W819

WCR VOL 1

LUDERICH-1

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION REPORT
LUDERICK-1
VOLUME I

(BASIC DATA)

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: P.A. ARDITTO

FEBRUARY, 1984

2/

LUDERICK-1

WELL COMPLETION REPORT

VOLUME 1

CONTENTS

FIGURES

APPENDICES

ENCLOSURES

1. SEISMIC CALIBRATION LOG PE601265
2. WSC-GEO (CHECKRAM) PE902541
3. TIME-DEPTH CURVE PE902542

1. WELL DATA RECORD

ESSO AUSTRALIA LTD.
COMPLETION REPORT

WELL	:	Luderick - 1
LOCATION	:	Latitude : 38° 26' 20.61"S Longitude : 147° 42' 57.85"E X = 562,493m E Y = 5,745,211m N Map Projection: UTM Zone 55 Geographical Location: Bass Strait Field: New
PERMIT	:	VIC/P1
ELEVATION	:	21m KB
WATER DEPTH	:	52m
TOTAL DEPTH	:	3021m KB
PLUG BACK TYPE	:	3 open hole balanced plugs, 1 bridge plug and 1 cased hole bridge plug.
REASONS FOR PLUGGING BACK	:	Plug and Abandonment
MOVED IN	:	2nd June 1983
RIGGED UP	:	3rd June 1983
SPUDDED	:	4th June 1983
RIG DOWN COMPLETE	:	29th June 1983
RIG RELEASED	:	1st July 1983
OPERATOR	:	Esso Exploration and Production Australia Inc.
PERMITTEE	:	BHP Petroleum Pty Ltd
ESSO INTEREST	:	50%
OTHER INTEREST	:	50%
CONTRACTOR	:	South Seas Drilling Company
RIG NAME	:	Southern Cross
EQUIPMENT TYPE	:	Oilwell E-200 semisubmersible
TOTAL RIG DAYS	:	28.80
DRILLING AFE NO.	:	03 308 233 006
TYPE COMPLETION	:	Plug and Abandonment
WELL CLASSIFICATION	:	Before Drilling New Field Wildcat After Drilling New Field Discovery

2. OPERATIONS SUMMARY

LUDERICK - 1

Move and Moor

The semi-submersible Southern Cross departed the Teraglin-1 location at 1845 hours on 2nd June, 1983, and arrived at the Luderick-1 location at 0530 hours on 3rd June, 1983. The rig was towed 55 km (30 nautical miles) by the workboat Atlas Dampier in 10-3/4 hours at an average speed of 5.1 km/hr (2.8 knots).

Anchor No. 8 was dropped by the rig and the remaining anchors run by the workboats Bass Tide, Lady Vera, and Atlas Dampier in 9 hours. While pretensioning, anchor No. 5 failed to hold and was reset. All anchors were pretensioned to 200 kips prior to pulling the rig into postion.

Actual Location

Latitute: 38° 26' 20.61"S
Longitude: 147° 42' 57.85"E
X = 562,493 mE
Y = 5,745,211 mN
AMG Zone 55 Universal Transverse Mercator Projection, Australian Geodetic Datum

The rig was located 4 metres at 130° from the called location and 64.5 kilometres at 200° from Lakes Entrance, Victoria.

26" Hole for 20" Conductor

The drilling template was landed at the seafloor depth of 73 metres RKB. The 26" hole was spudded at 0030 hours on 4th June, 1983 and drilled to 103m where, after penetrating a hard streak, the drilling assembly became stuck. The kelly was broken and fishing jars made up into the drillstring. The jars were tripped with 100 kips, freeing the fish. The hole was washed out and reamed several times before drilling continued to 209m. Fifty barrel high viscosity gel slugs were pumped on every second connection. The hole was displaced with high viscosity gel mud before and after a wiper trip prior to running casing. No further hole problems were encountered.

The 18-3/4" wellhead and 20 inch casing were run and cemented at a shoe depth of 194m. The BOP and riser were run and the 20 inch casing, shear rams, and collet connector successfully pressure tested to 500 psi.

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

After drilling out cement in the 20 inch casing, the 17-1/2" hole was drilled to 806m. The hole was logged and the 13-3/8" casing was run and cemented at 792m. The seal assembly was run and successfully pressure tested along with the BOP stack to 5000 psi. The 13-3/8" casing was tested against the shear rams to 1500 psi.

12-1/4" Hole

After drilling out the cement and float equipment in the 13-3/8" casing, 6m of new hole was drilled and a Phase II PIT conducted with a leak-off at 16.8 ppg EMW. The same X3A drilled 945m of hole to 1751m in 31-3/4 hours. A J-11 bit then drilled down to 1837m, where it was pulled to core.

Three cores were cut using a 9-7/8" RC4 Stratapax corehead and 8" x 5-1/4" core barrel fitted with a plastic sleeve. Core No. 1 was cut from 1837.9 to 1847.5m with 100% recovery; Core No. 2 from 1847.5 to 1856.5m with 94% recovery; and Core No. 3 from 1856.5 to 1861.6m with 96% recovery.

The rathole was reamed and drilling continued to 2062m with a J-11 bit. A J-22 bit was then used to drill to the intermediate logging point of 2477m. The DLL-MSFL-GR and FDC-CNL-GR logs were run as well as 6 RFT's (1 pressure survey plus 5 sampling runs).

The hole was then drilled to final total depth at 3021m using J-22 and J-33 bits. Final logs were then run, including an HRT (high resolution thermometer) log, velocity survey, 1 RFT, and 3 sidewall coring runs.

Plug and Abandonment

The first open hole balanced plug was set from 2060 to 1930m. The second open hole balanced plug was set across the top of the Latrobe from 1900 to 1710m and tagged wtih 15 kips. Balanced plug No. 3 was then set from 842 to 742m across the 13-3/8" casing shoe and pressure tested to 1500 psi. A 13-3/8" gauge ring/junk basket was run to 660m. The first attempt to set a 13-3/8" bridge plug on wireline failed due to a loose contact. The fault was corrected and the bridge plug set at 645m. The 13-3/8" casing was then cut using a Pengo explosive cutter at 185m. After retrieving the casing, balanced plug No. 4 was set from 214 to 110m across the 13-3/8" casing stub and pressure tested to 500 psi.

The BOP and riser were pulled and a casing cutter run to 85m. After having apparently cut the casing, the wellhead running tool was made up into the wellhead and an unsuccessful attempt made to pull the stub. Upon inspection, it was found that one of the cutter knives had cracked, giving false indications that the casing was cut. The cutter was rerun and the 20" casing cut at 85m. The stub was then retrieved along with the permanent guide base and drilling template.

Pulling Anchors

After a 1.82 day delay due to waiting on workboats and weather, the anchors were pulled by the workboats Bass Tide, Lady Vera, and Southern Tide. Anchors No. 3 and 7 were changed out at this time. The rig pulled in Anchor No. 8 and, under tow by the Lady Vera, departed for the Snapper-4 location at 1400 hours on 1st July, 1983.

11531/69-70

3. CASING DATA

WELL LUDERICK-1

CSG O.D. IN.	WT. LBS/FT	GRADE	CONN.	CSG LENGTH METRES	SHOE DEPTH R.K.B.	CENTRALIZER POSITION	REMARKS
24	610	-	CC	11.07			PILE JOINT
20	129	X-52	JV, CC	12.65		1 ACROSS EACH COLLAR FOR 5 COLLARS ABOVE SHOE	CROSS OVER JOINT
20	94	X-52	JV	85.52			7 JOINTS
20	94	X-52	JV	13.77	194.46		FLOAT SHOE JOINT
13-3/8	54.5	K-55	BUTT	12.47			HGR & PUP JOINT
13-3/8	54.5	K-55	BUTT	670.45		1 ACROSS EACH COLLAR FOR 6 COLLARS ABOVE SHOE	56 JOINTS CSG
13-3/8	54.5	K-55	BUTT	12.36			FLOAT COLLAR JOINT
13-3/8	54.5	K-55	BUTT	11.59			1 JOINT CSG
13-3/8	54.5	K-55	BUTT	12.10	791.72		FLOAT SHOE JOINT

4. CEMENT DATA

WELL LUDERICK-1

DATE	DEPTH METRES	TYPE JOB	TYPE CEMENT	AMOUNT	ADDITIVES	REMARKS
5/6/83	194.46	20" CSG LEAD	BLUE CIRCLE TYPE 101	700 sx	8% GEL PREHYDRATED IN FRESH-WATER	SEAWATER SLURRY WT 13.2 PPG
5/6/83	194.46	20" CSG TAIL	BLUE CIRCLE TYPE 101	350 sx		SEAWATER SLURRY WT 15.8 PPG
7/6/83	791.72	13-3/8" CSG	BLUE CIRCLE TYPE 101	1190 sx		SEAWATER SLURRY WT 15.7 PPG
26/6/83	2060 - 1930	P&A OPEN HOLE BAL. PLUG	BLUE CIRCLE TYPE 101	329 sx	0.5% HR6L	FRESHWATER
26/6/83	1900 - 1710	P&A OPEN HOLE BAL PLUG	BLUE CIRCLE TYPE 101	558 sx	0.4% HR6L	FRESHWATER TAGGED W/ 15 KIPS
27/6/83	842 - 742	P&A OPEN HOLE/CSG SHOE BAL PLUG	BLUE CIRCLE TYPE 101	286 sx		SEAWATER TESTED TO 1500 PSI
27/6/83	214 - 110	P&A BAL PLUG ACROSS 13-3/8" STUB	BLUE CIRCLE TYPE 101	496 sx		SEAWATER TESTED TO 500 PSI

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

LUDERICK-1

TYPE	INTERVAL
Cuttings	
i) 3 sets of washed and oven dried dried cuttings in plastic bags (100gms for sample)	230m-800m every 10m,
ii) 3 sets of washed and air dried cuttings in cloth bags (100gms per sample).	800m-3021 T.D. every 5m)
iii) A composite tinned sample every 15m of unwashed cuttings for geochemical analysis.	230m-3021 T.D.
Conventional Core No. 1	1837.9 - 1847.5m cored 9.6m, recovered 9.6m (100% recovery)
Conventional Core No. 2	1847.5 - 1856.5m cored 9.0m, recovered 8.5m (94.4% recovery)
Conventional Core No. 3	1856.5 - 1861.6m cored 5.1m, recovered 4.92m (96.5% recovery)
CST No. 1	2995.0 - 2006.9m shot 51 (recovered 38, 4 no recovery, 8 misfires, 1 pulled off), 74.5% recovery
CST No. 2	2681.0 - 1804.5m shot 51 (recovered 47, 1 no recovery, 2 misfires, 1 pulled off), 92.2% recovery
CST No. 3	1820.0 - 813.0m shot 51 (recovered 50, 1 no recovery), 98.0% recovery.

6. WIRELINE LOGS AND SURVEYS

LUDERICK-1

Type and Scale		From	To
	Suite 1		
BHC CAL GR	1:200 1:500	806	194m
	Suite 2		
DLL MSFL GR	1:200 1:500	2469	789m
FDC CNL GR	1:200 1:500	2468	789m
RFT No. 1	Took 35 pressure readings (seats 1 to 35)		
RFT No. 2-6	Took 6 pressure readings (seats 36 to 41) and recovered 5 pairs of segregated samples.		
	Suite 3		
HRT	1:200 1:500	1700	2400m
DLL MSFL GR	1:200 1:500	3018	2400m
LDL CNL GR	1:200 1:500	3019	1800m
BHC GR	1:200 1:500	3019	789m
HDT	1:200	3018	1700m
Velocity Survey	Shot 19 levels	3016	531m
RFT No. 7	Took 1 pressure reading (seat 42) and recovered 1 pair of segregated samples		

7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - LUDERICK 1

TEST	SEAT	DEPTH (METRES) K.B.	RECOVERY (LITRES) CHAMBER	OIL	COND.	GAS	FORMATION WATER	FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE *MPaa	Psia	HEWLETT-PACKARD HYDROSTATIC PRESSURE *MPaa	Psia	REMARKS
			Litres	Litres	Litres	m^3	Litres	Litres					
1	1	2400.0	Pretest						23.44	3400.4	26.52	3846.7	
	2	2385.0	Pretest						23.29	3378.5	26.33	3818.9	
	3	2370.0	Pretest						23.15	3357.4	26.16	3794.5	
	4	2364.0	Pretest						23.09	3348.8	26.11	3787.6	
	5	2116.7	Pretest						20.66	2996.4	23.41	3395.7	
	6	2108.8	Pretest						20.57	2938.8	23.33	3383.4	
	7	2048.0	Pretest						19.97	2896.3	22.67	3287.5	
	8	2037.5	Pretest						19.88	2883.1	22.56	3272.0	
	9	2029.2	Pretest						19.80	2871.2	22.47	3259.2	
	10	2018.5	Pretest						19.74	2863.6	22.35	3242.3	
	11	1995.5	Pretest						19.48	2825.1	22.11	3206.5	
	12	1990.5	Pretest						19.43	2817.0	22.07	3201.0	
	13	1967.0	Pretest						19.19	2783.7	21.81	3162.6	
	14	1960.0	Pretest						19.13	2774.1	21.73	3152.2	
	15	1955.8	Pretest						19.08	2767.8	21.68	3146.0	
	16	1948.5	Pretest						19.01	2757.4	21.61	3134.3	
	17	1937.5	Pretest						18.91	2742.1	21.48	3116.1	
	18	1934.0	Pretest						18.88	2738.1	21.46	3112.4	
	19	1923.4	Pretest						18.77	2721.7	21.34	3094.5	
	20	1909.5	Pretest						18.63	2702.2	21.19	3073.0	
	21	1896.2	Pretest						18.50	2683.2	21.04	3051.2	
	22	1889.5	Pretest						18.44	2674.1	20.97	3041.4	
	23	1885.5	Pretest						18.40	2669.0	20.93	3035.0	
	24	1877.2	Pretest						-	-	20.83	3021.8	Tight
	25	1878.5	Pretest						18.35	2661.1	20.85	3024.1	
	26	1871.8	Pretest						18.27	2649.4	20.78	3013.3	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - LUDERICK 1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES) OIL	COND.	GAS	FORMATION WATER	FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE MPaa	Psia	HEWLETT-PACKARD HYDROSTATIC PRESSURE MPaa	Psia	REMARKS
			Litres	Litres	Litres	m^3	Litres	Litres					
	27	1868.3	Pretest						18.37	2664.4	20.74	3007.9	
	28	1861.2	Pretest						18.18	2636.9	20.65	2994.8	
	29	1859.9	Pretest						18.15	2632.1	20.64	2993.9	
	30	1852.0	Pretest						18.07	2620.9	20.56	2982.1	
	31	1844.5	Pretest						18.01	2611.6	20.48	2970.2	
	32	1839.5	Pretest						17.98	2608.4	20.42	2961.9	
	33	1833.0	Pretest						17.97	2606.4	20.35	2951.1	
	34	1823.5	Pretest						17.85	2589.0	20.24	2935.5	
	35	1812.0	Pretest						17.71	2569.3	20.18	2918.0	
2	36	1838.5	22.7		0.78	3.537		0.76	17.98	2608.3	20.40	2958.7	Took segregated sample
	36	1838.5	3.8	Preserved for analysis									
3	37	1934.1	22.7					21.30	18.87	2737.3	21.41	3104.8	Took segregated sample
	37	1934.1	3.8					3.70					
4	38	1878.6	22.7						18.34	2660.0	20.80	3017.5	Filled 22.7 l chamber at seat 38 and 38A and filled 10.4 l chamber at seat 38A only
	38A	1879.0	22.7			0.001		21.70		2658.6		-	
	38A	1879.0	10.4					9.00		2658.3		3017.4	
	39	2018.5	Pretest										
5	40	2013.0	22.7					21.80	19.75	2864.6	22.29	3233.3	
	40	2013.0	3.8					3.70	19.64	2848.5	22.23	3224.3	Took segregated sample
6	41	1843.0	22.7	0.59		0.189		21.00	17.99	2609.9	20.37	2954.9	Took segregated sample
	41	1843.0	3.8	Preserved, then lost during transfer									
7	42	2018.0	22.7	7.92		1.841		1.83	19.75	2864.3	22.46	3257.3	Took segregated sample
	42	2018.0	10.4	Preserved for analysis									

* Conversion factor 1 psi = 6.89476 kPa

8. TEMPERATURE RECORD - LUDERICK 1

LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (C°)	CIRCULATION TIME (t_k) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER TEMPERATURE (C°)	GEOTHERMAL GRADIENT (C°/km)
Suite 1						
BHC CAL GR	806	37.7	60 min	3 hrs 30 min		
Suite 2						
DLL MSFL GR	2489	87.7	1 hr 45 min	6 hrs 15 min	110.0	41.8
FDC CNL GR	2468	95.5		10 hrs 50 min		
Suite 3						
HRT	2400	93.5		8 hrs 45 min		
DLL MSFL GR	3018	114.0		11 hrs 40 min		
LDL CNL GR	3019	119.0	2 hrs 15 min	14 hrs 55 min	141.0	44.5
BHC GR	3019	124.4		19 hrs 50 min		
HDT	3018	127.8		24 hrs 55 min		

11531/57

FIGURES

LUDERICK–1
LOCALITY MAP

SCALE – 1 : 250 000

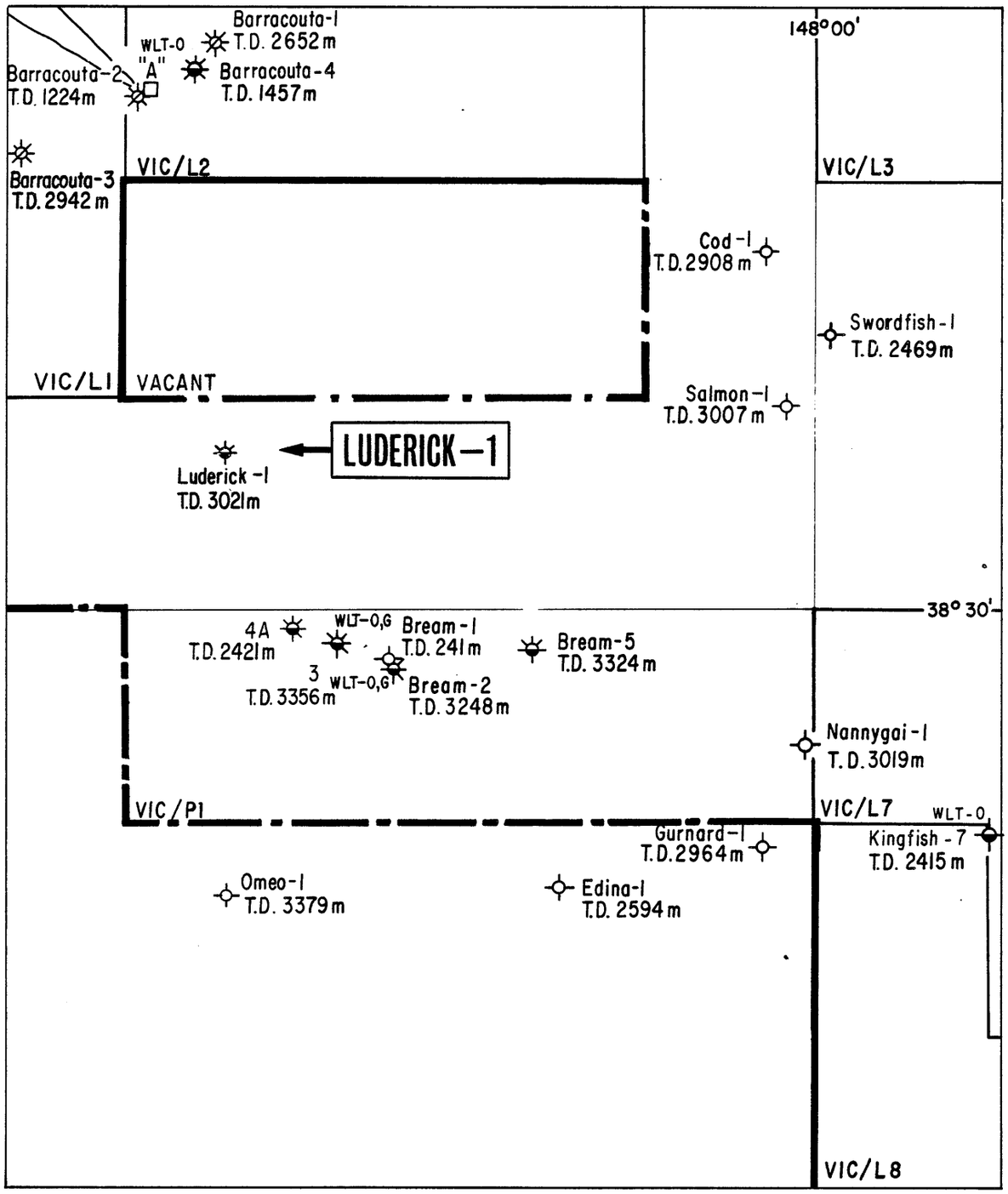


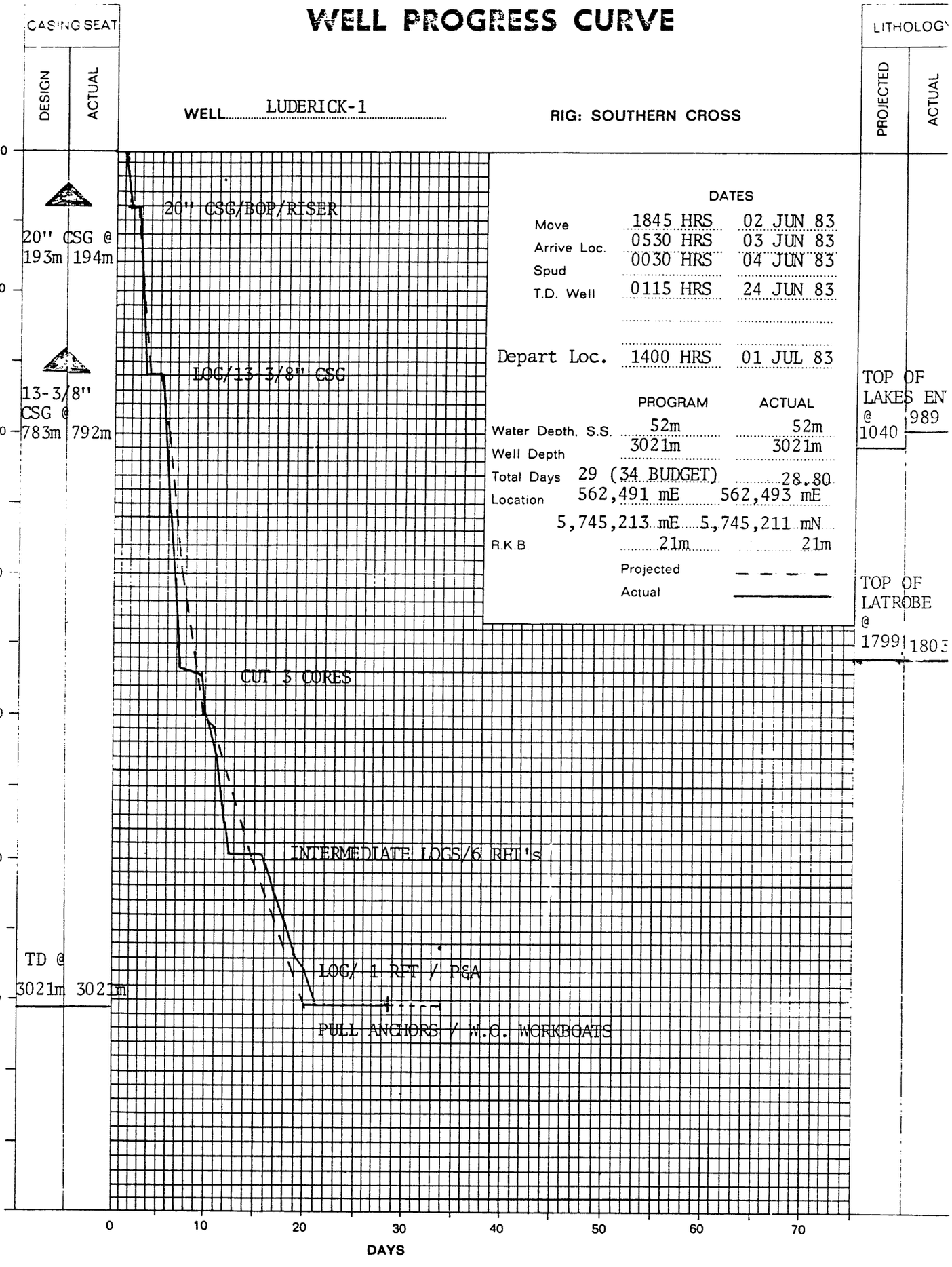
Figure 1

Dwg. 2188/OP/4

WELL PROGRESS CURVE

WELL LUDERICK-1

RIG: SOUTHERN CROSS



DATES		
Move	1845 HRS	02 JUN 83
Arrive Loc.	0530 HRS	03 JUN 83
Spud	0030 HRS	04 JUN 83
T.D. Well	0115 HRS	24 JUN 83
Depart Loc.	1400 HRS	01 JUL 83

