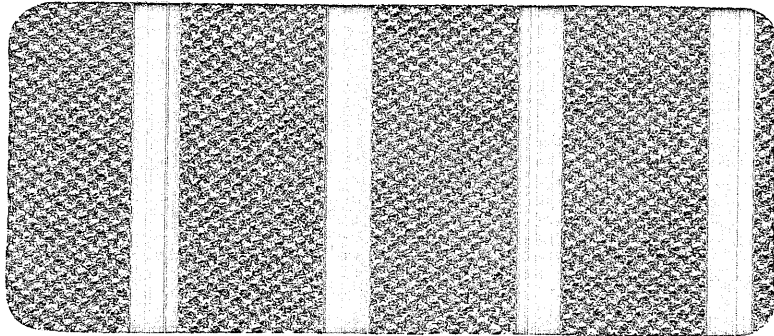
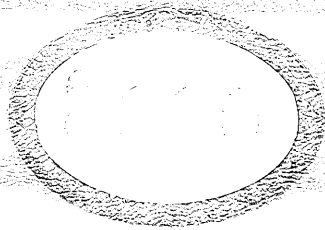




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WCA

CRUNTER -

1

WCA

ESSO EXPLORATION AND PRODUCTION  
AUSTRALIA INC.

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+ 2 ENCLOS

+ 7 pages.

WELL COMPLETION REPORT

GRUNTER-1

VOLUME 1

14 MAY 1985

**OIL and GAS DIVISION**

GIPPSLAND BASIN

VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: M.FITZALL

APRIL 1985

GRUNTER-1  
WELL COMPLETION REPORT  
VOLUME 1  
BASIC DATA

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## 1. WELL DATA RECORD.

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ESSO AUSTRALIA LTDCOMPLETION REPORT

WELL : GRUNTER-1  
LOCATION : Latitude : 38° 16' 21.29" S  
Longitude : 148° 30' 56.25" E  
X = 632578E  
Y = 5762840N  
Map Projection: UTM, Central Meridian : 147°  
Geographical Location: Bass Strait, S.E.  
Victoria  
Field: GRUNTER  
  
PERMIT : VIC/L11  
ELEVATION : 21m KB  
WATER DEPTH : 108m  
TOTAL DEPTH : 3809m KB  
PLUG BACK TYPE : Cement Plug  
REASONS FOR PLUGGING BACK : Plug and Abandonment  
MOVE IN : 13th September, 1984  
SPUDED : 14th September, 1984  
REACHED T.D. : 11th November, 1984  
RIG RELEASED : 28th November, 1984  
OPERATOR : Esso Exploration and Production Australia Ltd.  
PERMITTEE OR LICENCEE : Esso Exploration and Production Australia Ltd.  
and B.H.P Petroleum Pty. Ltd.  
  
ESSO INTEREST : 50%  
OTHER INTEREST : 50%  
CONTRACTOR : South Seas Drilling Company  
RIG NAME : Southern Cross  
EQUIPMENT TYPE : Semi-submersible  
TOTAL RIG DAYS : 76  
DRILLING AFE NO. : 05.308.234.005 (Drilling AFE)  
: 05.308.234.010 (Production Test AFE)  
TYPE COMPLETION : Plug and Abandonment  
WELL CLASSIFICATION : Before Drilling New Field Wildcat  
After Drilling New Field Discovery

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2. OPERATIONS SUMMARY

GRUNTER-1

Mooring

The Southern Cross departed the Cobia-2 location at 1530 hours on September 13, 1984 and arrived at the Grunter-1 location at 2145 hours the same day. The rig was towed 35 km (18.9 nautical miles) by the Atlas Dampier workboat in 6-1/4 hours at an average speed of 5.6 km/hr (3.02 knots).

Anchor No. 1 was dropped by the rig with the remaining anchors run by the workboats Lady Sally, Torrens Tide and Atlas Dampier. All anchors, except No. 4 were pretensioned to 200 kips. The pendant wire pigtail chain for No. 4 was fouled around the anchor's stabilizer bar. The No. 4 anchor was reset and pretensioned to 200 kips.

Actual Position

Latitude : 38° 16' 21.29" S  
Longitude : 148° 30' 56.25" E  
X = 632,578m E  
Y = 5,762,840m N

AMG Zone 55, Universal Transverse Mercator Projection,  
Australian Geodetic Datum.

The rig was located 3.6 metres at 108° from the called location and approximately 63 kms at 133° from Lakes Entrance, Victoria.

26" Hole for 20" Conductor

The drilling template was run and landed at a seafloor depth of 129m RKB. The 26" hole was drilled to 269m with seawater and high viscosity gel slugs. The hole was displaced at TD with high viscosity mud and a wiper trip made to the seafloor.

The 18-3/4" wellhead and 20" casing were run and cemented at a shoe depth of 252m. The BOP stack and riser were run and the casing and collet connector tested against the shear rams to 500 psi.

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

The 20" casing shoe was drilled out and the 17-1/2" hole drilled to 855m using seawater and high viscosity gel slugs. After making a wiper trip to the 20" shoe, the hole was logged and 13-3/8" casing run to 836.5m. The casing was cemented and the plug was bumped with 1500 psi. It was necessary to run a second seal assembly after reaching the recommended torque limit of 12,000 ft/lbs while making only one rotation with the original seal assembly. The second seal assembly was set and tested to 200/5000 psi. The BOP rams and valves were tested to 200/5000 psi and the annular preventers were tested to 200/3500 psi.

12-1/4" Hole for 9-5/8" Casing

The 13-3/8" cement, float equipment and 6m of new hole were drilled to 861m, where a Phase II PIT was conducted to leak off at 15.5 ppg EMW. For the first time in the Southern Cross operations, a tritium mud filtrate tracer was used in the mud system below the 13-3/8" casing.

The 12-1/4" hole was drilled to 3011m where two intermediate logs and three RFT's were run. The hole was drilled with mud weights between 9.2 and 9.6 ppg. At this point, due to encouraging hydrocarbon shows, the TD of the well was revised from 3021m to 3521m.

Drilling continued in the Intra Latrobe to 3389m. Core No. 1 was cut from 3389 - 3407m. After recovering the core, the drill string was hung off while repairs were made to the rotary table support beams. Drilling continued to 3434m where Core No. 2 was cut from 3434 - 3452m. After reaming the rat hole, drilling continued to 3521m where intermediate logs and 17 RFT's were run.

The TD was again revised to 4062m. The 12-1/4" hole was drilled to 3562m. Mud weight was increased from 9.5 ppg to 11.3 ppg in order to control an increase in gas units. Since abnormal pressure was encountered, intermediate logs were run. An attempt to collect RFT samples at 3557m resulted in the tool becoming stuck and it was necessary to cut and strip over the Schlumberger wireline.

After making a wiper trip and junk basket run to recover 21 CST bullets left in the hole, 9-5/8" casing was run to 3549m and cemented in two stages using a multi stage collar. Numerous unsuccessful attempts were made to set the 9-5/8" Seal Assembly. A modified S/A was run and energised with 12,000 ft/lbs of torque and successfully tested to 5000 psi.

8-1/2" Hole

After drilling out the cement, float equipment and an additional 6m of new hole, a Phase II PIT was run to 5000 psi without leak off, indicating an EMW of 19.4 ppg at the shoe. Drilling continued to 3809m with mud weight being increased from 11.3 - 16.0 ppg in order to control abnormal pressure. After logging the interval 3809 - 3550m, drilling was terminated and preparations made to conduct a production test of the interval 3392.5m-3400.5m.

Production Testing

Details of production testing operations are included in the Geology/Evaluation Summary (Volume 2).

Plug and Abandonment

Two P&A plugs were set one on top of the other from 3809 - 3500m prior to conducting a production test over the interval 3392.5 - 3400.5m. In order to prevent the plugs from "floating" due to the 16.0 ppg mud in the hole, a 16.0 ppg high density cement slurry was used.

The production testing program was concluded by setting a 9-5/8" EZSV bridge plug at 3370m and by spotting a 100 sack cement plug on top of the bridge plug from 3370 - 3285m.

The 9-5/8" casing was explosively cut with a Pengo cutter at 480m and an injection rate of 6 BPM at 700 psi established into the 9-5/8" x 13-3/8" annulus. After retrieving the 9-5/8" casing, a 235 sack cement plug was set across the stub from 530 - 430m with 10.6 bbls being squeezed into the annulus. The plug was tested to 1500 psi.

After making a gauge ring/junk basket run to 390m, a 13-3/8" EZSV bridge plug was run and set at 380m. The 13-3/8" casing was cut with a Pengo cutter at 232m and an injection rate of 6 BPM at 250 psi was established into the annulus. The casing was retrieved and a 505 sack cement plug was set across the stub from 260 - 170m with 16.7 bbls being squeezed into the 20" x 13-3/8" annulus. The plug was tested to 500 psi.

After pulling the BOP stack and riser, a 3.7 kg shaped explosive casing cutter was run below the wellhead running tool. The running tool was made up in the wellhead and the 20" casing was cut at 140.88m. The pile joint, drilling template and 4 post guide base were recovered. Approximately 3.23 days were spent waiting on boats to retrieve anchors. During this time the wire for Anchor No. 2 was changed out. This operation was somewhat hampered when the watch standers withdrew their labour, necessitating the use of staff labour to carry out duties normally performed by the watch standers.

Pulling Anchors

The rig was deballasted to the towing draft and all anchors, with the exception of No. 8 which was pulled by the rig, were pulled by the workboats Lady Sally, Swan Tide and Atlas Dampier. The Southern Cross was taken under tow by the Lady Sally at 1730 hrs November 28, 1984 enroute to the East Kingfish-1 location.

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## CASING DATA

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WELL GRUNTER-1

CSG OD IN	WT LBS. FT	GRADE	CONN.	CSG LENGTH METRES	SHOE DEPTH R.K.B.	CENTRALIZER POSITION	REMARKS
24"	670	-	CC	11.20		ONE PER COLLAR FOR FIRST 3 COLLARS	WELLHEAD/PILE JOINT #EP2-1
20"	129	X52	CC&JV	12.13			CROSSOVER
20"	94	X52	JV	88.49			7 JOINTS
20"	94	X52	JV	13.08	252.07		SHOE JOINT
13-3/8"	54.5	K-55	BUTT	5.50		ONE MIDWAY UP FS JOINT ONE PER COLLAR FOR FIRST 6 COLLARS.	HANGER JOINT HGR #EH36-1-2 S/A #ES38-1
13-3/8"	54.5	K-55	BUTT	678.17		FIVE INSIDE 20" CSG.	57 JOINTS
13-3/8"	54.5	K-55	BUTT	11.70			FLOAT COLLAR JOINT
13-3/8"	54.5	K-55	BUTT	12.65	836.51		SHOE JOINT
9-5/8"	47	N-80	BUTT	2.56	3549.14	ACROSS COLLARS ON 1ST 3 JTS. ACROSS COLLARS ON EVERY 3RD JT TO 2660 & ACROSS COLLARS ON JTS ABOVE & BELOW STAGE COLLAR	HANGER JOINT HGR:EH 94-1-2 S/A:ES 97-1
9-5/8"	47	N-80	BUTT	3394.03			291 JOINTS 1 PUP 1 MULTI-STAGE COLLAR





## CEMENT DATA

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WELL GRUNTER-1

DATE	DEPTH METRES	TYPE JOB	TYPE CEMENT	AMOUNT	ADDITIVES	REMARKS
15/9/84		20" CSG - LEAD	CLASS "G"	750 SX	8% GEL (2.2%PHG)	MIXED W/50/50 SW/FW SLURRY WT 13.3 PPG
15/9/84	252	20" CSG - TAIL	CLASS "G"	350 SX		MIXED WITH SEAWATER SLURRY WT 15.8 PPG
17/9/84	836.5	13-3/8 " CSG	CLASS "G"	1050 SX		MIXED WITH SEAWATER SLURRY WT 15.8 PPG
31/10/84	3549	9-5/8" CSG 1ST STAGE	CLASS "G"	1030 SX	0.25% HR6L	MIXED WITH FRESHWATER SLURRY WT 15.8 PPG
31/10/84		9-5/8" CSG 2ND STAGE	CLASS "G"	345 SX	0.6% HR6L	MIXED WITH FRESHWATER SLURRY WT 15.8 PPG
13/11/84	3809-3650	P&A PLUG #1	CLASS "G"	195 SX	0.4% HR12 0.5% CFR2	MIXED WITH FRESHWATER SLURRY WT 16.0 PPG
13/11/84	3650-3500	P&A PLUG #2	CLASS "G"	210 SX	0.4% HR12 0.5% CFR2	MIXED WITH FRESHWATER SLURRY WT 16.0 PPG
14/11/84	3450	9-5/8" EZSV				
21/11/84	3370	9-5/8" EZSV				
21/11/84	3370-3285	P&A PLUG #3	CLASS "G"	100 SX	0.6% HR6L	MIXED WITH FRESHWATER AVG SLURRY WT 15.8 PPG
22/11/84	530 - 430	P&A PLUG #4	CLASS "G"	235 SX	NEAT	MIXED WITH SEAWATER AVG SLURRY WT 15.8 PPG

SQUEEZE 10.5 BBBS INTO 9-5/8"x13-3/8" ANNULUS



WELL: GRUNTER-1

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5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

<u>INTERVAL</u>	<u>TYPE</u>
270.0 - 3809.0m	Cuttings samples - 3 sets of washed and oven dried and 3 sets of bagged and air dried cuttings:  from 270.0m - 850.0m every 10m, from 850.0m - 1200.0m every 5m, from 1200.0m - 1220.0m every 10m, from 1220.0m - 3809.0m every 5m.
3389.0 - 3407.0m	Conventional Core No. 1, recovered 99%.
3434.0 - 3452.0m	Conventional Core No. 2, recovered 94%.
1750.0 - 3810.0m *	Sidewall Cores:- Run 1 : Shot 51, recovered 25, Run 2 : Shot 51, recovered 40, Run 3 : Shot 51, recovered 42, Run 4 : Shot 30, recovered 24, Run 5 : Shot 30, recovered 12, Run 6 : Shot 30, recovered 16.
270.0 - 3809.0m	Unwashed canned sample every 15m (Geochem). Unwashed canned sample at various depths (for fission track analysis).

\* Loggers Depth

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WELL: GRUNTER-1

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6.

WIRELINE LOGS AND SURVEYS

<u>Type and Scale</u>	<u>From</u>	<u>To</u>
<u>Suite 1</u>		
BHC-GR 1:200 1:500	851.0m	251.0
<u>Suite 2</u>		
DLTD-MSFL-GR 1:200 1:500	3015.0	836.0m
LDTC-CNTH-GR 1:200 1:500	3015.0	836.0m
RFT-GR RUN 1 (PRESSURE RECORD) RFT-HP RUN 1 (PRESSURE RECORD)		
RFT-GR RUNS 2 & 3 (SAMPLE RECORD) RFT-HP RUNS 2 & 3 (SAMPLE RECORD)		
<u>Suite 3</u>		
DLTD-MSFL-GR 1:200 1:500	3520.0	2950.0m
LDTC-CNTH-NGTC 1:200 1:500	3524.0	2950.0m
NGT-C RATIOS LOG 1:200	3514.0	2950.0m
NGT-C SPECTROSCOPY 1:200	3514.0	2950.0m
RFT-GR RUN 4 (PRESSURE RECORD) RFT-HP RUN 4 (PRESSURE RECORD)		
RFT-GR RUNS 5-11 (SAMPLE RECORD) RFT-HP RUNS 5-11 (SAMPLE RECORD)		
RFT-GR RUNS 12-17 (SAMPLE RECORD) RFT-HP RUNS 12-17 (SAMPLE RECORD)		
BHC-GR 1:200 1:500	3524.0m	836.0
<u>Suite 4</u>		
DLTD-MSFL-GR 1:200 1:500	3564.0	3450.0m
GR 1:200 1:500	3564.0	3450.0m
HDT 1:200	3563.0	1800.0m
RFT-GR RUN 18 (PRESSURE AND SAMPLE RECORD) *STUCK CABLE/NO LOG		
CST RUNS 1-4 1:200		

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Suite 5

DLTD-MSFL-GR	1:200 1:500	3810.0	3550.0m
LDTC-CNTH-NGTC	1:200 1:500	3812.0	3550.0m
BHC-GR	1:200 1:500	3812.0	3550.0m
CBL-WAVE-GR-CCL	1:200	3550.0	3200.0m
CBL-VDL-GR-CCL	1:200	3550.0	3200.0m
RFT-GR RUN 19 (PRESSURES AND SAMPLE) RFT-HP RUN 19 (PRESSURES AND SAMPLE)			
CST RUNS 5 & 6	1:200		

Suite 6

GR-CCL-JB-G.RING	1:200	3475.0	3175.0m
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Suite 7

PROD. MODEL "D" PACKER #1			3382.0m
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Suite 8

CCL-WEIGHTS	1:200	3381.5	3275.0m
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Suite 9

PROD. MODEL "D" PACKER #2			3377.0m
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Suite 10

PROD. TEST #1 PERFO.		3392.5	3400.5m
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1323L/76-77

7.

## SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - GRUNTER-1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
				OIL	COND.	GAS	MUD FILTRATE	MPaa	Psia	MPaa	Psia	
1	1	2596.0	Pretest					25.58	3724.0	29.93	4356.0	Valid
	2	2670.0	Pretest					26.59	3871.3	30.76	4475.8	Valid
	3	2676.0	Pretest					26.60	3873.1	30.93	4485.8	Valid
	4	2686.0	Pretest					26.63	3876.3	30.95	4503.1	Valid
	5	2702.5	Pretest					26.66	3880.7	31.12	4528.7	Valid
	6	2710.0	Pretest					26.72	3889.4	31.22	4542.6	Valid
	7	2731.0	Pretest					-	-	31.44	4574.9	Seal Failure
	8	2730.7	Pretest					26.94	3921.6	31.43	4573.5	Valid
	9	2735.5	Pretest					-	-	31.49	4582.1	Seal Failure
	10	2735.7	Pretest					-	-	31.48	4580.9	Seal Failure
	11	2735.7	Pretest					26.96	3925.0	31.49	4581.6	Valid
	12	2804.0	Pretest					27.63	4021.5	32.26	4692.9	Valid
	13	2842.0	Pretest					28.18	4101.1	32.65	4750.2	Valid
	14	2856.0	Pretest					28.24	4110.6	32.82	4774.3	Valid
	15	2861.3	Pretest					28.24	4110.6	32.87	4781.6	Valid
	16	2874.0	Pretest					28.35	4126.4	33.01	4802.6	Valid
	17	2997.0	Pretest					29.59	4306.9	34.40	5003.8	Valid
2	18	2861.3	22.7		1.0	3.55	4.25	28.25	4111.8	32.91	4787.2	Valid Pretest, Sample taken
			10.4		0.45	1.80	0.80					
3	19	2702.5	22.7		1.6	4.38	0.20	26.63	3877.5	31.05	4518.5	Valid Pretest, Sample taken
			10.4		-	1.04	0.10					
4	20	3495.0	Pretest					-	-	39.55	5751.3	Seal Failure
	21	3495.3	Pretest					-	-	39.56	5752.5	Seal Failure
	22	3495.6	Pretest					-	-	39.57	5753.5	Tight then Seal Failure
	23	3494.6	Pretest					-	-	39.56	5752.6	Seal Failure
	24	3472.5	Pretest					-	-	39.27	5709.6	Seal Failure
	25	3472.3	Pretest					-	-	39.27	5710.2	Seal Failure
	26	3472.7	Pretest					-	-	39.28	5711.5	Tight
	27	3439.0	Pretest					36.30	5279.6	38.87	5652.5	Valid

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SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - GRUNTER-1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS		
				OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	MPaa	Psia	MPaa		Psia	
			Litres	Litres	Litres	m <sup>3</sup>	Litres	Litres						
4	28	3394.0	Pretest						35.60	5177.9	38.39	5583.0	Valid	
	29	3353.0	Pretest						34.71	5048.1	37.93	5515.7	Valid	
	30	3334.5	Pretest						34.28	4986.7	37.73	5486.7	Valid	
	31	3329.0	Pretest						-	-	37.69	5481.6	Tight	
	32	3328.7	Pretest						34.16	4968.9	37.68	5479.4	Valid	
	33	3324.3	Pretest						33.51	4874.5	37.65	5474.8	Valid	
	34	3310.0	Pretest						33.37	4853.9	37.49	5452.6	Valid	
	35	3253.5	Pretest						32.49	4726.5	36.86	5360.3	Valid	
	36	3230.0	Pretest						32.05	4663.1	36.61	5324.1	Valid	
	37	3181.0	Pretest						31.55	4591.1	36.07	5246.0	Valid	
	38	3152.5	Pretest						-	-	35.75	5199.7	Seal Failure	
	39	3152.7	Pretest						31.22	4543.2	35.75	5199.9	Valid	
	40	3122.0	Pretest						31.69	4610.9	35.41	5150.6	? Supercharged	
	41	3122.0	Pretest						31.64	4602.9	35.42	5151.6	? Supercharged	
	42	3122.2	Pretest						31.72	4615.5	35.42	5151.6	? Supercharged	
	43	3100.5	Pretest						30.86	4490.9	35.18	5117.0	Valid	
	44	3085.5	Pretest						30.77	4477.4	35.01	5092.5	Valid	
	45	3053.5	Pretest						-	-	34.65	5040.2	Tight	
	46	3053.1	Pretest						30.69	4465.3	34.65	5040.8	Valid	
	47	3044.8	Pretest						30.52	4441.1	34.57	5027.8	Valid	
	48	2997.0	Pretest						29.57	4303.0	30.02	4949.2	Valid	
5	49	3439.0	45.4			0.16		42.0	36.31	5281.5	38.90	5657.1	Valid Pretest, Sample taken	
			10.4			0.06		9.25						
6	50	3353.3	45.4	Trace		0.06		43.0	34.72	5050.0	37.90	5511.8	Valid Pretest, Sample taken	
			10.4	0.10		0.07		9.0						
	51	3152.7	Pretest						31.23	4544.5	35.68	5189.0	Valid	
	52	3014.6	Pretest						-	-	34.15	4967.0	Seal Failure	
	53	3014.8	Pretest						-	-	34.15	4967.8	Tight	
	54	2997.0	Pretest						29.56	4301.7	33.96	4939.3	Valid	

14/12/26



SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - GRUNTER-1

TEST SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
			OIL	COND.	GAS	FORMATION	MUD	MPaa	Psia	MPaa	Psia	
						WATER	FILTRATE					
		Litres	Litres	Litres	m <sup>3</sup>	Litres	Litres					
7	55	3394.0	Pretest					-	-	38.32	5572.5	Seal Failure
	56	3394.0	Pretest					-	-	38.33	5573.6	Seal Failure
	57	3394.2	45.4	Trace	0.06		41.0	35.55	5169.9	38.34	5574.8	Valid Pretest, Sample taken
			10.4	Trace	0.03		9.5					
8	58	3310.0	Pretest					33.37	4853.9	37.38	5436.0	Valid Pretest, Seal Failure on Opening Chamber.
	59	3310.0	Pretest					33.36	4853.7	37.38	5436.0	" " " "
	60	3310.3	Pretest					-	-	37.38	5436.3	Seal Failure
	61	3310.9	Pretest					-	-	37.40	5438.4	Seal Failure
9	62	3310.6	45.4		0.20	0.59	39.50	33.37	4854.6	37.37	5434.7	Valid Pretest, Sample taken
			10.4		0.40	0.63	6.30					
10	63	3328.8	45.4	0.70		0.79	38.50	34.17	4970.8	37.55	5460.0	Valid Pretest, Sample taken
			10.4	1.00		0.49	6.80					
11	64	3394.2	Pretest					-	-	38.18	5551.6	Seal Failure
	65	3394.4	45.4			0.16	40.40	35.55	5170.0	38.17	5550.7	Valid Pretest, Seal Failure while Sampling
	66	3394.8	Pretest					-	-	38.25	5562.5	Seal Failure
	67	3394.3	Pretest					-	-	38.25	5562.5	Seal Failure
12	68	3394.6	Pretest					-	-	38.23	5558.8	Seal Failure
	69	3394.6	Pretest					-	-	38.23	5558.8	Seal Failure
	70	3394.0	45.4				1.00	35.56	5172.6	38.20	5555.3	Valid Pretest, Opened 1 Chamber
13	71	3394.2	Pretest					35.60	5177.9	38.21	5555.9	Valid Pretest
	72	3393.5	Pretest					35.55	5171.2	38.19	5552.9	Valid Pretest
	73	3395.0	Pretest					35.63	5182.8	38.22	5557.5	Valid Pretest
	74	3394.7	Pretest					35.60	5177.7	38.19	5553.4	Valid Pretest
	75	3394.2	Pretest					-	-	38.18	5551.4	Tight
	76	3394.3	45.4			0.23	42.50	35.59	5176.9	38.18	5551.5	Valid Pretest, Sample taken
			10.4			0.09	9.20					

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SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - GRUNTER-1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS	
				OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	MPaa	Psia	MPaa		Psia
				Litres	Litres	m <sup>3</sup>	Litres	Litres					
14	77	3334.4	Pretest						34.30	4989.4	37.47	5449.7	Valid Pretest
	78	3334.5	Pretest						34.30	4989.3	37.47	5448.8	Valid Pretest
	79	3334.6	Pretest						34.29	4987.7	37.47	5448.6	Valid Pretest
	80	3336.2	Pretest						-	-	37.48	5450.4	Seal Failure
15	81	3334.4	Pretest						-	-	37.47	5449.2	Seal Failure
	82	3334.1	45.4			0.13		41.00	34.28	4986.8	37.47	5449.5	Valid Pretest, Sample taken
			10.4	Trace		0.04		9.10					
16	83	3044.7	45.4		Scum	0.75		39.00	30.52	4441.6	34.28	4986.0	Valid Pretest, Sample taken
			10.4			0.10		8.50					
17	84	3053.1	45.4		2.00	6.26		11.00	30.70	4466.7	34.39	5001.8	Valid Pretest, Sample taken
			10.4	Chamber Preserved									
18	85	3557.0	Pretest						-	-	47.84	6939.0	Seal Failure, Tool Stuck
19	86	3778.0	Pretest						-	-	71.73	10403.0	Tight
	87	3777.7	Pretest						-	-	71.69	10397.0	Tight
	88	3777.7	Pretest						69.72	10111.0 *	71.73	10403.0	Tight
	89	3666.0	Pretest						64.36	9334.0 *	69.10	10022.0	Tight
	90	3666.0	Pretest						-	-	69.07	10018.0	Tight
	91	3666.0	Pretest						-	-	69.11	10023.0	Tight
	92	3665.3	Pretest						-	-	69.23	10040.0	Tight
	93	3665.8	Pretest						-	-	69.25	10044.0	Tight
	94	3666.2	Pretest						-	-	69.25	10054.0	Tight
	95	3662.2	Pretest						-	-	69.33	10055.0	Tight
	96	3520.0	Pretest						-	-	66.32	9619.0	Tool check in Casing
	97	3574.0	Pretest						50.09	7264.0 *	67.46	9784.0	Tight
	98	3572.5	Pretest						-	-	67.64	9810.0	Seal Failure
	99	3572.2	22.7					1.50	51.53	7474.0 *	67.64	9810.0	Valid Pretest, Sample taken
			10.4					0.50					

\* not stabilised

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8.

