147.00	36.01	4083
18	2635.00	2614.00	909.00	915.68	2855	26.00	7.00	3714
19	2645.00	2624.00	910.00	916.68	2863	10.00	1.00	

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PE904248

This is an enclosure indicator page.
The enclosure PE904248 is enclosed within the
container PE902517 at this location in this
document.

The enclosure PE904248 has the following characteristics:

ITEM_BARCODE = PE904248
CONTAINER_BARCODE = PE902517
NAME = In/Out Time-Depth Curve
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = VELOCITY _CHART
DESCRIPTION = In/Out Time-Depth Curve (half-scale)
for Sunfish-2
REMARKS =
DATE_CREATED = 10/04/84
DATE_RECEIVED = 25/01/85
W_NO = W833
WELL_NAME = SUNFISH-2
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE604634

This is an enclosure indicator page.
The enclosure PE604634 is enclosed within the
container PE902517 at this location in this
document.

The enclosure PE604634 has the following characteristics:

ITEM_BARCODE = PE604634
CONTAINER_BARCODE = PE902517
 NAME = Synthetic Seismogram (Geogram)
 BASIN = GIPPSLAND
 PERMIT = VIC/P1
 TYPE = WELL
 SUBTYPE = SYNTH_SEISMOGRAPH
 DESCRIPTION = Synthetic Seismogram (Geogram) for
 Sunfish-2
 REMARKS =
 DATE_CREATED =
 DATE_RECEIVED = 5/10/84
 W_NO = W833
 WELL_NAME = SUNFISH-2
 CONTRACTOR = AUSTRALIAN LOG INTERPRETATION CENTRE
 CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE604635

This is an enclosure indicator page.
The enclosure PE604635 is enclosed within the
container PE902517 at this location in this
document.

The enclosure PE604635 has the following characteristics:

- ITEM_BARCODE = PE604635
- CONTAINER_BARCODE = PE902517
- NAME = Seismic Calibration Log
- BASIN = GIPPSLAND
- PERMIT = VIC/P1
- TYPE = WELL
- SUBTYPE = VELOCITY _CHART
- DESCRIPTION = Seismic Calibration Log for Sunfish-2
- REMARKS =
- DATE_CREATED = 10/10/83
- DATE_RECEIVED = 5/10/84
- W_NO = W833
- WELL_NAME = SUNFISH-2
- CONTRACTOR = SCHLUMBERGER
- CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)