	PROGRAM	ACTUAL
Water Depth. S.S.	52m	52m
Well Depth	3021m	3021m
Total Days	29 (34 BUDGET)	28.80
Location	562,491 mE	562,493 mE
	5,745,213 mE	5,745,211 mN
R.K.B.	21m	21m

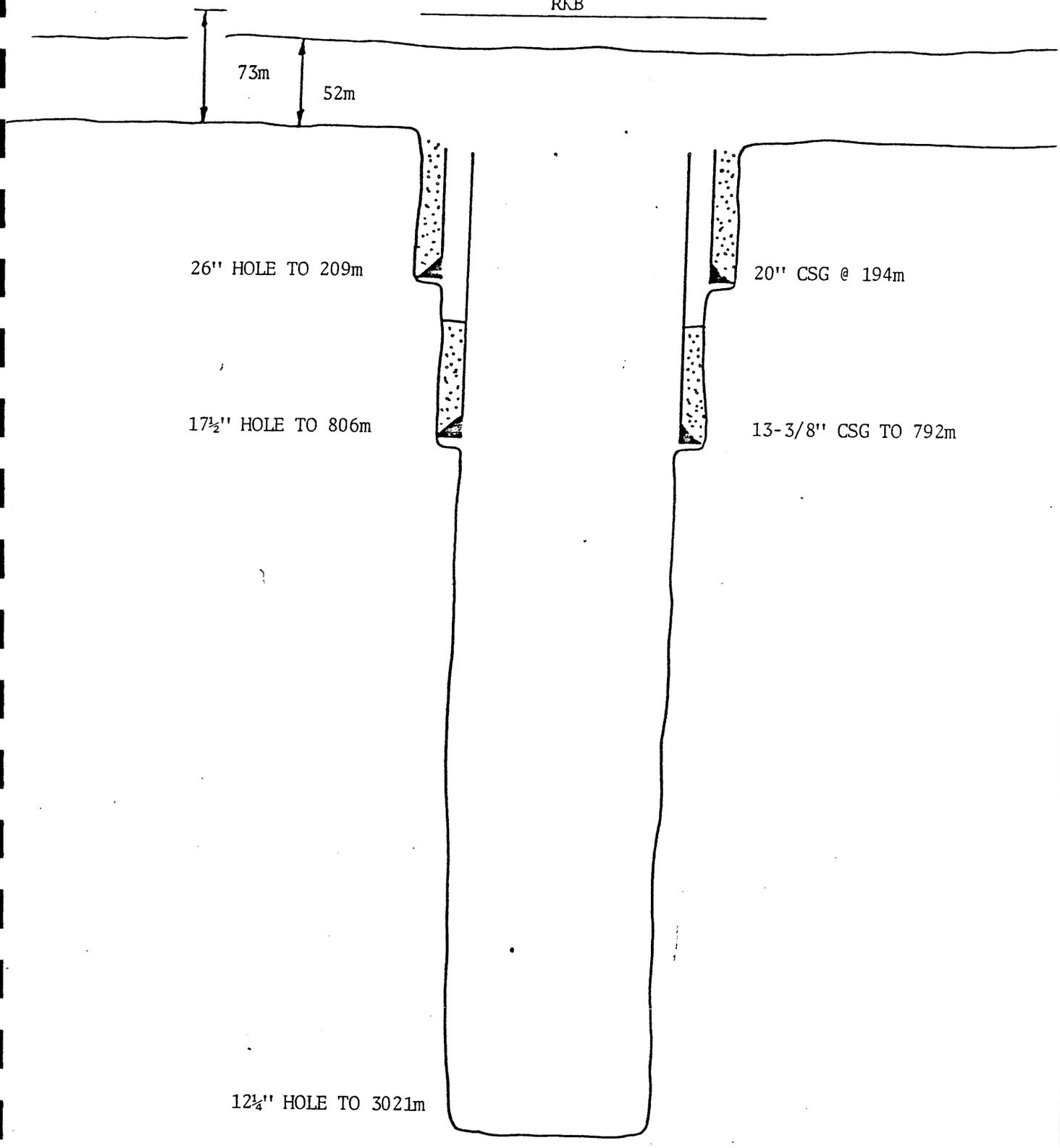
Projected — — — —

Actual ————

Wellbore Schematic

Well: LUDERICK-1

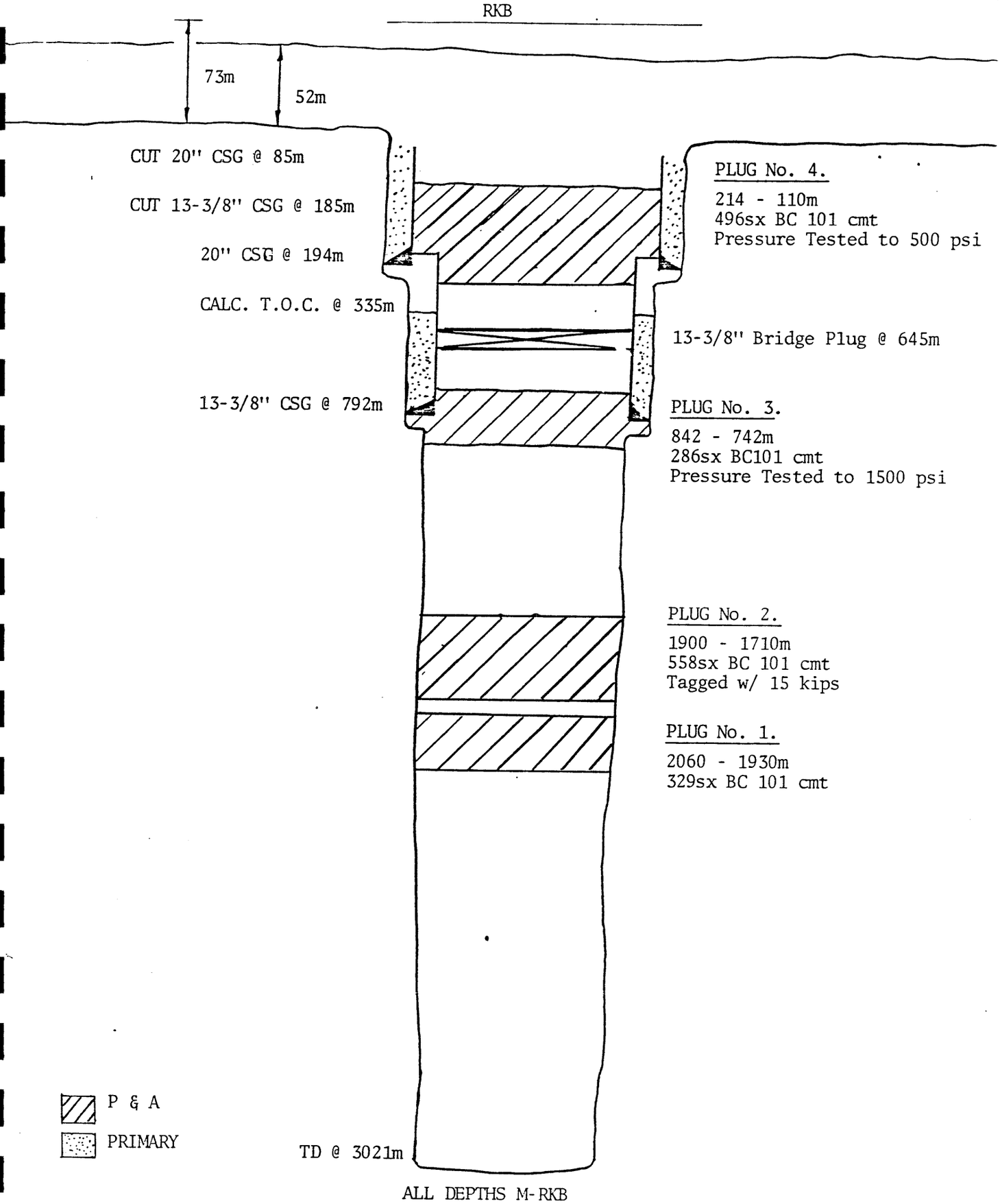
RKB



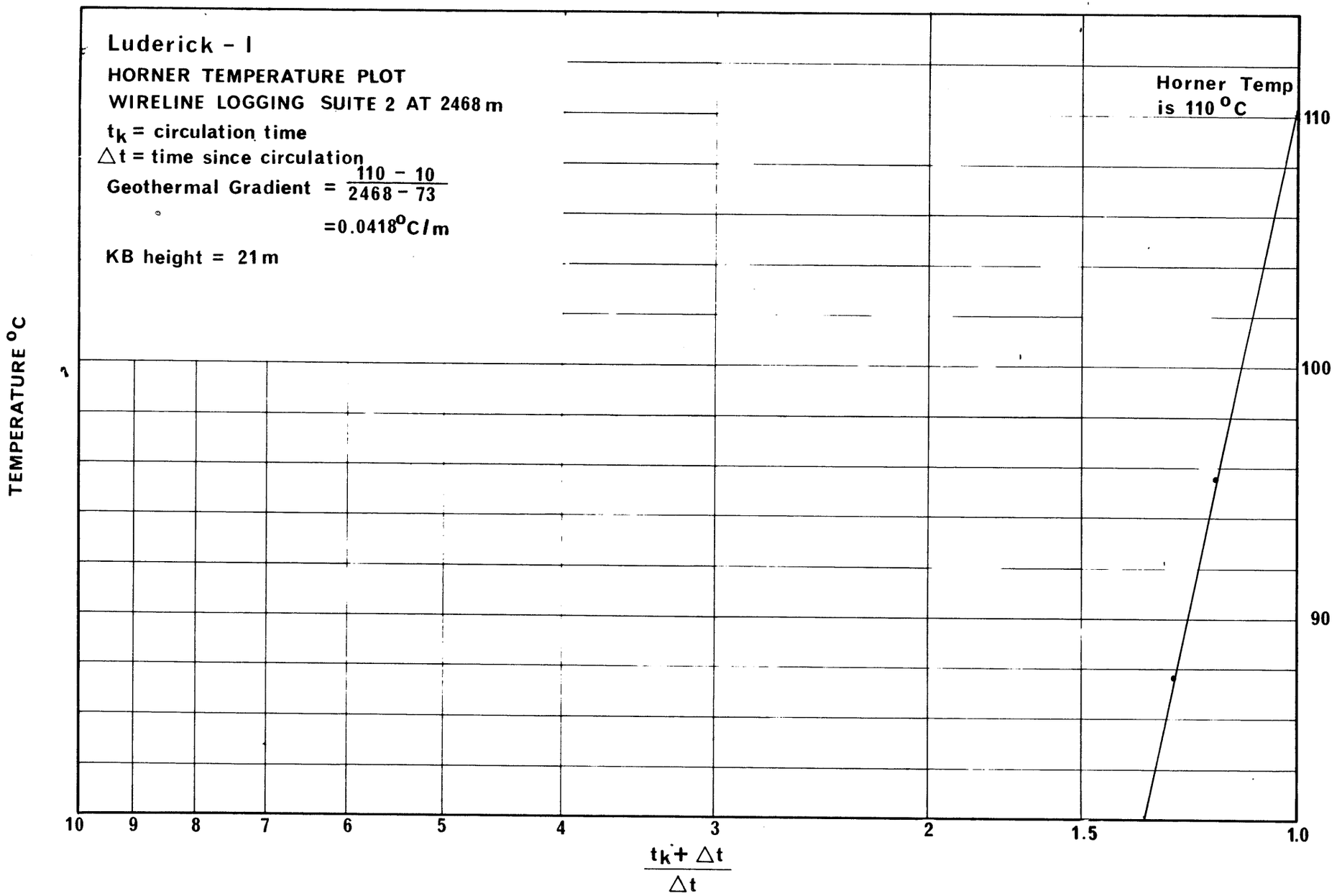
ABANDONMENT SCHEMATIC

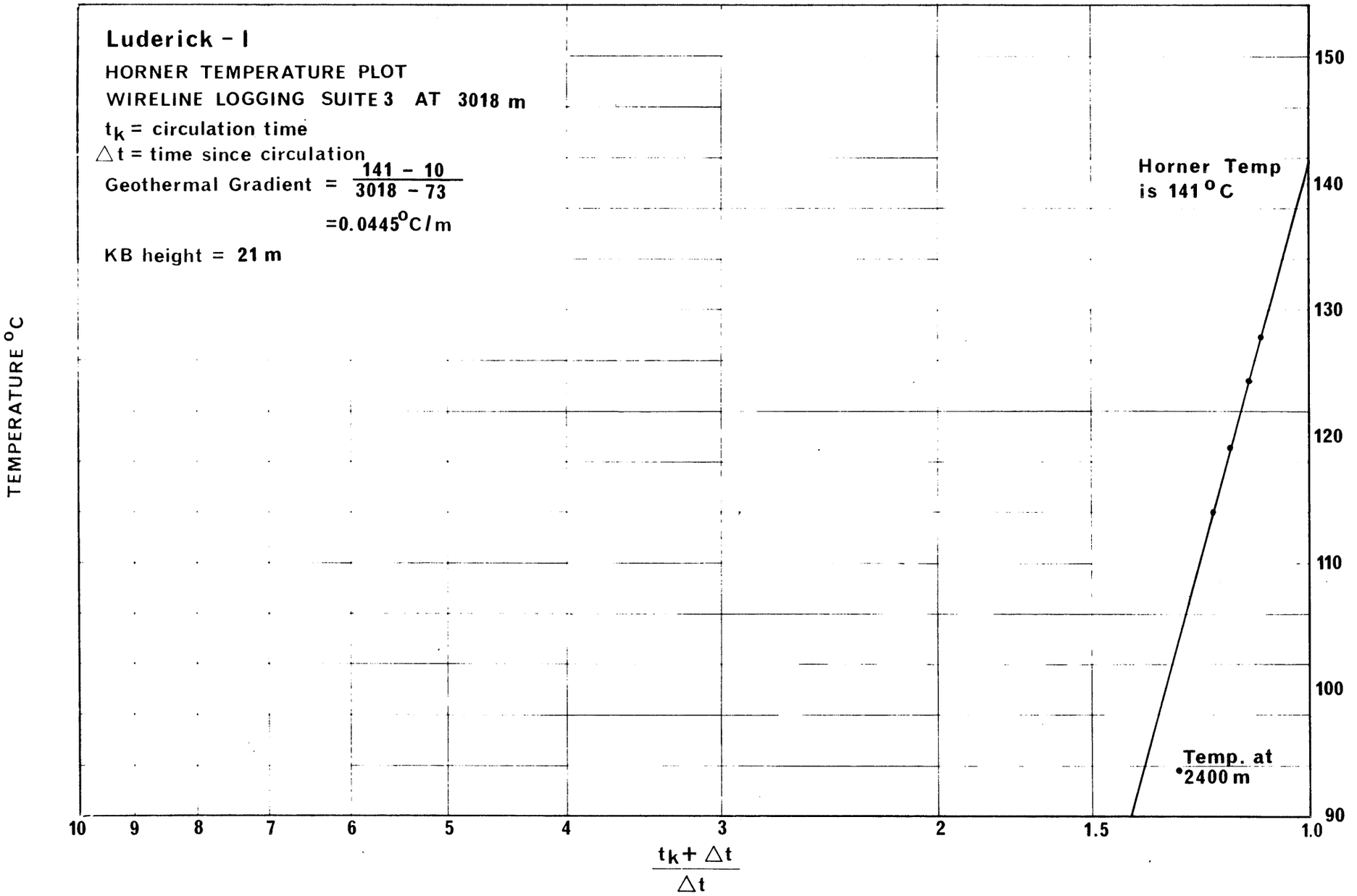
WELL: LUDERICK-1

RKB



ALL DEPTHS M-RKB


Luderick - 1
HORNER TEMPERATURE PLOT
WIRELINE LOGGING SUITE 2 AT 2468 m
t_k = circulation time
$\triangle t$ = time since circulation
Geothermal Gradient = $\frac{110 - 10}{2468 - 73}$
=0.0418°C/m
KB height = 21 m
Horner Temp is 110 °C
TEMPERATURE °C
110
100
90
10
9
8
7
6
5
4
3
2
1.5
1.0
$\frac{t_k + \triangle t}{\triangle t}$


Luderick - 1
HORNER TEMPERATURE PLOT
WIRELINE LOGGING SUITE 3 AT 3018 m
t_k = circulation time
$\triangle t$ = time since circulation
Geothermal Gradient = $\frac{141 - 10}{3018 - 73}$
=0.0445°C/m
KB height = 21 m
Horner Temp is 141 °C
Temp. at 2400 m
TEMPERATURE °C
150
140
130
120
110
100
90
10
9
8
7
6
5
4
3
2
1.5
1.0
$\frac{t_k + \triangle t}{\triangle t}$

APPENDIX 1

LITHOLOGICAL DESCRIPTIONS

APPENDIX 1

LITHOLOGICAL DESCRIPTIONS

LUDERICK - 1

LITHOLOGY DESCRIPTIONS

Depth	%	Description
200 - 210m		SHAKER BY PASS
210 - 220m		SHAKER BY PASS
220 - 230m		SHAKER BY PASS
230 - 240m	100	LIMESTONE/CALCILSILTITE (CALCARENITE): white, light grey, firm, very fine to fine grained, subrounded, moderately to well sorted, trace argillaceous matrix, bryozoans, foraminiferas, calcareous aggregates, shell fragments.
240 - 250m	100	LIMESTONE/CALCILSILTITE (CALCARENITE): as above.
250 - 260m	100	LIMESTONE/CALCILSILTITE (CALCARENITE): as above.
260 - 270m	100	LIMESTONE (CALCARENITE): light to medium grey, soft to firm, calcareous aggregates, calcareous cement, well sorted, argillaceous matrix, occasional quartz grains, bryozoan, shell fragments, trace glauconite.
270 - 280m	100	LIMESTONE: as above, but also calcisiltite/cacilutite.
280 - 290m	100	LIMESTONE: as above.
290 - 300m	100	LIMESTONE: as above.
300 - 310m	100	LIMESTONE: as above.
310 - 320m	100	LIMESTONE: (calcarenite) light to medium grey, firm, contains some clay, abundant fossils, dark mineral grains, calcareous cement, bryozoans, forams, echinoid spines and shell fragments.
320 - 330m	100	LIMESTONE: as above.
330 - 340m	100	LIMESTONE: (calcarenite) white to light grey, very argillaceous, calcareous clay, fine grained, moderately sorted, bryozoans, trace carbonaceous material, trace shell fragments and forams.
340 - 350m	100	LIMESTONE: as above.
350 - 360m	100	LIMESTONE: white to light grey, calcarenite, moderately sorted, hard, clayey in part, trace microfossils such as bryozoans, ostrocods, forams, gastropods. Loose quartz grains, clear to white, coarse grained to medium grained, rounded, trace glauconite.
360 - 370m	100	LIMESTONE: as above.
370 - 380m	100	LIMESTONE: white to light grey, calcarenite, moderately sorted, hard, lithic in part, clayey in part, trace microfossils, bryozoans, and gastropods.

380 - 390m	100	LIMESTONE: as above.
390 - 400m	100	LIMESTONE: as above, but becoming more sticky in part, 20-30% greater clay component.
400 - 410m	100	LIMESTONE: white to light gry, calcarenite, moderately sorted, hard, lithic and carbonaceous in part, loose quartz, trace microfossils, gastropods, glauconite. Clay content is 0%.
410 - 420m	100	LIMESTONE: as above, greater percentage of fossils - bryozoa, echinoderms, gastropods, crinoids, octacoids, forams.
420 - 430m	100	LIMESTONE: as above - clay content 1%.
430 - 440m	100	LIMESTONE: as above, clay content 1% - fossils still in abundance.
440 - 450m	100	LIMESTONE: as above.
450 - 460m	100	LIMESTONE: white to medium light grey, calcarenite, moderately sorted, hard, lithic in part, carbonaceous in part, abundance of fossils, bryozoa, forams, brachiopods, gastropods, glauconite, loose quartz, increasing amount of clay, 1-5% of sample.
460 - 470m	100	LIMESTONE: as above.
470 - 480m	100	LIMESTONE: as above.
480 - 490m	100	LIMESTONE: as above, more clay, less fossils.
490 - 500m	100	LIMESTONE: as above, more clay content, less fossils.
500 - 510m	100	LIMESTONE: white to medium light grey, calcarenite, moderately sorted, hard, lithic in part, carbonaceous speckling, increasing proportion of fine glauconite, trace of bryozoa, clay content 2%.
510 - 520m	100	LIMESTONE: as above.
520 - 530m	100	LIMESTONE: as above, no clay.
530 - 540m	100	LIMESTONE: as above.
540 - 550m	100	LIMESTONE: as above with increased amount of glauconite.
550 - 560m	100	LIMESTONE: as above.
560 - 570m	100	LIMESTONE: as above, more fossils.
570 - 580m	100	LIMESTONE: as above.
580 - 590m	100	LIMESTONE: light grey to medium light grey, calcarenite, hard, moderately sorted, high lithic component, carbonaceous specks, trace glauconite and fossils.
590 - 600m	100	LIMESTONE: as above.

600 - 610m	100	LIMESTONE: light grey to medium light grey, calcarenite, hard, high lithic component, carbonaceous in part, quartz becoming common, overgrowths on calcarenite, trace bryozoa, ostracods, glauconite more common.
610 - 620m	100	LIMESTONE: as above.
620 - 630m	100	LIMESTONE: as above, more abundant bryozoa.
630 - 640m	100	LIMESTONE: as above.
640 - 650m	100	LIMESTONE: as above.
650 - 660m	100	LIMESTONE: as above, more common quartz, angular, coarse to very coarse grained, fossils not as prominent, no clay.
660 - 670m	100	LIMESTONE: as above.
670 - 680m	100	LIMESTONE: as above, common quartz.
680 - 690m	100	LIMESTONE: white to light grey, calcarenite - hard, moderately sorted, lithic in part, common angular quartz, trace microfossils, glauconite, clay content 50%.
690 - 700m	100	LIMESTONE: as above, clay content 50%.
700 - 710m	100	LIMESTONE: as above, clay content 60%.
710 - 720m	100	LIMESTONE: as above.
720 - 730m	100	LIMESTONE (CALCARENITE/CALCISILTITE): white to light grey, moderately sorted, very argillaceous, clay content 80%, common quartz grains, fine grained, subrounded, trace fossils.
730 - 740m	100	LIMESTONE: as above.
740 - 750m	100	LIMESTONE: as above, fossils - trace brachiopods, bryozoans, ostracods.
750 - 760m	100	LIMESTONE: as above.
760 - 770m	100	LIMESTONE: as above.
770 - 780m	100	LIMESTONE(CALCARENITE): white, light grey to brown, moderately sorted, common lithic fragments and quartz grains, subangular to subrounded, abundant clay 70-80%, trace fossils.
780 - 790m	100	CALCARENITE: as above.
790 - 800m	100	CALCARENITE: as above.
800 - 806m	100	CALCARENITE: as above.
806 - 810m	100	CEMENT
810 - 815m	70	LIMESTONE: very light grey to pale brown, hard, dense, cryptocrystalline, fossiliferous - echinoids, forams, bryozoans.
	30	CALCARENITE: medium light grey, soft to hard, very fine to fine grained, well sorted, grades to calcilutite.
	trace	PYRITE: as above.
		Cement still in sample.