TEMPERATURE RECORD - GRUNTER-1

LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (C°)	CIRCULATION TIME (t <sub>k</sub> ) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER TEMPERATURE (C°)	GEO THERMAL GRADIENT (C°/km)
<u>Suite 1</u>						
BHC-GR	851.0	34.0				
<u>Suite 2</u>						
DLTD-MSFL-GR	3015.0	84.0	1.75	6.75	107.0 °	33.58
LDTG-CNTH-GR	3015.0	94.0	1.75	12.58	107.0 °	33.58
<u>Suite 3</u>						
DLTD-MSFL-GR	3520.0	96.0	1.75	8.50	123.6 °	33.43
LDTG-CNTH-NGTC	3524.0	107.0	1.75	14.50	123.6 °	33.43
BHC-GR	3524.0	126.0	3.00	Wiper trip 45.50	-	-
<u>Suite 4</u>						
DLTD-MSFL-GR	3564.0	96.0	1.75	7.97	116.0 °	30.83
GR	3564.0	99.5	1.75	10.50	116.0 °	30.83
HDT	3563.0	103.0	1.75	12.75	116.0 °	30.83
<u>Suite 5</u>						
DLTD-MSFL-GR	3810.0	117.0	3.50	7.92	142.0 °	35.81
LDTG-CNTH-NGTC	3812.0	124.0	3.50	11.17	142.0 °	35.81
BHC-GR	3812.0	128.0	3.50	13.67	142.0 °	35.81

NB: Prior to Suite 4, logging drilling was stopped at 3564m (3562m Drl's depth), and the mudweight raised from 9.5m to 11.3ppg. This involved circulating time of almost 20 hours in the 36 hours preceding logging and could account for the relatively low temperatures recorded during this suite.

FIGURES

# LOCALITY MAP GRUNTER-1

SCALE 1:250 000

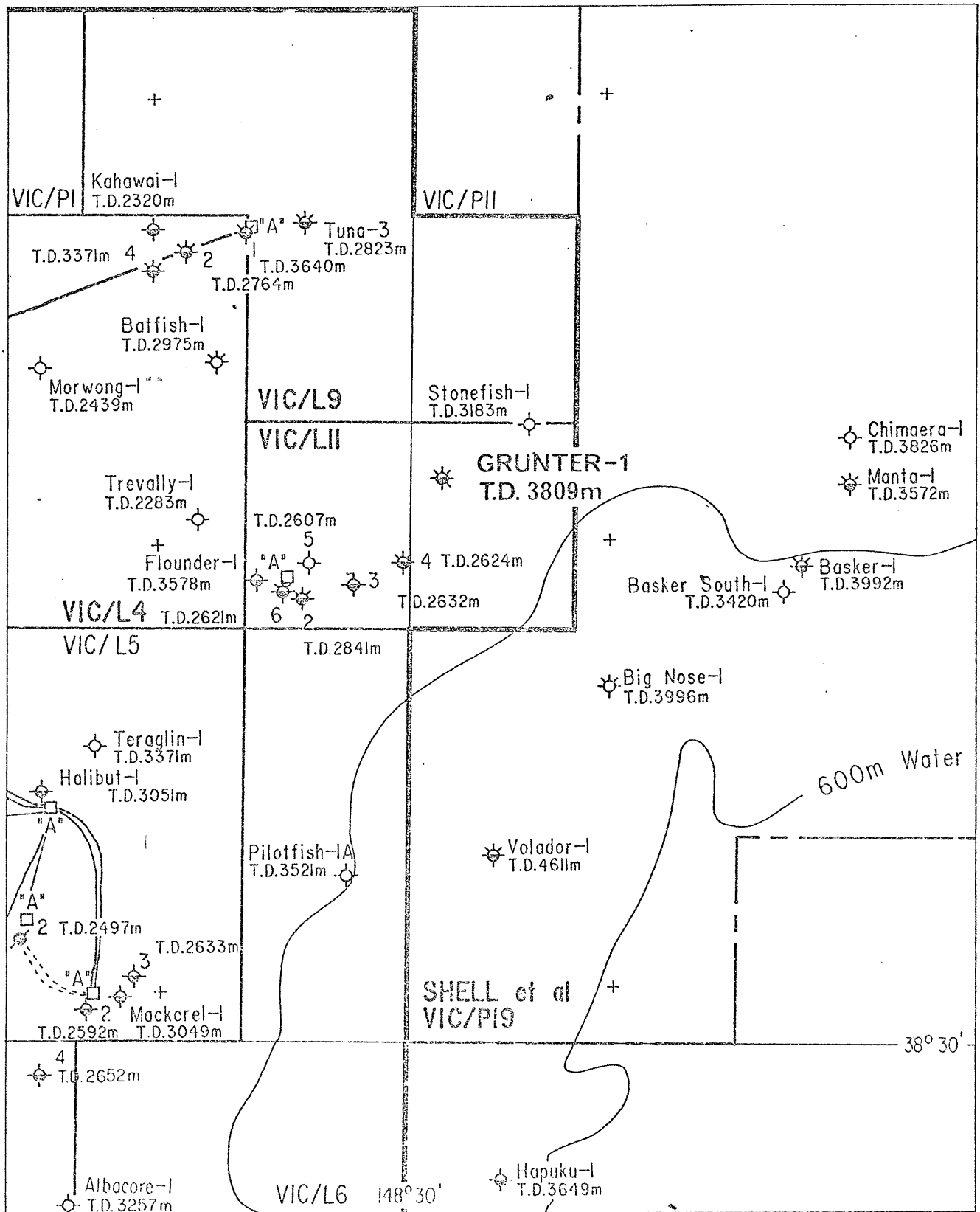


Figure 1

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# WELL PROGRESS CURVE

WELL: GRUNTER-1

RIG: SOUTHERN CROSS

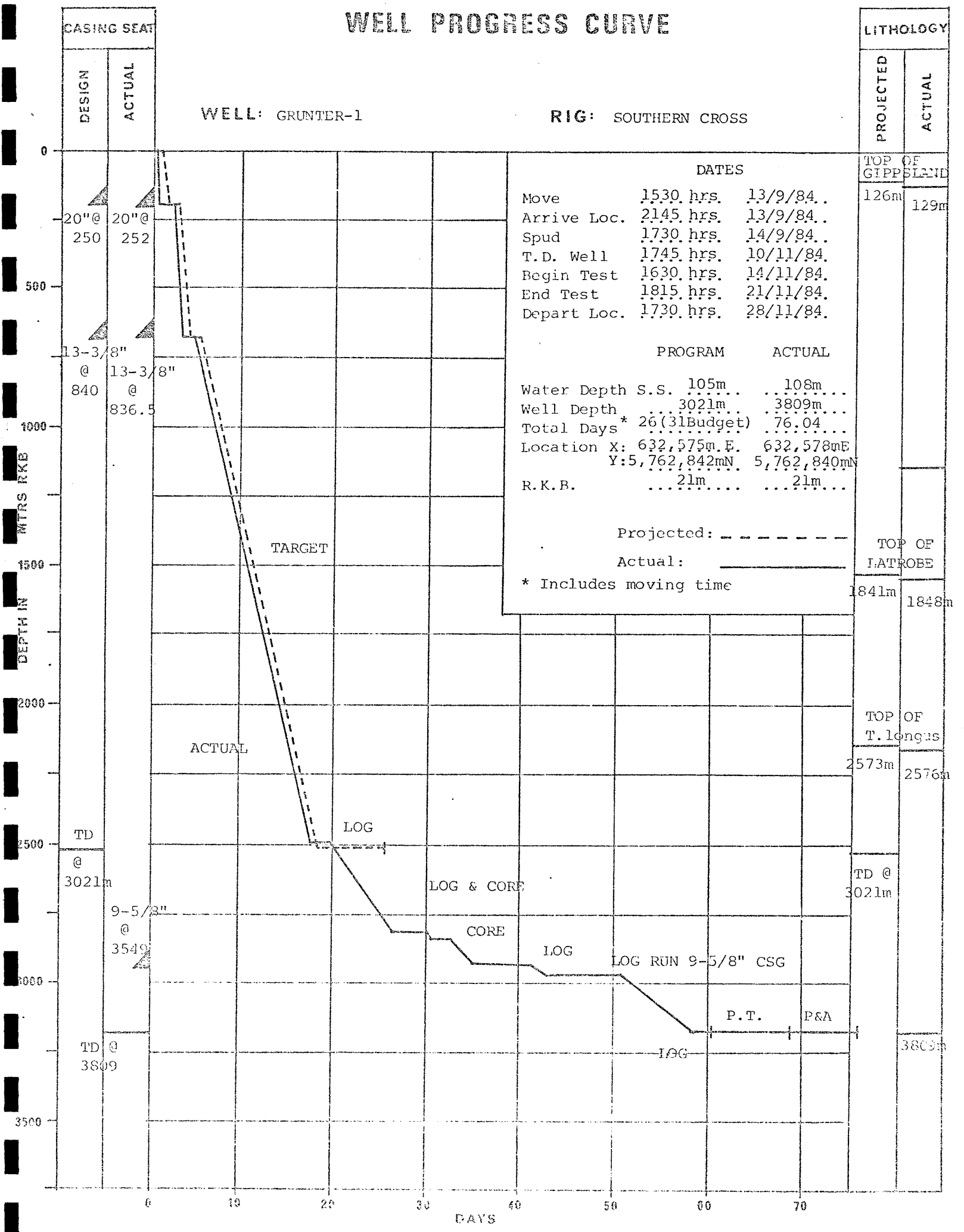


Figure 2.

WELLBORE SCHEMATIC

WELL: GRUNTER-1

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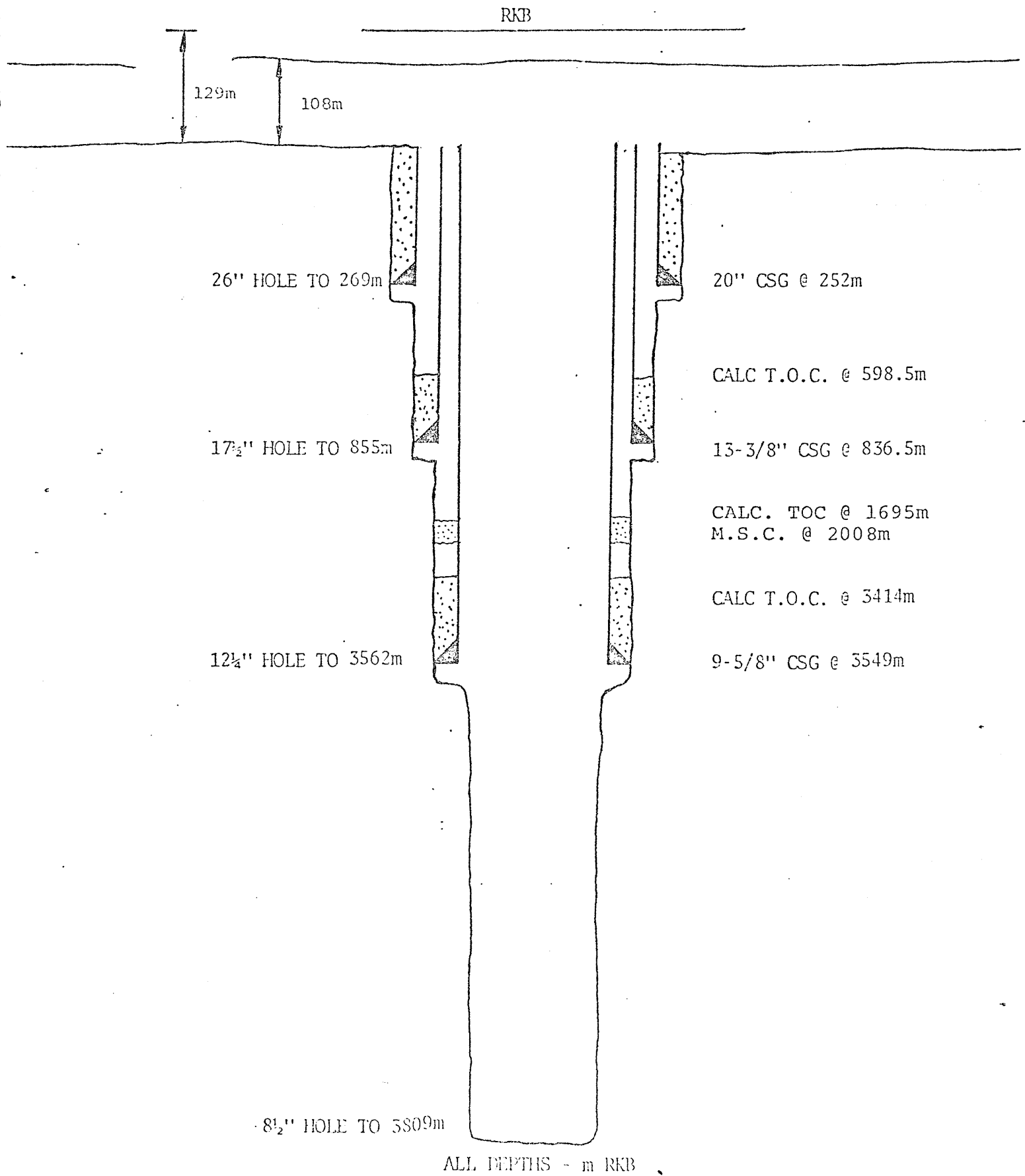


Figure 3

GRUNTER-1

RKB

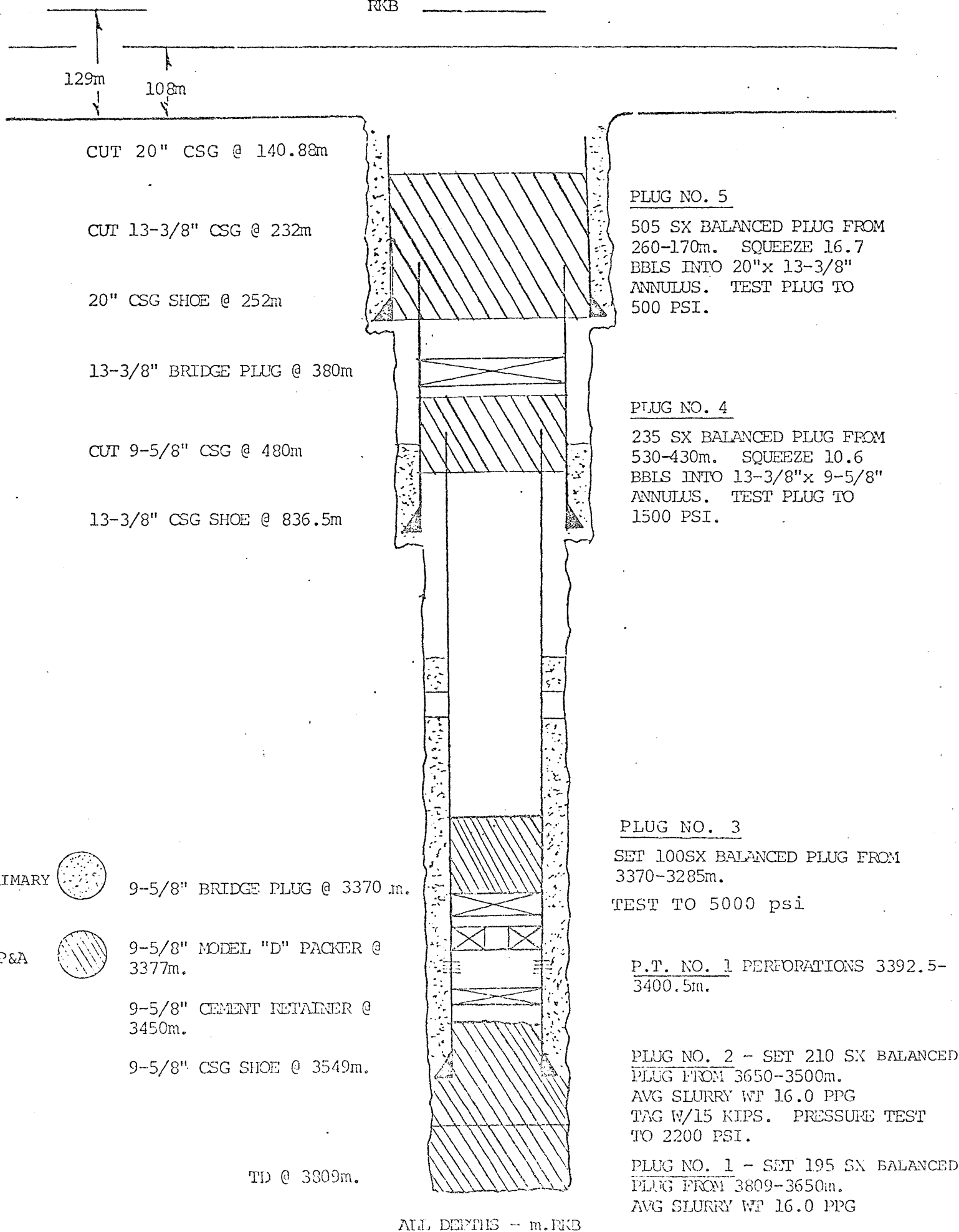


Figure 4



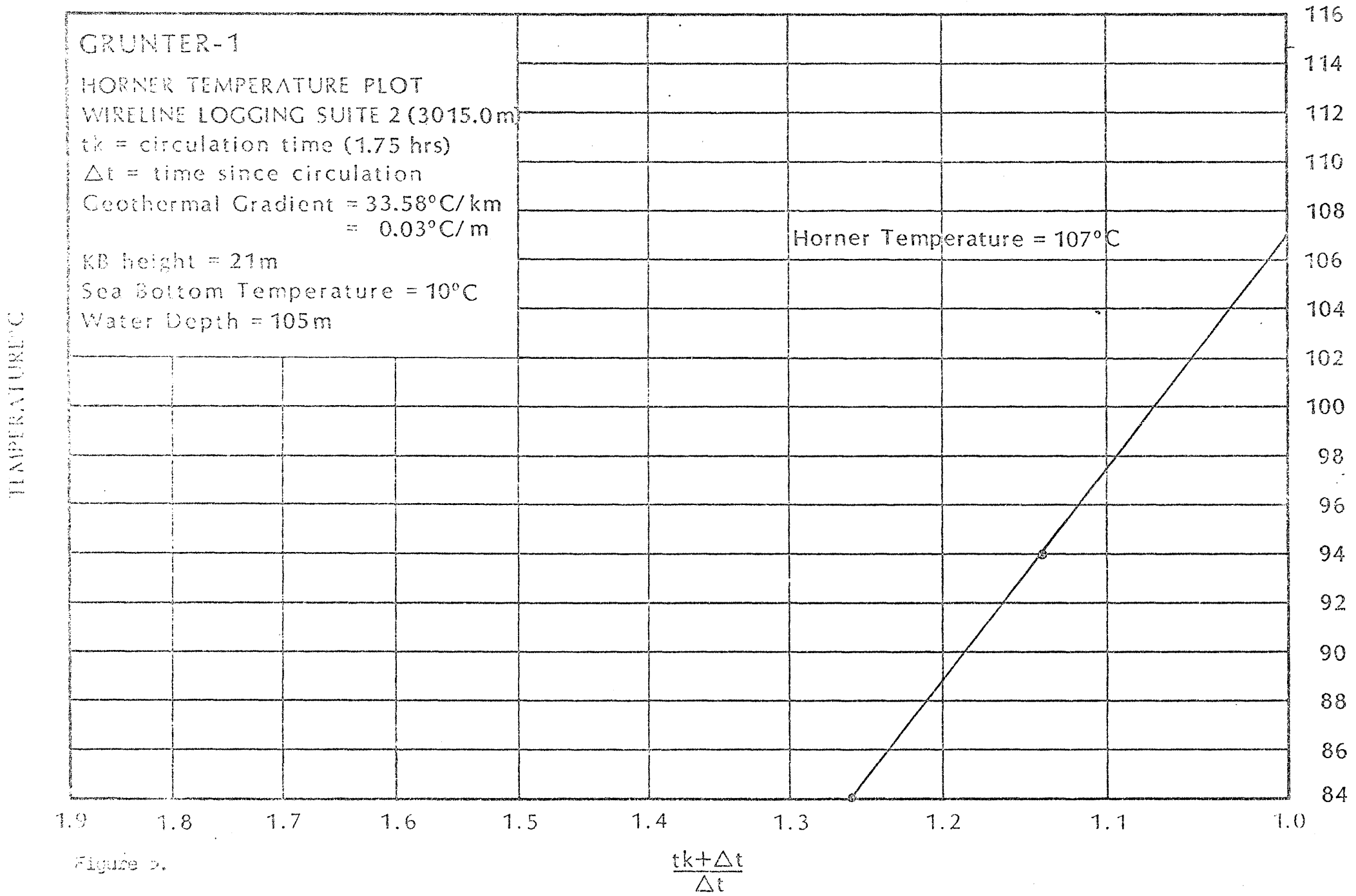


Figure 2.

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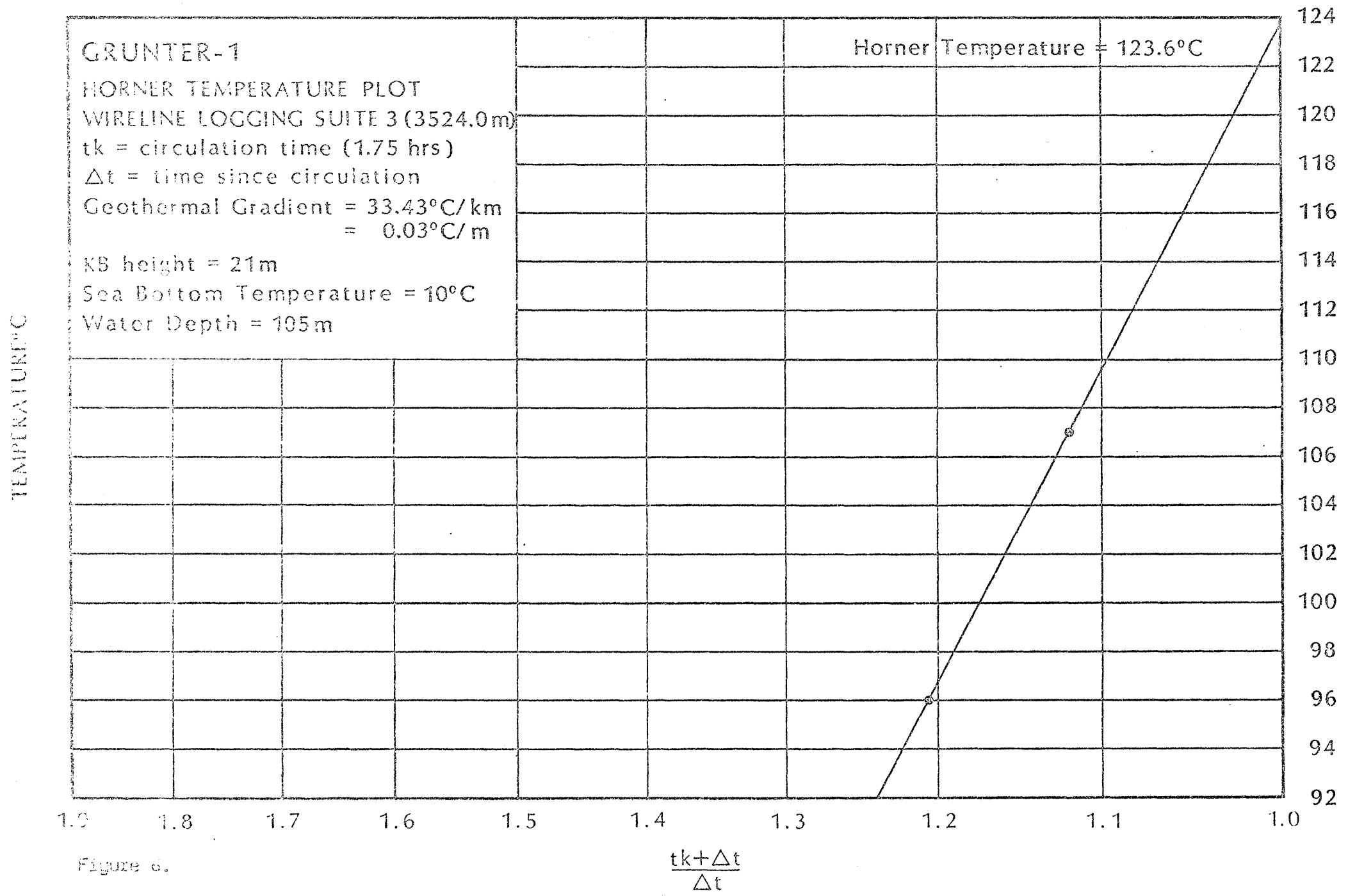


Figure 6.

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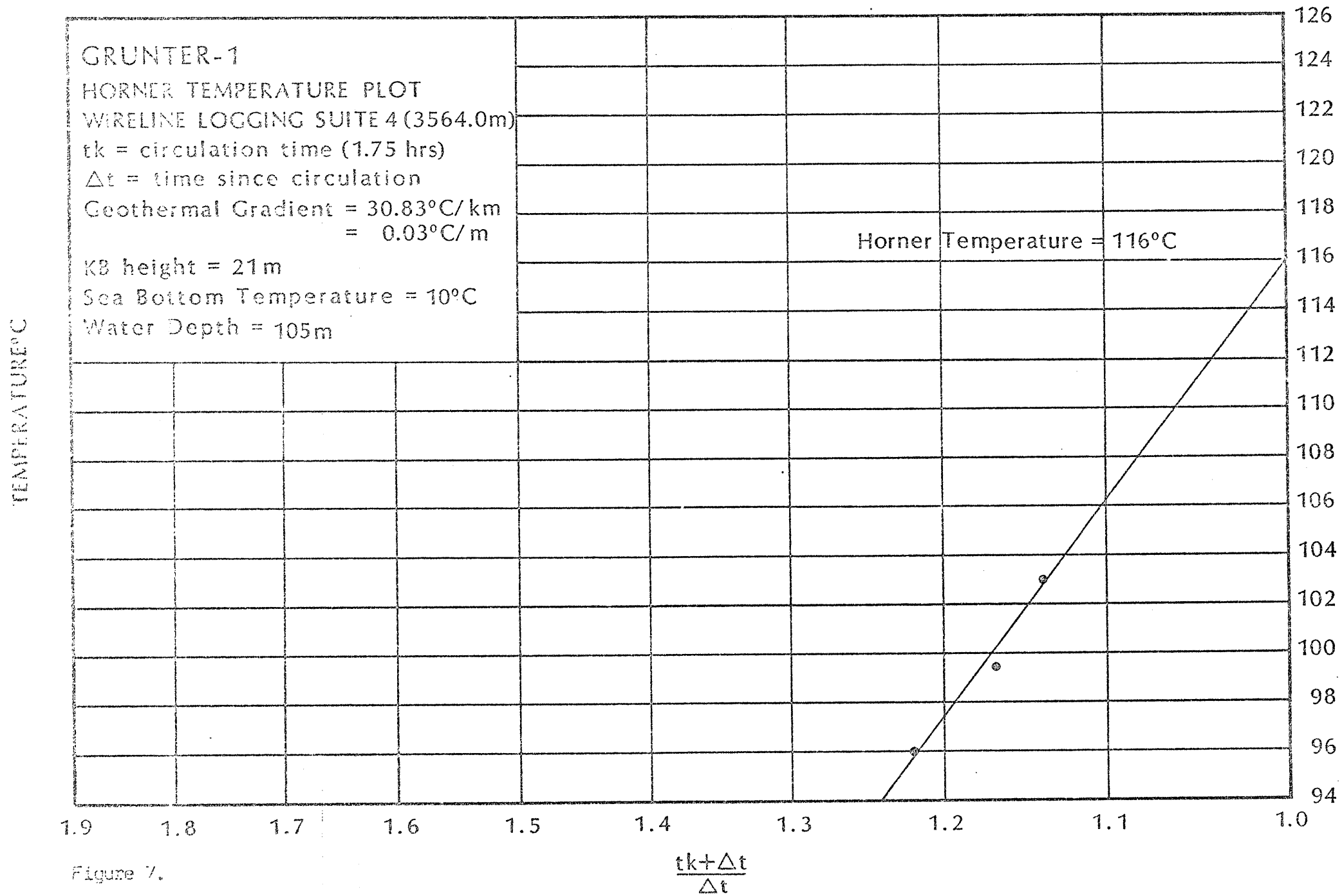


Figure 7.

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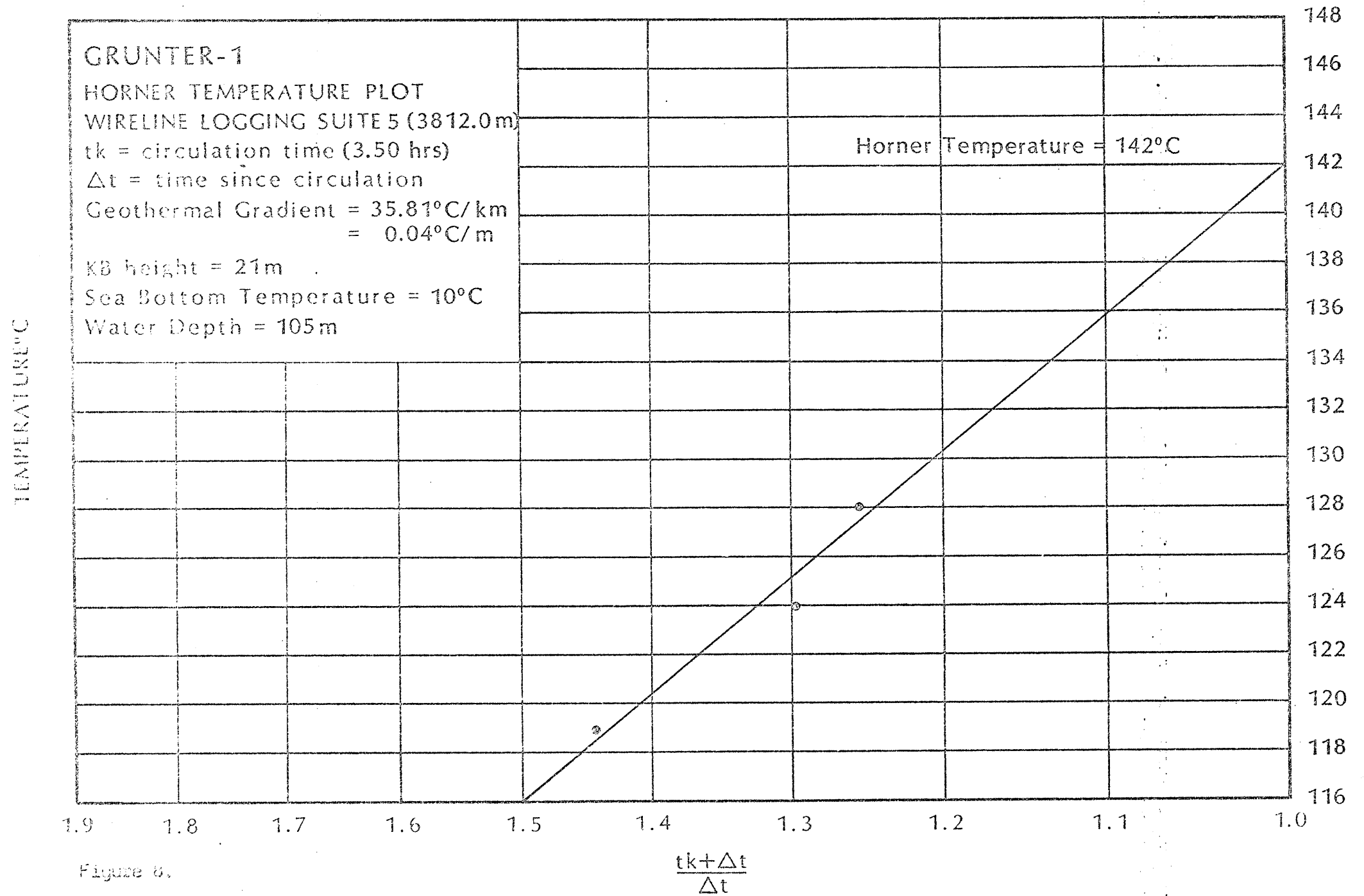


Figure 8.

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APPENDIX - 1

GRUNTER-1

Lithology Descriptions

Depth	%	Descriptions
270-280m	90 10	CEMENT LIMESTONE: Dominantly calcarenite with abundant fossil fragments and occasional subrounded to subangular, coarse, loose quartz grains.
280-290m	90 10	CEMENT LIMESTONE: as above.
290-300m	70 30	CEMENT LIMESTONE: Calcisiltite to dominantly calcarenite with abundant fossil fragments, mainly bryozoa.
300-310m	70  30	LIMESTONE: Calcarenite, white angular grains of calcite in firm cuttings. Abundant fossil fragments and occasional biosparite. CEMENT
310-320m	100  trace	LIMESTONE: Calcarenite and minor calcisiltite. Abundant foraminifera, bryozoa fossil fragments. Biosparite common. Cement
320-330m	100 trace	LIMESTONE: as above. Cement
330-340m	100	LIMESTONE: as above.
340-350m	100	LIMESTONE: Calcarenite grading to occasional calcisiltite. White to light grey aggregates of angular calcite grains. Abundant fossils including foraminifera and bryozoa. Biosparite common.
350-360m	100	LIMESTONE: as above. Calcisiltite common.
360-370m	100	LIMESTONE: as above.
370-380m	100	LIMESTONE: as above.
380-390m	100	LIMESTONE: Dominantly very fine grained calcarenite with minor calcisiltite. Occasional glauconite grains. Abundant fossils including foraminifera and bryozoa. Biosparite common.
390-400m	100	LIMESTONE: as above.
400-410m	100	LIMESTONE: Calcarenite - dominantly fine, angular, white to light grey calcite grains in firm cuttings. Rare glauconite. Occasional fossil fragments, dominantly foraminifera. Minor sparite.
410-420m	100	LIMESTONE: as above.
420-430m	100	LIMESTONE: as above.
430-440m	100	LIMESTONE: as above.

440-450m	100	LIMESTONE: as above.
450-460m	100	LIMESTONE: Calcarenite - very fine to medium angular, white to light grey calcite grains in firm to hard aggregates. Rare glauconite. Occasional fossil fragments, mainly bryozoa. Minor sparite.
460-470m	100	LIMESTONE: as above.
470-480m	100	LIMESTONE: as above.
480-490m	100	LIMESTONE: as above.
490-500m	100	LIMESTONE: Type 1, 80% Calcisiltite - medium grey to light grey, firm cuttings. Type 2, 20% Calcarenite - medium light grey to light grey and white angular, dominantly fine calcite in firm to hard cuttings. Type 3, Minor fossils, mainly foraminifera.
500-510m	100	LIMESTONE: Type 1, 80% Calcisiltite as above. Type 2, 20% Calcarenite as above. Type 3, Rare fossils as above.
510-520m	100	LIMESTONE: Type 1, 70% Calcisiltite as above. Type 2, 30% Calcarenite as above. Type 3, Trace fossils as above.
520-530m	100	LIMESTONE: Dominantly calcisiltite as above with occasional calcarenite. Occasional glauconite, slightly argillaceous. Rare forams and sparite.
530-540m	100	LIMESTONE: as above.
540-550m	100	LIMESTONE: as above.
550-560m	100	LIMESTONE: as above.
560-570m	100	LIMESTONE: Dominantly calcisiltite with slightly argillaceous matrix. Medium grey, soft cuttings. Occasional glauconite, forams, minor calcarenite.
570-580m	100	LIMESTONE: as above. Soft-firm cuttings.
580-590m	100	LIMESTONE: as above. Moderately argillaceous.
590-600m	100	LIMESTONE: as above.
600-610m	100	LIMESTONE: Calcisiltite, medium grey to medium light grey. Very argillaceous, minor glauconite and sparite, fossiliferous (forams and bryozoans). Occasional sand sized light grey calcite grains.
610-620m	100	LIMESTONE: as above.
620-630m	100	LIMESTONE: as above.
630-640m	100	LIMESTONE: as above.
640-650m	100	LIMESTONE: as above.

650-660m	100	LIMESTONE: Dominantly medium to light grey calcisiltite, slightly argillaceous and glauconitic. Medium grey to green grey calcisiltite, slightly glauconitic and dolomitic. Minor fossil fragments and sparry calcite.
660-670m	100	LIMESTONE: as above.
670-680m	100	LIMESTONE: Dominantly medium to light grey calcisiltite, slightly glauconitic and argillaceous. Minor calcilutite and calcarenite. Trace fossil fragments.
680-690m	100	LIMESTONE: as above.
690-700m	100	LIMESTONE: as above.
700-710m	100	LIMESTONE: as above.
710-720m	100	LIMESTONE: Calcisiltite: as above. Common forams and bryozoans.
720-730m	100	LIMESTONE: as above. Occasional calcarenite. Rare fossils.
730-740m	100	LIMESTONE: as above. Slightly argillaceous.
740-750m	100	LIMESTONE: as above. Common glauconitic, calcarenite.
750-760m	100	LIMESTONE: Very fine grained, medium light grey calcarenite, slightly glauconitic grading to calcisiltite. Slightly argillaceous matrix. Trace fossils, sparite, firm cuttings.
760-770m	100	LIMESTONE: as above.
770-780m	100	LIMESTONE: as above. Moderate to hard cuttings.
780-790m	100	LIMESTONE: Calcarenite, very fine grained, medium light grey to light grey grading to calcisiltite, as above.
790-800m	100	LIMESTONE: as above.
800-810m	100	LIMESTONE: as above.
810-820m	100	LIMESTONE: as above.
820-830m	100	LIMESTONE: Dominantly medium grey calcisiltite, soft to firm, argillaceous grading occasionally to very fine calcarenite.
830-840m	100	LIMESTONE: as above. Common calcarenite. Occasional medium calcite grains.
840-850m	100 trace	LIMESTONE: Dominantly calcisiltite. FOSSILS: forams.
850-855m		NO SAMPLE.



855-860m	50 50	CEMENT LIMESTONE: Very fine grained calcarenite grading to calcisiltite, very argillaceous matrix. Slightly glauconitic. Trace foraminifera.
860-865m	90  10	LIMESTONE: Fine to very fine grained calcarenite grading occasionally to calcisiltite, very argillaceous matrix. Medium light grey, firm cuttings. Grains are subrounded, slightly glauconitic. Trace foraminifera, bryozoa. CEMENT
865-870m	95 5 trace	LIMESTONE: as above. CEMENT SILICA: Microcrystalline, very hard, tan to brown cherty angular cuttings. Some show clear quartz veinlets. May be fossiliferous ?
870-875m	100  trace	LIMESTONE: Calcisiltite, soft, light grey, highly argillaceous cuttings, slightly glauconitic with occasional fine sand sized calcite grains. Trace foraminifera. CEMENT.
875-880m	100	LIMESTONE: as above. Grades to occasional very fine calcarenite.
880-885m	100 trace	LIMESTONE: as above. FOSSILS: forams and bryozoa.
885-890m	100  trace	LIMESTONE: Medium light grey to light grey, soft to moderately hard, very argillaceous, slightly glauconitic and very poorly sorted calcisiltite. Very fine to occasional medium sized grains common. FOSSILS: bryozoa.
890-895m	100	LIMESTONE: as above.
895-900m	100	LIMESTONE: Medium light grey to occasional white, soft-moderate hard, very argillaceous, slightly glauconitic calcisiltite. Grains occasionally reach very fine sand size.
900-905m	100 trace	LIMESTONE: as above. FOSSILS: forams.
905-910m	100	LIMESTONE: as above.
910-915m	100  trace	LIMESTONE: Calcisiltite, soft to moderate hard and light grey to very light grey, slightly glauconitic, very argillaceous. Occasional very fine grains. FOSSILS: bryozoa.
915-920m	100	LIMESTONE: as above. Trace forams.
920-925m	100	LIMESTONE: as above. No fossils.

925-930m	100	LIMESTONE: Soft to firm, medium light grey to light grey, slightly glauconitic, very argillaceous, calcisiltite. Occasional very fine sand sized grains, subrounded.
	trace	FOSSILS: bryozoa, forams.
930-935m	100	LIMESTONE: Soft to firm, rounded to occasional angular, very argillaceous, medium light grey to light grey, calcisiltite. Occasional very fine sand sized grains, slightly glauconitic. Trace sparite.
	trace	FOSSILS: forams.
935-940m	100	LIMESTONE: as above.
	trace	SPARRY CALCITE: colourless to white angular coarse grains.
	trace	FOSSILS: forams.
		N.B: Fossils and sparry calcite generally exhibits a dull orange-yellow mineral fluorescence.
940-945m	100	LIMESTONE: as above. Occasional cuttings medium grey. Occasional calcisiltite.
	trace	FOSSILS: bryozoa.
945-950m	100	LIMESTONE: Soft to firm, rounded to occasionally angular, medium light grey to occasionally medium grey, slightly glauconitic, very argillaceous, calcisiltite. Occasional very fine sand sized grains.
	trace	SPARITE: white to occasional colourless fine to coarse, angular, calcite.
950-955m	100	LIMESTONE: as above. Occasional light grey.
	trace	SPARITE: as above.
955-960m	100	LIMESTONE: Type 1, 90% medium grey to medium light grey, soft to firm, very argillaceous, slightly glauconitic, calcisiltite. Type 2, 10% medium light grey to light grey, firm to moderately hard, argillaceous, slightly glauconitic, calcarenite.
	trace	SPARITE: as above.
	trace	FOSSILS: bryozoa, as above.
960-965m	100	LIMESTONE: as above.
	trace	FOSSILS: forams.
965-970m	100	LIMESTONE: Dominantly calcisiltite as above. Minor calcarenite. Occasional coarse grains of glauconite.
	trace	SPARITE: as above.
970-975m	100	LIMESTONE: Soft to firm to occasional moderate hard, rounded to subangular, medium grey to medium light grey, slightly glauconitic, very argillaceous, calcisiltite. Minor calcarenite - medium light grey to light grey, moderate hard to firm, slightly glauconitic, slightly argillaceous.
	trace	SPARITE: as above
	trace	FOSSILS: forams.

975-980m	100 trace trace	LIMESTONE: as above. Minor calcisiltite - soft, very argillaceous, medium grey cuttings. SPARITE: as above. FOSSILS: forams.
980-985m	100 trace	LIMESTONE: as above. FOSSILS: forams, as above.
985-990m	100 trace trace	LIMESTONE: Dominantly calcisiltite as above. Minor calcarenite, calcisiltite as above. SPARITE: as above. FOSSILS: forams.
990-995m	100 trace	LIMESTONE: Soft to moderate hard, rounded to angular, slightly glauconitic, medium dark grey to light grey, very argillaceous, calcisiltite. SPARITE: as above.
995-1000m	100 trace	LIMESTONE: as above. SPARITE: as above.
1000-1005m	100 trace trace	LIMESTONE: Type 1, 85% calcisiltite, as above. Type 2, 10% calcarenite, firm to moderate hard, subangular, slightly argillaceous, slightly glauconitic, cuttings, grain size very fine, light grey. Type 3, 5% calcisiltite, soft, medium grey, very argillaceous. SPARITE: as above. FOSSILS: bryozoa.
1005-1010m	100	LIMESTONE: Type 1, 85% calcisiltite, as above. Very fine sand sized grains common. Type 2, 10% calcarenite, as above. Type 3, 5% calcisiltite, as above.
1010-1015m	100 trace trace	LIMESTONE: Type 1, 80% calcisiltite, as above. Type 3, 20% calcisiltite, medium grey to medium dark grey, soft, very argillaceous. Minor calcarenite: as above. SPARITE: as above. FOSSILS: bryozoa, as above.
1015-1020m	100 trace	LIMESTONE: Type 2, 40% calcarenite: medium grey, firm to hard, occasionally slightly glauconitic, very fine to fine grain size. Type 3, 60% calcisiltite. FOSSILS: foraminifera.
1020-1025m	100 trace trace	LIMESTONE: Type 2, 20% calcarenite: as above. Type 3, 80% calcisiltite: as above. SPARITE: as above. FOSSILS: forams.
1025-1030m	100 trace	LIMESTONE: Type 2, 20% calcarenite: as above. Type 3, 80% calcisiltite: as above. SPARITE: fine to medium grained, white to translucent calcite grained aggregates.
1030-1035m	100 trace	LIMESTONE: Type 1, 90% medium grey, firm to moderate hard, argillaceous, occasionally slightly glauconitic, calcisiltite. Type 2, 10% medium grey, firm to moderate hard, slightly argillaceous, occasionally slightly glauconitic calcarenite. Very fine grain size. SPARITE.