815 - 820m	90	CALCARENITE: as above.
	10	LIMESTONE: as above.
		Minor cement.
820 - 825m	100	CALCARENITE: medium dark grey to very light grey, soft to firm, very fine to fine grained, well sorted, trace carbonaceous flecking, fossiliferous - coral, forams, echinoids.
825 - 830m	80	CALCARENITE: as above.
	20	CALCILUTITE: white to medium grey, soft, sticky.
830 - 835m	70	CALCARENITE: as above.
	30	CALCILUTITE: as above.
835 - 840m	60	CALCARENITE: as above.
	40	CALCILUTITE: as above.
840 - 845m	60	CALCARENITE: medium dark grey to medium light grey, soft to firm, very fine grained to fine grained, well sorted, fossiliferous.
	40	CALCILUTITE: very light grey to medium grey, soft, sticky, fossiliferous, forams tend to give a sandy appearance.
		Both lithologies grading to calcisiltite in part.
845 - 850m	70	CALCILUTITE: as above.
	30	CALCARENITE: as above.
850 - 855m	100	CALCILUTITE: as above, grades in part to calcisiltite.
855 - 860m	100	CALCILUTITE: as above.
	trace	CALCARENITE: as above.
		Only minor fossils.
	trace	PYRITE
860 - 865m	100	CALCILUTITE: medium dark grey to light grey, dominantly medium grey, very soft to soft, very sticky, forams and minor fossils.
865 - 870m	90	CALCILUTITE: as above.
	10	CALCISILTITE: medium grey, soft, argillaceous.
		FORAMS, CORAL
870 - 875m	90	CALCILUTITE: as above.
	10	CALCISILTITE: as above.
875 - 880m	70	CALCILUTITE: as above.
	30	CALCARENITE: as above.
880 - 885m	70	CALCILUTITE: as above.
	30	CALCARENITE: as above.
885 - 890m	60	CALCILUTITE: as above.
	40	CALCARENITE: as above.
890 - 895m	50	CALCILUTITE: medium grey to medium dark grey, very soft to soft, sticky, forams, trace glauconite, grades to calcareous siltstone.
	50	CALCARENITE: medium grey to medium dark grey, soft to firm, very fine grained, very argillaceous, well sorted, very silty, forams, grades to calcareous siltstone.

895 - 900m	60	CALCAREOUS CLAYSTONE: medium dark grey to medium grey, very soft to firm, sticky, trace glauconite, very calcareous.
	40	CALCAREOUS SILTSTONE: medium grey to medium dark grey, soft to firm, argillaceous, very calcareous.
	trace	FORAMS, CORAL, ECHINOIDS
	trace	PYRITE
900 - 905m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
905 - 910m	80	CALCAREOUS SILTSTONE: grades to very fine grained sand, quartzose.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	CALCITE
910 - 915m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
915 - 920m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
920 - 925m	100	CALCAREOUS SILTSTONE: as above.
925 - 930m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
930 - 935m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
935 - 940m	100	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
940 - 945m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
945 - 950m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
950 - 955m	60	CALCAREOUS CLAYSTONE: medium grey to light grey, soft to firm, sticky, moderately calcareous, trace glauconite.
	40	CALCAREOUS SILTSTONE: medium grey to medium light grey, soft to firm, argillaceous, moderately calcareous, sandy in part, very fine to quartzose.
	trace	PYRITE, FORAMS, CORAL, ECHINOIDS.
955 - 960m	50	CALCAREOUS CLAYSTONE: as above.
	50	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE: very fine grained.
	trace	GYPSUM
960 - 965m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
965 - 970m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
970 - 975m	50	CALCAREOUS SILTSTONE: as above.
	50	CALCAREOUS CLAYSTONE: as above.

975 - 980m	50	CALCAREOUS SILTSTONE: as above.
	50	CALCAREOUS CLAYSTONE: as above.
980 - 985m	50	CALCAREOUS SILTSTONE: as above.
	50	CALCAREOUS CLAYSTONE: as above.
985 - 990m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
990 - 995m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
995 - 1000m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GYPSUM
1000 - 1005m	100	CALCAREOUS SILTSTONE: light grey to medium grey, soft to firm, very calcareous, argillaceous, arenaceous in part; minor fossils - predominantly forams, also corals and echinoids.
	trace	PYRITE
	trace	GYPSUM
1005 - 1010m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
1010 - 1015m	60	CALCAREOUS SILTSTONE: as above.
	40	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GYPSUM
1015 - 1020m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE: very dark green to light green, aggregates of medium grained pellets, also siltsize in siltstone giving it a faint green colour.
1020 - 1025m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1025 - 1030m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1030 - 1035m	90	CALCAREOUS SILTSTONE: medium dark grey to medium light grey, soft to firm, argillaceous, very calcareous, fossiliferous - forams dominant, also corals and echinoids.
	10	CALCAREOUS CLAYSTONE: medium grey to light grey, very soft to soft, sticky, very calcareous, fossiliferous, mainly forams, also corals and echinoids.
	trace	GLAUCONITE: pelleted - blue to green pellets throughout above lithologies, also siltsize in siltstone.
	trace	PYRITE
1035 - 1040m	60	CALCAREOUS SILTSTONE: as above.
	40	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE: less than above.

1040 - 1045m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
	trace	PYRITE
1045 - 1050m	80	CALCAREOUS CLAYSTONE: as above, only slightly fossiliferous.
	20	CALCAREOUS SILTSTONE: as above, only slightly fossiliferous.
1050 - 1055m	90	CALCAREOUS CLAYSTONE: increasing in fossils.
	10	CALCAREOUS SILTSTONE: increasing in fossils.
	trace	GYPSUM
	trace	GLAUCONITE
1055 - 1060m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
1060 - 1065m	80	CALCAREOUS SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
	trace	PYRITE
	trace	QUARTZ: clear, very coarse grained, angular.
1065 - 1070m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GYPSUM
1070 - 1075m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
	trace	QUARTZ: as above.
1075 - 1080m	90	CALCAREOUS SILTSTONE: as above.
	10	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
1080 - 1085m	100	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
1085 - 1090m	80	SILTSTONE: as above.
	20	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
1090 - 1095m	80	CALCAREOUS SILTSTONE: medium dark grey to medium grey, soft to firm, very calcareous, argillaceous, fossiliferous - dominantly forams, also corals and echinoids.
	20	CALCAREOUS CLAYSTONE: medium grey to light grey, very soft to firm, very calcareous, fossils as in siltstone.
1095 - 1100m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1100 - 1105m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1105 - 1110m	50	CALCAREOUS CLAYSTONE: becoming firmer.
	50	CALCAREOUS SILTSTONE: becoming firmer.
	trace	GYPSUM

1110 - 1115m	60	CALCAREOUS SILTSTONE: as above.
	40	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1115 - 1120m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	GYPSUM
1120 - 1125m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
1125 - 1130m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	GLAUCONITE: as above.
1130 - 1135m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
1135 - 1140m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1140 - 1145m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1145 - 1150m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
1150 - 1155m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
1155 - 1160m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1160 - 1165m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	GYPSUM
1165 - 1170m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
1170 - 1175m	100	CALCAREOUS CLAYSTONE: medium grey to light grey - dominantly medium grey, soft to firm - dominantly firm, very calcareous, silty in part, fossiliferous - forams, coral, echinoids.
	trace	PYRITE: very fine grained.
	trace	GYPSUM
1175 - 1180m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
1180 - 1185m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
1185 - 1190m	100	CALCAREOUS CLAYSTONE: as above.
1190 - 1195m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
1195 - 1200m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.

1200 - 1205m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1205 - 1210m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
1210 - 1215m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
1215 - 1220m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1220 - 1225m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1225 - 1230m	100	CALCAREOUS CLAYSTONE: light to medium light grey, very soft to firm, sticky in part, very calcareous, silty in part, fossiliferous, (less than above) - forams, coral.
	trace	CALCAREOUS SILTSTONE: light to medium dark grey, soft to firm, argillaceous, very calcareous.
1230 - 1235m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GYPSUM
1235 - 1240m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above, with trace reddish brown calcareous siltstone.
	trace	PYRITE
1240 - 1245m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
1245 - 1250m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
1250 - 1255m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	GLAUCONITE
1255 - 1260m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1260 - 1265m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1265 - 1270m	100	CALCAREOUS CLAYSTONE: as above.
1270 - 1275m	100	CALCAREOUS CLAYSTONE: as above.
1275 - 1280m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1280 - 1285m	100	CALCAREOUS CLAYSTONE: as above.
1285 - 1290m	100	CALCAREOUS CLAYSTONE: as above.
1290 - 1295m	100	CALCAREOUS CLAYSTONE: medium grey to medium light grey, trace red brown, very soft to firm, sticky in part, silty in part, mainly carbonaceous, minor fossils (generally forams).

1295 - 1300m	100	CALCAREOUS CLAYSTONE: as above.
1300 - 1305m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1305 - 1310m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1310 - 1320m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
	trace	QUARTZ
1320 - 1330m	100	CALCAREOUS CLAYSTONE: as above.
	trace	LIMESTONE: pinky buff, hard, cryptocrystalline, vitreous lustre.
	trace	GLAUCONITE
1330 - 1340m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1340 - 1350m	100	CALCAREOUS CLAYSTONE: as above.
1350 - 1360m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1360 - 1370m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	GLAUCONITE
1370 - 1380m	100	CALCAREOUS CLAYSTONE: as above.
1380 - 1385m	100	CALCAREOUS CLAYSTONE: as above.
1385 - 1390m	100	CALCAREOUS CLAYSTONE: as above.
1390 - 1395m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1395 - 1400m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1400 - 1405m	100	CALCAREOUS CLAYSTONE: as above.
1405 - 1410m	100	CALCAREOUS CLAYSTONE: medium grey to very light grey, very soft to firm, sticky in part, silty in part, moderately calcareous, subfissile in part, minor forams and other fossils.
1410 - 1415m	100	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1415 - 1420m	100	CALCAREOUS CLAYSTONE: as above.
1420 - 1425m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE: fine grained, encrusting quartz grains.
1425 - 1430m	100	CALCAREOUS CLAYSTONE: as above.
	trace	CARBONACEOUS MATERIAL: blocky, coaly.
	trace	GLAUCONITE
1430 - 1435m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1435 - 1440m	100	CALCAREOUS CLAYSTONE: as above.

1440 - 1445m	100 trace trace	CALCAREOUS CLAYSTONE: as above. CARBONACEOUS MATTER GLAUCONITE
1445 - 1450m	100	CALCAREOUS CLAYSTONE: as above.
1450 - 1455m	100 trace	CALCAREOUS CLAYSTONE: as above. PYRITE
1455 - 1460m	100	CALCAREOUS CLAYSTONE: as above.
1460 - 1465m	100	CALCAREOUS CLAYSTONE: as above.
1465 - 1470m	100	CALCAREOUS CLAYSTONE: as above.
1470 - 1475m	100 trace	CALCAREOUS CLAYSTONE: as above. Pyrite encrusted quartz.
1475 - 1480m	100	CALCAREOUS CLAYSTONE: as above, firmer than above.
1480 - 1485m	100 trace	CALCAREOUS CLAYSTONE: as above. GLAUCONITE
1485 - 1490m	100	CALCAREOUS CLAYSTONE: as above.
1490 - 1495m	100 trace	CALCAREOUS CLAYSTONE: as above. GLAUCONITE
1495 - 1500m	100	CALCAREOUS CLAYSTONE: as above.
1500 - 1505m	100 trace trace	CALCAREOUS CLAYSTONE: as above. PYRITE GLAUCONITE
1505 - 1510m	100 trace trace	CALCAREOUS CLAYSTONE: as above. PYRITE QUARTZ
1510 - 1515m	100	CALCAREOUS CLAYSTONE: as above.
1515 - 1520m	100 trace	CALCAREOUS CLAYSTONE: as above. GLAUCONITE
1520 - 1530m	100	CALCAREOUS CLAYSTONE: as above.
1530 - 1540m	100	CALCAREOUS CLAYSTONE: as above, becoming stickier.
1540 - 1550m	100	CALCAREOUS CLAYSTONE: as above.
1550 - 1560m	100	CALCAREOUS CLAYSTONE: as above.
1560 - 1570m	100	CALCAREOUS CLAYSTONE: as above.
1570 - 1580m	100	CALCAREOUS CLAYSTONE: as above.
1580 - 1590m	100	CALCAREOUS CLAYSTONE: as above.
1590 - 1600m	100	CALCAREOUS CLAYSTONE: as above.
1600 - 1610m	100	CALCAREOUS CLAYSTONE: as above.
1610 - 1615m	100	CALCAREOUS CLAYSTONE: medium grey with minor light grey, soft to firm, sticky in part, moderately calcareous, silty in part, subfissile, forams.

1615 - 1620m	100	CALCAREOUS CLAYSTONE: as above.
1620 - 1625m	100	CALCAREOUS CLAYSTONE: as above.
1625 - 1630m	100	CALCAREOUS CLAYSTONE: as above.
1630 - 1635m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1635 - 1640m	100	CALCAREOUS CLAYSTONE: as above.
1640 - 1645m	100	CALCAREOUS CLAYSTONE: as above.
1645 - 1650m	100	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1650 - 1655m	90	CALCAREOUS CLAYSTONE: medium grey to light grey, soft to firm, moderately calcareous, silty in part - forams.
	10	CALCAREOUS SILTSTONE: light grey, buff, soft to firm, moderately calcareous, sandy in part, very fine to fine grained, calcareous, minor glauconitic nodules.
	trace	PYRITE
1655 - 1660m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1660 - 1665m	100	CALCAREOUS CLAYSTONE: as above.
1665 - 1670m	100	CALCAREOUS CLAYSTONE: as above.
1670 - 1675m	100	CALCAREOUS CLAYSTONE: as above.
1675 - 1680m	90	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1680 - 1685m	80	CALCAREOUS CLAYSTONE: as above.
	20	CALCAREOUS SILTSTONE: as above.
1685 - 1690m	70	CALCAREOUS CLAYSTONE: as above.
	30	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	COAL
1690 - 1695m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1695 - 1700m	60	CALCAREOUS CLAYSTONE: as above.
	40	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1700 - 1705m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
1705 - 1710m	60	CALCAREOUS SILTSTONE: medium grey to medium light grey, minor amounts of buff coloured variety, firm, argillaceous, moderately calcareous, minor sandy parts, forams.
	40	CALCAREOUS CLAYSTONE: medium grey to very light grey, very soft to firm, moderately calcareous, forams.
	trace	GLAUCONITE: few very fine grains.

1710 - 1715m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
1715 - 1720m	50	CALCAREOUS SILTSTONE: as above.
	50	CALCAREOUS CLAYSTONE: as above.
1720 - 1725m	60	CALCAREOUS SILTSTONE: as above.
	40	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1725 - 1730m	50	CALCAREOUS SILTSTONE: as above.
	50	CALCAREOUS CLAYSTONE: as above.
	trace	PYRITE
1730 - 1735m	50	CALCAREOUS CLAYSTONE: as above.
	50	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
1735 - 1740m	70	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
1740 - 1745m	90	CALCAREOUS SILTSTONE: medium grey to light grey, light brown, soft to firm, argillaceous, moderately calcareous, sandy in part, very fine grained, subfissile, forams.
	8	CALCAREOUS CLAYSTONE: medium grey to very light grey, soft, moderately calcareous, subfissile, forams.
	2	GLAUCONITE: blue to green, very fine to medium grained pellets - isolated and associated with siltstone.
	trace	PYRITE
1745 - 1750m	100	CALCAREOUS SILTSTONE: as above.
	trace	CALCAREOUS CLAYSTONE: as above.
	trace	GLAUCONITE
1751m		Circulated Out.
	98	CALCAREOUS SILTSTONE: as above.
	2	GLAUCONITE: as above.
	trace	CALCITE
1751 - 1755m	78	CALCAREOUS CLAYSTONE: medium light grey to light grey, soft to firm, dominantly firm, subfissile, moderately calcareous.
	20	CALCAREOUS SILTSTONE: medium light grey, firm, moderately calcareous, argillaceous, sandy in part, very fine grained.
	2	GLAUCONITE: blue to green, pelletal, fine to medium grained.
	trace	FORAMS
1755 - 1760m	68	CALCAREOUS SILTSTONE: as above.
	30	CALCAREOUS CLAYSTONE: light brown to very light grey, very soft to soft, sticky, moderately calcareous.
	2	GLAUCONITE: up to coarse grain size, also larger aggregates.
	trace	CALCITE

1760 - 1765m	78	CALCAREOUS CLAYSTONE: dominantly pale brown, minor medium light grey, very soft to soft, sticky in part, moderately calcareous, becomes silty in part, trace forams.
	20	CALCAREOUS SILTSTONE: medium light grey to pale brown, firm to soft, moderately calcareous, argillaceous.
	2	GLAUCONITE: as above, also disseminated through mudstone.
	trace	QUARTZ: couple of angular to subrounded grains, medium to coarse grained.
1765 - 1770m	80	CALCAREOUS CLAYSTONE: as above, becoming firmer.
	20	CALCAREOUS SILTSTONE: as above.
	trace	GLAUCONITE: some very coarse grained pellets.
	trace	PYRITE
1770 - 1775m	90	CALCAREOUS CLAYSTONE: as above, softer than above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	GLAUCONITE: more common than above.
1775 - 1780m	100	CALCAREOUS CLAYSTONE: as above, grades to calcareous siltstone, sandy in part, very fine grained, abundant glauconite pellets.
1780 - 1785m	75	CALCAREOUS CLAYSTONE: as above, pale brown to brownish grey.
	20	CALCAREOUS SILTSTONE: as above. Both lithologies becoming firmer.
	5	SANDSTONE: brownish grey, firm to soft, very fine grained, angular to subrounded, well sorted, very argillaceous, slightly calcareous, abundant glauconite, very poor porosity, no shows. Abundant glauconite.
1785 - 1790m	60	SANDSTONE: as above.
	30	CALCAREOUS CLAYSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	abundant	GLAUCONITE
	trace	PYRITE
1790 - 1795m	70	CALCAREOUS CLAYSTONE: as above.
	20	SANDSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	abundant	GLAUCONITE: coarser grained than above.
1795 - 1800m	70	CALCAREOUS CLAYSTONE: as above.
	20	SANDSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE: increasing amount.
	abundant	GLAUCONITE
	trace	SILTSTONE: tan, very soft.
	trace	QUARTZ: clear, to iron stained, coarse grained, subangular to rounded.
1800 - 1805m	70	CALCAREOUS CLAYSTONE: as above.
	20	SANDSTONE: as above.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	SILTSTONE: tan, as above, increasing amount.
	trace	QUARTZ: clear, very coarse grained, subangular to rounded, increased amount.

1805 - 1808m	80	SANDSTONE: quartzose, brownish grey, soft, very fine to fine grained, subangular to subrounded, well sorted, very argillaceous, very poor porosity, no shows.
	10	SILTSTONE: tan, very soft, very argillaceous.
	10	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	QUARTZ: clear to iron stained, coarse grained, subangular to rounded
	abundant	GLAUCONITE
1808 - 1810m	80	CALCAREOUS SILTSTONE: medium light grey to light grey, firm, argillaceous, moderately calcareous, forams, cavings?
	20	SANDSTONE: quartzose, brown, very fine to fine grained, subangular to subrounded, well sorted, very argillaceous, slightly to moderately calcareous, very glauconitic, grades in part to siltstone.
	trace	PYRITE
	trace	QUARTZ: clear, medium grained to granule size, subangular to subrounded.
	trace	FOSSILS: forams, coral.
1810 - 1815m	60	CALCAREOUS SILTSTONE: as above.
	40	SANDSTONE: as above.
	trace	SILTSTONE: tan, very soft, argillaceous.
	trace	PYRITE
	trace	QUARTZ: as above.
	common	GLAUCONITE: as isolated pellets.
1815 - 1819m	50	CALCAREOUS SILTSTONE: as above.
	50	SANDSTONE: as above, slightly coarser grained to medium grained in part.
	trace	PYRITE
	trace	QUARTZ
1819 - 1820m	50	COAL: black, brittle, angular, conchoidal fracture, vitreous lustre.
	40	CALCAREOUS SILTSTONE: as above.
	10	SANDSTONE: brown to brownish grey, quartzose, very fine to medium grained, subangular to subrounded, moderately to well sorted, very argillaceous (few aggregates have only minor argillaceous matrix), very glauconitic, very poor porosity, no shows.
	trace	PYRITE
	trace	QUARTZ: clear to iron stained, medium grained to granular, subangular to subrounded.
1820 - 1825m	60	CALCAREOUS SILTSTONE: as above.
	40	SANDSTONE: as above, with trace of very light grey, pale red brown, fine to medium grained, subangular to subrounded, moderately to well sorted, minor argillaceous matrix, glauconitic.
	trace	QUARTZ: as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
1825 - 1830m	50	SANDSTONE: quartzose, clear, loose, coarse grained to granule, subangular to rounded, moderately well sorted, frosted, good porosity. One grain with bright white fluorescence, no cut, milky white crush cut, bright white ring residue. Trace mineral fluorescence.
	50	CALCAREOUS SILTSTONE: as above.
	trace	PYRITE
	trace	COAL
	trace	GLAUCONITE

1830 - 1835m	90	CALCAREOUS SILTSTONE: as above, cavings?
	10	SANDSTONE: as above, with minor aggregates, fine to medium grained, subangular to rounded, well sorted, minor argillaceous matrix, glauconitic.
	trace	PYRITE
	trace	COAL
1835 - 1837.9m	90	SANDSTONE: quartzose, clear with minor milky, loose, coarse grained to granule, angular to rounded, moderately sorted, frosted in part, minor amounts of fine to medium grained aggregates, subangular to subrounded, well sorted, minor amounts of argillaceous matrix, good porosity, 20% fluorescence, dominantly mineral (dolomite?) but few grains give slow diffuse, dull milky white crush cut fluorescence with dull milky white ring residue fluorescence.
	10	CALCAREOUS SILTSTONE: as above.
	trace	SANDSTONE: quartzose, pale red brown and brownish grey, fine to medium grained, subangular to subrounded, well sorted, very argillaceous, glauconitic.
	trace	PYRITE
	trace	GLAUCONITE
	Cut Core No. 1 from 1837.9 - 1847.5m	
	Cut Core No. 2 from 1847.5 - 1856.5m	
	Cut Core No. 3 from 1856.5 - 1861.6m	
1861.6 - 1865m	90	SHALE: medium grey, firm, silty in part, slightly calcareous.
	5	SANDSTONE: quartzose, loose, clear to milky, coarse grained, angular to subangular, trace bright yellow/white fluorescence, very slow dull yelllow cut, light grey brown residue.
	5	SHALE: brownish grey, firm, slightly calcareous.
	trace	GLAUCONITIC CLAYSTONE: brown, firm.
	trace	COAL
	trace	PYRITE
1865 - 1870m	50	COAL: black, soft to firm, brittle, vitreous lustre, conchoidal fracture.
	40	SANDSTONE: quartzose, clear to milky, loose, medium grained to granule size, dominantly coarse grained, subangular to subrounded, some grains are rounded, moderately sorted, frosted in part; trace dull yellow fluorescence, which gives a slow, dull yellow-brown to white crush cut. Also present, trace sandstone - very light grey, very fine grained, soft, very argillaceous matrix, carbonaceous flecking.
	10	SHALE: medium grey, as above.
1870 - 1875m	70	SANDSTONE: as above, more granule size grains, trace of orange stained grains, trace very fine grained aggregates, subangular to subrounded, well sorted, pale tan, some argillaceous matrix. The aggregates have a trace of yellow to dull orange fluorescence, which give a very slow crush cut with dull straw fluorescence and a clear residue.
	20	COAL: as above.
	10	SHALE: as above.
	trace	SILTSTONE: brown, soft, argillaceous.
	trace	PYRITE: very fine grained.

1875 - 1880m	60	SANDSTONE: quartzose, loose, clear to milky, medium grained to granule, dominantly coarse grained, subangular to subrounded, moderately well sorted, few very argillaceous, very fine grained to fine grained aggregates. 1-3% dull orange to white fluorescence, fast streaming milky white cut, dull brown residue.
	30	COAL: as above.
	10	SHALE/SILTSTONE: as above.
	trace	PYRITE
1880 - 1885m	90	SANDSTONE: as above, trace dull orange/yellow fluorescence, very slow, very dull straw crush cut, very dull straw residue fluorescence.
	10	CLAYSTONE: brownish grey, soft to firm, micromicaceous in part.
	trace	COAL
	trace	SHALE
	trace	PYRITE
1885 - 1890m	60	SANDSTONE: as above, trace dull orange yellow fluorescence, no cut, no crush cut.
	40	COAL: as above.
	trace	CLAYSTONE: as above.
1890 - 1895m	90	SANDSTONE: quartzose, clear to milky, loose, medium grained to granule, dominantly coarse grained, subangular to rounded, dominantly subrounded, moderate sorting, 20% aggregates of fine to medium grained, subangular to subrounded, well sorted quartz, trace argillaceous matrix. 30% bright yellow fluorescence, very slow milky white crush cut, clear residue, red brown oil stain (evaporates under light) associated with aggregates (see comments on 1895 - 1900m).
	5	COAL: as above.
	5	CLAYSTONE/SHALE: as above.
	trace	PYRITE
	trace	GLAUCONITE
1900m		Desander Sample
	90	Loose quartz, clear to minor milky, dominantly coarse to medium grained with fine grains and granules, subangular to subrounded, poorly sorted, trace very fine grained aggregates as above; 40% bright yellow fluorescence, very slow dull milky white cut.
	10	CLAYSTONE/SHALE: as above, some pebble size pieces.
1895 - 1900m	80	SANDSTONE: quartzose, loose, coarse grained to granule size, subangular to subrounded, a few grains are rounded, moderately sorted, few frosted grains, 20% of sand is composed of fine to medium grained aggregates, subangular to subrounded, well sorted, argillaceous matrix, dolomitic cement, glauconite pellets in few aggregates. Moderate to poor visible porosity. The aggregates have 30% bright yellow fluorescence, very very slow, dull white crush cut and , brown oil staining.
	10	COAL: as above.
	5	SHALE: medium light grey, firm, slightly calcareous.
	5	SHALE: brown to greyish brown, soft to firm, carbonaceous in part.
	trace	GLAUCONITIC SANDSTONE: greyish brown, firm to hard, very fine grained, subangular to subrounded, well sorted, argillaceous matrix, fine grained glauconite pellets.