1035-1040m	100	LIMESTONE: Type 1, 90% calcisiltite, as above. Type 2, 10% calcarenite, as above.
	trace	SPARITE.
	trace	FOSSILS: forams, bryozoa.
1040-1045m	100	LIMESTONE: Type 1, 60% calcisiltite, as above. Type 2, 40% calcarenite: as above.
	trace	FOSSILS.
1045-1050m	100	LIMESTONE: Type 1, 90% medium grey, firm to moderate hard, argillaceous, calcisiltite. Type 2, 10% medium grey to light grey, moderate hard, slightly argillaceous, calcarenite.
	trace	FOSSILS.
1050-1055m	100	LIMESTONE: Type 1, 90% calcisiltite, as above. Type 2, 10% calcarenite, as above.
	trace	SPARITE.
	trace	GLAUCONITE: fine to coarse solitary grains.
	trace	FOSSILS: forams.
1055-1060m	100	LIMESTONE: Type 1, 80% calcisiltite, medium grey, soft to moderate hard, very argillaceous, occasionally slightly glauconitic. Grades to calcilutite in parts. Type 2, 20% calcarenite: medium grey to medium light grey, firm to moderately hard, argillaceous, slightly glauconitic. Very fine grained.
	trace	SPARITE, FOSSILS and GLAUCONITE: as above.
1060-1065m	100	LIMESTONE: Type 1, 70% calcisiltite, as above. Type 2, 30% calcarenite, as above. Occasional light grey.
	trace	SPARITE, FORAMS and GLAUCONITE: as above.
1065-1070m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 2, 50% calcarenite: medium grey to light grey, moderate hard, slightly argillaceous, slightly glauconitic; very fine grained.
	trace	SPARITE.
	trace	FOSSILS: forams.
1070-1075m	100	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 2, 10% calcarenite: as above. Type 3, 10% calcilutite: medium grey, soft to firm, silty, highly argillaceous, slightly glauconitic.
	trace	SPARITE, FOSSILS.
1075-1080m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 2, 50% calcarenite: as above. Type 3, 10% calcilutite: as above.
	trace	Fossils.
1080-1085m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 2, 50% calcarenite: as above. Type 3, 10% calcilutite: as above.
	trace	SPARITE, FOSSILS.

1085-1090m	100	LIMESTONE: Type 1, 70% calcisiltite: medium grey, firm to moderately hard, occasionally slightly glauconitic, argillaceous, angular cuttings. Occasional very fine grains. Type 2, 20% calcarenite: as above. Occasionally moderately hard. Type 3, 10% calcilutite: as above.
	trace	SPARITE, FOSSILS.
1090-1095m	100	LIMESTONE: Type 1, 80% calcisiltite: medium grey, firm to moderately hard, slightly glauconitic in parts, argillaceous. Type 2, 15% calcarenite: medium grey to light grey, firm to moderately hard, slightly argillaceous. Type 3, 5% calcilutite: soft, very argillaceous, medium grey.
	trace	SPARITE, FOSSILS.
1095-1100m	100	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 2, 20% calcarenite: as above.
	trace	FOSSILS.
1100-1105m	100	LIMESTONE: Type 1, 100% calcisiltite: as above. Minor calcarenite: as above.
	trace	FOSSILS.
1105-1110m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 2, 10% calcarenite: as above.
	trace	FOSSILS.
1110-1115m	100	LIMESTONE: Type 1, 60% calcisiltite: firm to moderately hard, medium grey, argillaceous. Type 3, 40% calcilutite: soft to firm, very argillaceous, medium grey, subfissile.
	trace	FOSSILS.
1115-1120m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 2, 5% calcarenite: very fine grained, argillaceous, slightly glauconitic. Type 3, 5% calcilutite: as above.
	trace	FOSSILS.
1120-1125m	100	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 2, 10% calcarenite: as above. Type 3, 10% calcilutite: as above.
	trace	FOSSILS, SPARITE.
1125-1130m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above.
	trace	FOSSILS.
1130-1135m	100	LIMESTONE: Type 1, 85% calcisiltite: medium grey, soft to moderate hard, sand sized forams common, very argillaceous. Type 2, 5% calcarenite: medium grey to light grey, very fine grained, slightly argillaceous, slightly glauconitic. Type 3, 10% calcilutite: medium grey to occasional green grey, soft, very argillaceous, often subfissile.
	trace	FOSSILS.

1135-1140m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 3, 5% calcilutite: as above. FOSSILS, SPARITE.
1140-1145m	100 trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above. FOSSILS: forams.
1145-1150m	100 trace	LIMESTONE: Type 1, 100% calcisiltite: as above. FOSSILS.
1150-1155m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above.
1155-1160m	100 trace	LIMESTONE: Type 1, 100% calcisiltite: medium grey to medium light grey, soft to firm, slightly glauconitic, occasional very fine sand sized grains, very argillaceous matrix. FOSSILS: forams.
1160-1165m	100 trace trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: soft to firm, medium grey, highly argillaceous, silty. Often subfissile. GLAUCONITE: rounded coarse glauconite grains. FOSSILS: forams.
1165-1170m	100 trace	LIMESTONE: Type 1, 70% calcisiltite: as above. Type 3, 30% calcilutite: as above. Occasionally slightly glauconitic. FOSSILS: forams.
1170-1175m	100 trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 5% calcilutite: as above. Type 4) 5% Forams - white etc. GLAUCONITE: as above.
1175-1180m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: soft to firm, medium grey, slightly glauconitic, very argillaceous, occasional fine sand sized grains. Type 3, 5% calcilutite: soft to firm, medium grey, very argillaceous. Occasionally subfissile. FOSSILS: forams.
1180-1185m	100 trace trace trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 2, 5% calcarenite: medium grey to medium light grey, firm, slightly glauconitic, argillaceous, very fine grained. Type 3, 5% calcilutite: as above. SPARITE. GLAUCONITE: as above. FOSSILS: forams.
1185-1190m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 2, 5% calcilutite: as above. Forams, Glauconite: as above.
1190-1195m	100	LIMESTONE: as above.
1195-1200m	100 trace	LIMESTONE: Type 1, 80% calcisiltite: as above. Occasional light grey; extremely argillaceous. Type 3, 20% calcilutite: as above. FOSSILS: forams.

1200-1210m	100 trace	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above. Clay rich. Could be termed a calcarous claystone or marl. FOSSILS: forams.
1210-1220m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
1220-1225m	100	LIMESTONE: Type 1, 50% calcisiltite: medium light grey to medium grey, soft to firm, rounded cuttings, occasionally slightly glauconitic, very argillaceous. Type 3, 50% calcilutite: medium grey, soft to firm, highly clay-rich, platey to subfissile.
1225-1230m	100 trace	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above. FOSSILS: bryozoa.
1230-1240m	100	LIMESTONE: Type 1, 90% calcisiltite: medium light grey to medium grey, soft to firm, very argillaceous, occasionally slightly glauconitic. Type 3, 10% calcilutite: medium grey, soft to firm, highly argillaceous, platey to subfissile.
1240-1245m	100 trace	LIMESTONE: 100% calcisiltite: as above. Occasional very fine sand sized grains. Glauconite: as above.
1245-1250m	100	LIMESTONE: 100% calcisiltite: as above. Occasional platey cuttings.
1250-1255m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above.
1255-1260m	100	LIMESTONE: 100% calcisiltite: as above.
1260-1265m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 3, 5% calcilutite: as above. FOSSILS: forams: as above.
1265-1270m	100	LIMESTONE: Type 1, 90% calcisiltite: medium grey to medium light grey, soft to firm, argillaceous, rounded to platey, slightly glauconitic in parts. Occasionally grades to very fine grained calcarenite. Type 3, 10% calcilutite: medium grey, platey to occasionally subfissile, very argillaceous, soft to firm.
1270-1275m	100 trace	LIMESTONE: 100% calcisiltite: as above. FOSSILS: forams: as above.
1275-1280m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 2, 5% calcilutite: as above. FOSSILS: forams: as above.
1280-1285m	100 trace trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above. GLAUCONITE: medium grained, rounded aggregates. FOSSILS: forams: as above.
1285-1290m	100 trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above. SPARITE.

1290-1295m	100	LIMESTONE: 100% calcisiltite: medium grey to light grey, soft to firm, very argillaceous, slightly glauconitic in parts. Occasional very fine sand sized grains. Occasionally grades to calcilutite.
1295-1300m	100	LIMESTONE: 100% calcisiltite: extremely argillaceous, dominantly medium light grey.
1300-1305m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: medium grey to medium light grey, soft, extremely argillaceous, platey cuttings.
1305-1310m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Occasionally dark grey. Type 3, 10% calcilutite: as above.
	trace	FOSSILS: as above.
1310-1315m	100	LIMESTONE: Type 1, 90% calcisiltite: very argillaceous, medium light grey to occasional light grey, occasional dark grey, firm to occasionally moderately hard and slightly glauconitic. Rounded cuttings. Type 3, 10% calcilutite: very argillaceous, medium light grey, soft.
1315-1320m	100	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 3, 5% calcilutite: as above.
	trace	GLAUCONITE: as above. Fossils: as above.
1320-1325m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above.
	trace	FOSSILS: as above.
1325-1330m	100	LIMESTONE: Type 1, 80% calcisiltite: medium dark grey to light grey, generally medium grey, firm to moderately hard, slightly glauconitic in parts, occasional very fine grains, argillaceous. Type 2, 5% calcarenite: medium dark grey to light grey, firm to moderately hard, slightly glauconitic. Argillaceous matrix especially in dark varieties. Type 3, 10% calcilutite: soft, medium dark grey to medium grey, highly argillaceous, often platey.
	trace	FOSSILS.
1330-1335m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above.
	trace	FOSSILS: forams.
1335-1340m	100	LIMESTONE: Type 1, 95% calcisiltite: soft to occasional hard, light grey to occasionally medium dark grey, slightly glauconitic, slightly argillaceous grading to both very fine calcarenite and calcisiltite. Type 4, 5% Foraminifera: all shapes and sizes.
1340-1345m	100	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 4, 5% Foraminifera: as above.
	trace	Sparite.



1345-1350m	100	LIMESTONE: Type 1, 85% calcisiltite: as above. Type 2, 5% calcarenite: very fine, medium grey, slightly argillaceous, firm, slightly glauconitic. Type 3, 5% calcilutite: very argillaceous, soft to firm. Type 4, 5% Forams: as above.
1350-1355m	100	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 5% calcilutite: as above. Type 4, 5% Forams: as above.
1355-1360m	100 trace	LIMESTONE: Type 1, 95% calcisiltite: as above. Type 3, 5% calcilutite: as above. FOSSILS: forams: as above.
1360-1365m	100	LIMESTONE: Type 1, 95% calcisiltite: soft to moderately hard, medium dark grey to light grey, slightly glauconitic, slightly argillaceous. Grades to very fine calcarenite. Type 3, 5% calcilutite: soft, argillaceous, medium grey.
1365-1370m	100	LIMESTONE: Type 1, 90% calcisiltite: soft to moderately hard, medium dark grey to medium light grey, slightly glauconitic, argillaceous, occasional forams, grades to very fine calcarenite. Type 3, 5% Calcilutite: soft, medium grey, argillaceous. Type 4, 5% Forams as above.
1370-1375m	100 trace	LIMESTONE: Type 1, 80% calcisiltite: medium light grey to light grey, occasionally slightly glauconitic, argillaceous, occasional dark grey. Type 2, 10% calcarenite: slightly argillaceous, soft to firm, light grey to medium grey. Type 3, 10% calcilutite: soft, medium grey, very argillaceous, subfissile. FOSSILS: forams.
1375-1380m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Grades occasionally to very fine calcarenite. Type 3, 50% calcilutite: as above. Occasionally fissile.
1380-1385m	100 trace	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 3, 20% calcilutite: as above. SPARITE.
1385-1390m	100 trace	LIMESTONE: Type 1, 90% calcisiltite: as above. Type 3, 10% calcilutite: as above. FOSSILS: forams.
1390-1395m	100 trace	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 3, 20% calcilutite: as above. FOSSILS: forams.
1395-1400m	100 trace	LIMESTONE: Type 1, 85% calcisiltite: as above. Type 3, 10% calcilutite: as above. Type 4, 5% Forams: as above.

1400-1405m	100	LIMESTONE: Type 1, 80% calcisiltite: soft to firm, slightly glauconitic, very argillaceous, medium light grey. Grades to fine calcarenite. Type 3, 20% calcilutite: soft, medium grey, highly argillaceous. Platey.
	trace	FOSSILS: forams.
1405-1410m	100	LIMESTONE: as above.
	trace	FOSSILS: forams.
1410-1415m	100	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 3, 20% calcilutite: as above.
1415-1420m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	FOSSILS: forams.
1420-1425m	100	LIMESTONE: Type 1, 40% calcisiltite: soft to firm, rounded to occasional platey, argillaceous, occasionally very fine sand sized grains, occasionally slightly glauconitic. Type 3, 60% calcilutite: soft, platey to subfissile, highly argillaceous cuttings. May also be termed a calcareous claystone.
	trace	FOSSILS: forams.
1425-1430m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above. Occasionally dark grey.
	trace	FOSSILS: forams.
1430-1435m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
	trace	SPARITE: as above.
	trace	FOSSILS: forams.
1435-1440m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	FOSSILS: forams.
1440-1445m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
	trace	FOSSILS: forams.
1445-1450m	100	LIMESTONE: Type 1, 70% calcisiltite: soft to firm, medium grey, very argillaceous, rounded, slightly glauconitic in parts, occasional forams, occasionally very fine sand sized calcite grains. Type 3, 30% calcilutite: soft, medium grey, highly argillaceous, platey, angular to occasionally subfissile cuttings.
	trace	FOSSILS: forams.
1450-1455m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
	trace	FOSSILS: forams.
1455-1460m	100	LIMESTONE: Type 1, 70% calcisiltite: as above. Type 3, 30% calcilutite: as above.
	trace	FOSSILS: forams.
1460-1465m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	FOSSILS: forams.

1465-1470m	100	LIMESTONE: Type 1, 40% calcisiltite: soft to firm, argillaceous, rounded, occasional forams, occasionally slightly glauconitic. Type 3, 60% calcilutite: soft, very argillaceous, platy to occasionally subfissile. FOSSILS: forams.
	minor	
1470-1475m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above. FOSSILS: forams.
	minor	
	trace	SPARITE: as above.
1475-1480m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above. FOSSILS: forams.
	trace	
	trace	SPARITE.
1480-1485m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above. FOSSILS: forams.
	trace	
1485-1490m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above. FOSSILS: forams.
	trace	
	trace	SPARITE.
1490-1495m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above. FOSSILS: forams.
	trace	
1495-1500m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above. FOSSILS: forams.
	trace	
1500-1505m	100	LIMESTONE: Type 1, 50% calcisiltite: soft to firm, occasional forams, very argillaceous, slightly glauconitic in parts. Rounded cuttings. Type 3, 50% calcilutite: soft, highly argillaceous, platy to occasionally subfissile. FOSSILS: forams.
	minor	
1505-1510m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
1510-1515m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above. CALCARENITE: light grey, firm, very fine grains, slightly argillaceous, very glauconitic. FOSSILS: forams.
	trace	
	trace	
1515-1520m	100	LIMESTONE: Type 1, 80% calcisiltite: soft to firm, medium grey, very argillaceous, common sand sized forams, slightly glauconitic. Type 3, 20% calcilutite: soft, platy, clay-rich, medium grey to medium dark grey. FOSSILS: forams.
	trace	
1520-1525m	100	LIMESTONE: as above. FOSSILS: forams.
	trace	
1525-1530m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above. FOSSILS: forams.
	trace	

1530-1535m	100	LIMESTONE: Type 1, 30% calcisiltite: as above; very soft, highly argillaceous - calcerous siltstone. Type 3, 70% calcilutite: very soft, dispersive, highly argillaceous - calcarous claystone. FOSSILS: forams.
	trace	
1535-1540m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Occasionally dark grey. Type 3, 50% calcilutite: as above. FOSSILS: forams.
	trace	
1540-1545m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	Calcarenite: light grey, soft to firm, slightly glauconitic, argillaceous, occasional forams.
	trace	FOSSILS: forams.
1545-1550m	100	LIMESTONE: Type 1, 50% calcisiltite: soft to firm, slightly glauconitic in parts, argillaceous, medium light grey to medium grey, occasional very fine sized grains, common forams. Type 3, 50% calcilutite: soft to firm, slightly glauconitic in parts, very argillaceous, medium grey, occasional silt sized calcite grains.
	trace	FOSSILS: forams.
1550-1555m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above. Occasional forams.
	trace	FOSSILS: forams.
1555-1560m	100	LIMESTONE: Type 1, 40% calcisiltite: firm, medium grey to medium light grey, argillaceous, some forams, slightly glauconitic in parts, occasionally moderately hard. Type 3, 60% calcilutite: soft to firm, medium light grey to medium grey, platy angular cuttings, occasional slightly glauconitic, some forams, silt sized calcite grains, very argillaceous.
	trace	FOSSILS: forams.
1560-1565m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above.
	trace	FOSSILS: forams.
1565-1570m	100	LIMESTONE: Type 1, 20% calcisiltite: as above. Type 3, 80% calcilutite: as above. Occasionally subfissile.
1570-1575m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above.
1575-1580m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Occasionally light grey. Type 3, 50% calcilutite: as above.

1580-1585m	100	LIMESTONE: Type 1, 70% calcisiltite: light grey to medium grey, slightly glauconitic in parts, forams common, slightly argillaceous, occasional sand sized rounded calcite grains. Type 3, 30% calcilutite: medium grey, slightly glauconitic in parts, very argillaceous.
	trace	FOSSILS: forams.
1585-1590m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	FOSSILS: forams.
1590-1595m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
	trace	FOSSILS: forams.
1595-1600m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
	trace	FOSSILS: forams.
1600-1605m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
	minor	FOSSILS: forams.
1605-1610m	100	LIMESTONE: Type 1, 55% calcisiltite: soft to firm, medium grey to occasional light grey, argillaceous, glauconitic, occasional forams in parts, rounded to platy. Type 3, 40% calcilutite: soft to firm, platy, medium grey, very argillaceous, slightly silty, slightly glauconitic in parts. Type 4, 5% forams.
	trace	Other fossils.
1610-1615m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
	trace	FOSSILS: forams.
1615-1620m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above.
		FOSSILS: forams.
1620-1625m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above.
	trace	FOSSILS: forams.
1625-1630m	100	LIMESTONE: Type 1, 40% calcisiltite: as above; occasionally light grey, very glauconitic, moderately hard. Type 3, 60% calcilutite: as above.
	trace	forams.
1630-1635m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
		FOSSILS: forams.
1635-1640m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
	trace	FOSSILS: forams.
	trace	Pyrite: coarse to fine crystalline aggregates, often with interspersed calcite.

1640-1645m	100	LIMESTONE: Type 1, 60% calcisiltite: firm to soft, light grey to medium grey, slightly glauconitic in parts, occasional forams, slightly argillaceous. Type 3, 40% calcilutite: firm to soft, very argillaceous, slightly glauconitic, occasional forams in parts, rounded to platy. Type 4, 5% forams. Other fossils.
	trace	
1645-1650m	100	LIMESTONE: Type 1, 20% calcisiltite: as above. Type 3, 80% calcilutite: as above.
	trace	FOSSILS: forams.
1650-1655m	100	LIMESTONE: Type 1, 20% calcsiltite: as above. Type 3, 80% calcilutite: as above.
	trace	FOSSILS: forams.
1655-1660m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
	trace	FOSSILS: forams.
	trace	CALCARENITE.
1660-1665m	100	LIMESTONE: Type 1, 10% calcisiltite. Type 3, 90% calcilutite.
	trace	FOSSILS: forams.
1665-1670m	100	LIMESTONE: Type 1, 20% calcisiltite: moderate grey to light grey, rounded cutting. Argillaceous, slightly glauconitic, occasionally very fine sand sized grains. Type 3, 80% calcilutite: moderate grey to moderate light grey, slightly glauconitic in points, slightly silty, soft to firm, platy to subfissile, very argillaceous.
	trace	FOSSILS: forams.
	trace	PYRITE: as above.
	trace	CALCARNEITE = light grey, firm, slightly argillaceous.
1670-1675m	100	LIMESTONE: Type 1, 20% calcisiltite: as above. Type 3, 80% calcilutite: as above. Occasionally dark grey.
	trace	FOSSILS: forams.
1675-1680m	100	LIMESTONE: Type 1, 20% calcisiltite: as above. Type 3, 80% calcilutite: as above.
1680-1685m	100	LIMESTONE: Type 1, 10% calcisiltite: as above. Type 3, 90% calcilutite: as above.
	trace	Pyrite: Coarse to very coarse angular blocks of micro-crystalline pyrite.
1685-1690m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Occasionally dark grey. Type 3, 70% calcilutite: as above. Dominantly mud, dark grey, high argillaceous.
	trace	FOSSILS: forams.
1690-1695m	100	LIMESTONE: Type 1, 5% calcisiltite, firm and grey to medium dark grey, rounded, slightly glauconitic, argillaceous. Type 3, 95% calcilutite, soft to firm, platy to subfissile, medium to dark grey, very argillaceous, slightly glauconitic in parts, occasionally silty.

1695-1700m	100	LIMESTONE: Type 1, 10% calcisiltite: as above. Occassionally medium light grey. Type 3, 90% calcilutite: as above. FOSSILS: forams. PYRITE: as above.
	trace	
	trace	
1700-1705m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Occassionally medium grey. Type 3, 60% calcilutite: as above, occassionally medium light grey.
1705-1710m	100	LIMESTONE: Type 1, 50% calcisiltite: as above. Type 3, 50% calcilutite: as above.
1710-1715m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Type 3, 40% calcilutite: as above.
	trace	Forams: as above.
1715-1720m	100	LIMESTONE: Type 1, 70% calcisiltite: platey to blocky, occassionally rounded, subfissile, medium grey to medium dark grey, slightly glauconitic in parts, argillaceous, soft to medium hard. Type 3, 30% calcilutite: platey to subfissile, medium dark grey to medium grey, very argillaceous, soft to firm.
1720-1725m	100	LIMESTONE: Type 1, 70% calcisiltite: as above. Type 3, 30% calcilutite: as above.
	trace	GLAUCONITE: solitary grains, medium to coarse.
1725-1730m	100	LIMESTONE: Type 1, 80% calcisiltite: as above. Type 3, 20% calcilutite: as above.
	trace	CALCARENITE: very fine grained.
	trace	FOSSILS: forams.
1730-1735m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Occassionally light grey. Type 3, 40% calcilutite: as above.
	trace	FOSSILS: forams.
1735-1740m	100	LIMESTONE: Type 1, 50% calcisiltite: firm to moderately hard, medium dark grey to medium grey, occassionally light grey, slightly argillaceous, occassionally slightly glauconitic, rounded to platey. Type 3, 50% calcilutite. Soft to firm, platey to subfissile, medium dark grey to medium grey, occassionally slightly glauconitic, very argillaceous. Grades to calcisiltite.
	trace	PYRITE.
	trace	FOSSILS: bryozoa, forams.
1740-1745m	100	LIMESTONE: Type 1, 60% calcisiltite: as above. Occassionally buff to yellow brown and occassionally very tiny calcite grains. Type 3, 40% calcilutite: as above.
	trace	PYRITE.
	trace	FOSSILS: bryozoa, forams.
1745-1750m	100	LIMESTONE: Type 1, 40% calcisiltite: as above. Type 3, 60% calcilutite: as above.
1750-1755m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above.

1755-1760m	100	LIMESTONE: Type 1, 30% calcisiltite: as above. Type 3, 70% calcilutite: as above. Occasionally medium light grey. Occassionally patches of white calcite.
	trace	CALCARENITE: as above.
	trace	FOSSILS: forams.
1760-1765m	100	LIMESTONE: Type 1, 50% calcisiltite firm to moderately hard; platey to rounded; argillaceous, occasionally slightly glauconitic; occasional forams; medium light grey to dark grey; occasionally buff to light grey. Type 3, 50% calcilutite: soft to firm; platey to subfissile; very argillaceous; slightly glauconitic in parts; silty in parts; medium light grey.
	trace	FOSSILS: forams.
1765 - 1770m	100	LIMESTONE: Type 1, 40% Calcisiltite: as above. Type 3, 60% Calcilutite: as above.
	trace	CALCARENITE: very fine grained; rounded; light grey; slightly glauconitic.
	trace	PYRITE.
	trace	FOSSILS: forams, bryozoa.
1770-1775m	100	LIMESTONE: Type 1, 45% Calcisiltite: as above. Type 3, 50% Calcilutite: as above. Type 4, 5% Calcarenite: rounded; firm to moderately hard; occasional forams; slightly glauconitic in parts; light grey.
	trace	FOSSILS: forams.
1775-1780m	100	LIMESTONE: Type 1, 35% Calcisiltite: as above. Type 3, 60% Calcilutite: as above. Type 4, 5% Calcarenite: as above.
	trace	FOSSILS: forams.
1780-1785m	100	LIMESTONE: Type 1, 70% Calcisiltite: as above. Type 3, 30% Calcilutite: as above.
	trace	GLAUCONITE.
	trace	FOSSILS: forams.
1785-1790m	100	LIMESTONE: Type 1, 70% Calcisiltite: as above. Type 3, 30% Calcilutite: as above.
	trace	CALCARENITE: as above.
1790-1795m	100	LIMESTONE: Type 1, 50% Calcisiltite: as above. Type 3, 50% Calcilutite: as above.
	trace	SPARITE.
	trace	FOSSILS: forams, bryozoa.
1795-1800m	100	LIMESTONE: Type 1, 70% Calcisiltite: platey to subfissile; medium dark grey to occasional light grey; very argillaceous; occasionally slightly glauconitic. Type 3, 30% Calcilutite: platey; occasionally subfissile and needle like; medium dark grey to medium light grey; occasionally silt sized calcite grains; highly argillaceous; occasionally slightly glauconitic.



1800-1805m	100	LIMESTONE: Type 1, 40% Calcisiltite: as above, occasional fossils, forams. Type 3, 60% Calcilutite: as above. NB very clay rich.
	trace	SPARITE (probably cavings).
	trace	FOSSILS: forams.
1805-1810m	100	LIMESTONE: Type 1, 30% Calcisiltite: as above. Type 3, 70% Calcilutite. NB very clay rich (marl).
	trace	CALCARENITE: as above.
	trace	FOSSILS: forams.
1810-1815m	100	LIMESTONE: Type 1, 50% Calcisiltite: platy, very argillaceous, dominantly light grey to occasional medium dark grey, slightly glauconitic, soft to firm, occasional fossils, forams. Type 3, 50% Calcilutite: platy to needle-like; very argillaceous; dominantly medium dark grey to occasional medium light grey, very slightly glauconitic in parts, soft to firm.
	trace	CALCARENITE: moderately hard; angular cuttings; very fine rounded calcite grains in buff to white cuttings. Show dull orange mineral fluorescence.
1815-1820m	100	LIMESTONE: Type 1, 60% Calcisiltite as above. Type 2, 5% Calcarenite: light grey; very fine grained; firm; occasional forams? Type 3, 35% Calcilutite: as above.
1820-1825m	100	LIMESTONE: Type 1, 50% Calcisiltite: as above. Occasionally subfissile. Type 3, 50% Calcilutite: as above. Occasionally subfissile.
	trace	Fossils. N.B. from 1760m the clay content has increased markedly, the above might also be termed calcareous shale with some calcareous siltstone.
1825-1830m	100	LIMESTONE: Type 1, 70% Calcisiltite: as above. Type 3, 30% Calcilutite: as above.
	trace	CALCARENITE: firm, very fine grained, occasional forams; light grey.
1830-1835m	100	LIMESTONE: Type 1, 50% Calcisiltite: as above. Type 2, 10% Calcarenite: as above. Type 3, 40% Calcilutite: as above.
	trace	FOSSILS: forams.
1835-1840m	100	LIMESTONE: Type 1, 40% Calcisiltite: as above.
		Type 2, 10% Calcarenite: as above.
		Type 3, 50% Calcilutite: as above.
	trace	FOSSILS: forams.
1840-1845m	100	LIMESTONE: Type 1, 50% Calcisiltite: as above. Type 3, 50% Calcilutite: as above.
	trace	FOSSILS: forams.

1845-1850m	100	LIMESTONE: Type 1, 50% Calcisiltite: as above.
		Type 2, 10% Calcarenite: as above.
		Type 3, 40% Calcilutite: as above.
	trace	FOSSILS: forams, bryozoa; one coarse, angular quartz grain, 3 light brown, soft argillaceous siltstone cuttings.
1850-1855m	90	LIMESTONE: Type 1, 50% Calcisiltite: as above.
		Type 3, 50% Calcilutite: as above.
	10	GLAUCONITIC SILTSTONE: Light brown, argillaceous siltstone; soft to firm and occasionally moderately hard; rounded cuttings, sandy-fine to coarse; subangular quartz grains and fine to coarse green-black rounded glauconitic grains, very argillaceous.
	trace	FOSSILS: forams (cavings), medium to coarse angular to subangular loose quartz. No shows.
1855-1860m	80	LIMESTONE: Type 3, as above (cavings).
	20	GLAUCONITIC SILTSTONE: as above.
	trace	Loose quartz: as above. No shows.
	trace	FOSSILS: forams (cavings).
1860-1865m	60	LIMESTONE: as above (cavings).
	30	SANDSTONE: Medium to coarse grained, subangular to angular, moderately sorted, clear to translucent loose quartz. No shows.
		to translucent loose quartz. No shows.
	10	SILTSTONE: Argillaceous, light brown, soft to firm, rounded cuttings, common fine to medium and rounded glauconite grains, occasional quartz grains fine to medium grained, subangular.
	trace	GLAUCONITE: fine to medium rounded aggregates.
	trace	FOSSILS: forams (Cavings).
1865-1870m	50	LIMESTONE: as above (Cavings).
	40	SANDSTONE: Medium to very coarse grained, subangular to angular, poorly sorted clear to translucent, loose quartz. No shows.
		Excellent visible porosity.
	10	SILTSTONE: as above.
	trace	FORAMS: as above (Cavings). Show dull orange mineral fluorescence.
	trace	CARBONACEOUS MATTER: Black, vitreous, associated with fine grained quartz. Gives slow yellow weak crush cut.
1870-1875m	50	LIMESTONE: as above (Cavings).
	45	SANDSTONE: as above. No shows, very poorly sorted.
	5	GLAUCONITE: Fine to medium rounded aggregates.
1875-1880m	40	LIMESTONE: as above (Cavings).
	60	SANDSTONE: Very fine to very coarse, extremely poorly sorted, otherwise as above. Excellent visible porosity. No shows.
	Trace	GLAUCONITE: as above.

1880-1885m	40	LIMESTONE: as above (cavings).
	60	SILTSTONE: as above. No shows.
	Trace	GLAUCONITE: as above.
		CARBONACEOUS MATTER: Black, vitrous blocky cuttings.
		N.P. Much fine sand is being lost through the shakers. Hence these samples are unrepresentative of formation which is probably wholly uncemented sandstone/siltstone - very fine to very coarse.
1885-1890m	40	LIMESTONE: as above (Cavings).
	55	SANDSTONE: as above. No shows.
	Trace	GLAUCONITE: Fine to coarse pellets, and in fine to medium aggregates.
	5	CARBONACEOUS MATTER: as above.
1890-1895m	30	LIMESTONE: as above (Cavings).
	60	SANDSTONE: Very fine to very coarse, subrounded to subangular, poorly sorted, clear to translucent, loose quartz. No shows. Excellent visible porosity.
	10	COAL: as above.
1895-1900m	5	LIMESTONE: as above (Cavings).
	35	COAL: as above. Trace (2 cuttings) have bright yellow fluorescence and slow yellow crush cut.
	60	SANDSTONE: as above. No shows.
1900-1905m	70	SANDSTONE: as above. No shows.
	30	COAL: as above.
	Trace	LIMESTONE: as above (Cavings).
	Trace	PYRITE: Very coarse angular crystals.
1905-1910m	90	SANDSTONE: as above. No shows.
	10	COAL: as above.
	trace	PYRITE: as above.
	trace	LIMESTONE: as above (Cavings).
1910-1915m	35	COAL: as above.
	65	SANDSTONE: Type 1, 100% very fine to very coarse grained, very poorly sorted, clear to translucent, subangular to rounded loose quartz. Excellent visible porosity. Type 2, trace very fine sand grading to silt, rounded grains in soft aggregate minor coal fragments; 1 cutting gave moderately bright yellow fluorescence and moderately fast yellow stream cut leaving yellow orange residue.
1915-1920m	30	LIMESTONE: Calcisiltite: medium grey, slightly argillaceous, occasional forams, slightly glauconitic in parts grades to calcilutite. Typical of Gippsland Limestone (Cavings).
	45	SANDSTONE: fine to very coarse grained, clear to translucent, poorly sorted, subangular to rounded, loose quartz. Excellent visible porosity. No shows.
	20	COAL: Hard, blocky, black, vitreous etc.
	5	SILTSTONE: Dark grey, firm to moderately hard, highly carbonaceous.
	trace	PYRITE: Microcrystalline aggregates often associated with coal or siltstone above.
	trace	FOSSILS: forams (Cavings).

1920-1925m	20	LIMESTONE: as above. Occasional Calcarenite (Cavings).
	65	SANDSTONE: Medium to coarse grained, clear to translucent, subangular to rounded, poorly sorted loose quartz. Excellent visible porosity. No shows.
	10	COAL: as above.
	5 trace	SILTSTONE: as above. PYRITE: as above.
1925-1930m	80	SANDSTONE: Type 1, as above. No shows. Excellent visible porosity. Occasionally grain is tan coloured (iron stained).
	10	COAL: as above.
	10	SILTSTONE: as above.
	trace trace	LIMESTONE: as above (Cavings). SANDSTONE: Type 2, soft aggregates of very fine, subangular to subrounded quartz, moderate visible porosity, well sorted, clear to translucent, coaly (fine grained). No shows.
1930-1935m	85	SANDSTONE: Type 1, as above. No shows. Excellent visible porosity.
	10	COAL: as above. One cutting showed dull yellow fluorescence. No cut.
	5	SILTSTONE: as above.
	trace trace	SANDSTONE: Type 2, very fine grained etc. as above. PYRITE: as above. LIMESTONE: as above (Cavings).
1935-1940m	95	SANDSTONE: Type 1, as above. Occasional white grains. Excellent visible porosity. No shows.
	5	COAL: as above.
	trace	SILTSTONE: Medium light grey, micaceous, argillaceous; occasionally slightly carbonaceous.
	trace trace	PYRITE: as above. Also often associated with carbonaceous matter and fine grained quartz. LIMESTONE: as above (cavings).
1940-1945m	90	SANDSTONE: Type 1, as above. No shows.
	5	COAL: as above.
	5	SILTSTONE: Medium grey to dark grey and brownish grey, soft to firm, micaceous, slightly argillaceous, slightly carbonaceous.
	trace	CARBONACEOUS ORGANIC MATTER? tan, brittle, with bright yellow fluorescence, no stream cut or crush cut.
1945-1950m	95	SANDSTONE: Type 1, as above. No shows.
	5	SILTSTONE: as above. Occasionally very carbonaceous.
	trace	COAL: as above.
1950-1955m	100	SANDSTONE: Type 1, medium to very coarse grained, subangular to rounded, poorly sorted, clear, translucent, occasionally white, loose quartz. Excellent visible porosity. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
1955-1960m	100	SANDSTONE: as above. Occasionally tan (iron stained). No shows. Excellent visible porosity.

1960-1965m	100	SANDSTONE: No shows. Excellent visible porosity.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
1965-1970m	95	SANDSTONE: Type 1, as above. Excellent visible porosity. No shows.
	5	SILTSTONE: as above. One cutting; very carbonaceous showed dull yellow fluorescence. No stream or cut.
	trace	SANDSTONE: Type 2, very fine to medium grained, subrounded, poorly sorted quartz in hard aggregate, carbonaceous silica cemented, poor visible porosity.
	trace	COAL: as above.
1970-1975m	100	SANDSTONE: Type 1, as above. No shows. Excellent visible porosity.
	trace	SANDSTONE: Type 2, as above.
1975-1980m	100	SANDSTONE: Type 1, fine to very coarse grained, poorly sorted, subangular to rounded, clear translucent to occasionally white loose quartz. Excellent visible porosity. No shows.
	trace	COAL: as above.
	trace	PYRITE: as above.
1980-1985m	100	SANDSTONE: as above. No shows.
	trace	SILTSTONE: as above. Very carbonaceous.
	trace	PYRITE: as above.
1985-1990m	100	SANDSTONE: as above. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above. Very carbonaceous.
	trace	PYRITE: as above.
1990-1995m	100	SANDSTONE: as above. Occasionally buff (iron stained). Occasional angular grains.
	trace	COAL: as above (Cavings).
1995-2000m	100	SANDSTONE: as above. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2000-2005m	100	SANDSTONE: as above. No shows. Predominantly medium to very coarse grained, occasionally Fe stained.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2005-2010m	100	SANDSTONE: as above. No shows.
2010-2015m	100	SANDSTONE: as above.
2015-2020m	95	SANDSTONE: fine to very coarse grained, poorly sorted, clear to translucent to occasionally white, subangular, occasionally argillaceous to subrounded and occasionally rounded, loose quartz. Excellent visible porosity. No shows.
	5	SILTSTONE: Soft to firm, dark grey to medium dark grey and occasionally brownish grey, sandy, carbonaceous and occasionally micaceous.
	trace	COAL: as above.
	trace	PYRITE: as above.

2020-2025m	90	SANDSTONE: as above. No shows.
	10	SILTSTONE: as above. Grading to fine grained siltstone aggregates with silica to occasional pyrite cement. No visible porosity. No shows.
	trace	COAL: as above. PYRITE: as above.
2025-2030m	95	SANDSTONE: Type 1, as above. No shows. Often iron stained. Type 2, fine to medium aggregates. Silica cemented. No shows. Poor visible porosity.
	5	SILTSTONE: as above. Occasionally subfissile, slightly argillaceous. Slightly carbonaceous.
	trace	ORGANIC MATTER: Brown, with yellow fluorescence, no cut (1 cutting).
2030-2035m	95	SANDSTONE: Type 1, as above. No shows. Often iron stained. Type 2, trace fine to medium aggregates, silica cemented. No shows. Poor visible porosity.
	5	SILTSTONE: as above. Occasionally subfissile, slightly argillaceous, slightly carbonaceous.
	trace	ORGANIC MATTER: brown, with yellow fluorescence, no cut (1 cutting).
2035-2040m	85	SANDSTONE: Type 1, as above. Trace aggregates: as above. No shows.
	10	SILTSTONE: Argillaceous, calcareous in parts. Medium light grey to dark grey and brown grey, carbonaceous in parts.
	5	COAL: as above.
2040-2045m	90	SANDSTONE: as above. trace aggregates: as above. No shows.
	5	SILTSTONE: as above.
	5	COAL: as above.
	trace	N.B. trace Coal is common in samples from 1950-2035m but is probably cavings. CALCISILTITE: argillaceous, very carbonaceous, platy to subfissile, medium grey cuttings are common from 1940-2045m. Cavings.
2045-2050m	95	SANDSTONE: as above. No shows.
	5	SILTSTONE: as above.
2050-2055m	90	SANDSTONE: as above. No shows.
	5	SILTSTONE: as above.
	5	COAL: as above.
2055-2060m	90	SANDSTONE: as above. No shows.
	5	SILTSTONE: as above.
	5	COAL: as above.
2060-2065m	95	SANDSTONE: as above. No shows. Trace of aggregates as above. No shows.
	5	SILTSTONE: as above.
	trace	COAL: as above.
2065-2070m	90	SANDSTONE: fine to very coarse grained, subangular to rounded, clear to translucent, occasionally white, poorly sorted loose quartz. No shows. Excellent visible porosity.
	5	SILTSTONE: Medium grey to dark grey, argillaceous, blocky, soft to firm, carbonaceous, slightly calcareous in parts.

2115-2120m	60	SANDSTONE: Type 1, Coarse to very coarse grained, occasionally medium grained, subangular to rounded, translucent to occasionally white, moderately well sorted, loose quartz. Excellent visible porosity. No shows.
	40	SILTSTONE: Medium grey to dark grey, firm to occasionally moderately hard, rounded to angular cuttings. Slightly argillaceous, carbonaceous, slightly micaceous in parts.
	Minor	SANDSTONE: Type 2, Fine to medium grained, subrounded, moderately well sorted sand grains in silica cemented aggregates. Poor visible porosity. No shows.
2120-2125m	trace	PYRITE: Microcrystalline angular aggregates.
	60	SANDSTONE: Type 1, as above. No shows.
2125-2130m	40	SILTSTONE: as above. Occasionally very carbonaceous.
	55	SANDSTONE: as above. No shows.
2130-2135m	45	SILTSTONE: as above. Occasionally grades to very fine siltstone. No shows, poor visible porosity.
	55	SANDSTONE: as above. No shows.
2135-2140m	45	SILTSTONE: as above. Occasionally pyritic.
	trace	COAL: black, blocky, dull.
2140-2145m	60	SANDSTONE: as above. No shows.
	40	SILTSTONE: as above. Occasionally medium light grey.
2145-2150m	trace	COAL: as above.
	trace	ORGANIC MATTER: Tan, amber, transparent resinous? with bluey-white fluorescence and very slow crush cut.
2150-2155m	70	SANDSTONE: Dominantly coarse to very coarse grained, occasionally medium, subangular to rounded, dominantly subrounded, moderately well sorted, translucent, loose quartz. Excellent visible porosity. No shows.
	30	SILTSTONE: Soft to firm dark grey to medium dark grey, rounded cuttings. Carbonaceous slightly angular, slightly pyritic in parts, slightly sandy in parts.
	trace	COAL: black, blocky, dull.
2155-2160m	70	SANDSTONE: as above
	30	SILTSTONE: as above. Occasionally medium light grey.
2160-2165m	70	SANDSTONE: as above. No shows.
	30	SILTSTONE: grades occasionally to soft to firm, very fine grained siltstone. Occasionally micaceous.
2165-2170m	trace	COAL: as above.
	60	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, very fine grained subrounded, moderately visible porosity, in firm to soft rounded cuttings. Occasionally carbonaceous. No shows..
2170-2175m	35	SILTSTONE: as above.
	5	COAL: as above.

	5	COAL: black, platy to blocky, vitreous, brittle.
	trace	PYRITE: Microcrystalline aggregates: occasional cementing fine to coarse quartz grains.
2070-2075m	90	SANDSTONE: as above. Occasionally angular. No shows.
	5	SILTSTONE: as above.
	5	COAL: as above.
2075-2080m	95	SANDSTONE: as above. Occasionally angular, occasionally extremely coarse, pebbly. No shows.
	5	COAL: as above
	trace	SILTSTONE: as above.
2080-2085m	100	SANDSTONE: as above
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2085-2090m	100	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, fine grained, subrounded grains, moderately well sorted, translucent quartz. Silica cemented. Poor visible porosity.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
	trace	PYRITE: as above.
2090-2095m	100	SANDSTONE: 100% Type 1, as above. Dominantly subrounded, medium to coarse grained, No shows. Minor Type 2, as above. Very carbonaceous. Poor visible porosity. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2095-2100m	100	SANDSTONE: Type 1, as above. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2100-2105m	100	SANDSTONE: Type 1, Dominantly coarse to very coarse grained, moderately well sorted, subrounded. Otherwise as above. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2105-2110m	100	SANDSTONE: fine to very coarse grained, dominantly coarse to very coarse grained, subangular to rounded, dominantly rounded, clear, transgressive, occasionally white, poorly sorted, loose quartz. Excellent visible porosity. No shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
2110-2115m	95	SANDSTONE: as above. No shows. Also trace fine grained aggregates, silica cemented, poor visible porosity, firm, subrounded grains.
	5	SILTSTONE: medium grey to medium dark grey, carbonaceous, argillaceous, slightly micaceous in parts, calcareous in parts, soft to firm rounded cuttings.
	trace	COAL: as above.



2160-2165m	65	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 2, as above. No shows..
	35	SILTSTONE: as above.
	trace	COAL: as above.
	trace	ORGANIC MATTER: as above. Blue-white fluorescence. Very weak, diffuse blue-white crush cut (1 cutting).
2165-2170m	65	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 2, as above. No shows.
	30	SILTSTONE: as above.
	5	COAL: as above. 1 cutting gives blue-white fluorescence. No cut.
2170-2175m	50	SANDSTONE: 95% Type 1, coarse to very coarse to occasional medium grained, subrounded to rounded, translucent, moderately well sorted, loose quartz. Excellent visible porosity. No shows.
		5% Type 2, soft, very fine grained, rounded, light grey aggregates; moderate visible porosity, slightly carbonaceous, grades to siltstone, slightly argillaceous. No shows.
	45	SILTSTONE: soft to firm, rounded, medium grey to medium dark grey cuttings. Argillaceous, carbonaceous, conchoidal, slightly sandy.
	5	COAL: as above.
2175-2180m	70	SANDSTONE: 90% Type 1, as above. No shows. 10% Type 2, as above. No shows.
	30	SILTSTONE: as above
	trace	COAL: as above.
2180-2185m	70	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 2, as above. No shows.
	30	SILTSTONE: as above.
	trace	COAL: as above.
2185-2190m	70	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	30	SILTSTONE: as above.
2190-2195m	70	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 2, as above. No shows.
	30	SILTSTONE: as above.
	trace	COAL: as above. Soft.
2195-2200m	80	SANDSTONE: 90% Type 1, as above. No shows. 10% Type 2, as above. Occasional fine grained, firm, silica cemented. No shows.
	20	SILTSTONE: as above. Very carbonaceous in parts and dark grey.
2200-2205m	90	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2205-2210m	75	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	20	SILTSTONE: as above.
	5	COAL: as above.

2210-2215m	75	SANDSTONE: 100% Type 1, coarse to very coarse grained, and occasionally medium subangular to rounded, dominantly subrounded and well sorted, translucent, loose quartz. Excellent visible porosity. No shows. Trace Type 2, very fine grained, moderate visible porosity, firm rounded aggregates. Slightly argillaceous. No shows.
	25	SILTSTONE: Soft to firm, medium dark grey to medium grey, slightly calcareous, slightly carbonaceous, argillaceous.
	trace	COAL: as above.
2215-2220m	80	SANDSTONE: 95% Type 1, as above. No shows. Trace Type 2, as above. No shows. 5% Type 3, fine to medium grained, subangular to subrounded, moderately well sorted quartz grains in rounded, hard calcite cemented aggregates. Poor visible porosity. Common rounded siltstone grains of medium size as inclusions.
	20	SILTSTONE: as above. Occasionally very carbonaceous, very calcareous.
	trace	COAL: as above.
2220-2225m	70	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 3, as above.
	30	SILTSTONE: as above.
	trace	COAL: as above.
2225-2230m	65	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 3, as above. No shows.
	35	SILTSTONE: as above.
	trace	COAL: as above.
2230-2235m	90	SANDSTONE: Type 1, fine to very coarse grained, poorly sorted, translucent, subrounded to rounded, loose quartz. Excellent visible porosity. No shows.
	10	SILTSTONE: as above.
2235-2240m	90	SANDSTONE: as above. No shows.
	10	SILTSTONE: as above. No shows. Occasionally medium light grey.
2240-2245m	80	SANDSTONE: as above. Dominantly coarse to very coarse. No shows.
	20	SILTSTONE: Occasionally very carbonaceous.
2245-2250m	70	SANDSTONE: as above. No shows. Coarse to very coarse.
	30	SILTSTONE: as above.
	trace	COAL: as above.
2250-2255m	70	SANDSTONE: as above. No shows. Coarse to very coarse.
	30	SILTSTONE: as above. Very argillaceous.
2255-2260m	80	SANDSTONE: as above. No shows.
	20	SILTSTONE: soft to firm, medium light grey to dark grey, slightly argillaceous, carbonaceous, slightly micaceous in parts grades to very fine sandstone. Rounded cuttings.