1900 - 1905m	80	COAL: as above.
	20	SANDSTONE: as above, 20% dolomitic aggregates, 20% dull yellow to bright white fluorescence, very slow dull white crush cut and 10% oil staining.
	trace	PYRITE
	trace	GLAUCONITE
	trace	SHALE: pale brown, soft, carbonaceous.
1905 - 1910m	70	COAL: as above.
	20	SANDSTONE: quartzose, loose, clear to milky, coarse grained to granule size, subangular to subrounded, moderately sorted, 5% fine to medium grained aggregates, subangular to subrounded, well sorted, minor argillaceous matrix, trace glauconite. The aggregates have bright yellow fluorescence, as above, and brown staining that evaporates under light of microscope, and gives a very slow dull yellow crush cut.
	5	SHALE: medium light grey, slightly calcareous.
	5	SHALE: brownish grey, soft to firm, some carbonaceous.
	trace	PYRITE
	trace	GLAUCONITIC CLAYSTONE: brown, firm.
1910 - 1915m	60	SANDSTONE: as above, fluorescence as above.
	30	COAL: as above.
	10	SHALE: medium light grey, as above.
	trace	SHALE: brownish grey as above.
	trace	PYRITE
1915 - 1920m	50	SANDSTONE: as above, 1-2% dolomitic aggregates as above. Trace bright yellow fluorescence which gives a slow, dull white crush cut and a clear residue.
	20	SHALE: medium light grey, soft to firm, slightly calcareous.
	20	SHALE: brown to brownish grey, soft to firm, some carbonaceous material.
	10	COAL: as above.
	trace	PYRITE
	trace	GLAUCONITE
1920 - 1925m	60	SHALE: 1) medium grey to medium light grey, soft to firm, silty in part, slightly to moderately calcareous, minor amounts of glauconite; 2) brown to brownish grey, soft to firm, carbonaceous in part.
	30	SANDSTONE: quartzose, clear, loose, coarse to fine grained, subangular to subrounded, moderately sorted, brown stain on some grains - silty looking, common fine to medium grained aggregates of quartz, subangular to subrounded, well sorted, trace to common light grey to brownish grey argillaceous matrix. Trace yellow fluorescence, dull to very dull, no cut.
	10	COAL: as above.
	trace	PYRITE
1925 - 1930m	100	COAL: as above.
	trace	SHALE: as above.
	trace	SANDSTONE: as above.
	trace	Mineral fluorescence.

1930 - 1935m	50	COAL: as above.
	30	SHALE: as above.
	20	SANDSTONE: as above, dominantly coarse grained; trace yellow white fluorescence, no cut to slow, very dull white streaming cut, dull milky white crush cut, dull white ring residue fluorescence, clear residue.
1935 - 1940m	80	SANDSTONE: quartzose, clear to translucent, loose, very coarse to medium grained, angular to subangular, moderately sorted, trace bright yellow fluorescence with slow cut.
	15	SILTSTONE: 1) medium grey to medium light grey, soft to firm, moderately calcareous in part; 2) brown to brown grey, soft to firm, carbonaceous in part.
	5	COAL: as above.
	trace	SHALE: as above.
	trace	PYRITE
1940 - 1945m	60	COAL: as above.
	30	SANDSTONE: as above, with some granule size, trace yellow fluorescence, slow streaming dull white cut, clear residue.
	10	SILTSTONE: 1) medium light grey, soft to firm, slightly to moderately calcareous; 2) brownish grey, soft to firm, carbonaceous in part.
	trace	SHALE: brownish grey, soft to firm, carbonaceous in part.
1945 - 1950m	70	SANDSTONE: quartzose, clear to white, loose, coarse to very coarse grained, predominantly subangular, trace fluorescence and cut as above.
	30	SILTSTONE: as above, trace pyrite.
	trace	SHALE: as above.
	trace	COAL: as above.
1950 - 1955m	70	SANDSTONE: as above, trace fluorescence and cut as above.
	20	SILTSTONE: as above.
	10	COAL: as abve.
1955 - 1956.7m		Bottoms Up
	90	SANDSTONE: as above, coarse to very coarse common granules, very good visible porosity, trace fluorescence and cut as above.
	10	SILTSTONE: as above, trace pyrite.
	trace	COAL: as above.
1956.7 - 1960m	100	SANDSTONE: predominantly very coarse grained, subangular, otherwise as above.
	trace	SILTSTONE: as above.
1960 - 1965m	100	SANDSTONE: well sorted, subrounded to subangular, otherwise as above, trace bright yellow fluorescence as above.
1965 - 1970m	100	SANDSTONE: as above.
1970 - 1975m	60	SANDSTONE: predominantly angular to subangular, otherwise as above.
	40	COAL: as above.
1975 - 1980m	90	SANDSTONE: as above.
	10	COAL: as above.

1980 - 1985m	70	SANDSTONE: quartzose, white with occasional clear, loose, medium to very coarse grains, predominantly very coarse grained, subangular to subrounded, trace non fluorescent red/brown stain on some grains. There is trace to 5% bright yellow and orange fluorescence which gives a slow streaming cut.
	30	SILTSTONE: 1) medium light grey to very light grey, soft to firm, blocky to subfissile, calcareous in part; 2) dark grey to brownish grey, soft to firm, blocky to subfissile, carbonaceous in part, trace orange fluorescence, with bright yellow slow streaming cut. Note: one piece showed brown, even residue and orange/brown fluorescent residue.
1985 - 1990m	70	SANDSTONE: as above, trace fluorescence as above, occasionally very fine grained calcareous aggregates.
	30	SILTSTONE: as above, trace fluorescence as above.
1990 - 1995m	95	SANDSTONE: as above, trace fluorescence as above, trace brown/red stain as above.
	5	SILTSTONE: as above, trace fluorescence as above, cut as above.
1995 - 2000m	100	SANDSTONE: as above, trace fluorescence as above.
	trace	SILTSTONE: as above.
2000 - 2005m	100	SANDSTONE: as above, trace fluorescence as above.
	trace	SILTSTONE: as above.
2005 - 2010m	50	SANDSTONE: predominantly medium to coarse grained, otherwise as above.
	40	COAL: black, vitreous, hard, earthy in part.
	10	SILTSTONE: as above, and some buff.
2010 - 2015m	85	COAL: as above.
	15	SANDSTONE: as above, trace fluorescence as above.
	trace	SILTSTONE: as above.
2015 - 2020m	50	SILTSTONE: as above.
	20	SANDSTONE: as above.
	20	SHALE: as for siltstone, but very carbonaceous in part and fissile.
	10	COAL: as above.
2020 - 2025m	70	SANDSTONE: as above, trace fluorescence as above.
	20	SILTSTONE: as above.
	10	SHALE: as above.
	trace	COAL
2025 - 2030m	100	SANDSTONE: quartzose, clear to translucent, loose, medium to very coarse grained, subangular to subrounded, moderately to well sorted, few aggregates, buff, very fine grained, very well sorted, white to buff argillaceous matrix. Trace bright yellow to orange fluorescence which gives a bright white crush cut and clear residue.
	trace	COAL: as above.
	trace	SILTSTONE/SHALE: as above.

2030 - 2035m	100	SANDSTONE: as above, some granule size grains; no fluorescence.
	trace	COAL: as above.
	trace	SILTSTONE/SHALE: as above.
2035 - 2040m	100	SANDSTONE: as above.
	trace	COAL: as above.
	trace	SILTSTONE/SHALE: as above.
	trace	PYRITE
2040 - 2045m	100	SANDSTONE: as above, fluorescence as above.
	trace	SILTSTONE: as above.
2045 - 2050m	100	SANDSTONE: as above, 40% mineral fluorescence, bright yellow dolomite cement, trace calcitic cement.
	trace	COAL
	trace	SILTSTONE
	trace	GLAUCONITE
2050 - 2055m	80	SANDSTONE: as above, but coarser grained - large percentage are granule sized, dolomitic cement, trace calcitic cement, 40% bright yellow mineral fluorescence.
	20	COAL: black, brittle, vitreous lustre.
	trace	SILTSTONE: as above, some has trace of glauconite.
2055 - 2060m	80	SANDSTONE: quartzose, clear to translucent, loose, coarse grained to granule size, dominantly very coarse grained, subangular to subrounded, moderately to well sorted, frosted in part, few aggregates of very fine to fine grained, subangular to rounded, well sorted, mainly dolomitic cement, trace of minor argillaceous matrix. 30% bright yellow mineral fluorescence - dolomitic cement.
	15	COAL: as above.
	5	SILTSTONE: 1) medium grey to medium light grey, soft to firm, slightly to moderately calcareous; 2) brownish grey, soft to firm, carbonaceous laminae in part, grades to shale.
	trace	PYRITE
	trace	GLAUCONITE
2060 - 2065m	70	SILTSTONE: medium grey, soft to firm, slightly to modertely calcareous, glauconitic in part, cavings?, minor brownish grey siltstone.
	20	SANDSTONE: quartzose, clear to translucent, fine grained to granule size, dominantly very coarse grained, subangular to subrounded, moderately sorted, frosted in part, 5% of sand consists of fine grained, buff to white aggregates, subangular to subrounded, well sorted, with white argillaceous matrix. They are friable to firm, some grains are cemented together by dolomite. These are hard with very poor to zero visual porosity, 10% bright yellow mineral fluorescence.
	10	COAL: black, hard, brittle, vitreous lustre.
	trace	SHALE: brown, soft, minor carbonaceous laminae.
	trace	PYRITE
	trace	GLAUCONITE: dark green, fine to coarse grained pellets (probably broken out of grey calcareous siltstone).

2065 - 2070m	70	SILTSTONE: as above.
	20	SANDSTONE: as above, some aggregates are micaceous in part, 10% fluorescence as above.
	10	COAL: as above.
	trace	SHALE: as above.
	trace	PYRITE
	trace	GLAUCONITE
2070 - 2075m	80	COAL: as above.
	10	SANDSTONE: as above.
	5	SILTSTONE: as above.
	5	SHALE: as above.
2075 - 2080m	100	COAL: as above.
	trace	SANDSTONE: as above.
	trace	SHALE: as above.
2080 - 2085m	40	SILTSTONE: as above.
	30	COAL: as above.
	20	SANDSTONE: as above, dolomitic.
	10	SHALE: as above.
	trace	PYRITE
2085 - 2090m	40	SILTSTONE: as above, grades to very fine grained sandstone, trace pyrite, trace mica.
	30	SANDSTONE: predominantly loose, medium to coarse grained, subangular, quartzose grains, also some very fine grained, dolomite cemented aggregates with bright yellow fluorescence.
	20	MUDSTONE: medium light grey, soft to firm, blocky cuttings, moderately calcareous.
	10	COAL: as above.
	trace	DOLOMITE: coarse, sparry crystals. They have bright yellow mineral fluorescence.
2090 - 2095m	70	SANDSTONE: as above.
	20	COAL: as above.
	10	SILTSTONE: as above.
	trace	MUDSTONE: as above.
	trace	DOLOMITE: as above.
2095 - 2100m	90	SANDSTONE: as above, trace dolomite cemented aggregates, trace red brown oil stain, bright yellow fluorescence and slow streaming bright yellow cut.
	10	SILTSTONE: as above.
	trace	MUDSTONE: as above.
	trace	COAL
2100 - 2105m	95	SANDSTONE: as above, trace dolomite cemented aggregates, trace pyrite.
	5	SILTSTONE: as above.
	trace	MUDSTONE
2105 - 2110m	100	SANDSTONE: predominantly medium to coarse grained, angular to subangular, quartzose, loose, as above.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2110 - 2115m	100	SANDSTONE: as above.
	trace	COAL: as above.
	trace	SILTSTONE: as above.

2115 - 2120m	100	SANDSTONE: as above, with trace dolomite cemented aggregates as above, trace fluorescence as above.
	trace	COAL
	trace	SILTSTONE
2120 - 2125m	70	SANDSTONE: as above.
	30	COAL: as above.
2125 - 2130m	40	SANDSTONE: as above.
	60	COAL: as above.
2130 - 2135m	80	SANDSTONE: as above.
	10	SILTSTONE: as above, some buff, trace pyrite, trace forams.
	10	COAL: as above.
2135 - 2140m	80	SANDSTONE: as above, trace dolomitic cemented aggregates, trace pyrite.
	20	SILTSTONE: as above.
2140 - 2145m	90	SANDSTONE: as above, trace pyrite, trace mica.
	10	SILTSTONE: as above, trace forams.
2145 - 2150m	100	SANDSTONE: as above, well sorted, medium to coarse grained, trace pyrite.
	trace	SILTSTONE: as above, trace forams.
2150 - 2155m	90	SANDSTONE: poorly sorted, very coarse to medium grained, trace pyrite, otherwise as above.
	10	SILTSTONE: as above, calcareous in part.
2155 - 2160m	100	SANDSTONE: well sorted, coarse grained, otherwise as above.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2160 - 2165m	70	SANDSTONE: as above, coarse to very coarse grained, well sorted, good visible porosity.
	30	COAL: grading into very carbonaceous shale in part.
2165 - 2170m	95	SANDSTONE: as above.
	5	COAL: as above, trace shale as above.
	trace	SILTSTONE: as above.
2170 - 2175m	100	SANDSTONE: as above.
2175 - 2180m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2180 - 2185m	100	SANDSTONE: as above.
2185 - 2190m	60	SANDSTONE: as above.
	40	COAL: as above.
2190 - 2195m	70	SANDSTONE: as above.
	20	COAL: as above.
	10	SILTSTONE: as above, carbonaceous in part.

2195 - 2200m	60	SILTSTONE: medium light grey to very light grey, occasionally buff to brownish grey, firm, blocky cuttings, carbonaceous in part with occasional rootlets.
	30	SANDSTONE: as above.
	10	COAL: as above.
	trace	SHALE: medium dark grey, firm to hard, fissile to subfissile, very carbonaceous in part.
2200 - 2205m	80	SANDSTONE: predominantly loose, as above, but with 30% hard, fine to medium dolomite cemented, aggregates.
	20	SILTSTONE: as above.
2205 - 2210m	90	SANDSTONE: as above, 30% dolomitic cement.
	10	SILTSTONE: as above.
	trace	SHALE
	trace	COAL
2210 - 2215m	90	SANDSTONE: as above, 5% dolomitic cement.
	10	SILTSTONE: as above.
	trace	SHALE
	trace	COAL
2215 - 2220m	70	SANDSTONE: quartzose, clear to translucent, loose, fine grained to granule size, dominantly very coarse, subangular to subrounded, moderately sorted, frosted in part, aggregates of fine to medium grained quartz and very fine grained quartz, argillaceous matrix, micaceous in part, very poor porosity, 5% dolomitic cement.
	20	SILTSTONE: 1) medium light grey to light grey, soft to firm, grades to very fine grained sand; 2) brownish grey, soft to hard, dominantly firm, carbonaceous in part.
	5	SHALE: brownish grey, soft to firm, carbonaceous laminae in part.
	5	COAL: black, firm to hard, brittle, vitreous to earthy lustre.
	trace	PYRITE: as above.
2220 - 2225m	80	SANDSTONE: as above, dominantly very fine to medium grained aggregates, 5% dolomitic cement.
	20	SILTSTONE: as above, calcareous in part.
	trace	COAL
	trace	PYRITE
2225 - 2230m	80	SANDSTONE: quartzose, light grey, loose to friable, very fine grained to coarse grained, dominantly fine to medium grained, moderately sorted, subangular to subrounded, argillaceous matrix, trace dolomitic cement.
	10	SILTSTONE: 1) light grey, soft to firm, slightly to moderately calcareous; 2) brownish grey, firm, blocky cuttings.
	10	SHALE: brownish grey, soft, carbonaceous in part.
	trace	COAL

2230 - 2235m	90	SANDSTONE: quartzose, loose, medium to very coarse grained, subangular to subrounded, moderately to well sorted, aggregates of fine to medium grained quartz (trace very fine grained), as above, micaceous in part with argillaceous matrix, trace dolomitic cement, moderate to good visible porosity.
	5	SILTSTONE: as above.
	5	SHALE: as above.
2235 - 2240m	100	SANDSTONE: as above, no dolomitic cement.
	trace	SILTSTONE/SHALE: as above.
	trace	MICA: muscovite.
2240 - 2245m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2245 - 2250m	95	SANDSTONE: as above,
	5	SILTSTONE: as above.
2250 - 2255m	95	SANDSTONE: as above, trace dull orange fluorescence, instantaneous streaming bright yellow white cut fluorescence, clear residue, trace mineral fluorescence.
	5	SILTSTONE: as above.
2255 - 2260m	95	SANDSTONE: as above, increasing very fine grains to medium grained aggregates, some lithic fragments in aggregates, trace mineral fluorescence.
	5	SILTSTONE/SHALE: as above.
	trace	PYRITE
	trace	COAL
2260 - 2265m	90	SANDSTONE: as above, quartz pressure solution becoming more apparent.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2265 - 2270m	90	SANDSTONE: quartzose, loose to friable, subangular to subrounded, moderately sorted, fine to very coarse grained, dominantly coarse to very coarse grained, aggregates of fine to medium grains - some very fine grained, argillaceous matrix in part, no matrix in part, micaceous in part, trace dolomitic cement, very fine grained lithics in part, very fine grained sand, grades to siltstone in part.
	10	SILTSTONE/SHALE: greyish brown, soft to firm, carbonaceous in part.
	trace	PYRITE
2270 - 2275m	80	SANDSTONE: as above, aggregates have only minor argillaceous matrix, dominantly quartz.
	20	SHALE: as above.
	trace	SILTSTONE: as above.
2275 - 2280m	100	SANDSTONE: as above.
	trace	SHALE: as above.
	trace	COAL: as above.

2280 - 2285m	90	SANDSTONE: quartzose, loose to friable, dominantly loose, fine to very coarse grained, dominantly coarse to very coarse, subangular to subrounded, moderately sorted, aggregates of fine to medium grained quartz are micaceous in part, grades to siltstone, quartz pressure solution.
	5	SHALE: brownish grey, soft, carbonaceous in part.
	5	SILTSTONE: brownish grey, soft to firm, argillaceous.
	trace	PYRITE
2285 - 2290m	70	COAL: as above.
	30	SHALE: increasing amount of carbonaceous laminations.
	trace	SANDSTONE: as above.
2290 - 2295m	40	SHALE: as above.
	30	COAL: as above.
	30	SANDSTONE: as above.
	trace	MICA: coarse grained.
	trace	PYRITE
2295 - 2300m	50	SANDSTONE: as above, carbonaceous in part.
	30	SHALE: as above.
	10	SILTSTONE: as above.
	10	COAL: as above.
	trace	MICA: coarse grained.
	trace	PYRITE
2300 - 2305m	90	SANDSTONE: quartzose, clear to milky, loose to firm, dominantly loose, fine grained to granule, dominantly coarse to very coarse grained, subangular to subrounded, moderately sorted, (evidence of quartz overgrowths on loose coarse grains), minor aggregates of fine to medium grains, some aggregates have a component of lithics giving them a greyish brown colour, grades in part to siltstone, micaceous in part.
	10	SHALE: brown to brownish grey, soft to firm, carbonaceous.
	trace	COAL
	trace	PYRITE
2305 - 2310m	90	SANDSTONE: as above.
	5	SHALE: as above.
	5	SILTSTONE: brownish grey, soft to firm, grades to sandstone.
	trace	PYRITE
2310 - 2315m	80	SANDSTONE: as above, only trace mica.
	10	COAL: as above.
	5	SHALE: as above.
	5	SILTSTONE: as above.
	trace	PYRITE
2315 - 2320m	90	SANDSTONE: as above, 30% bright yellow fluorescence - dolomitic cement.
	10	SHALE/SILTSTONE: as above.
	trace	COAL
	trace	PYRITE

2320 - 2325m	90	SANDSTONE: quartzose, friable to firm, fine to medium grained, minor coarse grains, subangular to subrounded, moderately to well sorted, 40% dolomitic cement, trace micromica, some quartz overgrowths.
	10	SHALE/SILTSTONE: as above.
	trace	COAL
2325 - 2330m	90	SANDSTONE: as above, 20% dolomitic cement.
	10	SHALE/SILTSTONE: as above.
	trace	COAL
2330 - 2335m	50	SILTSTONE: 1) brownish grey, soft to firm, carbonaceous in part; 2) medium light grey, soft to firm, calcareous in part, grades to sandstone.
	40	SANDSTONE: as above, 5% dolomitic cement.
	10	COAL: as above.
2335 - 2340m	50	SILTSTONE: as above.
	50	SANDSTONE: as above.
	trace	COAL
2340 - 2345m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2345 - 2350m	50	SANDSTONE: as above.
	50	COAL: as above.
	trace	SILTSTONE: as above.
2350 - 2355m	40	SILTSTONE: as above.
	20	COAL: as above.
	30	SANDSTONE: as above.
	10	SHALE: dark grey, very carbonaceous, hard, fissile.
2355 - 2360m	50	SILTSTONE: as above.
	50	SANDSTONE: as above.
	trace	COAL: as above.
2360 - 2365m	30	SANDSTONE: as above, with some dolomitic cemented aggregates.
	30	SILTSTONE: as above.
	5	CLAYSTONE: white to very light grey, soft, occasionally microcrystalline pyrite.
	15	SHALE: as above.
	20	COAL: as above.
2365 - 2370m	80	COAL: as above.
	20	SILTSTONE: as above.
	trace	SANDSTONE: as above, with dolomite cemented aggregates.
	trace	SHALE: as above.
2370 - 2375m	80	COAL: as above.
	10	SILTSTONE: as above.
	10	SHALE: as above.
	trace	SANDSTONE: as above.
2375 - 2380m	40	SILTSTONE: as above.
	30	SANDSTONE: quartzose, loose, clear to white, medium to coarse grained, subangular, well sorted, occasionally fine to medium grained, hard, dolomite cemented aggregates.
	20	SHALE: as above.
	10	COAL: as above.

2380 - 2385m	80	SANDSTONE: as above.
	10	SILTSTONE: as above.
	10	SHALE: as above.
	trace	COAL: as above.
2385 - 2390m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	SHALE: as above.
2390 - 2395m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
2395 - 2400m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2400 - 2405m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2405 - 2410m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2410 - 2415m	100	SANDSTONE: predominantly angular to subangular, abundant dolomite and siliceous cemented aggregates, otherwise as above.
	trace	SILTSTONE: as above.
2415 - 2420m	100	SANDSTONE: as above.
2420 - 2425m	100	SANDSTONE: as above.
2425 - 2430m	100	SANDSTONE: predominantly angular, otherwise as above.
	trace	SILTSTONE: as above.
2430 - 2435m	80	SANDSTONE: angular to subangular, otherwise as above.
	20	SILTSTONE: as above.
2435 - 2440m	70	SANDSTONE: as above, 5% dolomite cemented aggregates, trace pyrite.
	30	SILTSTONE: as above.
2440 - 2445m	60	SANDSTONE: as above, 5% dolomite cemented aggregates.
	40	SILTSTONE: as above.
	trace	SHALE: as above.
2445 - 2450m	70	SANDSTONE: as above, 5% dolomite cemented aggregates.
	30	SILTSTONE: as above.
2450 - 2455m	70	SANDSTONE: as above, trace dolomite cemented aggregates.
	30	SILTSTONE: a above.
2455 - 2460m	70	SANDSTONE: as above, trace to 5% dolomite-cemented aggregates.
	30	SILTSTONE: as above.
	trace	SHALE: as above.
2460 - 2465m	70	SANDSTONE: as above, trace to 5% dolomite-cemented aggregates.
	20	SILTSTONE: as above.
	10	SHALE: as above.