2260-2265m	70	SANDSTONE: as above. No shows.
	20	COAL: blocky, angular, black.
	10	SILTSTONE: as above. Very argillaceous.
2265-2270m	50	SANDSTONE: as above. No shows.
	45	COAL: as above.
	5	SILTSTONE: as above. Very argillaceous.
2270-2275m	55	SANDSTONE: as above. Occasionally white. No shows.
	35	COAL: as above.
	10	SILTSTONE: as above.
2275-2280m	50	SANDSTONE: as above. No shows.
	40	COAL: as above.
	10	SILTSTONE: as above.
2280-2285m	60	SANDSTONE: as above. No shows.
	30	COAL: as above.
	10	SILTSTONE: as above.
2285-2290m	80	SANDSTONE: as above. No shows. Trace medium, fine to very fine aggregates. Moderately visible porosity. No shows. Calcite cemented.
	10	SILTSTONE: as above.
	10	COAL: as above.
	trace	PYRITE: cemented fine to occasionally medium sandstone aggregates.
	Trace	FLUORESCENCE: 2 pinpoint on 1 cutting of carbonaceous siltstone, blue-white, no cut.
2290-2295m	85	SANDSTONE: 100% Type 1, Coarse to very coarse grained, subrounded to rounded, moderately well sorted, translucent occasionally white, loose quartz. Excellent visible porosity. No shows. Trace Type 2, Very fine to fine, moderately well sorted subrounded quartz in soft to occasionally moderately hard rounded, cuttings. Occasionally pyrite cemented. Otherwise moderately visible porosity. No shows.
	15	SILTSTONE: medium light grey to dark grey, carbonaceous in flecks and laminations, argillaceous, soft to moderately hard, rounded cuttings.
	trace	COAL: black, blocky, dull.
2295-2300m	85	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	15	SILTSTONE: as above.
	trace	COAL: as above.
2300-2305m	90	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	5	SILTSTONE: as above.
	5	COAL: as above.
	trace	FLUORESCENCE: blue-white as above (1 cutting).
2305-2310m	80	SANDSTONE: 95% Type 1, as above. No shows. 5% Type 2, as above. No shows.
	15	COAL: as above. Trace (3 cuttings) fluorescence blue-white, no crush cut or stream.
	5	SILTSTONE: as above.

2310-2315m	90	<p>SANDSTONE: 90% Type 1, coarse to very coarse grained, occasionally medium, translucent, moderately well sorted, subrounded to rounded, loose quartz. Excellent visible porosity. No shows.</p> <p>10% Type 2, fine grained, subrounded, well sorted quartz in firm to moderately hard calcite cemented aggregates. Poor visible porosity. No shows. Occasionally very fine grained, carbonaceous laminations, moderately visible porosity. No shows.</p> <p>5 5</p> <p>COAL: as above. SILTSTONE: as above.</p>
2315-2320m	90	<p>SANDSTONE: 85% Type 1, as above. No shows. 10% Type 2, fine to medium grained, subrounded to rounded, moderately well sorted, quartz in moderately hard calcite cemented aggregates fine to medium sized coal fragments common. Poor visible porosity. Trace 3 cuttings have yellow/white fluorescence. No stream cut, very slow diffuse crush cut, associated with coal. 5% Type 3, Very fine grained soft cuttings with moderate visible porosity and occasionally carbonaceous matter. No shows.</p> <p>10 trace</p> <p>SILTSTONE: as above. COAL: as above.</p>
2320-2325m	70	<p>SANDSTONE: 95% Type 1, as above. No shows. Trace Type 2, as above. One cutting shows fluorescence as above. No stream cut or crush cut associated with amber organic matter. 5% Type 3, as above. No shows.</p> <p>30 trace</p> <p>COAL: as above. SILTSTONE: as above.</p>
2325-2330m	90	<p>SANDSTONE: 100% Type 1, as above. No shows.</p> <p>5 5</p> <p>COAL: as above. SILTSTONE: as above.</p>
2330-2335m	85	<p>SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. Trace fluorescence as above. Slow crush cut leaving yellow residue. Trace Type 3, as above. No shows.</p> <p>15 trace</p> <p>COAL: as above. SILTSTONE: as above.</p>
<p>N.B. 5% mineral fluorescence (Dolomite) white to orangey yellow associated with Type 2, sandstone.</p>		
2335-2340m	70	<p>SANDSTONE: 90% Type 1, as above. Occasionally well rounded. No shows. 10% Type 2, Fine to medium grained, moderately well sorted quartz, subrounded to rounded moderately hard to hard dolomite cemented aggregates. Poor visible porosity. The cuttings give orange fluorescence with no cut. This is dolomite mineral fluorescence, that occurs in approximately more than 10% of total sample.</p> <p>30 trace</p> <p>SILTSTONE: as above. COAL: as above.</p>

2340-2345m	80	SANDSTONE: 90% Type 1, as above. No shows. 10% Type 2, as above. Grains have orange mineral fluorescence as above. No cut.
	20	SILTSTONE: as above.
	trace	COAL: as above.
2345-2350m	80	COAL: black, dull to vitreous, blocky, moderately hard, brittle.
	20	SANDSTONE: 90% Type 1, as above. No shows. 10% Type 2, as above. NB. Mineral fluorescence associated. No shows.
	trace	SILTSTONE: as above.
2350-2355m	80	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. N.B. All have mineral fluorescence as above.
	15	COAL: as above.
	5	SILTSTONE: as above. Micaceous in parts, medium grey to dark grey.
	trace	PYRITE: cementing fine to medium grained quartz.
2355-2360m	80	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Mineral fluorescence occurs.
	15	COAL: as above.
	5	SILTSTONE: as above.
2360-2365m	75	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. Trace (1 cutting) fluorescence blue-white associated with organic matter. No cut.
	25	COAL: as above.
	trace	SILTSTONE: as above.
2365-2370m	80	COAL: as above.
	10	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. No shows.
	10	SILTSTONE: as above.
2370-2375m	40	COAL: as above.
	40	SILTSTONE: as above.
	20	SANDSTONE: 80% Type 1, as above. No shows. Type 2, as above. No shows.
2375-2380m	80	COAL: Black, blocky, dull to occasionally vitreous, cuttings. Very hard and occasionally silty.
	10	SILTSTONE: Soft to firm, medium light grey to medium dark grey. Slightly argillaceous, slightly carbonaceous in parts.
	10	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. No shows.
2380-2385m	45	SILTSTONE: Soft to firm, medium grey to medium dark grey, slightly carbonaceous, slightly argillaceous, occasionally very carbonaceous, rounded cuttings.
	35	COAL: as above. Occasionally greyish black and silty.

2380-2385m cont'd	20	SANDSTONE: 90% Type 1, coarse to very coarse grained, subrounded to rounded, translucent, moderately well sorted, loose quartz. Excellent visible porosity. No shows. 10% Type 2, Very fine to fine grained, soft to firm, slightly carbonaceous, moderate visible porosity. No shows.
		N.B. One cutting of carbonaceous siltstone gave bright yellow fluorescence. Weak diffuse yellow crush cut leaving yellow-white ring residue. Fluorescence is associated with carbonaceous part of siltstone.
	trace	PYRITE: hard, angular, crystalline.
2385-2390m	60	SILTSTONE: Soft to firm and occasionally moderately hard, medium grey and rounded to dark grey, platy to subfissile cuttings. Slightly argillaceous and carbonaceous, especially as dark grey flecks and laminations. Occasionally very fine, small grains.
	20	COAL: as above.
	20	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. No shows.
	trace	(2 cuttings) of yellowy white fluorescence, no cut; associated with amber organic matter.
2390-2395m	50	COAL: as above.
	40	SILTSTONE: as above.
	10	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows.
2395-2400m	45	COAL: as above.
	45	SILTSTONE: as above.
	10	SANDSTONE: 30% Type 1, as above. No shows. 70% Type 2, as above. No shows.
2400-2405m	10	COAL: Black to greyish black, blocky to platy, hard, silty in parts.
	50	SILTSTONE: Medium grey to dark grey, soft to moderately hard, rounded to platy (in dark grey samples) slightly argillaceous, carbonaceous, occasionally slightly platy.
	40	SANDSTONE: 70% Type 1, coarse to very coarse grained, translucent, subrounded to rounded, moderately well sorted, loose quartz. Excellent visible porosity. No shows. 30% Type 2, fine to very fine, subrounded quartz, moderately well sorted in soft rounded aggregates. Slightly carbonaceous in parts. Moderate visible porosity. No shows. Light grey to buff.
2405-2410m	55	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows.
	40	SILTSTONE: as above.
	5	COAL: as above.
2410-2415m	70	SANDSTONE: 80% Type 1, as above. No shows. Trace Type 2, as above. 20% Type 3, fine to medium grained, subrounded, poorly sorted quartz in moderately hard to hard, dolomite cemented aggregates. Dolomite has minor deep orange fluorescence. No shows.

	30	SILTSTONE: as above.
	Minor	PYRITE: Often cementing fine grained quartz.
	trace	COAL: as above.
2415-2420m	80	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 3, as above, with mineral fluorescence as above. Occasionally coarse quartz grains.
	20	SILTSTONE: as above. Very carbonaceous in parts.
	trace	COAL: as above.
2420-2425m	65	SANDSTONE: 85% Type 1, as above. No shows. 15% Type 3, as above. No shows. Trace Type 2, as above. No shows.
	35	SILTSTONE: as above.
2425-2430m	35	SANDSTONE: 100% Type 1, coarse to very coarse grained, subrounded to rounded, moderately well sorted, translucent, loose quartz. Excellent visible porosity. No shows. Trace Type 2, fine to very fine, soft rounded aggregates, moderately visible porosity. No shows. Slightly carbonaceous in parts. Trace Type 3, fine to medium and occasionally coarse, subangular to rounded quartz grains in moderately hard, dolomite cemented, aggregates. Poor visible porosity. No shows, minor orange fluorescence.
	40	SILTSTONE: Medium grey to dark grey, soft to firm, slightly argillaceous, carbonaceous and dolomitic in parts. Occasionally pyritic.
	25	COAL: Black, brittle, occasionally silty, blocky to platy cuttings.
	trace	PYRITE: Microcrystalline aggregates, often cementing silt or very fine grained quartz.
2430-2435m	40	COAL: as above. Grading to dark grey, very carbonaceous siltstone.
	40	SILTSTONE: as above. Occasionally very dolomitic.
	20	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace Type 3, as above. No shows. Occasionally pyritic.
	trace	PYRITE: as above.
2435-2440m	85	SILTSTONE: as above, non dolomitic. Very carbonaceous flecks and laminations in part. Occasionally medium light grey in colour and occasionally very argillaceous. Minor pyrite.
	10	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. No shows. Trace Type 3, as above. No shows.
	5	COAL: as above. Grades to carbonaceous siltstone.
2440-2445m	55	SILTSTONE: as above. Occasionally pyritic.
	30	COAL: as above.
	15	SANDSTONE: 60% Type 1, as above. No shows. 40% Type 2, as above. No shows. Trace Type 3, as above. No shows. Mineral fluorescence and slightly carbonaceous.
	trace	Pyrite: as above.

2445-2450m	80	SILTSTONE: as above.
	10	SANDSTONE: 60% Type 1, as above. No shows. 30% Type 2, as above. No shows. 10% Type 3, as above. No shows.
	10 trace	COAL: as above. PYRITE: as above.
2450-2455m	70	SILTSTONE: soft to firm and occasionally moderate to hard, rounded cuttings, moderately light grey to dark grey, slightly argillaceous in parts, sandy in parts, carbonaceous in flecks and laminations, occasionally slightly calcareous.
	30	SANDSTONE: Type 1, 60% coarse to very coarse grained, translucent to occasionally white, subrounded to rounded and occasionally well rounded, moderately well sorted, loose quartz. Excellent visible porosity. No shows. Type 2, 40% very fine to fine and occasionally medium, subrounded, moderately well sorted, quartz in soft to firm, light grey to very light grey, often calcite cemented aggregates. Occasionally slightly carbonaceous and occasionally pyritic. Poor to moderate visible porosity. No shows.
	trace	COAL: black to grey black, blocky to platy, occasionally silty.
2455-2460m	50	SILTSTONE: as above. Pyritic in parts. Coaly, laminations, common.
	40	SANDSTONE: 90% Type 1, as above. No shows. 5% Type 2, as above. No shows. Occasionally pyritic. 5% Type 3, coarse to occasional medium, subrounded to rounded quartz in dolomite cemented aggregates. Poor visible porosity. No shows. Orange mineral fluorescence.
	10	COAL: as above.
2460-2465m	60	SANDSTONE: 70% Type 1, as above. No shows. 10% Type 2, as above. No shows. 20% Type 3, as above. No shows. Orange mineral fluorescence.
	40	SILTSTONE: pyritic in parts. Trace light cuttings yellow-white fluorescence. No cut as with organic matter in siltstone.
	trace	PYRITE: as above.
2465-2470m	70	SANDSTONE: 60% Type 1, as above. No shows. 10% Type 2, as above. No shows. 30% Type 3, as above. No shows. Orange mineral fluorescence. Slightly carbonaceous in parts. Very hard cuttings.
	25	SILTSTONE: as above. Pyritic in parts. Very calcareous in parts (cavings).
	5	COAL: as above.
	trace	SANDSTONE: Type 1, loose, medium to coarse grained quartz, as above. Probably cavings. No shows.
	trace	CLAYSTONE: white. As above.



2470-2475m	80	SANDSTONE: 3 Types. 50% Type 1, Coarse to very coarse occasionally pebbly, subrounded to occasionally well rounded, clear to translucent, moderately well sorted, loose quartz. Excellent visible porosity. No shows, commonly fractured and broken probably due to bit action. 45% Type 2, Medium to occasionally coarse, subrounded to rounded, well sorted, clear to translucent quartz in very hard, dolomite cemented aggregates. Poor visible porosity. No shows. Orange fluorescence in all cuttings. 5% Type 3, Fine to very fine, subrounded, well sorted quartz in soft to friable aggregates. Moderate visible porosity, slightly carbonaceous in flecks and laminations. No shows.
	20	SILTSTONE: soft to firm, angular to rounded cuttings. Slightly to very argillaceous, slightly carbonaceous in parts.
	trace	COAL: as above.
	trace	PYRITE: Microcrystalline aggregates.
2475-2480m	90	SANDSTONE: 50% Type 1, as above. No shows. Frequent broken grains. 50% Type 2, as above. No shows. Trace pyrite. Dolomite cement occasionally yellow. Orange mineral fluorescence.
	5	SILTSTONE: as above.
	5	COAL: as above. Possibly cavings.
2480-2485m	80	SANDSTONE: 50% Type 1, as above. No shows. Frequent broken grains. 50% Type 2, as above. No shows. Orange mineral fluorescence. Dolomite cement, yellow grey.
	15	SILTSTONE: as above.
	5	COAL: as above. Possibly cavings. Minor Pyrite: as above.
2485-2490m	90	SANDSTONE: 50% Type 1, Coarse to very coarse to pebbly (less than 2mm), subrounded to well rounded translucent to occasionally white, and well sorted, loose quartz. Excellent visible porosity. No shows. Common fractured grains. 50% Type 2, medium to coarse grained, subrounded to well rounded, moderately well sorted quartz in very hard dolomite cemented aggregates. Dolomite occasionally yellow grey. No visible porosity. No shows. Dolomite has orange fluorescence. Occasionally pyrite cement.
	5	SILTSTONE: Moderate grey to dark grey rounded, soft to firm aggregates. Commonly carbonaceous in flecks and laminations, slightly pyritic in parts, slightly argillaceous. Sandy in parts.
	5	COAL: Black, blocky to platy cuttings. N.B. The siltstone and coal are probably cavings.
2490-2495m	100	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows.
	trace	COAL, SILTSTONE: as above. (cavings).
2495-2500m	100	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows.
	trace	COAL, SILTSTONE: as above. (cavings).
	trace	PYRITE: microcrystalline aggregates and as cement to Type 2, sandstone.

2500-2505m	100	SANDSTONE: 60% Type 1, as above. No shows. 40% Type 2, as above. No shows. Deep orange mineral fluorescence. Occasionally pyrite cemented.
	trace trace	COAL, SILTSTONE: as above. (cavings). PYRITE: as above.
2505-2510m	100	SANDSTONE: 60% Type 1, as above. No shows. 40% Type 2, as above. No shows. Dolomite has deep orange mineral fluorescence. Occasionally pyrite cemented. Trace Type 3, very fine to occasionally fine quartz in soft to firm light grey cuttings. Slightly carbonaceous carbonate (calcite) cemented. Poor visible porosity. No shows.
	trace trace	COAL: as above. SILTSTONE: as above (cavings).
2510-2515m	95	SANDSTONE: 60% Type 1, coarse to very coarse grained, subrounded to well rounded, translucent, moderate well sorted, loose quartz. Excellent visible porosity. No shows. 40% Type 2, medium to occasional coarse, moderate well sorted, subrounded to well rounded quartz in hard dolomite cement aggregates (3% dolomite from calcimetry). Poor visible porosity. No shows. Orange mineral fluorescence common. Trace pyrite cemented. Trace Type 3, fine to very fine quartz in soft rounded aggregates. Moderate visible porosity. No shows.
	5	SILTSTONE: soft to firm, moderate light grey to dark grey, slightly argillaceous and slightly carbonaceous in parts, occasionally calcareous.
	trace	COAL: Black, blocky to platy, brittle etc.
2515-2520m	80	SANDSTONE: 70% Type 1, as above. No shows. 30% Type 2, as above.
	20	SILTSTONE: as above. Occasionally very calcareous.
	trace trace	COAL: as above. PYRITE: microcrystalline and aggregates.
2520-2525m	50	SILTSTONE: light grey to occasionally medium grey, firm, subfissile in parts, slightly argillaceous and carbonaceous. Slightly calcareous.
	30	CLAYSTONE: well rounded soft to occasional firm cuttings of white calcareous clay and kaolinite. Occasional silty and carbonaceous impurities.
	10	SANDSTONE: 2 types - 50% Type 1, coarse to very coarse grained, well rounded to rounded, loose, transparent quartz grains. Excellent visible porosity, no shows. 50% Type 2, medium to occasionally coarse grained, subangular to subrounded aggregates. Hard dolomite cement gives 5% spotty, medium bright yellow, mineral fluorescence. Very poor to no visible porosity. No shows.
	10	COAL: black, hard, brittle, vitreous, conchoidal fracture in parts.

2525-2530m	90	SILTSTONE: soft to firm, platy, moderately light grey to moderate grey, cuttings. Argillaceous, occasionally carbonaceous or slightly pyritic, slightly calcareous.
	10	SANDSTONE: 50% Type 1, coarse to very coarse grained, subrounded to well rounded, translucent, moderately well sorted, loose quartz. Excellent visible porosity. No shows. 50% Type 2, medium to coarse grained, subrounded to well rounded, quartz in moderate hard dolomite cemented aggregates. Poor visible porosity. No shows. 5% spotty, moderately bright yellow, mineral fluorescence. As above.
	trace	COAL: as above.
	trace	PYRITE: as above.
2530-2535m	trace	CLAYSTONE: as above.
	85	SILTSTONE: as above.
	15	SANDSTONE: as above. Trace Type 3, very fine grained quartz in soft to firm, rounded aggregates. Moderate visible porosity. No shows. Slightly carbonaceous.
	trace	COAL: as above. Clay and trace as above.
2535-2540m	95	SILTSTONE: as above.
	5	SANDSTONE: 40% Type 1, as above. 40% Type 2, as above. Type 3, as above.
	trace	COAL: as above.
	trace	CLAYSTONE: as above.
2540-2545m	100	SILTSTONE: light grey to medium light grey, firm, slightly argillaceous and carbonaceous cuttings, slightly calcareous in parts.
2545-2550m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above. No hydrocarbon fluorescence. Trace mineral fluorescence.
	trace	CLAYSTONE: as above.
2550-2555m	100	SILTSTONE: light grey to occasional brown, firm, argillaceous, slightly carbonaceous in parts, very slightly sandy. Rare fine grained glauconite pellets.
	trace	SANDSTONE: Type 1, loose medium to coarse grained quartz. No shows. Minor cemented (dolomite) aggregates giving trace moderate, bright yellow mineral fluorescence.
2555-2560m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above with rare pyritic cemented fine to medium grained, subangular and well sorted quartz grains. No fluorescence or cut from any sandstone type.
2560-2565m	100	SILTSTONE: light grey, firm, argillaceous and slightly carbonaceous in parts, occasionally slightly calcareous, and very slightly sandy. Common glauconite staining and as pellets.
	trace	SANDSTONE: Dominantly loose, medium to coarse grained, moderately sorted, rounded to subangular, quartz grains. No shows. Rare dolomite, cemented. Fine to medium grained, well sorted, subangular to rounded, quartz aggregates. Trace moderate, bright yellow mineral fluorescence. No shows.

2565-2570m	100	SILTSTONE: as above with common glauconite occurring as pellets and staining.
	trace	SANDSTONE: as above. No shows, trace mineral fluorescence only.
2570-2575m	100	SILTSTONE: light grey to green grey, slightly argillaceous and sandy, common to abundant glauconite as staining, pebbles and pellets. Very slightly carbonaceous in part; predominantly non calcareous. Slightly pyritic in parts.
	trace	SANDSTONE: 2 types - Type 1, dominantly loose medium to coarse grained, well sorted, subangular to rounded, quartz grains, Excellent visible porosity. No shows. Type 2, minor dolomite, cemented aggregates of fine to occasionally coarse grained, moderately well sorted, subangular to rounded, quartz. No visible porosity, no shows. Trace moderate, bright yellow mineral fluorescence. Trace pyritic cemented, fine to medium grained sandstone. aggregates. No visible porosity, no fluorescence.
2575-2580m	100	SILTSTONE: as above. Abundant glauconite staining and pellets. Quite sandy in parts.
	trace	SANDSTONE: as above. No shows in either type.
2580-2585m	100	SILTSTONE: as above. Still with abundant glauconite.
	trace	SANDSTONE: as above. With mineral fluorescence only.
2585-2590m	95	SILTSTONE: light grey to occasional green grey and glauconitic. As above.
	5	SANDSTONE: 50% Type 1, loose, medium to coarse grained, subangular to well rounded quartz grains. Excellent visible porosity. No shows. 50% Type 2, fine medium grained dolomite cemented aggregates. Well sorted, medium to occasionally coarse grained. No visible porosity. Moderate, bright yellow mineral fluorescence only. No shows. Trace pyrite cemented fine grained to medium grained sandstone aggregates.
2590-2595m	95	SILTSTONE: moderately light grey to dark grey, soft to firm, rounded cuttings. Slightly argillaceous, occasionally glauconitic and slightly pyritic. Grades to a very fine grained sandstone.
	5	SANDSTONE: 70% Type 1, Coarse to very coarse grained, translucent, moderately well sorted, rounded to well rounded, loose quartz. Excellent visible porosity. No shows. 30% Type 2, Medium to coarse grained, subangular to subrounded quartz in moderately hard carbonate (some dolomite) cemented aggregates. No to very poor visible porosity. Trace of yellow mineral fluorescence. No shows. NOTE: trace - one cutting. Buff organic matter (kerogen?), with dull yellow fluorescence, which gave a weak yellow-white, moderately fast streaming cut, leaving yellow-white ring residue.
	trace	PYRITE: blocky, crystal aggregates.