2465 - 2470m	50	SANDSTONE: as above, with only few grains having dolomite-cemented aggregates.
	40	SILTSTONE: as above, and occasionally grading to very fine grained sandstone.
	10	SHALE: medium light grey, firm to soft, subangular cuttings, sometimes subfissile cuttings, with trace carbonaceous inclusions.
2470 - 2475m	50	SANDSTONE: predominantly loose quartz fragments - clear to translucent, medium to very coarse grained, predominantly coarse, subangular to subrounded cuttings, no shows. Also present are quartzose aggregates consisting of clear, very friable, very fine to medium grained, subrounded grains, well sorted, trace white argillaceous matrix, rare to trace dolomite cement. Dolomite cemented aggregates have dull light yellow fluorescence, no cut.
	40	SILTSTONE: medium light grey to medium grey, firm, blocky rounded cuttings, occasional carbonaceous inclusions.
	10	SHALE: as above. ?AMBER: translucent, orange, crumbles easily, glassy texture, bright white fluorescence, no cut.
2475 - 2477.7m		Bottoms Up
	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
	trace	SHALE: as above, finely laminated with very carbonaceous/coaly layers.
	trace	COAL: black, firm, angular cuttings, argillaceous.
2477.7 - 2480m	90	SILTSTONE: medium light grey, firm, subrounded cuttings, moderately calcareous.
	10	SHALE: medium dark grey to brown grey, firm, subangular to subrounded, blocky to elongated cuttings, occasional carbonaceous inclusions.
	tr-5	SANDSTONE: loose quartz grains, translucent, coarse to very coarse to granule size, subrounded, no shows.
	trace	COAL: black, hard, shiny, subangular cuttings.
2480 - 2485m	85	SILTSTONE: as above.
	trace	SHALE: as above.
	5	SANDSTONE: loose quartz, as above. Also rare quartz aggregates with dolomitic cement and faint, dull pale yellow fluorescence, no cut, (probably cavings).
	10	COAL: as above.
2485 - 2490m	90	SANDSTONE: clear to translucent, medium to coarse grained, subrounded to rounded grains, well sorted, no shows. Also 3 pieces dolomite-cemented aggregates as above.
	10	SILTSTONE: occasionally buff, otherwise as above, trace pyrite.
	trace	SHALE: as above.
2490 - 2495m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	SHALE: as above.
	trace	COAL: as above.

2495 - 2500m	80	SANDSTONE: occasional granule sized quartz grains otherwise as above. Occasional very fine grained quartz aggregates with carbonaceous inclusions and argillaceous matrix. No shows. Also 2 pieces dolomite-cemented aggregates as above.
	20	SILTSTONE: as above.
2500 - 2505m	90	SANDSTONE: predominantly angular to subangular, otherwise as above.
	10	SILTSTONE: as above.
2505 - 2510m	80	SANDSTONE: as above, occasional dolomite-cemented aggregates.
	20	SILTSTONE: as above, trace mica.
	trace	SHALE: as above.
2510 - 2515m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2515 - 2520m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2520 - 2525m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	SHALE: as above.
2525 - 2530m	90	SANDSTONE: as above.
	10	SILTSTONE: slightly calcareous.
2530 - 2535m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2535 - 2540m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
2540 - 2545m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2545 - 2550m	100	SANDSTONE: as above, 2 dolomite-cemented cuttings.
	trace	SILTSTONE: as above.
2550 - 2555m	80	SANDSTONE: as above, occasional dolomite-cemented aggregates.
	20	SILTSTONE: as above, grading to very fine grained sandstone.
	trace	SHALE
2555 - 2560m	80	SANDSTONE: as above, with 25% dolomite-cemented aggregates with bright yellow fluorescence.
	20	SILTSTONE: carbonaceous flecks in part otherwise as above.
	trace	SHALE: carbonaceous, as above.
2560 - 2565m	50	SANDSTONE: as above, with 20% dolomite-cemented aggregates.
	40	COAL: as above.
	10	SILTSTONE: as above.
	trace	SHALE: as above.

2565 - 2570m	20	SILTSTONE: as above.
	30	COAL: black, hard, shiny angular cuttings.
	40	SANDSTONE: loose quartz as above. Also present 10% dolomite-cemented aggregates, consisting of clear quartz grains, moderately friable, subangular quartz grains, fine to medium grained, moderately well sorted, dolomitic cement, carbonaceous inclusions, poor visual porosity, pale dull white to yellow fluorescence, no cut, no crush cut.
	10	SHALE: medium dark grey to brown grey, firm, subfissile to fissile, argillaceous matrix, non-calcareous, common carbonaceous inclusions.
2570 - 2575m	10	SILTSTONE: medium light grey to medium dark grey, soft to firm, rounded cuttings slightly calcareous.
	80	SANDSTONE: loose quartz - clear to translucent, medium to very coarse grained, predominantly coarse grained, no shows. 20% of whole sample consists of dolomite-cemented aggregates.
	10	SHALE: as above.
2575 - 2580m	20	SILTSTONE: occasionally with carbonaceous inclusions, otherwise as above.
	50	SANDSTONE: loose quartz as above, dolomite-cemented aggregates approximately 10% of sample as above.
	20	SHALE: as above.
	10	CLAYSTONE: light grey, very soft, dispersive. water sensitive, carbonaceous inclusions.
	trace	PYRITE: microcrystalline aggregates.
	trace	MICA: muscovite.
2580 - 2585m	40	SILTSTONE: as above.
	30	SANDSTONE: loose quartz as above; trace dolomite-cemented aggregates as above; also present is some very fine grained sandstone - friable, well sorted, argillaceous matrix. No shows.
	10	SHALE: as above.
	20	CLAYSTONE: as above.
2585 - 2590m	40	SANDSTONE: loose quartz, clear to translucent, medium to coarse grained, angular to subangular, moderately sorted, 5% dolomite-cemented, fine to medium grained aggregates, hard.
	30	SILTSTONE: medium light grey to dark grey, brown, firm, rounded to subfissile cuttings, slightly calcareous in part.
	20	CLAYSTONE: medium light grey to light grey, very soft, rounded cuttings.
	10	SHALE: dark grey, brown, firm to hard, fissile.
	trace	COAL: as above.
2590 - 2595m	50	SANDSTONE: with 5% dolomite-cemented aggregates as above.
	20	SILTSTONE: as above.
	10	CLAYSTONE: as above.
	20	SHALE: as above.
2595 - 2600m	30	SANDSTONE: as above.
	50	SILTSTONE: as above.
	10	CLAYSTONE: as above.
	10	SHALE: as above.

5/

2600 - 2605m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	CLAYSTONE: as above.
	trace	SHALE: as above.
2605 - 2610m	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
	trace	CLAYSTONE: as above.
	trace	SHALE: as above.
	trace	COAL: as above.
2610 - 2615m	70	SANDSTONE: as above.
	30	SILTSTONE: as above.
2615 - 2620m	80	SANDSTONE: as above.
	20	SILTSTONE: grading to very fine grained sandstone as above.
	trace	SHALE: as above.
2620 - 2625m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2625 - 2630m	60	SANDSTONE: as above.
	40	SILTSTONE: as above.
	trace	SHALE: as above.
2630 - 2635m	80	SILTSTONE: as above, with occasional glauconite inclusions.
	20	SANDSTONE: as above, including trace dolomite-cemented aggregates as above.
	trace	SHALE: as above.
	trace	COAL: as above.
2635 - 2640m	50	SILTSTONE: light grey to medium dark grey, firm, rounded blocky cuttings, calcareous, occasional trace of glauconite inclusions.
	50	SANDSTONE: loose quartz - clear to translucent, medium to very coarse grained, dominantly coarse, subangular to subrounded, dominantly subangular, moderately well sorted, no shows, also trace dolomite-cemented aggregates - clear to translucent quartz grains, medium to coarse grained, hard, well cemented, dull pale white to yellow fluorescence, no cut.
	trace	SHALE: medium dark grey to brownish grey, firm, fissile, non calcareous, common carbonaceous inclusions.
	trace	COAL: black, vitreous, hard, angular cuttings, conchoidal fracture.
	trace	PYRITE: microcrystalline aggregates.
2640 - 2645m	80	SANDSTONE: loose quartz, occasional granule size otherwise as above. Few cuttings of dolomite-cemented aggregates as above.
	20	SILTSTONE: as above.
	trace	PYRITE: as above.
2645 - 2650m	50	SANDSTONE: as above, rare dolomite aggregates.
	40	SILTSTONE: as above.
	10	SHALE: as above, occasionally becoming very carbonaceous.
	trace	PYRITE: as above.

2650 - 2655m	20	COAL: as above.
	40	SHALE: very carbonaceous in parts, otherwise as above.
	10	SILTSTONE: with trace glauconite inclusions as above.
	20	SANDSTONE: loose quartz - as above. Also a minor proportion of very fine grained, friable, very argillaceous sandstone, with common carbonaceous inclusions.
	10	CLAYSTONE: white to very light grey or buff, very soft, slightly sticky.
	trace	PYRITE: as above.
2655 - 2660m	50	SANDSTONE: loose quartz as above. Trace of very fine grained sandstone, as above.
	20	SILTSTONE: as above.
	20	SHALE: carbonaceous in part, as above.
	10	CLAYSTONE: as above.
	trace	COAL: as above.
	trace	GLAUCONITE: as above.
2660 - 2665m	80	SANDSTONE: predominantly loose quartz as above. Trace very fine grained sandstone, less argillaceous, otherwise as above. Quartz aggregates - clear, very friable, fine to medium grained, predominantly fine grained, subrounded, well sorted, argillaceous matrix, occasional carbonaceous inclusions. Moderate visual porosity. No shows.
	10	SILTSTONE: with glauconite inclusions, otherwise as above.
	10	SHALE: as above.
	trace	CLAYSTONE: as above.
2665 - 2670m	70	SANDSTONE: predominantly loose quartz grains as above. Trace argillaceous very fine grained sandstone. Trace quartz aggregates.
	10	SILTSTONE: as above.
	10	SHALE: as above.
	10	CLAYSTONE: as above.
	trace	GLAUCONITE
2670 - 2675m	70	SANDSTONE: as above, with some argillaceous aggregates.
	30	SILTSTONE: as above, trace mica.
	trace	CLAYSTONE: very light grey to white, soft, sticky.
	trace	SHALE
2675 - 2680m	70	SANDSTONE: as above, trace pyrite, trace mica.
	20	SILTSTONE: as above.
	trace	CLAYSTONE: as above.
	10	SHALE: as above.
2680 - 2685m	70	SANDSTONE: as above, trace mica.
	30	SILTSTONE: as above.
	trace	CLAYSTONE: as above
	trace	SHALE: as above.
2685 - 2690m	90	SANDSTONE: as above, trace mica.
	10	SILTSTONE: as above.
2690 - 2695m	90	SANDSTONE: as above.
	10	SILTSTONE: as above.
2695 - 2700m	70	SANDSTONE: as above.
	30	SILTSTONE: as above.
	trace	SHALE: as above.

2700 - 2705m	10	SANDSTONE: as above.
	70	SILTSTONE: as above.
	10	SHALE: as above.
	10	CLAYSTONE: as above.
2705 - 2710m	10	SANDSTONE: as above.
	70	SILTSTONE: as above.
	10	SHALE: as above.
	10	CLAYSTONE: as above.
2710 - 2715m	10	SANDSTONE: trace fine grained aggregates, trace bright yellow fluorescence with very slow diffuse yellow crush cut.
	80	SILTSTONE: as above.
	trace	SHALE: as above.
	10	CLAYSTONE: as above.
2715 - 2720m	10	SANDSTONE: as above, trace fluorescence as above.
	50	SILTSTONE: as above.
	30	SHALE: as above.
	10	CLAYSTONE: as above.
2720 - 2725m	10	SANDSTONE: as above, some argillaceous aggregates, trace fluorescence as above.
	30	SILTSTONE: as above.
	30	SHALE: as above.
	20	CLAYSTONE: as above.
	10	COAL: as above.
2725 - 2730m	20	SANDSTONE: as above, no fluorescence.
	40	SILTSTONE: as above.
	20	SHALE: very carbonaceous, black, in part.
	20	CLAYSTONE: as above.
2730 - 2735m	10	SANDSTONE: as above, trace fluorescence as above.
	60	SILTSTONE: as above.
	20	SHALE: as above.
	trace	CLAYSTONE: as above.
	10	COAL: as above.
2735 - 2740m	trace	SANDSTONE: as above.
	60	SILTSTONE: as above.
	20	SHALE: as above.
	20	CLAYSTONE: as above.
	trace	COAL: as above.
2740 - 2745m	40	SILTSTONE: medium light grey to medium dark grey, firm to hard, rounded, blocky cuttings, carbonaceous flecking.
	30	SHALE: brownish grey to dark grey, firm, fissile, common carbonaceous inclusions.
	20	CLAYSTONE: white to light grey, yellow brown, very soft, sticky, well rounded blocky cuttings, carbonaceous inclusions.
	10	SANDSTONE: predominantly very fine grained aggregates, otherwise as above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2745 - 2750m	60	SILTSTONE: as above.
	10	SHALE: as above.
	20	CLAYSTONE: as above.
	10	SANDSTONE: as above.
	trace	PYRITE: as above.

2750 - 2755m	80	SANDSTONE: predominantly loose quartz - clear to translucent, medium to very coarse grained, dominantly medium to coarse grained, subangular to subrounded, moderately well sorted, no shows. Also trace of fine to medium grained, friable, well rounded, well sorted, occasional carbonaceous inclusions. No shows.
	10	SILTSTONE: as above.
	trace	SHALE: as above.
	10	CLAYSTONE: as above.
2755 - 2760m	90	SANDSTONE: predominantly loose quartz as above. Minor sandstone aggregates as above.
	10	SILTSTONE: as above.
	trace	SHALE: as above.
	trace	CLAYSTONE: as above.
2760 - 2765m	40	SILTSTONE: as above.
	30	CLAYSTONE: slightly sticky, dispersive, otherwise as above.
	30	SANDSTONE: as above, ie. dominantly loose quartz.
	trace	PYRITE: microcrystalline aggregates.
2765 - 2770m	70	COAL: black, hard, angular cuttings, vitreous.
	20	SHALE: becoming very carbonaceous in parts, otherwise as above.
	10	SILTSTONE: as above, (dominantly loose quartz).
	trace	CLAYSTONE: cohesive (ie. not dispersive) otherwise as above.
	trace	SANDSTONE: as above.
2770 - 2775m	30	COAL: as above.
	50	SHALE: very carbonaceous in parts, otherwise as above.
	10	CLAYSTONE: as above.
	10	SILTSTONE: as above.
	trace	SANDSTONE: as above, (ie. dominantly loose quartz).
2775 - 2780m	30	SILTSTONE: as above.
	40	SHALE: very carbonaceous in part, as above.
	10	CLAYSTONE: as above.
	10	COAL: as above.
	10	SANDSTONE: trace loose quartz as above. Predominantly very fine to fine grained, friable, subrounded, well sorted, ?argillaceous matrix, very fine grained carbonaceous inclusions, good visual porosity. 3 small cuttings had dull, faint, white fluorescence with very slow-streaming dull white cut and small amount of instant white crush cut.
2780 - 2785m	40	SILTSONE: as above.
	30	CLAYSTONE: slightly sticky, tending to dispersive, otherwise as above.
	30	SANDSTONE: Occasional loose quartz grains as above. Dominantly very fine grained sandstone, very argillaceous, otherwise as above.
	trace	SHALE: as above.
	trace	COAL: as above.

2785 - 2790m	40	COAL: as above.
	50	SHALE: very carbonaceous in parts, otherwise as above.
	10	SANDSTONE: trace loose quartz as above, predominantly very fine grained sandstone, less argillaceous, otherwise as above. 1 small cutting with yellow white fluorescence, very slow streaming yellow white cut, faint white crush cut.
2790 - 2795m	20	COAL: as above.
	50	SHALE: as above.
	20	SILTSTONE: as above.
	10	SANDSTONE: as above, trace fluorescence as above.
2795 - 2800m	70	SHALE: as above.
	20	SILTSTONE: as above.
	10	CLAYSTONE: as above.
	trace	SANDSTONE: as above.
	trace	COAL: as above.
2800 - 2805m	50	SHALE: as above.
	30	SILTSTONE: as above,
	20	SANDSTONE: predominantly argillaceous, fine to medium grained aggregates.
2805 - 2810m	20	SHALE: as above.
	20	SILTSTONE: trace glauconite as above.
	60	SANDSTONE: predominantly argillaceous, fine to medium grained aggregates, trace fluorescence in some aggregates, as above.
2810 - 2815m	40	SHALE: as above.
	30	SILTSTONE: as above.
	10	SANDSTONE: as above.
	10	CLAYSTONE: as above.
	10	COAL: as above.
2815 - 2820m	10	SHALE: as above.
	70	SILTSTONE: as above.
	20	SANDSTONE: predominantly loose grains.
	trace	CLAYSTONE: as above.
2820 - 2825m	30	SANDSTONE: two types - 1) predominantly medium to fine grained, hard, quartzose aggregates, argillaceous cement; 2) medium to coarse grained, loose grains, subangular to angular, moderately well sorted, trace fluorescence as above in aggregates.
	30	SILTSTONE: as above.
	20	SHALE: as above.
	20	CLAYSTONE: as above.
2825 - 2830m	30	SILTSTONE: as above.
	10	SHALE: as above.
	60	SANDSTONE: as above.
	trace	CLAYSTONE: as above.
2830 - 2835m	30	SILTSTONE: as above.
	10	SHALE: as above.
	40	SANDSTONE: as above, with trace to 5% fluorescence in fine grained argillaceous aggregates, as above; predominantly loose angular to subangular grains.
	10	CLAYSTONE: as above.
	10	COAL: as above.

2835 - 2840m	10	SILTSTONE: as above.
	20	SHALE: as above.
	40	SANDSTONE: predominantly loose as above, with fluorescence.
	30	CLAYSTONE: as above.
2840 - 2845m	30	SILTSTONE: as above.
	trace	SHALE: as above.
	70	SANDSTONE: predominantly loose as above, 5% dull orange fluorescence - no cut.
	trace	CLAYSTONE: as above.
2845 - 2850m	20	SILTSTONE: as above.
	10	SHALE: as above.
	70	SANDSTONE: predominantly loose, as above, 5% dull orange fluorescence, trace yellow fluorescence, no cut.
2850 - 2855m	20	SILTSTONE: as above.
	10	SHALE: as above.
	70	SANDSTONE: as above.
2855 - 2860m	60	SILTSTONE: as above.
	30	SANDSTONE: predominantly loose quartz as above. Trace sandstone aggregates as above with trace fluorescence and cut as above.
	10	SHALE: as above.
	trace	CLAYSTONE: as above.
	trace	PYRITE: as above.
2860 - 2865m	20	COAL: black, angular cuttings, vitreous.
	40	SHALE: brownish grey to dark grey, firm, fissile, carbonaceous inclusions and layering, very carbonaceous in parts.
	trace	SANDSTONE: Predominantly 1) loose quartz - clear to translucent, medium to coarse grained, occasionally very coarse grained, subangular to subrounded, predominantly subrounded; also 2) translucent, friable, fine to medium grained, subrounded to rounded, well sorted, white argillaceous cement, fine grained carbonaceous inclusions, good visual porosity, trace bright patchy yellow-white fluorescence, slow streaming yellow white cut and crush cut.
	30	SILTSTONE: as above.
	10	CLAYSTONE: as above.
2865 - 2870m	60	SHALE: subfissile to fissile, otherwise as above.
	20	SILTSTONE: light to medium dark grey, firm to soft, blocky cuttings, trace cuttings are greenish grey, slightly calcareous, majority. are non calcareous, carbonaceous flecking.
	20	CLAYSTONE: buff, light grey, brownish grey, very soft, well rounded, blocky, occasionally carbonaceous flecking.
	trace	COAL: as above.
	trace	SANDSTONE: as above, trace fluorescence, very slow dispersive cut, and crush cut.
	trace	PYRITE: as above.

2870 - 2875m	30	COAL: as above.
	30	SHALE: as above.
	10	SILTSTONE: as above.
	20	SANDSTONE: predominantly loose quartz as above, aggregtes as above. Few cuttings with fluorescence as above, and faint dispersive crush cut.
	10	CLAYSTONE: as above.
2875 - 2880m	40	SANDSTONE: mainly loose quartz grains, coarse grained, also very fine to fine grained, well sorted aggregates. Trace fluorescence in the fine to medium grained aggregates, which gives very slow diffuse cut and crush cut. The very fine to fine grained aggregates have patchy yellow white fluorescence and slow streaming cut and crush cut. Rare dull orange pinpoint fluorescence as well.
	40	SHALE: as above.
	10	SILTSTONE: as above.
	10	CLAYSTONE: silty in parts, otherwise as above.
	trace	COAL: as above.
2880 - 2885m	50	SANDSTONE: loose quartz grains and quartz aggregates as above. Trace fluorescence as above in very fine to fine grained aggregates. Rare dull orange fluorescence, without cut.
	20	COAL: as above.
	10	SHALE: as above.
	10	SILTSTONE: as above.
	10	CLAYSTONE: as above.
2885 - 2890m	60	SANDSTONE: loose quartz - medium to coarse grained, no shows. Quartz aggregates - predominantly fine to very fine, rare fine to medium grained aggregates with fluorescence, and very slow diffuse white cut and crush cut. Trace orange fluorescence without cut.
	20	SHALE: as above.
	10	COAL: as above.
	10	CLAYSTONE: as above.
	trace	PYRITE: microcrystalline aggregates.
2890 - 2895m		Cavings samples logged after trip.
2895 - 2900m		Cavings samples logged after trip.
2900 - 2905m	50	SANDSTONE: predominantly loose quartz as above, also some quartz aggregates as above, with trace fluorescence as above.
	40	SILTSTONE: predominantly medium dark grey to medium light grey as above, also brown cuttings with carbonaceous flecks, very common greenish grey calcareous cuttings (20%).
	10	SHALE: as above.
2905 - 2910m	70	SILTSTONE: as above, but only 5% greenish grey, glauconite pellets in some pieces of dark brown cuttings.
	20	SHALE: very carbonaceous in part, otherwise as above.
	10	COAL: as above.
	trace	SANDSTONE: as above.

2910 - 2915m	30	COAL: as above.
	50	SILTSTONE: as above.
	20	SHALE: as above.
	trace	SANDSTONE: loose quartz as above.
	trace	PYRITE: as above.
2915 - 2920m	60	COAL: as above.
	10	SHALE: as above.
	30	SILTSTONE: as above.
	trace	CLAYSTONE: as above.
	trace	SANDSTONE: loose quartz as above.
2920 - 2925m	30	SANDSTONE: predominantly loose quartz. Fine to medium grained aggregates, rare (ie. few cuttings per sample) dull, very pale yellow white fluorescence, very very faint cut as above.
	10	SHALE: as above.
	40	SILTSTONE: as above, approximately 30% is non calcareous, rest becoming carbonaceous.
	10	COAL: as above.
	10	CLAYSTONE: as above.
2925 - 2930m	50	SANDSTONE: mainly loose quartz with some fine to medium aggregates. Trace have yellow white fluorescence, and give pale white diffuse cut and crush cut.
	10	SHALE: as above.
	30	SILTSTONE: as above, with trace very dull orange fluorescence, trace dull pale white diffuse cut.
	10	COAL: as above.
2930 - 2935m	70	SANDSTONE: loose quartz, subangular to subrounded, otherwise as above. Fine to medium aggregates as above, trace dull yellow fluorescence, no cut. Rare bright white fluorescence, faint cream cut.
	20	SILTSTONE: approximately 20% green grey calcareous cuttings.
	10	SHALE: as above.
	trace	COAL: as above.
2935 - 2940m	80	SANDSTONE: loose quartz and fine to medium grained aggregates as above. Aggregates have trace very dull, faint yellow fluorescence, but no cut.
	20	SILTSTONE: as above.
	trace	SHALE: as above.
	trace	COAL: as above.
2940 - 2945m	70	COAL: black, vitreous angular cuttings.
	30	SANDSTONE: predominantly loose quartz, clear to translucent, medium to coarse grained, occasional grains are very coarse, subangular to subrounded, moderately well sorted, no shows. Also trace fine to medium grained aggregates, trace very dull yellow fluorescence, streaming white cut, no crush cut, leaves bright white fluorescent shaped residue.
	trace	SILTSTONE: carbonaceous siltstone, as above.