2595-2600m	95	SILTSTONE: as above. Occasional carbonaceous laminations.
	5	SANDSTONE: 80% Type 1, Coarse to very coarse grained, occasionally subangular to rounded, translucent, well sorted, loose quartz. Excellent visible porosity. No shows. 20% Type 2, medium to coarse grained, subangular to subrounded, moderate to well sorted quartz in moderately hard, carbonate (some dolomite) cemented, aggregates. Poor to no visible porosity. No shows.
	trace	Yellow mineral fluorescence.
Bottoms up sample at 2603.5 m	90	SILTSTONE: soft to firm, light grey to medium dark grey, rounded, cuttings. Slightly argillaceous in parts. Occasionally slightly carbonaceous in flecks and laminations, very glauconitic in parts. Occasional white mica flakes. Grades to very fine grained sandstone.
	10	SANDSTONE: 90% Type 1, Coarse to very coarse grained, subangular to rounded, translucent, moderately well sorted, loose quartz. Excellent visible porosity. No shows. 10% Type 2, medium to coarse grained, subangular to rounded quartz in moderately hard carbonate (slightly dolomitic) cemented, aggregates. Poor visible porosity.
	trace	Orange mineral fluorescence. No shows.
2603-2605	60	SILTSTONE: as above. Occasionally very carbonaceous in thin laminations.
	40	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. No shows.
	trace	PYRITE: as above.
2605-2610m	90	SANDSTONE: 90% Type 1, coarse to very coarse grained, subrounded to rounded, translucent and well sorted, loose quartz. Excellent visible porosity. No shows. 5% Type 2, medium to coarse grained, subrounded to rounded, moderately well sorted quartz in moderately hard, dolomite cemented aggregates. Trace orange mineral fluorescence. No shows. Poor to no visible porosity. 5% Type 3, very fine, well sorted subrounded quartz in soft to firm aggregates. Slightly glauconitic, slightly pyritic. Moderate visible porosity. No shows. Slightly carbonaceous in parts.
	10	SILTSTONE: light grey to moderately dark grey, soft to firm rounded cuttings. Slightly carbonaceous in flecks and laminations. Slightly micaceous and slightly glauconitic in parts.
2610-2615m	95	SANDSTONE: 90% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace Orange mineral fluorescence. 10% Type 3, as above. No shows.
	5	SILTSTONE: as above.
2615-2620m	90	SANDSTONE: 90% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace orange mineral fluorescence 10% Type 3, as above. No shows.
	10	SILTSTONE: as above.

2620-2625m	95	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace orange mineral fluorescence. Trace Type 3, as above. No shows.
	5	SILTSTONE: Occasionally dark grey, very carbonaceous.
2625-2630m	80	SANDSTONE: 95% Type 1, coarse to very coarse grained, subrounded to rounded, translucent, moderately well sorted loose quartz. Excellent visible porosity. No shows. Trace Type 2, medium to coarse quartz in moderately hard, dark dolomite cemented, aggregates with very poor visible porosity. No shows. Trace yellow mineral fluorescence. 5% Type 3, very fine grained quartz in soft to firm rounded aggregates. Slightly carbonaceous, moderate visible porosity. No shows.
	20	SILTSTONE: moderate light grey to dark grey, in soft to firm rounded aggregates. Slightly carbonaceous, argillaceous and micaceous in parts, occasionally sandy.
	trace	PYRITE: crystalline, angular, cuttings.
2630-2635m	95	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace yellow mineral fluorescence. Trace Type 3, as above. No shows.
	5	SILTSTONE: as above.
2635-2640m	75	SANDSTONE: 95% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace yellow mineral fluorescence. 5% Type 3, as above. No shows.
	25	SILTSTONE: as above.
	trace	COAL: Black, blocky, brittle, angular
2640-2645m	50	SANDSTONE: 90% Type 1, as above. No shows. 5% Type 2, as above. No shows. Trace yellow mineral fluorescence. 5% Type 3, as above. No shows.
	50	SILTSTONE: light grey to dark grey, soft to firm, rounded cuttings. Slightly argillaceous and carbonaceous; sandy in parts; slightly micaceous and glauconitic in parts.
	trace	CLAYSTONE: white, kaolinite? rich; calcareous; slightly carbonaceous, sandy, soft to occasionally firm cuttings.
2645-2650m	50	SANDSTONE: Type 1, as above. No shows. Trace Type 2, as above. Trace yellow mineral fluorescence. No shows. 10% Type 3, as above. No shows.
	50	SILTSTONE: as above.
	trace	CLAYSTONE: as above.
2650-2655m	60	SILTSTONE: medium light grey to dark grey; soft to firm cuttings; slightly argillaceous, carbonaceous in parts; slightly glauconitic; occasionally sandy.

2650-2655m cont'd	40	SANDSTONE: 100% Type 1, coarse to very coarse; translucent, well sorted, subrounded to rounded, loose quartz; excellent visible porosity; No shows. Trace Type 2, medium to occasionally coarse grained; quartz in dolomite cemented aggregates; trace moderately bright yellow mineral fluorescence; No shows.
	trace	CLAYSTONE: as above.
2655-2660m	60	SANDSTONE: 100% Type 1, coarse to very coarse grained; subrounded to rounded, well sorted, loose quartz. Excellent visible porosity. No shows. Trace Type 2, medium grained, well sorted, subangular to rounded, dolomite cemented, aggregates. Trace moderate, bright yellow mineral fluorescence. No shows.
	30	SILTSTONE: medium light grey to dark grey; soft to firm; argillaceous; slightly sandy and slightly carbonaceous, siltstone.
	10	COAL: black, hard, sharp and brittle cuttings silty in part. Several cuttings contain a brown to buff "organic resin" that gives fast bright yellow streaming cut from moderately bright yellow fluorescence.
2660-2665m	60	SILTSTONE: as above.
	30	SANDSTONE: Dominantly Type 1, loose coarse to very coarse grained, as above; No shows.
	10	COAL: as above.
2665-2670m	60	SANDSTONE: Dominantly Type 1, as above. No shows.
	30	SILTSTONE: as above.
	10	COAL: as above.
2670-2675m	50	SANDSTONE: 2 types - 95% Type 1, loose, coarse to very coarse grained, rounded to well rounded, well sorted, clear to milky white quartz grains. Excellent visible porosity. No shows. 5% Type 2, medium grained, well sorted dolomite cemented aggregates. Hard, buff coloured, dolomite cement. No visible porosity. 5% moderately bright to dull, yellow mineral fluorescence only; <u>No</u> hydrocarbon fluorescence.
	40	SILTSTONE: light grey to brown, firm to moderately hard, argillaceous, sandy, with occasional carbonaceous material and mica. Minor calcareous siltstone; sometimes with white calcite patches.
	10	COAL: black, hard, brittle. Occasionally sandy and silty.
2675-2680m	60	SILTSTONE: as above.
	40	SANDSTONE: Dominantly loose, coarse to very coarse grained. Type 1, as above; no fluorescence. Minor Type 2, as above with trace moderately bright yellow mineral fluorescence.
2680-2685m	65	SANDSTONE: as above; dominantly loose, coarse to very coarse grained without shows. Minor Type 2, no shows.
	30	SILTSTONE: as above.
	5	LIMESTONE: Buff to off-white, hard, crystalline calcite. Moderately bright yellow/white fluorescence, no cut.

2685-2690	70	SILTSTONE: Light grey to medium light grey, firm, argillaceous, slightly carbonaceous, occasionally sandy, occasionally calcareous.
	30	SANDSTONE: 100% Type 1, loose, coarse to very coarse grained, rounded to well rounded, well sorted, clear to milky white quartz grains. Excellent visible porosity. No shows. Trace Type 2, as above. No shows.
	trace	LIMESTONE: Buff to off-white, hard, crystalline calcite gives trace moderately bright yellow mineral fluorescence.
2690-2695m	60	SILTSTONE: Light grey to medium dark grey, soft to firm, rounded and occasionally argillaceous, slightly carbonaceous, occasionally sandy.
	40	SANDSTONE: 60% Type 1, coarse to very coarse grained, subrounded to well rounded, moderately well sorted, clear to translucent to occasionally white, loose quartz. Excellent visible porosity. No shows. 40% Type 2, fine to medium grained, subrounded, well sorted quartz in firm to moderately hard, white carbonate (occasionally buff dolomite) cemented aggregates. No visible porosity. No shows. Trace bright yellow mineral fluorescence. Occasional trace pyrite cemented.
	trace trace	PYRITE: angular crystalline fragments. LIMESTONE: as above.
2695-2700m	70	SILTSTONE: as above. Occasionally very carbonaceous.
	20	SANDSTONE: 60% Type 1, as above. No shows. 40% Type 2, as above. No shows. Trace moderately bright yellow mineral fluorescence.
	10 trace	COAL: black to moderately hard, brittle and blocky, with occasionally conchoidal fracture. PYRITE: as above.
2700-2705m	80	SILTSTONE: as above. Occasionally very carbonaceous.
	10	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Trace yellow mineral fluorescence.
	10	COAL: as above, occasionally silty.
2705-2710m	90	SILTSTONE: soft to firm, light grey to medium grey rounded cuttings, argillaceous, slightly carbonaceous to very carbonaceous in parts (in flecks and laminations). Occasionally sandy.
	5	SANDSTONE: 100% Type 1, coarse to very coarse; subrounded to well rounded, translucent, loose quartz, excellent visible porosity. No shows. Trace Type 2, medium to coarse grained quartz in dolomite and calcite cemented aggregates; poor visible porosity. No shows. Trace bright yellow mineral fluorescence. Occasionally pyrite cemented.
	5	COAL: as above.
2710-2715m	85	SILTSTONE: as above.
	10	COAL: as above, trace amber organic matter (kerogen) with yellow and white fluorescence and weak cut.
	5	SANDSTONE: 100% Type 1, as above. No shows; Trace Type 2, as above. No shows.



2715-2720m	65	SILTSTONE: as above. Occasionally very carbonaceous and dark grey.
	30	COAL: black, vitreous and with a conchoidal fracture, brittle, silty in parts.
	5	SANDSTONE: 100% Type 1, as above; No shows; Trace Type 2, as above. No shows. Trace yellow mineral fluorescence.
2720-2725m	50	SILTSTONE: as above. Occasionally brownish.
	40	COAL: as above.
	10	SANDSTONE: 80% Type 1, as above. No shows. 20% Type 2, as above. Fine to medium grained subrounded quartz in firm to moderately firm silica, cemented aggregates. Poor visible porosity. No shows.
2725-2730m	75	SILTSTONE: as above. Occasionally brownish.
	20	COAL: as above.
	5	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Occasionally pyrite cemented.
2730-2735m	80	SILTSTONE: as above. Occasionally very argillaceous and very carbonaceous.
	10	COAL: as above.
	10	SANDSTONE: 100% Type 1, as above. No shows. Trace Type 2, as above. No shows. Occasionally pyrite cemented.
2735-2740m	50	SILTSTONE: Light grey to medium light grey, moderately hard to hard, argillaceous to slightly sandy. Very slightly carbonaceous, moderately calcareous.
	40	SANDSTONE: 2 types - 50% Type 1, coarse to very coarse grained, well rounded to rounded, well sorted, clear to milky quartz grains. Excellent visible porosity no fluorescence. 50% Type 2, dolomite and silica cemented, (dominantly dolomite), fine to medium grained, moderately well sorted, subangular to subrounded, quartz aggregates. Strong buff to clear dolomite cement gives 20% moderately bright yellow mineral fluorescence. No shows. No visible porosity.
	10	COAL: silty, grading to carbonaceous siltstone in part, black, hard, brittle, vitreous lustre.
2740-2745m	50	SILTSTONE: as above. Commonly non calcareous, but occasionally moderately calcareous.
	45	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows. 30% bright to moderately bright yellow mineral fluorescence.
	5	COAL: as above.
2745-2750m	60	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows. 30% bright to moderately bright, yellow mineral fluorescence. Occasionally pyrite cemented.
	30	SILTSTONE: as above.
	10	COAL: as above.
	trace	Pyrite: Crystalline aggregates.

2750-2755m	50	SILTSTONE: as above.
	40	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows. 20% bright to moderately bright, yellow to yellow-white mineral fluorescence.
	10 trace	COAL: as above. PYRITE: as above.
2755-2760m	70	SILTSTONE: light grey to dark grey, firm to moderately hard, rounded to angular and platy cuttings, argillaceous to sandy in parts, occasionally pyritic. Slightly to very carbonaceous (in dark grey cuttings) and occasionally coaly.
	30	SANDSTONE: 50% Type 1, coarse to very coarse grained, subrounded to rounded, clear to milky white, moderately well sorted, loose quartz. Excellent visible porosity. No shows. 50% Type 2, fine to medium grained, subangular to subrounded, well sorted quartz in moderate hard, dolomite and occasionally silty cemented aggregates; Poor to no visible porosity. No shows. 10% moderately bright, yellow mineral fluorescence, occasionally pyrite cemented.
	trace trace	COAL: Black, dull and silty. PYRITE: Blocky crystals.
2760-2765m	70	SILTSTONE: as above.
	30	SANDSTONE: 70% Type 1, as above. No shows. 30% Type 2, as above. No shows. 5% moderately bright, yellow mineral fluorescence. Dolomite colourless to buff.
	trace trace	COAL: as above. PYRITE
2765-2770m	80	SILTSTONE: as above.
	10	SANDSTONE: 50% Type 1, as above. No shows. 50% Type 2, as above. No shows. Slightly pyritic in parts; slightly carbonaceous in parts; 5% moderately bright to dull yellow mineral fluorescence.
	10	COAL: as above.
2770-2775m	90	SILTSTONE: light grey to medium dark grey, firm to moderately hard, very carbonaceous in part, In general, slightly sand and non calcareous.
	10	COAL: black, hard, brittle, slightly silty in parts, vitreous.
	trace	SANDSTONE: Dolomite and pyrite cemented aggregates with no visible porosity. Trace moderately bright, yellow mineral fluorescence from dolomite cement.
2775-2780m	90	SILTSTONE: as above.
	5	SANDSTONE: as above, with minor, loose, subangular, coarse grained quartz grains. Still with trace mineral fluorescence from dolomite cemented sandstone aggregates.
	5	COAL: as above.
2780-2785m	95	SILTSTONE: light grey to medium dark grey, slightly to very carbonaceous, occasionally calcareous, firm to moderately hard, occasionally subfissile cuttings.

	5	COAL: black, hard, brittle, sharp and vitreous cuttings.
	trace	SANDSTONE: 3 types - Type 1, loose, coarse to very coarse grained, subangular, well sorted, quartz grains. Excellent visible porosity. No shows. Type 2, dolomite cemented, fine to medium grained, subangular, moderately well sorted, sandstone aggregates. No visible porosity. No shows. Trace moderately bright, yellow mineral fluorescence associated with cement. Type 3, fine to medium grained, well sorted, subangular, pyrite cemented aggregates. No visible porosity. No shows.
2785-2790m	55	SILTSTONE: as above.
	40	COAL: as above.
	5	SANDSTONE: as above; mineral fluorescence only.
2790-2795m	90	SILTSTONE: light grey to brown, as above.
	10	COAL: as above.
	trace	SANDSTONE: dominantly dolomite cemented, aggregates giving trace moderately bright, yellow mineral fluorescence as above. No shows.
2795-2800m	85	SILTSTONE: light grey to brown, argillaceous, with slight to moderate carbonaceous. Very slightly sandy in parts, occasionally calcareous, firm to moderately hard cuttings.
	15	COAL: black, hard, sharp and brittle cuttings, slightly silty in parts.
	trace	SANDSTONE: loose coarse to very coarse grained, dolomite cemented, aggregates and pyrite cemented aggregates.
2800-2805m	90	SILTSTONE: as above.
	10	COAL: as above.
	trace	SANDSTONE: as above. No shows.
2805-2810m	95	SILTSTONE: as above, commonly dark grey and very carbonaceous.
	5	COAL: as above.
	trace	SANDSTONE: dominantly loose, coarse to very coarse grained, as above.
2810-2815m	95	SILTSTONE: as above, commonly dark grey and very carbonaceous.
	5	COAL: as above.
	trace	SANDSTONE: dominantly loose coarse to medium grained; rounded to subrounded quartz. Excellent visible porosity. No shows. Minor dolomite cemented medium to fine grained aggregates; trace moderately bright yellow mineral fluorescence.
2815-2820m	100	SILTSTONE: as above; commonly dark grey and very carbonaceous.
	trace	COAL: as above.
	trace	SANDSTONE: Dominantly loose coarse to very coarse grained, subrounded to rounded quartz grains. Excellent visible porosity. No shows. Trace dolomite cemented, fine to medium grained aggregates with trace, dull yellow mineral fluorescence.

2820-2825m	100	SILTSTONE: light grey to dark grey and occasionally brown, soft to firm, rounded to occasionally platy cuttings. Slightly sandy in places. Pyritic in parts.
	trace	SANDSTONE: coarse to very coarse grained, translucent, subrounded to rounded, loose quartz. No shows.
	trace	COAL: black, brittle, blocky, silty cuttings.
2825-2830m	90	SILTSTONE: as above.
	10	COAL: as above, grading to greyish black and very silty.
	trace	SANDSTONE: as above, trace fine to medium grained, dolomite cemented aggregates with dull, yellow mineral fluorescence.
2830-2835m	80	SILTSTONE: as above.
	20	COAL: as above.
	trace	SANDSTONE: as above. trace dolomite cemented aggregates as above; occasionally pyrite cemented aggregates
	trace	PYRITE: blocky crystals and aggregates.
2835-2840m	60	SILTSTONE: as above.
	20	COAL: black to greyish black, blocky to platy, silty and occasionally clayey, brittle cuttings.
	20	CLAYSTONE: medium dark grey, soft to firm, platy to subfissile cuttings, slightly to very carbonaceous in flecks and laminations; slightly silty.
	trace	SANDSTONE: as above.
2840-2845m	80	SILTSTONE: as above.
	20	COAL: as above.
2845-2850m	90	SILTSTONE: as above with parallel laminations defined by carbonaceous material.
	10	COAL: as above.
	trace	SANDSTONE: as above with trace dull yellow mineral fluorescence.
2850-2855m	95	SILTSTONE: light grey to medium dark grey and occasionally brown, argillaceous, sandy in parts, occasionally very carbonaceous with carbonaceous material defining parallel laminations. Firm to moderately hard, non calcareous.
	5	COAL: black, hard, brittle, vitreous lustre, silty in part.
	trace	SANDSTONE: dominantly cemented aggregates of fine to medium grained, well sorted, subangular to subrounded quartz. Silica and rare dolomitic cements. Minor loose coarse grained, well rounded, quartz grains. No shows.
2855-2860m	95	SILTSTONE: white to medium dark grey, as above.
	5	COAL: as above.
	trace	SANDSTONE: dominantly dolomite and silica cemented aggregates as above. Trace mineral fluorescence only.

2860-2865m	75	SILTSTONE: as above.
	20	SANDSTONE: 2 types 80% Type 1, loose, coarse to very coarse grained, well sorted, rounded to well rounded, quartz grains. Excellent visible porosity, no fluorescence. 20% Type 2, dolomite cemented, fine to medium grained, moderately well sorted, subangular to subrounded quartz aggregates. Strong, hard, dolomitic and occasionally silica cements. Occasional dull yellow mineral fluorescence associated with dolomite cement.
	5	COAL: as above.
2865-2870m	80	SILTSTONE: as above.
	20	SANDSTONE: 2 types 50% Type 1, as above, no fluorescence. 50% Type 2, as above with dominantly silica and clay matrix.
	trace	COAL: as above.
2870-2875m	85	SILTSTONE: white to medium to dark grey, occasionally brown, argillaceous, sandy, very carbonaceous in part grading to silty coal, micromicaceous, firm cuttings.
	10	SANDSTONE: 2 types - 30% Type 1, loose, medium to coarse grained, subangular to subrounded, well sorted, clear to milky white quartz grains. Excellent visible porosity, no shows. 70% Type 2, silica cemented, fine to medium grained, moderately well sorted, subangular to subrounded quartz aggregates. Moderately hard, clear silica cement with common clay matrix. Rare dolomite cement giving trace dull yellow mineral fluorescence.
	5	COAL: black, hard, brittle, vitreous, silty in part.
2875-2880m	90	SILTSTONE: as above.
	10	SANDSTONE: 60% Type 1, as above, no shows. 40% Type 2, as above, no shows.
	trace	COAL: as above.
2880-2885m	80	SILTSTONE: as above.
	20	SANDSTONE: 50% Type 1, 50% as above. Type 2, 50% as above, no shows.
2885-2890m	85	SILTSTONE: as above.
	15	SANDSTONE: 60% Type 1, as above. 40% Type 2, as above. No visible porosity, no fluorescence.
	trace	PYRITE: cemented, fine to medium grained aggregates.
2890-2895m	50	COAL: as above.
	45	SILTSTONE: as above, minor disseminated pyrite as accessory.
	5	SANDSTONE: dominantly Type 1, as above, no shows.
2895-2900m	80	SILTSTONE: light grey, medium to dark grey and rare brown, argillaceous, micromicaceous, moderately to very carbonaceous, firm to occasionally hard cuttings, dominantly non calcareous.

2895-2900m cont'd	15	SANDSTONE: 2 types - 70% Type 1, loose, medium to coarse grained, subangular to rounded, well sorted quartz grains. Excellent visible porosity. No shows.
		30% Type 2, aggregates of fine to medium grained, moderately well sorted, subangular to subrounded, silica and rare dolomite cemented quartz. No visible porosity, no shows.
	5	Commonly contains a clay matrix. COAL: hard, black, vitreous, blocky cuttings.
2900-2905m	75	SILTSTONE: as above, with white siltstone common.
	20	SANDSTONE: as above, no fluorescence.
	5	COAL: as above.
2905-2910m	80	SILTSTONE: as above, with occasional mottled white to grey siltstone.
	15	SANDSTONE: 80% Type 1, as above.
		20% Type 2, as above, no shows.
	5	COAL: as above.
2910-2915m	95	SILTSTONE: white to medium light grey, firm, argillaceous, micaceous, slightly to moderately carbonaceous, non calcareous, slightly water sensitive.
	5	SANDSTONE: 2 types - 90% Type 1, loose, medium to coarse grained, subangular to subrounded, well sorted, clear to milky white quartz grains. Excellent visible porosity, no shows.
		10% Type 2, aggregates of fine to medium grained, well sorted, subangular to subrounded quartz with strong, white to clear crystalline silica cement. No visible porosity, minor clay matrix, no shows.
	trace	COAL: black, hard, brittle, vitreous.
2915-2920m	90	SILTSTONE: as above.
	5	COAL: as above.
	5	SANDSTONE: as above, no shows.
2920-2925m	95	SILTSTONE: as above, minor associated pyrite.
	5	SANDSTONE: dominantly Type 1, as above, no shows.
	trace	COAL: as above, slightly silty in part.
2925-2930m	90	SILTSTONE: as above.
	10	SANDSTONE: as above, no shows.
	trace	COAL: as above.
2930-2935m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above, no shows.
	trace	COAL: as above.
2935-2940m	100	SILTSTONE: white to medium dark grey, argillaceous, carbonaceous, micromicaceous in part, firm, non calcareous, slightly sandy.
	trace	SANDSTONE: dominantly loose, coarse to very coarse grained, well sorted, well rounded, clear to milky white. Excellent visible porosity, no shows. Minor silica cemented, fine to occasionally medium grained, subangular to subrounded, well sorted, aggregates. No visible porosity, no shows.
	trace	COAL: black, hard, brittle, blocky, silty in part.

2940-2945m	95	SILTSTONE: as above, commonly sandy.
	5	SANDSTONE: dominantly cemented aggregates as above. No shows, minor loose, coarse to very coarse grained as above. No shows.
	trace	COAL: as above.
2945-2950m	90	SILTSTONE: as above.
	5	SANDSTONE: as above, no shows.
	5	COAL: as above.
2950-2955m	70	SILTSTONE: as above.
	25	COAL: as above with conchoidal fracturing and common silty laminations.
	5	SANDSTONE: as above, no shows.
2955-2960m	90	SILTSTONE: as above.
	5	COAL: as above.
	5	SANDSTONE: as above, no shows.
2960-2965m	85	SILTSTONE: white to medium dark grey, argillaceous, micaceous, slightly to very carbonaceous, occasionally sandy, firm to moderately hard, slightly water sensitive, non calcareous to slightly calcareous. Trace associated pyrite.
	10	SANDSTONE: 2 types - 80% Type 1, loose, medium to very coarse grained, well sorted, subangular to well rounded, clear to milky quartz. Excellent visible porosity, no shows. 20% Type 2, hard, silica cemented aggregates, fine to medium grained, well sorted, subangular to rounded quartz grains. Strong white to clear silica cement, minor silty and argillaceous matrix. Very poor to no visible porosity, no shows.
	5	COAL: black, hard, blocky and brittle with occasionally conchoidal fractures.
2965-2970m	90	SILTSTONE: as above.
	5	COAL: as above.
	5	SANDSTONE: 50% Type 1, as above. 50% Type 2, as above, no shows.
2970-2975m	85	SILTSTONE: as above.
	10	COAL: as above, very hard in part.
	5	SANDSTONE: 50% Type 1, as above. 50% Type 2, as above, no shows.
2975-2980m	95	SILTSTONE: dominantly medium light grey as above, minor associated pyrite.
	5	COAL: as above.
	trace	SANDSTONE: 50% Type 1, as above. 50% Type 2, as above, no shows.
2980-2985m	85	SILTSTONE: white kaolinitic to carbonaceous medium dark grey. Firm, argillaceous, micaceous, slightly sandy, slightly to very carbonaceous tending to subfissile in part, slightly water sensitive, dominantly non calcareous.