2945 - 2950m	60	COAL: as above.
	30	SANDSTONE: loose quartz and medium to coarse aggregates as above, with trace fluorescence and cut as above.
	trace	SHALE: brown grey, firm, subfissile, carbonaceous.
	trace	CLAYSTONE: buff to brown grey, very soft, blocky rounded cuttings, carbonaceous inclusions.
	10	SILTSTONE: as above.
2950 - 2955m	20	COAL: as above.
	20	SILTSTONE: as above.
	60	SANDSTONE: with trace yellow, slow diffuse cut, in aggregates only.
	trace	SHALE: as above.
2955 - 2960m	60	COAL: as above.
	30	SANDSTONE: as above, trace fluorescence in aggregates.
	10	SILTSTONE: as above.
	trace	SHALE: as above.
2960 - 2965m	40	COAL: as above.
	40	SANDSTONE: as above, with trace yellow fluorescence in aggregates, which gives a slow-streaming yellow cut.
	20	SILTSTONE: as above.
	trace	SHALE: as above.
2965 - 2970m	10	COAL: as above.
	30	SILTSTONE: as above.
	60	SANDSTONE: predominantly loose grains but common aggregates with trace fluorescence as above.
2970 - 2975m	trace	COAL: as above.
	30	SILTSTONE: as above.
	70	SANDSTONE: as above.
2975 - 2980m	10	COAL: as above.
	20	SILTSTONE: as above.
	70	SANDSTONE: as above, trace fluorescence as above.
2980 - 2985m	80	SANDSTONE: as above, trace to 5% fluorescence as above.
	20	SILTSTONE: as above.
2985 - 2990m	70	SANDSTONE: as above, trace to 5% fluorescence as above, with occasional cement, as above.
	20	SILTSTONE: as above.
	10	SHALE: as above.
	trace	COAL
2990 - 2995m	80	SANDSTONE: as above, some aggregates have dark carbonaceous laminae, predominantly loose, coarse to very coarse, angular to subangular grains, trace to 5% fluorescence and cut as above.
	20	SILTSTONE: as above.
2995 - 3000m	80	SANDSTONE: as above, 5-10% fluorescence in aggregates as above, very slow cut.
	10	SILTSTONE: as above.
	10	SHALE: very dark grey to brown grey, very carbonaceous, hard, fissile.

69

3000 - 3005m	80	SANDSTONE: predominantly loose coarse to very coarse grains, clear to milky quartz, angular to subangular, moderately well sorted, commonly associated with mica plates - moderate visible porosity is implied, no shows; trace to 10% fine to medium grained aggregates, moderately hard, slightly calcareous, siliceous and argillaceous cement, trace to 10% yellow to very dull orange fluorescence with trace to very weak pale yellow slow-streaming cut.
	20	SILTSTONE: medium dark grey to medium grey, firm to moderately hard, blocky to subfissile cuttings, grades into shale in part, very carbonaceous in part, especially as grainsize descreases.
3005 - 3010m	60	SANDSTONE: as above, trace fluorescence as above.
	30	SILTSTONE: as above.
	10	SHALE: medium dark grey to black, very carbonaceous in part, hard to firm, fissile.
3010 - 3015m	60	SANDSTONE: as above, 10% fluorescence as above, with cut as above.
	20	SILTSTONE: as above.
	20	SHALE: as above.
3015 - 3020m	60	SANDSTONE: as above, with 10% fluorescence as above, with very weak cut as above.
	30	SILTSTONE: as above.
	10	SHALE: as above.
3021 T.D.	60	SANDSTONE: as above, with 10% fluorescence as above, with cut as above.
	30	SILTSTONE: as above.
	10	SHALE: as above.

APPENDIX 2

CORE DESCRIPTIONS

APPENDIX 2

CORE DESCRIPTIONS

62

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

Core No. One

Well Luderick-1

Interval Cored 1837.9-1847.45 m, **Cut** 9.55 m, **Recovered** 9.55 m, (100 %) **Fm.** Latrobe

Bit Type RC-4 **Bit Size** 9-7/8 in., **Desc by** R. Key **Date** 11/6/83

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 25 0			1837	1837.9 - 1841.9m SANDSTONE: quartzose, light grey, friable to firm, very fine to fine grained, subangular to subrounded, well sorted, micaceous, becomes laminated with carbonaceous laminae, some bioturbation.
(107)		?	1838	Poor visual porosity.
				Shows: 1837.9 - 1838.3m Trace pinpoint bright white fluorescence, very slow dull white cut. Trace pin
			1839	point oil stain (?)
				1838.3 - 1841.9m Petroliferous odour, 5 spotty to uneven oil stain, 50-100 bright white fluorescence,
			1840	milky white cut, clear residue.
				1841.9 - 1843.35m SANDSTONE: as above, harder, more intensely bioturbated, very micaceous in part,
			1841	some carbonaceous laminae (roots?) end abruptly at
(450)				1843,35m in a thick 5cm mass.
				Shows: 1.-40 pinpoint to patchy bright orange yellow
			1842	white fluorescence, very slow dull milky white cut
				to white streaming cut, clear residue.
				1843.35 - 1843.9m SANDSTONE: light grey to medium
			1843	light grey, quartzose, friable to hard, very fine to
(232)				fine grained, subangular to subrounded, well
				sorted, micaceous becoming very micaceous to
		?	1844	base with white argillaceous matrix, very poor visible
				porosity.
				Shows: trace to 2 bright orange to white pinpoint
			1845	fluorescence, very slow dull milky white cut.
		?		1843.9 - 1 44.1m SANDSTONE: as above, with car-
				bonaceous laminae and bioturbation, hard to very hard,
			1846	becomes very micaceous to base, very poor visible
				porosity.
				Shows: trace - 20 bright orange to yellow pinpoint
				fluorescence, very slow dull milky white cut. Trace
				pinpoint oil stain (?)

* Erratic ROP's could be due to high winds affecting Geolograph line.

63/

ESSO AUSTRALIA LTD

CORE DESCRIPTION

Core No. One

Well Luderick-1

Interval Cored 1837.9-1847.45 m, **Cut** 9.55 m, **Recovered** 9.55 m, (100 %) **Fm.** Latrobe

Bit Type RC-4 **Bit Size** 9-7/8 in., **Desc by** R. Key **Date** 11/6/83

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 25 0 (240)			1847	1844.1 - 1847.45m SANDSTONE: medium grey, very micaceous, fine to coarse grained mica, especially to base - at base gives schistoze texture, very fine grained sand with argillaceous matrix, at base has coarse grained quartz, subangular to rounded, hard, some carbonaceous laminae and bioturbation. Very poor visible porosity. Shows: 1-10 orange to yellow pinpoint to patchy fluorescence, very slow dull straw to fast streaming yellow/white cut, clear residue, trace pinpoint oil stain (?)
			1848	

64

ESSO AUSTRALIA LTD.

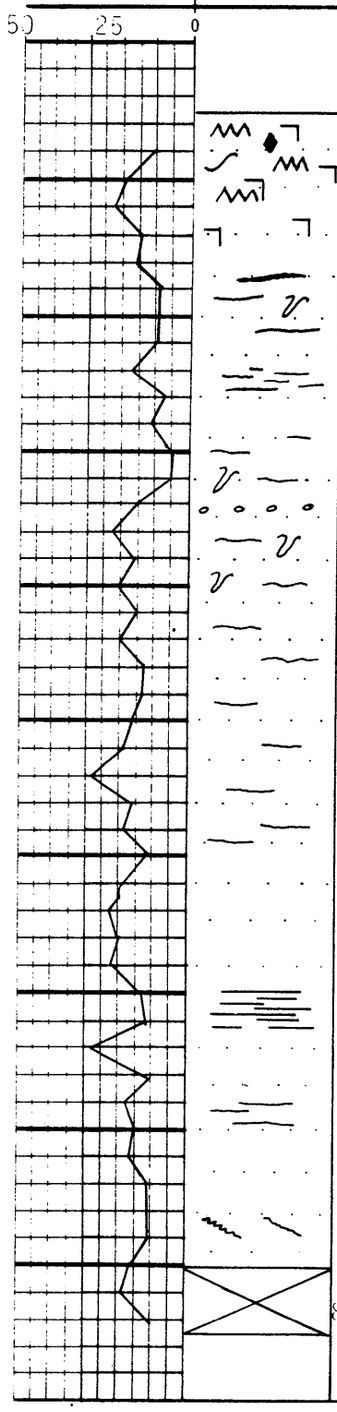
CORE DESCRIPTION

Core No. Two

Well Luderick-1

Interval Cored 1847.5-1856.5 **m,** **Cut** 9 **m,** **Recovered** 8.5 **m,** (94 %) **Fm.** Latrobe

Bit Type RC-4 **Bit Size** 9-7/8 **in.,** **Desc by** Davidson, Key **Date** 11/6/83



Depth & Coring Rate (m/hr)	Shows	Interval (m)	Descriptive Lithology
		1847	1847.5-1848.15m SANDSTONE: quartzose, grey to clear, hard, coarse to very coarse grained, sub-rounded to subangular, moderately sorted, very fine grained to silt sized matrix forming occasional thin siltstone layers (less than 3mm), abundant mica, trace glauconite and micropyrite, slightly calcareous, poor visible porosity - no shows.
	20-60	1848	
	70-100	1849	1848.15-1848.65m SANDSTONE: poorly sorted, friable, otherwise as above. Fluorescence - 20-60 patchy bright yellow/white, slow streaming cut, yellow fluorescent residue.
		1850	1848.65-1849.33m SANDSTONE: medium to coarse grained moderately to well sorted, hard, friable, non calcareous, moderate visible porosity, otherwise as above, occasional burrows. Fluorescence - trace-15 red brown oil stain, 70-100 bright yellow white fluorescence as above, cut as above, strong petroliferous odour.
	tr-5	1851	
		1852	
		1853	1849.33-1853.16m SANDSTONE: quartzose, grey white to clear, hard, friable, very coarse to fine grained, moderately sorted, minor grading apparent, predominantly subangular, occasionally well rounded pebbles up to 5mm in single layers, moderate visible porosity red brown convoluted carbonaceous/micaceous very thin laminae, subhorizontal. Fluorescence - trace-5 dull orange yellow with trace bright yellow, concentrated in carbonaceous/micaceous laminae - weak streaming cut and crush cut, yellow fluorescent residual ring and light brown residue.
	tr	1854	
	No Shows	1855	
		1856	1853.16-1853.23m SANDSTONE: poorly sorted, bimodal, well rounded, coarse to very coarse grains with fine grains in interstices, hard, friable, poor visible porosity, trace fluorescence as above.
	80-100		1853.23-1855.96m SANDSTONE: quartzose, clear to white, moderately hard to hard, friable, poorly sorted, moderate to good visible porosity, no shows.
			1855.96-1856.00m SANDSTONE: thinly laminated, poorly sorted, very coarse to medium quartz grains, very friable, soft, oil stained with fine to very fine harder layers without shows.
			Shows: 80-100 oil stain, red brown, 80-100 light orange fluorescence with instantaneous bright yellow streaming/blooming cut, yellow orange fluorescent residue and brown oil stain residue over whole spot dish.

65/

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

Core No. Three

Well Luderick-1

Interval Cored 1856.5-1861.6 m, Cut 5.1 m, Recovered 4.92 m, (96.5 %) Fm. Latrobe

Bit Type RC-4 Bit Size 9-7/8 in., Desc by N. Davidson Date 12/6/83

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
20 10 0			1856	1856.5-1857.49 SILTSTONE: medium dark grey, quartzose very micaceous, hard, subfissile, carbonaceous flecks, occasionally finely laminated with shale and coaly laminae, flaser bedding in part.
			1857	1857.49-1857.75m SANDSTONE: quartzose, white to clear, hard, very coarse to fine grained, predominantly medium grained, poorly sorted, well rounded to angular, predominantly subangular, minor coaly fine laminae, rare rootlets - no shows.
			1858	
			1859	1857.75-1859.25m CARBONACEOUS SHALE: dark grey to medium dark grey, hard, fissile, coaly in part, flaser bedding and rip up clasts towards base of layer.
			1860	1859.25-1860.23m MUDSTONE: medium light grey, hard, occasionally carbonaceous shaley laminae, occasionally siltstone clasts.
			1861	1860.23-1860.56m SILTSTONE: as above.
				1860.56-1861.42m SANDSTONE/SILTSTONE: inter-laminated as above, minor graded bedding.
			1862	1861.42-1861.6m No Recovery

APPENDIX 3

SIDEWALL CORE DESCRIPTIONS

APPENDIX 3

SIDEWALL CORE DESCRIPTIONS

LUDERICK - 1

SIDEWALL CORE DESCRIPTIONS

No.	Depth	Rec. (mm)	Rock Type	Description
1	2995.0	30	Siltstone	Medium dark grey, firm, slightly calcareous, argillaceous.
2	2982.8			No Recovery, bottle contains mud only.
3	2952.3	20	Sandstone	Medium grey, fine to very fine grained, moderately sorted, subangular to subrounded, firm, slightly calcareous, very argillaceous, trace (one streak) dull yellow fluorescence, no cut.
4	2944.0	10	Sandstone	Brown grey, fine to medium grained, poorly sorted, subangular to angular, firm, slightly calcareous, very argillaceous, very poor visible porosity. C1 C2 C3 C4 C5 C6 955 82 61 17 23 26
5	2935.0	10	Sandstone	Very light grey, very fine grained, moderately sorted, subangular, moderately hard, one third black vitreous coal. C1 C2 C3 C4 C5 C6 2964 344 167 34 3 13
6	2925.9	10	Sandstone	Very light grey, very fine grained, moderately sorted, angular, moderately hard, carbonaceous in part, possibly argillaceous, matrix very poor visible porosity, trace spotty, moderately intense yellow fluorescence, very dull weak yellow cut fluorescence over whole bowl, very very poor residue. C1 C2 C3 C4 C5 C6 1357 197 106 17 6 13
7	2907.1	20	Siltstone	Medium light grey, firm to moderately hard, very argillaceous.
8	2881.3	30	Shale	Medium dark grey, firm, slightly calcareous, carbonaceous.
9	2857.0	30	Sandstone	Medium grey, very fine grained, moderately sorted, subangular, firm, moderately calcareous, very argillaceous, slightly carbonaceous.
10	2854.0	30	Sandstone	Very light grey, medium to fine grained, poorly sorted, subrounded to subangular, firm, white clay matrix, very poor visible porosity. C1 C2 C3 C4 C5 C6 91 25 30 4 12 tr
11	2844.6	25	Sandstone	Light grey, medium to fine grained, moderately well sorted, subrounded to subangular, firm, slightly calcareous, slightly carbonaceous, white clay matrix, extremely poor visible porosity, trace to very slight spotty dull yellow fluorescence, no cut. C1 C2 C3 C4 C5 C6 403 66 65 26 6 13

12	2841.0	30	Sandstone	Light grey, medium to very fine grained, moderately poorly sorted, subrounded to subangular, firm, slightly calcareous, slightly carbonaceous, white clay matrix, poor visible porosity, tight. 20% even, moderate, yellow fluorescence, moderately strong yellow cut fluorescence, moderately strong, pale brown, cut residue. C1 C2 C3 C4 C5 C6 8320 1312 1216 275 171 156
13	2851.1			No Recovery - Misfire
14	2851.0	30	Sandstone	Medium light grey, very fine grained, well sorted, angular, moderately hard to firm, slightly calcareous, very argillaceous, slightly carbonaceous, very poor visible porosity. C1 C2 C3 C4 C5 C6 494 148 198 52 34 52
15	2834.0	20	Sandstone	Light grey, medium to very fine grained, moderately to poorly sorted, subrounded to subangular, firm, slightly calcareous, white clay matrix, slightly carbonaceous, very poor visible porosity. C1 C2 C3 C4 C5 C6 221 49 53 26 6 13
16	2827.0	30	Sandstone	Light grey, fine to medium, occasionally coarse grained, subrounded to subangular, poorly sorted, firm, slightly calcareous, slightly carbonaceous, white clay matrix, very poor visible porosity.
17	2800.0	30	Sandstone	Medium grey, very fine grained, well sorted, subangular, firm, slightly calcareous, slightly carbonaceous, very argillaceous.
18	2768.0	30	Sandstone	Medium grey, very fine grained, well sorted, subangular, firm, slightly calcareous, slightly pyritic, very argillaceous.
19	2757.0	20	Sandstone	Light grey, fine grained, subangular to subrounded, well sorted, firm, slightly calcareous, white clay matrix, carbonaceous. C1 C2 C3 C4 C5 C6 247 45 46 22 6 13
20	2727.0	30	Sandstone	Medium grey, very fine grained, well sorted, subangular to subrounded, firm, slightly calcareous, very argillaceous.
21	2710.0	30	Shale	Medium grey, firm, silty.
22	2681.0	20	Siltstone	Medium grey, firm, slightly calcareous, very argillaceous.
23	2650.0	30	Siltstone	Medium grey, firm, slightly calcareous, argillaceous.

24	2611.0	30	Siltstone	Brown grey, argillaceous, micromicaceous.
25	2580.0	20	Siltstone	Green grey, argillaceous, slightly carbonaceous.
26	2553.5	40	Siltstone	Grey red, slightly calcareous, argillaceous.
27	2539.0	40	Sandstone	Medium light grey, very fine grained, well sorted, subrounded to subangular, firm, slightly calcaeous, very argillaceous, pyritic.
28	2501.1	40	Sandstone	Medium light grey, very fine grained, well sorted, subrounded to subangular, slightly calcareous, argillaceous, carbonaceous.
29	2480.0	40	Siltstone	Medium grey, firm, very argillaceous, carbonaceous.

C1	C2	C3	C4	C5	C6
206	49	7	8	0	0

30	2461.0	30	Sandstone	Olive grey, fine to very fine grained, subangular to subrounded, moderately well sorted, firm.
31	2445.0	20	Siltstone	Olive grey, firm, slightly calcareous, slightly carbonaceous.
32	2171.0	20	Sandstone	Light grey, fine grained, moderately well sorted, subangular to subrounded, firm.
33	2137.5			No Recovery - Misfire
34	2135.5	20	Claystone	Light grey, firm.
35	2100.5	20	Sandstone	Medium light grey, medium grained, moderately well sorted, subangular, firm, slightly calcareous, slightly argillaceous, moderate visible porosity.

C1	C2	C3	C4	C5	C6
169	25	38	4	12	tr

36	2092.9			No Recovery - Misfire
37	2092.0	20	Sandstone	Light grey, fine grained, moderately well sorted, subangular to angular, moderately hard, very slightly calcareous, white clay matrix, poor visible porosity.
38	2081.7	20	Coal	Black, vitreous.

C1	C2	C3	C4	C5	C6
32448	5510	973	0	0	0

39	2070.6			No Recovery - Misfire
40	2068.4	20	Sandstone	Buff, fine grained, moderately well sorted, subrounded to subangular, moderately had, slightly calcareous, micromicaceous, slightly pyritic.

41	2022.5	20	Mudstone	Yellow brown, firm, slightly calcareous, slightly silty. C1 988 C2 689 C3 1064 C4 602 C5 228 C6 156
42	2018.0			No Recovery - Misfire
43	2013.0			No Recovery
44	2013.0			No Recovery
45	2009.5			No Recovery - Misfire
46	2009.4	20	Siltstone	Yellow brown, moderately hard, slightly calcareous, carbonaceous, trace dull yellow fluorescence on spotty carbonaceous laminae, no cut.
47	2006.9			No Recovery
48	2006.9			No Recovery - Misfire
49	2006.9			No Recovery - Lost
50	2427.5	20	Siltstone	Olive grey, firm.
51	2403.0			No Recovery - Misfire
52	2681.0			No Recovery
53	2403.0	20	Sandstone	Light grey, fine grained, well sorted, subangular to subrounded, firm, slightly calcareous, argillaceous, slightly carbonaceous.
54	2383.0	20	Sandstone	Light grey, fine to very fine grained, well sorted, subangular to subrounded, firm, slightly calcareous, white clay matrix.
55	2359.0	40	Shale	Green red, moderately hard, slightly calcareous, very carbonaceous with coal streaks.
56	2339.0	40	Shale	Green red, moderately hard, carbonaceous, fissile.
57	2322.0	20	Sandstone	Light grey, fine grained, well sorted, subangular to subrounded, firm, very calcareous, argillaceous, micromicaceous, trace coal, poor visible porosity.
58	2291.5	40	Coal/ Shale	Black, firm. Green red, firm, carbonaceous.
59	2270.0	30	Siltstone	Olive grey, firm, micromicaceous.
60	2227.1	45	Claystone	Medium grey, firm, slightly calcareous. C1 45 C2 6 C3 3 C4 0 C5 0 C6 0

61	2200.0	10	Sandstone	Medium light grey, fine grained, moderately well sorted, subangular to subrounded, moderately hard, argillaceous, poor sample, poor visible porosity. C1 C2 C3 C4 C5 C6 13 8 8 0 0 0
62	2018.0	10	Sandstone	Medium light grey, fine to medium grained, moderately well sorted, subangular to subrounded, firm, slightly calcareous, friable, 80% even bright blue-white fluorescence, slow, weak blue-white cut fluorescence, moderate very pale brown cut residue, smells of oil, moderately visible porosity. C1 C2 C3 C4 C5 C6 832 13120 18483 11558 4742 2496
63	2012.9	20	Sandstone	Medium light grey, fine grained, moderately well sorted, subangular to subrounded, firm, slightly calcareous, friable, poor visible porosity. C1 C2 C3 C4 C5 C6 0 0 0 0 0 0
64	1984.0	20	Siltstone	Medium dark grey, soft to firm, moderately calcareous.
65	1981.0	30	Coal	Black, hard. C1 C2 C3 C4 C5 C6 806 262 114 34 40 65
66	1978.0	20	Sandstone	Olive grey, coarse to medium grained, poorly sorted, angular to subrounded, soft, loose, argillaceous. C1 C2 C3 C4 C5 C6 312 33 38 23 23 39
67	1953.0	40	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to subrounded, soft, slightly calcareous, friable, slightly argillaceous. C1 C2 C3 C4 C5 C6 64 8 15 0 0 0
68	1950.9	35	Shale	Medium grey, soft to firm, micaceous, carbonaceous.
69	1946.5	25	Coal	Black, hard.
70	1937.0	25	Sandstone	Light grey, coarse to fine grained, poorly sorted, subangular to subrounded, friable, slightly calcareous, white clay matrix. C1 C2 C3 C4 C5 C6 0 0 0 0 0 0
71	1934.0	25	Sandstone	Green grey, coarse to fine grained, poorly sorted, subangular to subrounded, friable, white clay matrix.
72	1928.0	40	Coal	Black, blocky, vitreous. C1 C2 C3 C4 C5 C6 4899 1114 213 tr 0 0

72

73	1923.2	30	Sandstone	Medium light grey, fine grained, well sorted, subrounded, friable, slightly calcareous, carbonaceous laminae, white clay matrix.

C1	C2	C3	C4	C5	C6
154	20	7	0	0	0

74	1919.0	40	Coal	Black.
75	1914.4	20	Siltstone	Grey brown, moderately hard, slightly calcareous, trace fine grained quartz grains, micromicaceous.

C1	C2	C3	C4	C5	C6
1031	287	68	9	10	0

76	1908.0	35	Sandstone	Medium light grey, fine grained to coarse grained, occasionally very coarse grained, poorly sorted, subangular to subrounded, friable to very friable, slightly calcareous, very argillaceous.
77	1906.0	20	Siltstone	Medium light grey, soft to firm, siltstone and carbonaceous layers, very finely laminated.
78	1901.5	30	Sandstone	Olive grey, coarse to fine grained, poorly sorted, subrounded to subangular, firm, slightly carbonaceous laminae.
79	1896.0	25	Sandstone	Brown, very fine to coarse grained, poorly sorted, subrounded to subangular, very friable, very argillaceous.
80	1893.5	25	Siltstone	Grey red, medium grained, angular to subangular, poorly sorted, firm, slightly micromicaceous, very argillaceous, occasionally loose quartz.
81	1886.9	30	Sandstone	Brown, fine to coarse grained, poorly sorted, subangular to subrounded, friable, argillaceous matrix.

C1	C2	C3	C4	C5	C6
206	49	7	9	0	0

82	1883.5	20	Sandstone	Light grey, fine to occasionally medium grained, moderately well sorted, angular to subangular, friable to firm, moderate visible porosity.

C1	C2	C3	C4	C5	C6
77	16	15	tr	0	0

83	1879.0	30	Sandstone	Light grey, medium to fine grained, poorly sorted, subangular to angular, friable to firm, slightly carbonaceous, poor visible porosity.

C1	C2	C3	C4	C5	C6
77	9	16	7	0	0

84	1874.0	30	Sandstone	Carbonaceous, argillaceous.
85	1873.0	10	Coal	Black, vitreous, trace spotty bright yellow mineral fluorescence.

C1	C2	C3	C4	C5	C6
4332	393	136	26	11	0

73/

86	1870.0	10	Sandstone	Light grey, medium grained, moderately well sorted, subrounded to subangular, friable to firm, slightly carbonaceous, slightly argillaceous, loose grains, moderate visible porosity.

C1	C2	C3	C4	C5	C6
206	65	45	8	11	0

87	1837.0	20	Sandstone	Light grey, coarse to fine grained, poorly sorted, angular to subangular, friable to soft, moderate visible porosity.

C1	C2	C3	C4	C5	C6
180	270	1430	1735	872	526

88	1835.0	10	Sandstone	Light grey, fine grained, moderately well sorted, subrounded to subangular, friable to soft, slightly calcareous.

C1	C2	C3	C4	C5	C6
309	622	1598	5687	2573	1684

89	1833.0	10	Sandstone	Green grey, fine grained to occasionally coarse grained, moderately well sorted, subrounded to subangular, friable to soft.

C1	C2	C3	C4	C5	C6
154	393	3895	5687	3951	3473

90	1831.0	10	Siltstone	Olive grey, firm, very slightly calcareous, micromicaceous, glauconitic.

C1	C2	C3	C4	C5	C6
618	393	487	156	114	263

91	1827.9	10	Siltstone	Olive grey, firm, very slightly calcareous, micromicaceous, glauconitic.

C1	C2	C3	C4	C5	C6
515	270	365	173	46	105

92	1826.0	20	Siltstone	Olive grey, firm, very slightly calcareous, micromicaceous, glauconitic.

93	1823.5	20	Sandstone	Olive grey, fine grained, well sorted, subrounded to subangular, friable, slightly calcareous, carbonaceous. 30% even, very dull yellow fluorescence, very dull weak, yellow crush cut, poor visible porosity, no residue.

C1	C2	C3	C4	C5	C6
77	213	197	173	68	0

94	1821.5	40	Siltstone	Green grey, firm, slightly calcareous, very glauconitic.
95	1820.1			No Recovery - Misfire
96	1818.0	40	Siltstone	Green grey, firm, slightly calcareous, 10% glauconite, argillaceous.
97	1816.0	40	Siltstone	Medium light grey, moderately hard, slightly calcareous, very pyritic.

98	1813.5	40	Siltstone	Green grey, moderately hard, slightly calcareous, 30% glauconite, argillaceous.
99	1812.0			No Recovery - Lost
100	1810.5			No Recovery - Misfire
101	1808.0	40	Siltstone	Brown grey, moderately hard, slightly calcareous, 20% glauconite, argillaceous.
102	1804.5	40	Siltstone	Brown grey, moderately hard, slightly calcareous, 20% glauconite, argillaceous.
103	1820.0	30	Siltstone	Olive grey, moderately hard, slightly calcareous, trace glauconite, argillaceous.
104	1812.0	30	Sandstone	Medium grey, very fine grained, well sorted, subangular to subrounded, moderately hard to firm, slightly calcareous, argillaceous.
105	1810.4	30	Siltstone	Olive grey, moderately hard to firm, moderately calcareous, trace glauconite, argillaceous.
106	1803.5	30	Siltstone	Brown grey, moderately hard, slightly calcareous, very argillaceous, trace glauconite.
107	1802.5	40	Siltstone	Brown grey, moderately hard, moderately calcareous, occasionally coarse clear quartz grain, trace glauconite, argillaceous.
108	1801.5	40	Siltstone	Brown, moderately hard, moderately calcareous, occasional loose coarse quartz grain, trace glauconite, very argillaceous.
109	1800.5	45	Siltstone	Brown, moderately hard, moderately calcareous, occasional loose coarse quartz grain, trace glauconite, very argillaceous.
110	1799.0	45	Siltstone	Brown, moderately hard, very calcareous, 20% glauconite, very argillaceous.
111	1798.0	45	Siltstone	Brown, moderately hard, very calcareous, glauconitic, very argillaceous.
112	1797.0	45	Siltstone	Brown, hard, very calcareous, slightly glauconitic, very argillaceous.
113	1795.0	45	Siltstone	Brown, hard, very calcareous, slightly glauconitic, very argillaceous.
114	1791.0	45	Siltstone	Brown, hard, very calcareous, occasional shell fragments.
115	1787.0	45	Siltstone	Grey red, moderately hard, very argillaceous, glauconitic.

116	1783.0	45	Siltstone	Grey red, moderately hard, very argillaceous, glauconitic.
117	1780.0	45	Siltstone	Green grey, moderately hard, very calcareous, abundant glauconite.
118	1777.0	45	Mudstone	Very calcareous, medium grey, moderately hard, occasional glauconite.
119	1766.5	45	Mudstone	Very calcareous, medium grey, moderately hard, occasional glauconite.
120	1754.0	45	Siltstone	Green grey, moderately hard, very calcareous, very glauconitic and argillaceous.
121	1745.0	45	Mudstone	Medium grey, moderately hard, very calcareous.
122	1720.0	45	Calcilutite	Medium grey, moderately hard, very calcareous, very argillaceous.
123	1694.9	45	Calcilutite	Medium grey, moderately hard, very calcareous, very argillaceous.
124	1665.0	40	Calcilutite	Medium grey, moderately hard, very calcareous, very argillaceous.
125	1635.0	40	Calcilutite	Medium grey, moderately hard, very calcareous, very argillaceous.
126	1605.0	40	Calcilutite	Medium light grey, firm, very calcreous, very argillaceous.
127	1574.0	40	Calcilutite	Medium light grey, firm, very calcareous.
128	1545.0	40	Calcilutite	Medium light grey, firm, very calcareous.
129	1516.1	40	Calcilutite	Medium light grey, firm, very calcareous.
130	1486.0	40	Calcilutite	Medium light grey, firm, very calcareous.
131	1453.4	40	Calcilutite	Medium light grey, firm, very calcareous.
132	1425.0	40	Calcilutite	Medium light grey, firm, very calcareous.
133	1398.5	40	Calcilutite	Medium light grey, firm, very calcareous.
134	1370.0	40	Calcilutite	Medium light grey, firm, very calcareous, shell fragments.
135	1339.9	40	Calcilutite	Medium light grey, firm, very calcareous, no fossils.
136	1310.0	40	Calcilutite	Medium light grey, firm, very calcareous, pyrite lenses and foram fragments.
137	1280.0	40	Calcilutite	Medium light grey, firm, very calcareous, no fossils.

138	1249.1	40	Calcilutite	Medium light grey, firm, very calcareous.
139	1218.9	40	Calcilutite	Medium light grey, firm, very calcareous.
140	1190.5	40	Calcilutite	Medium light grey, firm, very calcareous.
141	1160.9	40	Calcilutite	Medium light grey, moderately hard, very calcareous, no shell fragments.
142	1129.9	40	Calcilutite	Medium light grey, moderately hard, very calcareous, no shell fragments.
143	1100.0	40	Calcilutite	Medium light grey, moderately hard, very calcareous, occasional shell fragments.
144	1069.0	40	Calcilutite	Medium light grey, moderately hard, very calcareous, occasional shell fragments.
145	1041.5	40	Calcilutite	Medium light grey, moderately hard, very calcareous, no shell fragments.
146	1010.1	40	Calcilutite	Medium light grey, moderately hard, very calcareous, no shell fragments.
147	980.0	40	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous.
148	944.9	40	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous.
149	922.0	40	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous.
150	888.0	40	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous, pyritic lenses, 1mm thick, shell fragments.
151	860.6	40	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous.
152	824.5	30	Calcisiltite	Medium light grey, moderately hard, very calcareous, light and dark laminations, argillaceous.
153	813.0			No Recovery

APPENDIX 4

RFT RESULTS

APPENDIX 4

APPENDIX 4

RFT RESULTS

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: One DATE: 16/6/83 OBSERVERS: N. Davidson/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/1	2400	2379	PT	HP	Y	A	3846.7	9.36	3400.4	8.34	3846.7	9.36	Valid
				SCH	Y	G	3827	9.35	3380	8.33	3826	9.34	
1/2	2385	2364	PT	HP	Y	A	3818.9	9.38	3378.5	8.34	3819.7	9.35	Valid
				SCH	Y	G	3798	9.33	3358	8.33	3798	9.33	
1/3	2370	2349	PT	HP	Y	A	3794.5	9.38	3357.4	8.34	3796.8	9.35	Valid
				SCH	Y	G	3774	9.33	3336	8.32	3774	9.33	
1/4	2364	2343	PT	HP	Y	A	3787.6	9.39	3348.8	8.34	3787.5	9.39	Valid
				SCH	Y	G	3765	9.33	3328	8.33	3765	9.33	
1/5	2116.7	2095.7	PT	HP	Y	A	3395.7	9.36	2996.4	8.34	3396.5	9.36	Valid
				SCH	Y	G	3374	9.34	2975	8.32	3375	9.34	
1/6	2108.8	2087.8	PT	HP	Y	A	3383.4	9.36	2983.8	8.34	3383.9	9.36	Valid
				SCH	Y	G	3363	9.35	2964	8.32	3363	9.35	
1/7	2048	2027	PT	HP	Y	A	3287.5	9.37	2896.3	8.33	3287.5	9.37	Valid
				SCH	Y	G	3267	9.35	2876	8.32	3266	9.35	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: One DATE: 16/6/83 OBSERVERS: N. Davidson/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/8	2037.5	2016.5	PT	HP	Y	A	3272.0	9.37	2883.1	8.34	3272.9	9.37	Valid
				SCH	Y	G	3251	9.35	2861	8.32	3252	9.35	
1/9	2029.2	2008.2	PT	HP	Y	A	3259.2	9.37	2871.2	8.34	3260.4	9.38	Valid
				SCH	Y	G	3239	9.36	2850	8.32	3239	9.36	
1/10	2018.5	1997.5	PT	HP	Y	A	3242.3	9.37	2863.6	8.36	3243.4	9.38	Valid
				SCH	Y	G	3223	9.36	2843	8.34	3223	9.36	
1/11	1995.5	1974.5	PT	HP	Y	A	3206.5	9.38	2825.1	8.34	3209.5	9.38	Valid
				SCH	Y	G	3186	9.36	2807	8.33	3187	9.36	
1/12	1990.5	1969.5	PT	HP	Y	A	3201.0	9.38	2817.9	8.34	3201.4	9.38	Valid
				SCH	Y	G	3179	9.36	2800	8.33	3179	9.36	
1/13	1967	1946	PT	HP	Y	A	3162.6	9.38	2783.7	8.34	3163.9	9.38	Valid
				SCH	Y	G	3142	9.36	2765	8.33	3142	9.36	
1/14	1960	1939	PT	HP	Y	A	3152.2	9.38	2774.1	8.34	3153.8	9.39	Valid
				SCH	Y	G	3131	9.36	2755	8.33	3131	9.36	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: One DATE: 16/6/83 OBSERVERS: N. Davidson/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/15	1955.8	1934.8	PT	HP	Y	A	3146.0	9.38	2767.8	8.34	3146.6	9.38	Valid
				SCH	Y	G	3125	9.37	2749	8.33	3125	9.37	
1/16	1948.5	1927.5	PT	HP	Y	A	3134.3	9.38	2757.4	8.34	3135.4	9.39	Valid
				SCH	Y	G	3114	9.37	2739	8.33	3114	9.37	
1/17	1937.5	1916.5	PT	HP	Y	A	3116.1	9.38	2742.1	8.34	3117.9		Valid
				SCH	Y	G	3097	9.37	2724	8.33	3097	9.36	
1/18	1934	1913	PT	HP	Y	A	3112.4	9.39	2738.1	8.34	3112.9	9.39	Valid
				SCH	Y	G	3090	9.36	2718	8.33	3091	9.37	
1/19	1923.4	1902.4	PT	HP	Y	A	3094.5	9.38	2721.7	8.34	3095.3	9.39	Valid
				SCH	Y	G	3075	9.37	2703	8.33	3075	9.37	
1/20	1909.5	1888.5	PT	HP	Y	A	3073.0	9.39	2702.2	8.34	3073.6	9.39	Valid
				SCH	Y	G	3052	9.37	2683	8.33	3052	9.37	
1/21	1896.2	1875.2	PT	HP	Y	A	3051.2	9.39	2683.2	8.34	3051.9	9.39	Valid
				SCH	Y	G	3031	9.37	2664	8.33	3031	9.37	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: One DATE: 16/6/83 OBSERVERS: N. Davidson/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/22	1889.5	1868.5	PT	HP	Y	A	3041.4	9.39	2674.1	8.34	3041.5	9.39	Valid
				SCH	Y	G	3020	9.37	2655	8.33	3020	9.37	
1/23	1885.5	1864.5	PT	HP	Y	A	3035.0	9.39	2669.0	8.34	3035.4	9.39	Valid
				SCH	Y	G	3013	9.37	2649	8.33	3013	9.37	
1/24	1877.2	1856.2	PT	HP	Y	A	3021.8	9.39			3022.8	9.39	Tight
				SCH	Y	G	3000	9.37			3000	9.37	
1/25	1878.5	1857.5	PT	HP	Y	A	3024.1	9.39	2661.1	8.35	3024.7	9.39	Valid
				SCH	Y	G	3003	9.37	2640	8.33	3002	9.37	
1/26	1871.8	1850.8	PT	HP	Y	A	3013.3	9.39	2649.4	8.34	3014.0	9.39	Valid
				SCH	Y	G	2992	9.37	2629	8.33	2992	9.37	
1/27	1868.3	1847.3	PT	HP	Y	A	3007.9	9.39	2644.4	8.34	3008.5	9.39	Valid
				SCH	Y	G	2986	9.37	2624	8.33	2987	9.37	
1/28	1861.2	1840.2	PT	HP	Y	A	2994.8	9.38	2636.9	8.35	2996.4	9.39	Valid
				SCH	Y	G	2975	9.37	2617	8.34	2975	9.37	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: One DATE: 16/6/83 OBSERVERS: N. Davidson/ S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
1/29	1859.9	1838.9	PT	HP	Y	A	2993.9		2632.1	8.34	2995.0	9.39	Valid
				SCH	Y	G	2972		2612	8.33	2972	9.37	
1/30	1852	1831	PT	HP	Y	A	2982.1	9.39	2620.9	8.34	2982.5	9.39	Valid
				SCH	Y	G	2960	9.37	2601	8.33	2960	9.37	
1/31	1844.5	1823.5	PT	HP	Y	A	2970.2	9.39	2611.6	8.35	2970.2	9.39	Valid
				SCH	Y	G	2949	9.37	2592	8.33	2949	9.37	
1/32	1839.5	1818.5	PT	HP	Y	A	2961.9	9.39	2608.4	8.36	2961.9	9.39	Valid
				SCH	Y	G	2940	9.37	2589	8.34	2940	9.37	
1/33	1833	1812	PT	HP	Y	A	2951.1	9.39	2606.4	8.38	2951.6	9.39	Valid
				SCH	Y	G	2930	9.37	2587	8.37	2930	9.37	
1/34	1823.5	1802.5	PT	HP	Y	A	2935.5	9.39	2589.0	8.37	2936.0	9.39	Valid
				SCH	Y	G	2914	9.37	2570	8.36	2914	9.37	
1/35	1812	1791	PT	HP	Y	A	2918.0	9.39	2569.3	8.36	2918.5	9.39	Valid
				SCH	Y	G	2894	9.36	2549	8.34	2894	9.36	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Two RUN NO: Two - Six DATE: 17-18/6/83 OBSERVERS: N. Davidson/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
2/36	1838.5	1817.5	SPT	HP	Y	A	2958.7	9.39	2608.3	8.36	2956.6	9.38	Valid
				SCH	Y	G	2939	9.37	2591	8.36	2940	9.37	
3/37	1934.1	1913.1	SPT	HP	Y	A	3104.8	9.36	2737.3	8.34	3103	9.36	Valid
				SCH	Y	G	3084	9.35	2718	8.33	3083	9.34	
4/38	1878.6	1857.6	SPT	HP	Y	A	3017.5	9.37	2660.0	8.35	3017.8	9.37	Valid
				SCH	Y	G	2996	9.35	2640	8.33	2996	9.35	
4/38A	1879	1858	SPT	HP	Y	A	3017.8	9.37	2658.6	8.34	3017.4	9.37	Valid
				SCH	Y	G	2996	9.35	2639	8.32	2997	9.35	
4/39	2018.5	1997.5	PT	HP	Y	A	3233.3	9.35	2864.6	8.36	3234.1	9.35	Valid
				SCH	Y	G	3217	9.34	2851	8.37	3219	9.35	
5/40	2013.0	1992	SPT	HP	Y	A	3224.3	9.35	2848.5	8.34	3225.3	9.35	Valid
				SCH	Y	G	3211	9.35	2837	8.35	3213	9.36	
6/41	1843	1822	SPT	HP	Y	A	2954.9	9.35	2609.9	8.35	2954.5	9.35	Valid
				SCH	Y	G	2939	9.35	2595	9.35	2942	9.36	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES - LUDERICK 1

SERVICE COMPANY: Schlumberger SUITE NO: Three RUN NO: Seven DATE: 25/6/83 OBSERVERS: B. Crowther/S.T. Koh

SEAT NO.	DEPTH (m)	DEPTH (SS) (m)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP		FM. PRESS		FHP		TEST RESULT
							psi	ppg	psi	ppg	psi	ppg	
7/42	2018.0	1997.0	SPT	HP	Y	A	3257.3	9.4	2864.3	8.36	3257.6	9.4	Valid
				SCH	Y	G	3241	9.4	2851	8.37	3243	9.4	

1. Pressure Test = PT
   Sample & Pressure = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

11531/58-64

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: N.Davidson, S.T.Koh DATE: 17/6/83 SUITE 2 RUN 2

SEAT NO.	2/36			2/36	
DEPTH	1838.5	m		1838.5	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	03-39-20	hrs			hrs
Pretest Open	03-39-20	hrs			hrs
Time Open	4-00	min			min
Chamber Open	03-43-30	hrs		03-53-30	hrs
Chamber Full	03-50-00	hrs		03-55-55	hrs
Fill Time	6-30	min		2-25	min
Start Build up	03-50-00	hrs		03-55-55	hrs
Finish Build up	03-52-20	hrs		03-58-00	hrs
Build Up Time	2-20	min		2-00	min
Seal Chamber	03-52-20	hrs		03-58-00	hrs
Tool Retract				03-59-00	hrs
Total Time	13-00	min		6-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	2958.7				
ISIP	2608.3			2607.9	
Initial Flowing Press.	2571			2598.7	
Final Flowing Press.	2590			2599.2	
Sampling Press. Range	2571 - 2590			2598.7 - 2599.2	
FSIP	2607.8			2607.9	
FHP				2956.6	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	1865	m		1865	m
Max.Rec. Temp.	76.7	°C		76.7	°C
Time Circ. Stopped	15/06/83 @ 18.00	hrs		15/06/83 @ 18.00	hrs
Time since Circ.	33.6	hrs		33.6	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	1650	psig			psig
Amt Gas	124.93 cu ft/ 3.537	m^3			m^3
Amt Condensate	0.78	lit.			lit.
Amt Mud	0.76	lit.			lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1	303,121	ppm			ppm
C2	45,270	ppm			ppm
C3	24,358	ppm			ppm
1C4/nC4	6,541	ppm			ppm
C5	1,051	ppm			ppm
C6+	89	ppm			ppm
CO2/H2S	0.7%/Nil	ppm			ppm
Condensate Properties	70°API @ 16°C				
Colour	Clear, colourless				
Fluorescence	Blue/white				
Condensate yield	39.4 bbl/MMSCF				
Water Properties					
Resistivity		°C			°C
NaCl Equivalent		ppm			ppm
Cl-titrated		ppm			ppm
pH/Nitrates		ppm			ppm
Est. Water Type					
Mud Properties					
Resistivity	0.218 ohm @ 25	°C		0.218 ohm @ 25	°C
NaCl Equivalent	28,000	ppm		28,000	ppm
Cl-titrated	18,000	ppm		18,000	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.		psig			psig
Calibration Temp.		°C			°C
Mud Weight	9.25	ppg		9.25	ppg
Calc.Hydrostatic	9.39	psig		9.39	psig
RFT Chokesize	(0.76mm) 0.030	"		(0.51mm) 0.020	"

Remarks: Upper chamber preserved for full analysis.

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: N.Davidson, S.T.Koh DATE: 17/6/83 SUITE 2 RUN 3

SEAT NO.	3/37			3/37	
DEPTH	1934.1	m		1934.1	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	09-11-06	hrs			hrs
Pretest Open	09-11-06	hrs			hrs
Time Open	4-09	min			min
Chamber Open	09-15-15	hrs		09-25-05	hrs
Chamber Full	09-20-42	hrs		09-27-11	hrs
Fill Time	5-27	min		2-06	min
Start Build up	09-20-42	hrs		09-27-11	hrs
Finish Build up	09-23-39	hrs		09-28-50	hrs
Build Up Time	3-00	min		1-39	min
Seal Chamber	09-23-39	hrs		09-29-05	hrs
Tool Retract		hrs		09-30-00	hrs
Total Time	12-33	min		4-5555	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3104.8				
ISIP	2737.3			2736.9	
Initial Flowing Press.	2343.6			2681.1	
Final Flowing Press.	2581.1			2681.4	
Sampling Press. Range	2343.6 - 2581.1			2681.1 - 2681.4	
FSIP	2736.9			2737.0	
FHP				3103.0	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	1950	m		1950	m
Max.Rec. Temp.	86.4	°C		86.4	°C
Time Circ. Stopped	15/06/83 @ 18.00	hrs		15/06/83 @ 18.00	hrs
Time since Circ.	39	hrs		39	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	0	psig		0	psig
Amt Gas	0	m^3		0	m^3
Amt Oil	0	lit.		0	lit.
Amt Water	21.30	lit.		3.70	lit.
Amt Others		lit.			lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		ppm			ppm
C2		ppm			ppm
C3		ppm			ppm
iC4/nC4		ppm			ppm
C5		ppm			ppm
C6+		ppm			ppm
CO2/H2S		ppm			ppm
Oil Properties	°API @	°C			
Colour					
Fluorescence					
Condensate yield					
Water Properties					
Resistivity	0.773 ohm m @ 20	°C		0.610 ohm m @ 19	°C
NaCl Equivalent	8200	ppm		10000	ppm
Cl-titrated	4000	ppm		4000	ppm
pH/Nitrates	7.5/60	ppm		7.5/60	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.218 ohm @ 25	°C		0.218 ohm @ 25	°C
NaCl Equivalent	28,000	ppm		28,000	ppm
Cl-titrated	18,000	ppm		18,000	ppm
pH/Nitrates		ppm			ppm
Calibration					
Calibration Press.		psig			psig
Calibration Temp.		°C			°C
Mud Weight	9.25	ppg		9.25	ppg
Calc.Hydrostatic	9.36	psig		9.36	psig
RFT Chokesize	(0.76mm) 0.030	"		(0.51mm) 0.020	"

Remarks:

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: N.Davidson, S.T.Koh DATE: 17/6/83 SUITE 2 RUN 4

SEAT NO.	4/38	4/38A			4/38A	
DEPTH	1878.6m	1879.0m	m		1879.0	m
	CHAMBER 1 (22.7 lit.)			CHAMBER 2 (10.4 lit.)		
A. RECORDING TIMES						
Tool Set	14-05-30	15-34-33	hrs			hrs
Pretest Open	14-05-30	15-34-33	hrs			hrs
Time Open	3-16	2-42	min			min
Chamber Open	14-08-46	15-37-15	hrs	15-58-10		hrs
Chamber Full		15-48-15	hrs	16-40-10		hrs
Fill Time		93-00	min	42-00		min
Start Build up		15-48-15	hrs	16-40-10		hrs
Finish Build up		15-56-55	hrs	16-48-50		hrs
Build Up Time		8-40	min	8-40		min
Seal Chamber	15-30-45	15-57-00	hrs	16-48-50		hrs
Tool Retract	15-31-45	-	hrs	16-49-50		hrs
Total Time		112-00	min	52-00		min
B. SAMPLE PRESSURES		psia			psia	
IHP	3017.5	3017.8				
ISIP	2660.0	2658.6		2658.6		
Initial Flow Press.	101	412		128		
Final Flow Press.	394	537		1686		
Sampling Press.Range	101-394	412-537		128 - 1686		
FSIP	-	2658.3		2657.2		
FHP				3017.4		
Form.Press.(Horner)						
C. TEMPERATURE						
Depth Tool Reached		1905	m	1905		m
Max.Rec. Temp.		83.8	°C	83.8		°C
Time Circ. Stopped	15/06/83 @ 18.00		hrs	15/06/83 @ 18.00		hrs
Time since Circ.		45.5	hrs	46		hrs
Form. Temp.(Horner)			°C			°C
D. SAMPLE RECOVERY						
Surface Pressure		0	psig	0		psig
Amt Gas	0.05 cu ft/	0.001	m^3	0		m^3
Amt Oil	Trace oil film	0	lit.	Trace oil film	0	lit.
Amt Water		21.70	lit.	9.00		lit.
Amt Others			lit.			lit.
E. SAMPLE PROPERTIES						
Gas Composition						
C1			ppm			ppm
C2			ppm			ppm
C3			ppm			ppm
IC4/nC4			ppm			ppm
C5			ppm			ppm
C6+			ppm			ppm
CO2/H2S			ppm			ppm
Oil Properties		°API @	°C			
Colour						
Fluorescence	Dull, diffuse, yellow milky - white					
GOR cf/bbl						
Water Properties						
Resistivity	0.219 ohm m @ 15		°C	0.224 ohm m @ 17		°C
NaCl Equivalent	35,000		ppm	35,000		ppm
Cl-titrated	14,000		ppm	13,000		ppm
pH/Nitrates	8/20		ppm	8/20		ppm
Est. Water Type						
Mud Properties						
Resistivity	0.218 ohm @ 25		°C	0.218 ohm @ 25		°C
NaCl Equivalent	28,000		ppm	28,000		ppm
Cl-titrated	18,000		ppm	18,000		ppm
pH/Nitrates	160		ppm	160		ppm
Calibration						
Calibration Press.			psig			psig
Calibration Temp.			°C			°C
Mud Weight		9.25	ppg		9.25	ppg
Calc.Hydrostatic		9.36	psig		9.36	psig
RFT Chokesize	(0.76mm)	0.030	"	(0.76mm)	0.030	"

Remarks: Filled the lower chamber at seats 4/38 and 4/38A
Filled the upper chamber at seat 4/38A only

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: N.Davidson, S.T.Koh DATE: 18/6/83 SUITE 2 RUN 5

SEAT NO.	5/40			5/40	
DEPTH	2013.0	m		2013.0	m
	CHAMBER 1 (22.7	lit.)		CHAMBER 2 (3.8	lit.)
A. RECORDING TIMES					
Tool Set	00-29-30	hrs			hrs
Pretest Open	00-29-30	hrs			hrs
Time Open	8-45	min			min
Chamber Open	00-37-15	hrs		00-54-40	hrs
Chamber Full	00-49-50	hrs		00-57-40	hrs
Fill Time	12-35	min		3-00	min
Start Build up	00-49-50	hrs		00-57-40	hrs
Finish Build up	00-53-30	hrs		01-00-30	hrs
Build Up Time	3-40	min		2-50	min
Seal Chamber	00-53-30	hrs		01-00-30	hrs
Tool Retract				01-02-40	hrs
Total Time		min		8-00	min
B. SAMPLE PRESSURES	psia			psia	
IHP	3224.5				
ISIP	2848.5			2849.0	
Initial Flowing Press.	164			1642	
Final Flowing Press.	1876			1992	
Sampling Press.Range	164-1876			1642-1992	
FSIP	2848.7			2848.5	
FHP				3225.3	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached	2050	m		2050	m
Max.Rec. Temp.	92.7	°C		92.7	°C
Time Circ. Stopped	15/06/83 @ 18.00	hrs		15/06/83 @ 18.00	hrs
Time since Circ.	54	hrs		54.5	hrs
Form. Temp.(Horner)		°C			°C
D. SAMPLE RECOVERY					
Surface Pressure	0	psig		0	psig
Amt Gas	0	m^3		0	m^3
Amt Oil trace film	0	lit.	trace film	0	lit.
Amt Water	21.80	lit.		3.70	lit.
Amt Others		lit.	trace scum		lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		ppm			ppm
C2		ppm			ppm
C3		ppm			ppm
1C4/nC4		ppm			ppm
C5		ppm			ppm
C6+		ppm			ppm
CO2/H2S		ppm			ppm
Oil Properties	°API @	°C			
Colour					
Fluorescence	Dull, diffuse, yellow milky - white				
GOR cf/bbl					
Water Properties					
Resistivity	0.305 ohm m @ 17	°C		0.462 ohm m @ 16	°C
NaCl Equivalent	24,000	ppm		18,000	ppm
Cl-titrated	10,000	ppm		8,000	ppm
pH/Nitrates	8/65	ppm		7.5/65	ppm
Est. Water Type					
Mud Properties					
Resistivity	0.218 ohm @ 25	°C		0.218 ohm @ 25	°C
NaCl Equivalent	28,000	ppm		28,000	ppm
Cl-titrated	1,800	ppm		18,000	ppm
pH/Nitrates	160	ppm		160	ppm
Calibration					
Calibration Press.		psig			psig
Calibration Temp.		°C			°C
Mud Weight	9.25	ppg		9.25	ppg
Calc.Hydrostatic	9.35	psig		9.35	psig
RFT Chokesize	(0.76mm) 0.030	"		(0.51mm) 0.020	"

Remarks:

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: N.Davidson, S.T.Koh DATE: 18/6/83 SUITE 2 RUN 6

	CHAMBER 1 (22.7 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	6/41		6/41	
DEPTH	1843.0	m	1843.0	m
A. RECORDING TIMES				
Tool Set	04-52-20	hrs		hrs
Pretest Open	04-52-20	hrs		hrs
Time Open	2-55	min		min
Chamber Open	04-55-15	hrs	05-08-30	hrs
Chamber Full	05-02-00	hrs	05-11-00	hrs
Fill Time	6-45	min	2-30	min
Start Build up	05-02-00	hrs	05-11-00	hrs
Finish Build up	05-07-00	hrs	05-17-00	hrs
Build Up Time	5-00	min	6-00	min
Seal Chamber	05-07-30	hrs	05-18-00	hrs
Tool Retract			05-19-00	hrs
Total Time	15-10	min	10-30	min
B. SAMPLE PRESSURES	psia		psia	
IHP	2954.9			
ISIP	2609.9		2609.4	
Initial Flowing Press.	230 - 2230		2297	
Final Flowing Press.	2198		2885	
Sampling Press.Range	230 - 2198		2297 - 2285	
FSIP	2609.1		2609.2	
FHP			2954.5	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	1875	m	1875	m
Max.Rec. Temp.	83.4	°C	83.4	°C
Time Circ. Stopped	15/06/83 @ 18.00	hrs	15/06/83 @ 18.00	hrs
Time since Circ.	59	hrs	59	hrs
Form. Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	1000	psig		psig
Amt Gas	6.66 cu ft/0.189	m^3		m^3
Amt Oil	0.59	lit.		lit.
Amt Water	21.00	lit.		lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition				
C1	757,800	ppm		ppm
C2	82,310	ppm		ppm
C3	28,620	ppm		ppm
1C4/nC4	5,620	ppm		ppm
C5	670	ppm		ppm
C6+	110	ppm		ppm
CO2/H2S	0.4 % / 0	ppm		ppm
Oil Properties	45.9 °API @ 16°C			
Colour	Reddish brown			
Fluorescence	Bright blue white			
GOR cf/bbl	1794			
Water Properties				
Resistivity	0.195 ohm m @ 19	°C		°C
NaCl Equivalent	40,000	ppm		ppm
Cl-titrated	16,000	ppm		ppm
pH/Nitrates	8/70	ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity		°C		°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH/Nitrates		ppm		ppm
Calibration				
Calibration Press.		psig		psig
Calibration Temp.		°C		°C
Mud Weight	9.25	ppg	9.25	ppg
Calc.Hydrostatic	9.35	psig	9.35	psig
RFT Chokesize	(0.76mm) 0.030	"	(0.51mm) 0.020	"

Remarks: Upper chamber preserved for full analysis, but was lost whilst transferring.

RFT SAMPLE TEST REPORT - LUDERICK 1

OBSERVER: B.Crowther/P.Priest DATE: 25/6/83 SUITE 3 RUN 7

SEAT NO.		7/42		7/42	
DEPTH		2018.0	m	2018.0	m
	CHAMBER 1 (22.7		lit.)	CHAMBER 2 (10.4	lit.)
A. RECORDING TIMES					
Tool Set		19-30-51	hrs		hrs
Pretest Open		19-30-51	hrs		hrs
Time Open		4-55	min		min
Chamber Open		19-35-46	hrs	19-46-21	hrs
Chamber Full		19-42-50	hrs	19-52-58	hrs
Fill Time		7-04	min	6-37	min
Start Build up		19-42-50	hrs	19-52-58	hrs
Finish Build up		19-43-20	hrs	19-53-15	hrs
Build Up Time		1-30	min	00-17	sec
Seal Chamber		19-44-00	hrs	19-54-53	hrs
Tool Retract				19-57-09	hrs
Total Time		13-09	min	10-48	min
B. SAMPLE PRESSURES		psia		psia	
IHP		3257.3			
ISIP		2864.3		2863.5	
Initial Flowing Press.		634.5		2680.0	
Final Flowing Press.		2485.8		2652.1	
Sampling Press.Range		634.5 - 2485.8		2680 - 2652.1	
FSIP		2863.5		2863.2	
FHP				3257.6	
Form.Press.(Horner)					
C. TEMPERATURE					
Depth Tool Reached		2060	m	2060	m
Max.Rec. Temp.		91.4	°C	91.4	°C
Time Circ. Stopped	24/06/83 @	03.30	hrs	24/06/83 @ 03.30	hrs
Time since Circ.		39	hrs	39	hrs
Form. Temp.(Horner)			°C		°C
D. SAMPLE RECOVERY					
Surface Pressure		1000	psig		psig
Amt Gas	65 cu ft/1.841		m^3		m^3
Amt Oil	trace film	7.92	lit.		lit.
Amt Water		1.83	lit.		lit.
Amt Others			lit.		lit.
E. SAMPLE PROPERTIES					
Gas Composition					
C1		204,654	ppm		ppm
C2		25,166	ppm		ppm
C3		13,637	ppm		ppm
1C4/nC4		4,023	ppm		ppm
C5		647	ppm		ppm
C6+		92	ppm		ppm
CO2/H2S	1.5 % /10		ppm		ppm
Oil Properties	61 °API @ 16°C				
Colour	Reddish grey				
Fluorescence	Bright blue white				
GOR cf/bbl		1305			
Water Properties					
Resistivity	0.320 ohm m @	9	°C		°C
NaCl Equivalent		30,000	ppm		ppm
Cl-titrated		13,000	ppm		ppm
pH/Nitrates		7.1/60	ppm		ppm
Est. Water Type					
Mud Properties					
Resistivity	0.312 ohm m @	15	°C	0.312 ohm m @ 15	°C
NaCl Equivalent		45,000	ppm	45,000	ppm
Cl-titrated		21,000	ppm	21,000	ppm
pH/Nitrates		200	ppm	200	ppm
Calibration					
Calibration Press.			psig		psig
Calibration Temp.			°C		°C
Mud Weight		9.2	ppg	9.2	ppg
Calc.Hydrostatic		9.4	psig	9.4	psig
RFT Chokesize	(0.76mm)	0.030	"	(0.51mm) 0.020	"

Remarks: Upper chamber was preserved for analysis. Serial No. RFS-AE-43

APPENDIX 5

VELOCITY SURVEY REPORT

APPENDIX 5

VELOCITY SURVEY

VELOCITY SURVEY REPORT

1. Marine Velocity Survey report.

2. Processing report.

3. Schlumberger field report.

4. Gun geometry sketch.

5. Check shot data - observed and corrected.

6. Schlumberger Geogram

7. Schlumberger seismic calibration log-drift curve, adjusted continuous velocity log and time-depth curve.

8. Schlumberger CSU field log.

9. Time-Depth Curve.

0745L

MARINE VELOCITY SURVEY REPORT

WELL	:	Luderick#1
BASIN	:	Gippsland
DATE OF SURVEY	:	25.6.83
CONTRACTOR	:	Schlumberger
RECORDED BY	:	G. Miller
WITNESSED BY	:	T. White
WATER DEPTH	:	52.0m
R.T. ELEVATION	:	21m
T.D. WHEN SHOT	:	3021mKB
CASING DEPTH	:	20" @ 194mKB. 13 3/8" @ 792mKB
NO. OF SHOOTING LEVELS	:	19

702L

PROCESSING REPORT

LUDERICK-1

1. OPEN HOLE LOGS

The Sonic data was used over the interval 3020m to 200m K.B.
The density data was used over the interval 3020m to 791m K.B.
From 791 to 200m the last density reading was extrapolated.

2. SHOT DATA

Level 531.0 - stacked 11 shots didn't use 27 shots due to noise.
Level 1784.5 - level estimated due to noise.
Level 3016.8 - stacked 5 shots didn't use 8 shots due to noise.
Level 2880.1 - stacked 3 shots.
Level 2773.1 - stacked 4 shots didn't use 1 shot due to noise.
Level 2565.0 - stacked 4 shots.
Level 2402.0 - stacked 3 shots.
Level 2290.0 - stacked 4 shots.
Level 2132.0 - stacked 3 shots.
Level 2018.0 - stacked 4 shots didn't use 2 shots due to noise.
Level 1927.0 - stacked 3 shots.
Level 1802.0 - stacked 3 shots didn't use 2 shots due to noise.
Level 1751.0 - stacked 8 shots didn't use 2 shots due to noise.
Level 1481.0 - stacked 6 shots.
Level 1430.0 - stacked 31 shots didn't use 2 shots due to noise.
Level 1208.0 - stacked 5 shots.
Level 1041.0 - stacked 3 shots.
Level 926.0 - stacked 2 shots.
Level 789.0 - stacked 2 shots.
Level 661.0 - stacked 2 shots.
Level 531.0 - stacked 3 shots.
Moonpool shots - stacked 6 didn't use 1 due to noise.

3. DATA PROCESSING INFORMATION

Well is assumed vertical. SRD is sea level.
Kelly Bushing = 20.7m above SRD.
Ground level = 52.0m from SRD.
Gun and shot sensor distance was calculated to be 37 metres from wellbore using the moonpool shots. Azimuth of gun and shot sensor = 0. Gun and shot sensor elevation from SRD = -10.0. Average velocity used between SRD and sea bed = 1480 m/sec (as requested).

0702L

Schlumberger

WELL SEISMIC SERVICE FIELD REPORT

COMPANY	WELL	DATE	LOCATION	ENGINEER	WITNESSED BY
ESSO	LUDERICK 1	25/6/83	SEA	G. MILLER	T. WHITE

FEET ☐ METRES ☒ | JACK UP ☐ SHIP ☐ PLATFORM ☐ SEMI-SUB ☒ | WEATHER: Calm

SCHLUMBERGER ZERO	KB	AT ELEVATION	21.0	M	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

GUN TYPE WATER ☐ AIR ☒
VOLUME 1 x 200 CU INCHES
PRESSURE - BARS 140
VIBRATOR TYPE
SWEEP LENGTH SECONDS
FROM HZ TO HZ

TIDEL INFORMATION DISTANCE HOUR DATE

TIDE LEVEL TO M.S.L. (RECORD IF LEVEL VARIES MORE THAN 2 METRES DURING SURVEY) N/A

CSU SOFTWARE VERSION: 24 | MAX. HOLE DEV: <5° AZIM: N/

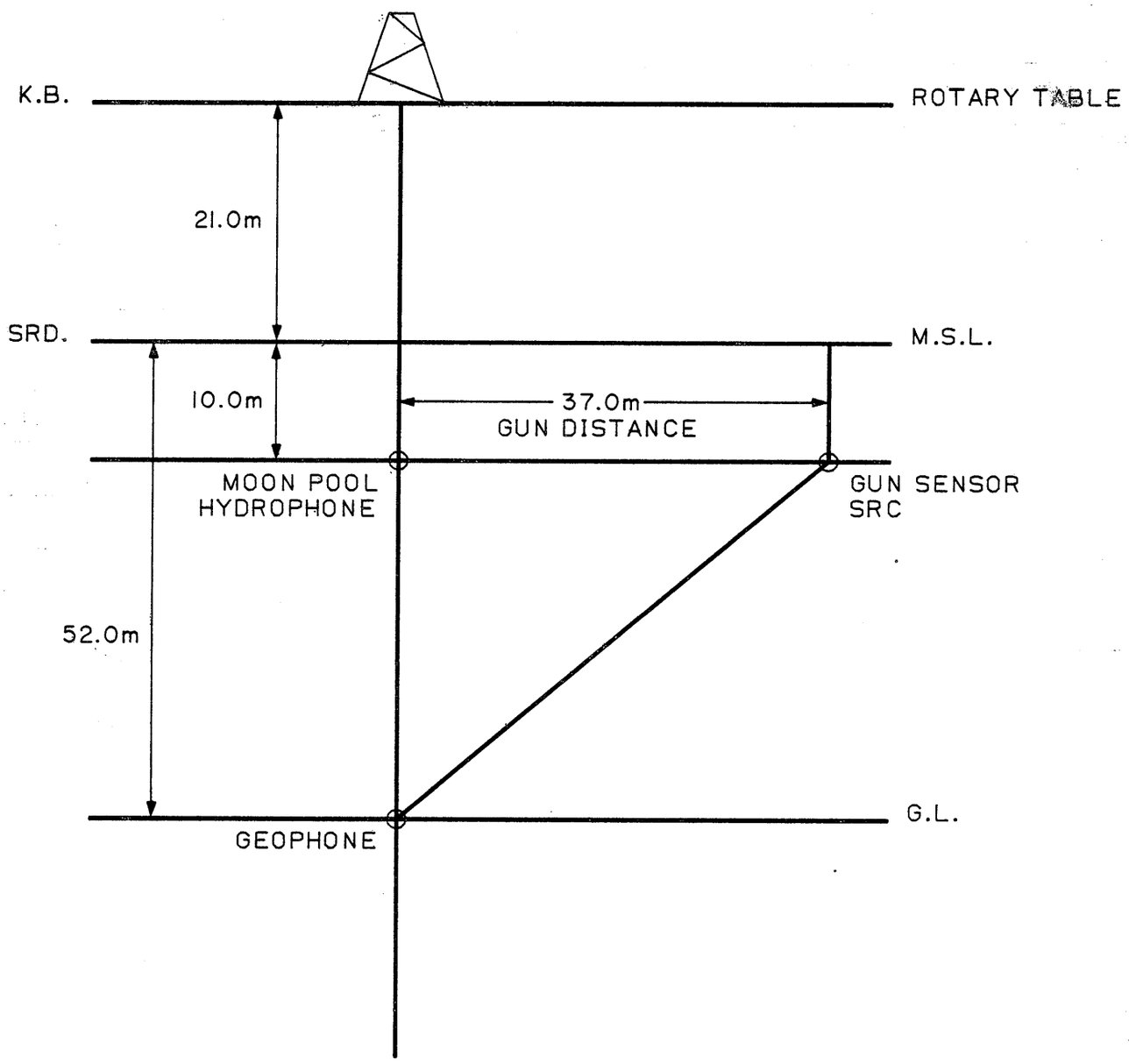
NOTE: SHOTS HIGHLY RECOMMENDED AT TD, TOP EACH SONIC, ABOVE AND BELOW BAD HOLE INTERVALS

UNCORRECTED RESULTS Quality: G = Good, P = Poor, U = Unsatisfacto

SHOT NO.	DEPTH	GUN PRESSURE	FILTERS	TRANSIT TIME	HOUR SHOT	FILE	STACK	STACKED SHOTS	QUALITY / REMARK
1	3016	140	None	1045.4	10.25			45 - 52	N
2	2880	140	None	1007.3	10.37			53 - 55	G
3	2773	140	None	977.5	10.50			56 - 59	G
4	2565	140	None	924.3	11.01			60 - 63	G
5	2402	140	None	883.8	11.08			64 - 66	E
6	2290	140	None	852.6	11.14			67 - 70	E
7	2132	140	None	807.0	11.21			71 - 73	E
8	2018	140	None	773.3	11.26			74 - 79	E
9	1927	140	None	744.4	11.31			80 - 82	E
10	1802	140	None	706.3	11.38			83 - 87	E
11	1751	140	None	686.6	11.50			88 - 97	N
12	1481	140	None	589.5	11.58			98 - 103	N BAD HO
13	1430	140	None	571.6	12.25			104 - 136	N BAD HO
14	1208	140	None	484.8	12.43			137 - 141	E BAD HO
15	1041	140	None	421.6	12.51			142 - 144	E
16	926	140	None	378.9	13.02			145 - 146	E
17	789	140	None	330.5	13.12			147 - 148	E
18	661	140	None	285.9	13.21			149 - 150	E
19	531	140	None	239.1	13.29			151 - 153	E

LUDERICK-1

GUN GEOMETRY SKETCH



Dwg. 2188/OP/12

VELOCITY SURVEY - LODERICK-1

LEVEL NUMBER	MEASURED DEPTH FROM KB (m)	VERTICAL DEPTH FROM MSL (m)	OBSERVED TRAVEL TIME (ms)	VERTICAL TRAVEL TIME MSL/ GEOPHONE (ms)	AVERAGE VELOCITY MSL/GEOPHONE (m/s)	DELTA DEPTH BETWEEN SHOTS (m)	DELTA TIME BETWEEN SHOTS (ms)	INTERVAL VELOCITY BETWEEN SHOTS (m/s)
	73.00	52.00	37.82	35.14	1480			
						458.00	208.97	2192
1	531.00	510.00	238.00	244.11	2089			
						130.00	48.16	2700
2	661.00	640.00	286.00	292.26	2190			
						128.00	44.10	2903
3	789.00	768.00	330.00	336.36	2283			
						137.00	48.07	2850
4	926.00	905.00	378.00	384.43	2354			
						115.00	43.04	2672
5	1041.00	1020.00	421.00	427.47	2386			
						167.00	63.04	2649
6	1208.00	1187.00	484.00	490.52	2420			
						222.00	87.04	2551
7	1430.00	1409.00	571.00	577.56	2440			
						51.00	18.01	2832
8	1481.00	1460.00	589.00	595.57	2451			
						270.00	97.03	2783
9	1751.00	1730.00	686.00	692.60	2498			
						51.00	20.00	2550
10	1802.00	1781.00	706.00	712.60	2499			
						125.00	38.01	3288
11	1927.00	1906.00	744.00	750.62	2539			
						91.00	29.01	3138
12	2018.00	1997.00	773.00	779.62	2562			
						114.00	34.01	3352
13	2132.00	2111.00	807.00	813.63	2595			
						158.00	45.01	3510
14	2290.00	2269.00	852.00	858.64	2643			
						112.00	32.01	3499
15	2402.00	2381.00	884.00	890.65	2673			
						163.00	40.01	4074
16	2565.00	2544.00	924.00	930.66	2734			
						208.10	53.01	3926
17	2773.10	2752.10	977.00	983.67	2798			
						107.00	30.00	3567
18	2880.10	2859.10	1007.00	1013.67	2821			
						136.70	39.00	3504
19	3016.80	2995.80	1046.00	1052.68	2846			

PE601265

This is an enclosure indicator page.
The enclosure PE601265 is enclosed within the container PE902539 at this location in this document.

The enclosure PE601265 has the following characteristics:

ITEM_BARCODE	= PE601265
CONTAINER_BARCODE	= PE902539
NAME	= Seismic Calibration Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Seismic Calibration Log
REMARKS	=
DATE_CREATED	= 25/06/83
DATE_RECEIVED	= 25/06/84
W_NO	= W819
WELL_NAME	= Luderick-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902541

This is an enclosure indicator page.
The enclosure PE902541 is enclosed within the container PE902539 at this location in this document.

The enclosure PE902541 has the following characteristics:

ITEM_BARCODE	= PE902541
CONTAINER_BARCODE	= PE902539
NAME	= Geogram
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAM
DESCRIPTION	= Geogram
REMARKS	=
DATE_CREATED	= 25/06/1983
DATE_RECEIVED	= 25/06/1984
W_NO	= W819
WELL_NAME	= Luderick-1
CONTRACTOR	= Schlumberger
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902542

This is an enclosure indicator page.
The enclosure PE902542 is enclosed within the container PE902539 at this location in this document.

The enclosure PE902542 has the following characteristics:

ITEM_BARCODE	= PE902542
CONTAINER_BARCODE	= PE902539
NAME	= Time Depth Curve
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Time Depth Curve
REMARKS	=
DATE_CREATED	= 17/02/1984
DATE_RECEIVED	= 25/06/1984
W_NO	= W819
WELL_NAME	= Luderick-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)