2980-2985m cont'd	10	SANDSTONE: 2 types - 50% Type 1, loose, medium to very coarse grained, well sorted, subrounded to well rounded, clear to milky white quartz grains. Excellent visible porosity, no shows. 50% Type 2, silica and rare dolomite cemented quartz aggregates. Grains are very fine to medium grained, well sorted, subangular to rounded, common carbonaceous inclusions. Strong white to clear to buff cements. Trace dull yellow mineral fluorescence from rare dolomite cement. Very poor to dominantly no visible porosity. No shows.
	5	COAL: black, hard, brittle, blocky and conchoidally fractured cuttings, minor associated pyrite.
2985-2990m	80	SILTSTONE: as above.
	15	COAL: as above.
	5	SANDSTONE: dominantly loose - Type 1, as above. No shows.
2990 - 2995m	95	SILTSTONE: as above.
	5	COAL: as above.
	trace	SANDSTONE: dominantly loose - Type 1, as above. No shows.
2995-3000m	95	SILTSTONE: commonly white, kaolinitic, as above.
	5	SANDSTONE: 50% Type 1, as above. 50% Type 2, as above, no shows.
	trace	COAL: as above.
3000-3005m	90	SILTSTONE: white to medium dark grey, argillaceous, micaceous, slightly to very carbonaceous, firm to occasionally moderately hard, slightly water sensitive, dominantly non calcareous, slightly sandy.
	10	SANDSTONE: 2 types - 30% Type 1, loose, medium to very coarse grained, well sorted, rounded to well rounded, clear to milky quartz grains. Excellent visible porosity, no shows. 70% Type 2, silica and rare dolomite cemented quartz aggregates. Grains are very fine to medium grained, well sorted, subangular to subrounded with strong white crystalline silica and rare buff dolomite cements. Trace dull yellow mineral fluorescence from dolomite cement. Very poor to no visible porosity, no shows.
	trace	COAL: black, hard, brittle, silty, commonly associated with pyrite.
3005-3010m	90	SILTSTONE: as above.
	10	SANDSTONE: as above.
3010-3011m	90	SILTSTONE: as above.
	10	SANDSTONE: as above.
3011-3015m	60	SILTSTONE: as above.
	30	SANDSTONE: as above.
	10	COAL



3015-3020m	50	SILTSTONE: pale brown to dark grey, predominantly argillaceous to carbonaceous in part, water sensitive, common carbonaceous flecking, grading in part to very fine sandstone.
	50	SANDSTONE: buff to light to dark grey, fine to occasionally medium grained, rounded quartz grains, in a predominantly silica to occasionally kaolinitic cement; occasionally carbonate matrix reacting with HCl; minor yellow mineral fluorescence, trace dull yellow crushed fluorescence - no cut. Poor to no visible porosity, occasionally clear, opaque, loose, coarse, rounded quartz grains with no shows; good porosity.
3020-3025m	50	SANDSTONE: increasing percentage, up to 20% yellow gold fluorescence with no crush cut obtainable; otherwise as above.
	50	SILTSTONE: as above.
3025-3030m	70	SILTSTONE: becoming increasingly carbonaceous and shaley, otherwise as above.
	30	SANDSTONE: as above.
3030-3035m	60	SILTSTONE: as above.
	30	SANDSTONE: as above.
	10	COAL: as above.
3035-3037m	70	SANDSTONE: as above, occasional pyrite.
	30	SILTSTONE: as above, micromicaceous in part.
3037-3040m	50	SANDSTONE: buff to light grey, argillaceous to carbonaceous, commonly siliceous, very fine to fine grained, subangular to subrounded, sandy in part, poorly sorted, 10% dull yellow fluorescence with no associated cut, poor visible porosity.
	50	SILTSTONE: light to dark brown to grey, carbonaceous flecks, water sensitive, grading in part to very fine sandstone, no shows.
3040-3045m	70	SILTSTONE: as above.
	30	SANDSTONE: as above, occasional pyrite.
3045-3050m	60	SANDSTONE: white to buff, fine to medium grained, subangular to subrounded, predominantly silica cemented, occasionally kaolinitic, in carbonaceous matrix, occasional carbonaceous flecking. Trace pyrite. Trace very coarse grained, angular to well rounded quartz grains. 20% yellow fluorescence with no associated cut.
	40	SILTSTONE: as above, micromicaceous in part.
3050-3055m	60	SANDSTONE: white, buff, sucrosic, mainly fine grained, subrounded quartz in a siliceous slightly dolomitic cement, minor pyrite, occasionally carbonaceous fleckings, fair sorting, fair visible porosity. Common pale grey, fine to medium grained, subrounded to subangular quartz in a siliceous cement with a siltstone matrix. Slightly dolomitic, kaolinitic, becoming increasingly argillaceous with carbonaceous laminae and flecks in part.

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3050-3055m cont'd		Overall 30% yellow to gold fluorescence with no extractable crush cut, with possible yellow mineral fluorescence.
	40	SILTSTONE: pale to dark brown, commonly carbonaceous with argillaceous laminae scattered throughout. Micromicaceous, firm, grading in part to very fine sandstone. No shows. Occasionally coarse angular pyrite cubes.
3055-3060m	20	SANDSTONE: as above.
	80	SILTSTONE: as above, becoming increasingly shalier.
3060-3065m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3065-3070m	20	SANDSTONE: light grey, fine to very fine grained quartz, argillaceous matrix, carbonaceous flecking in part. Kaolinitic in part, slightly calcareous cement, 20% dull yellow fluorescence; no cut.
	80	SILTSTONE: light grey brown to brown, sandy in part, micromicaceous, friable, flecky in part, trace pyrite, carbonaceous inclusions.
3070-3075m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
3075-3080m	50	SANDSTONE: as above.
	50	SILTSTONE: as above.
3080-3085m	50	SANDSTONE: 4 types - Type 1, varicoloured, pale orange to brown, beige, buff Bimodal, medium to coarse grained, subangular to subrounded in a predominantly dolomitic cement (reacting with both HCl and Alizarin red) with associated yellow mineral fluorescence and hydrocarbon yellow fluorescence from possible brown oil residue. 30% calcimetry. Tight, no visible porosity, firm. Type 2, buff to very light grey to clear to opaque, medium subrounded to subangular quartz grains, in a mainly siliceous cement, fair sorting, no visible porosity, no shows. Type 3, smokey opaque, well rounded to rounded quartz pebbles, tight, no shows. Type 4, white, very fine to fine grained, subrounded quartz in a dominantly siliceous sandy matrix. Good sorting, no visible porosity, with yellow gold fluorescence. Note: in samples with yellow gold fluorescence a very pale white halo ring is left after the chloroethane has evaporated - residual dead oil (with no associated crushed cut).
	50	SILTSTONE: brown to light grey, carbonaceous, pyrite in part, sandy, friable, blocky to flakely in part, micromicaceous, tight, no visible porosity and no shows, occasional pyrite inclusions.
3085-3090m	50	SANDSTONE: as above, calcimetry.
	50	SILTSTONE: as above.

3090-3095m	30	SANDSTONE: 2 types - Type 1, sandstone with associated yellow mineral fluorescence with no hydrocarbon indications otherwise as above. Type 2, sandstone with predominantly bright blue to white fluorescence with fast milky white cut, otherwise as above.
	70	SILTSTONE: as above.
3095-3100m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
3100-3105m	30	SANDSTONE: 3 types - Type 1, clear to beige to buff, rounded to subrounded, fairly sorted, medium to fine grained bimodal siliceous, dolomitic cemented (reacted with HCl and Alizeran red) with associated mineral fluorescence. Tight, no visible porosity, no shows.
		Type 2, clear to light buff, medium to coarse quartz sand, subrounded to subangular, bimodal, fairly sorted, siliceous cement. No visible porosity. Tight. White fluorescence, positive milky chloroethane cut, slow speed.
		Type 3, clear to opaque, coarse to very coarse grained quartz fragments, well rounded, tight, no shows.
	70	SILTSTONE AND SHALY SILTSTONE: pale grey to brown, carbonaceous, blocky (sandy) and tabular (shaly), very fine to fine sand and silt. Hardness is friable to soft. Inclusions, minor pyrite and carbonaceous matter. Tight. Minor interbeds of very fine grained to fine grained chloritic siltstone - tight, fairly well sorted, no visible porosity, no shows.
3105-3110m	30	SANDSTONE: as above. Type 1, slightly more active in HCl, possibly some calcite. Pyrite more common accessory.
		Type 2, slow milky cut.
	70	SILTSTONE: as above, less shaly, more lighter coloured siltstone and sandy siltstone fraction.
3110-3115m	20	SANDSTONE: as above. Type 1, HCl positive. Type 2, slow milky cut.
	80	SILTSTONE: as above, less shaley component. Still carbonaceous and minor pyrite.
3115-3120m	20	SANDSTONE: 3 types present as above. Minor fluorescence, both white and yellow mineral fluorescence.
		Type 1, strong to medium HCl response, dolomite/calcite cement.
		Type 2, slow milky cut.
	80	SILTSTONE: pale grey to brown, carbonaceous, friable (blocky), very fine to fine grained sand and silt. Well rounded to rounded, moderately sorted grains with micaceous cement. Accessory carbonaceous flakes and pyritic aggregates. Tight, no visible porosity, no shows.

3120-3125m	10	SANDSTONE: Types 1 and 2. Trace Type 3. Type 1, clear to beige to buff, fine to medium grained, subrounded bimodal sand. Fairly sorted with dolomitic - possibly calcitic cement (confirmed by HCl, A.Z. test on yellow mineral fluorescing samples). Tight, no visible porosity, no shows. Type 2, clear to light buff, fine grained, subrounded to subangular bimodal sand. Fairly sorted siliceous cement. Tight, no visible porosity, slow milky cut from white fluorescing samples. Minor pyrite with this type. Type 3, clear to semi-opaque, coarse to very coarse quartz fragments, well rounded, tight, no shows.
	90	SILTSTONE AND SHALY SILTSTONE: pale grey to grey and brown, carbonaceous and tabular, very fine to fine sand and silt. Well rounded to rounded, moderately sorted grains with micaceous cement. Accessory carbonaceous flakes and minor pyrite, tight, no visible porosity, no shows.
3125-3130m	5	SANDSTONE: Types 1 and 2 as above. Much less than 5% of total sample fluoresced. Equal amounts of white and dull yellow fluorescence. Type 1, good reaction to HCl and Azarian red. No visible porosity, no shows. Type 2, slow to moderate milky cut, some cement appears kaolinitic, no visible porosity.
	95	SILTSTONE AND SHALY SILTSTONE: as above, with more shale component, trace coal.
3130-3135m	5	SANDSTONE: as above. Including fluorescence and slow milky cut.
	95	SILTSTONE AND SHALY SILTSTONE: as above.
3135-3140m	5	SANDSTONE: as above. Still the two fluorescent types though total about 1% of sample. White fluorescent sand (Type 2) still shows slow milky cut.
	95	SILTSTONE AND SHALE: as above, plus about 10% of coal.
3140-3145m	10	SANDSTONE: Types 1 and 2 as above - less than 5% fluorescence, both types - very slow faint milky cut of the white fluorescent sand (Type 2).
	90	SILTSTONE AND SHALE: as above, trace coal, trace pyrite.
3145-3150m	10	SANDSTONE: as above.
	90	SILTSTONE: as above.
3150-3155m	10	SANDSTONE: as above.
	90	SILTSTONE: as above.
3155-3160m	40	SANDSTONE: as above.
	30	SILTSTONE: as above.
	30	COAL: black, vitreous, blocky, firm.

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3160-3165m	20	SANDSTONE: white, buff to light grey, fine to occasionally medium grained, rounded quartz aggregates in a dominantly siliceous cement, within a kaolinitic siltstone matrix. Fair sorting, friable and water sensitive (clay fraction), no visible porosity, no shows. Trace dark orange brown, medium grained, subangular to subrounded, well cemented quartz aggregates. Tight, firm, poor sorting with bright white fluorescence with associated instantaneous white milky cut. Occasional buff to pale brown, fine grained, subangular to subrounded quartz aggregates, in a dominantly partly calcitic-dolomitic cement within an argillaceous matrix, firm, poor sorting, no visible porosity, yellow dull mineral fluorescence with no associated cut.
	40	SILTSTONE: pale to dark brown to grey, argillaceous with common carbonaceous black filaments scattered throughout, grading in part to very fine to fine grained, subrounded sandstone, often micromicaceous with minor pyrite. Tight. No shows.
	40	COAL: black, vitreous, blocky, preferential fracture, conchoidal fracture in part.
3165-3170m	50	SANDSTONE: as above.
	50	SILTSTONE: as above.
	trace	COAL: as above.
3170-3175m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
	trace	COAL
3175-3180m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
	trace	COAL
3180-3185m	30	SANDSTONE: as above, more friable with a lot of individual grains and grain aggregates in sample.
	70	SILTSTONE: as above.
	trace	COAL
3185-3190m	20	SANDSTONE: white to very light grey, friable (water sensitive), rounded to subrounded fine grained, moderately sorted kaolinitic cemented sand. No visible porosity, no shows. Buff to light brown, fine grained, subrounded to subangular quartz aggregates in calcitic-dolomitic cement, firm, hard. Minor carbonaceous and pyritic accessories. No visible porosity. Dark yellow mineral fluorescence, positive HCl test. No shows. Trace white to opaque, hard, rounded to subangular, coarse grained quartz fragments. No visible porosity, no shows. Trace white, friable, subrounded to subangular, fine to medium grained, moderately sorted, silica cemented quartz sand. No visible porosity, mild white fluorescence, no cut.
	80	SILTSTONE: pale to dark brown and grey, firm to friable, argillite with very fine grained, well rounded sands, moderately well sorted. Minor pyrite and carbonaceous matter. No visible porosity, no shows.
	trace	COAL

3190-3195m	10	SANDSTONE: as above.
	90	SILTSTONE: pale grey, firm, siliceous to calcareous, pale brown, argillaceous with common fine, black, carbonaceous filaments scattered throughout. Tight, no shows.
3195-3200m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
3200-3205m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3205-3210m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3210-3215m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3215-3220m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3220-3225m	10	SANDSTONE: white to very light grey, firm to hard, rounded to subrounded, fine grained, moderately sorted, siliceous cemented. No visible porosity, no shows. Buff to light brown, firm, subrounded to subangular, fine grained, fairly sorted quartz aggregates in calcite-dolomite cement, minor trace carbonaceous, argillaceous and pyritic accessories. No visible porosity, fluorescence - dull yellow, positive HCl and Alazarian red test. No shows.
	90	SILTSTONE: pale to dark brown and grey, firm to friable argillite, with very fine grained well rounded sands. Common carbonaceous filaments. Note: some of the grey fragments appear to have a calcitic cement - positive reaction to HCl and Alazarian red. Carbonate cement less than 50%. No visible porosity, no shows.
	trace	COAL
3225-3230m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
3232m		Grab Sample
	20	SANDSTONE: as above.
3232.5-3235m	80	SILTSTONE: as above.
	20	SANDSTONE: as above, trace pyrite.
	70	SILTSTONE: as above.
3235-3240m	10	COAL: black, vitreous, blocky preferential fracture, conchoidal fracture. About 1% of sample is brown, translucent, soft to brittle, blocky conchoidal fracture. Strong white fluorescence, instantaneous white cut. Possibly a waxy exinite.
	70	SILTSTONE: light grey to medium dark grey and brown, firm to moderately hard, argillaceous, slightly micaceous, slightly to very carbonaceous, dominantly non calcareous, sandy.

3235-3240m cont'd	25	SANDSTONE: fine grained, well rounded to subangular, moderately well sorted quartz grains set in dominantly silica and minor calcareous cements. Hard, white crystalline cements with 5% moderately bright yellow mineral fluorescence from calcareous cement. No visible porosity, no shows.
	5	COAL: black, hard, brittle, conchoidal fracture, vitreous.
3240-3245m	20	SANDSTONE: as above.
	75	SILTSTONE: as above.
	5	COAL: as above.
3245-3250m	20	SANDSTONE: as above.
	75	SILTSTONE: as above.
	5	COAL: as above.
3250-3255m	25	SANDSTONE: as above.
	75	SILTSTONE: as above.
	trace	COAL
3255-3260m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above, with trace mineral fluorescence. No shows.
	trace	COAL: as above.
3260-3265m	95	SILTSTONE: light grey to medium dark grey and brown, argillaceous, carbonaceous, firm to soft, slightly water sensitive, dominantly non calcareous, slightly sandy in part, slightly micaceous.
	5	SANDSTONE: fine grained, well sorted, subangular to rounded, quartz grains set in strong white silica and rare buff calcite cements. Minor carbonaceous material and mica in matrix, very poor to no visible porosity, no shows.
	trace	COAL: black, hard, conchoidal fracture, rare exinite.
3265-3270m	95	SILTSTONE: as above.
	5	SANDSTONE: as above, rare loose, medium to coarse grained, well rounded, clear to milky quartz grains. Probably cavings. No shows.
	trace	COAL: as above.
3270-3275m	95	SILTSTONE: as above.
	5	SANDSTONE: as above, with minor moderately bright to dull yellow mineral fluorescence from calcite cement. No shows.
	trace	COAL: as above with 2 cuttings of exinite giving fluorescence and cut.
3275-3280m	90	COAL: as above, black, shiny, hard.
	5	SANDSTONE: as above, with mineral fluorescence as above.
	5	SILTSTONE: as above.
3280-3285m	10	SANDSTONE: as above.
	20	COAL: as above.
	70	SILTSTONE: as above, sandy fraction (very fine grained sand) abundant.

3285-3290m	10	SANDSTONE: white to pale buff to light brown, hard to firm, fine to very fine grained, rounded, well to moderately sorted sands. Siliceous and carbonate matrix (positive HCl test and yellow mineral fluorescence), trace pyrite, no visible porosity, no shows.
	60	SILTSTONE: dark brown to grey, argillaceous to carbonaceous siltstone with very fine grained sandy fraction. Non calcareous, soft to friable, water sensitive. No visible porosity, no shows.
	30	COAL: black, hard to very hard, conchoidal fracture, tabular fracture in one direction, no exinite.
3290-3295m	20	SANDSTONE: as above.
	60	SILTSTONE: as above.
	20	COAL: as above.
3295-3300m	20	SANDSTONE: as above.
	50	SILTSTONE: as above.
	30	COAL: as above.
3300-3305m	15	SANDSTONE: as above.
	50	SILTSTONE: as above.
	35	COAL: as above.
3305-3310m	25	SANDSTONE: as above, accessory pyrite nodules.
	65	SILTSTONE: as above.
	10	COAL: as above.
3310-3315m	35	SANDSTONE: as above, with white, medium grained, rounded to moderately well sorted sand. Siliceous cement, no visible porosity, no shows.
	55	SILTSTONE: as above.
	10	COAL: as above.
3315-3320m	40	SILTSTONE: light grey to medium dark grey, occasionally brown, argillaceous, sandy, slightly to very carbonaceous, soft to firm, slightly water sensitive, dominantly non calcareous.
	40	COAL: black, hard, brittle, conchoidal fracture, trace exinite giving fluorescence and cut.
	20	SANDSTONE: very fine grained to occasionally medium grained, moderately well sorted, subangular to well rounded quartz grains set in strong white silica cement, rare moderately bright to dull yellow fluorescing dolomite/calcite cement. No visible porosity, no shows.
3320-3325m	70	SILTSTONE: as above.
	25	SANDSTONE: as above, with trace of moderately bright to dull white/yellow mineral fluorescence associated with rare calcareously cemented aggregates, no visible porosity, no shows.
	5	COAL: as above.



3325-3330m	30	SILTSTONE: as above.
	40	SANDSTONE: 2 types - 70% Type 1, very fine grained to occasionally medium grained cemented aggregates as above. 30% Type 2, loose, fine to medium grained, subangular to subrounded, moderately well sorted, clear to milky quartz grains. Moderate visible porosity, commonly heavy white clay matrix.
	20	CLAYSTONE: white, soft to firm kaolinitic cuttings. Carbonaceous, silty and argillaceous impurities.
	10	COAL: as above. Shows: 10% moderately bright yellow mineral fluorescence from calcareous and silica cemented sandstone. 20% dull to moderately bright blue/white fluorescence from claystone and clay rich sandstone. Absolutely no streaming cut, very slow, very weak dull yellow/white crush cut. Associated with approximately 30 units drill gas, dominantly C <sub>1</sub> - possibly gas or light oil.
3330-3335m	70	SILTSTONE: light grey to medium dark grey, carbonaceous, argillaceous, sandy, slightly micromicaceous in part, firm to soft, water sensitive, dominantly non calcareous.
	20	COAL: black, hard, brittle, conchoidal fracture.
	5	SANDSTONE: dominantly cemented aggregates of very fine to occasionally medium grained, subangular to rounded, well sorted, quartz grains. Hard strong silica cement. 5% moderately bright yellow/white fluorescence from aggregates. Very weak moderately bright yellow white slow streaming cut from several cuttings. Weak slow diffuse crush cut, (dull yellow white). No brown oil staining but a yellow fluorescent ring left in bowl after cuttings. Probably an oil show.
	5	CLAYSTONE: white, kaolinitic, sandy, common carbonaceous impurities, soft, rounded cuttings. Gives 5% moderately bright to dull blue white fluorescence. No strong cut. Very weak slow diffuse crush cut. Probably an oil show.
3335-3340m	85	SILTSTONE: as above.
	10	COAL: as above.
	5	SANDSTONE: as above, with trace moderately bright yellow-white fluorescence, no streaming cut, weak, diffuse, dull yellow-white crush cut. Common white clay matrix grading to sandy claystone. Hydrocarbon cuttings probably cavings from hydrocarbon sand above.
3340-3345m	95	SILTSTONE: light brown to dark brown to occasionally light grey, slightly to very carbonaceous, firm to moderately hard, argillaceous, non calcareous, slightly micromicaceous.

3340-3345m cont'd	5	<p>SANDSTONE: silica and rare calcareous cemented aggregates of very fine to medium grained, well sorted, subangular to rounded quartz grains. Minor white clay and mica in matrix. Very poor to no visible porosity. Trace spotty moderately bright yellow mineral/hydrocarbon fluorescence. No streaming cut. Very slow dull diffuse yellow crush cut. Probably cavings. Trace pyrite cemented fine grained aggregates.</p>
	trace	<p>COAL: black, hard, brittle, silty, conchoidal fracture.</p>
3345-3348m		Spot Sample
	70	SILTSTONE: as above.
	15	CLAYSTONE: 5% fluorescence - moderately bright blue white, gives no streaming cut but weak diffuse dull white crush cut.
	10	SANDSTONE: from silica cemented aggregates as above. Trace moderately bright yellow/white fluorescence. No streaming cut, weak diffuse dull white crush cut.
	5	COAL: as above.
3348-3350m		
	90	SILTSTONE: as above.
	10	SANDSTONE: clay rich grading to sandy claystone, as above. 5% moderately bright white fluorescence, very slow diffuse streaming cut, weak diffuse dull white crush cut. No obvious oil stain.
	trace	COAL: as above.
3350-3355m		
	50	SILTSTONE: light to dark brown, occasionally grey, firm to moderately hard, argillaceous, slightly to very carbonaceous, non calcareous, slightly micromicaceous, occasionally sandy.
	40	COAL: black, hard, brittle, conchoidal fracture.
	10	SANDSTONE: dominantly silica cemented aggregates of fine to occasionally medium grained, well sorted, subangular to well rounded quartz grains. Strong white to clear silica cement and/or clay matrix. 5% moderately bright to dull yellow/white fluorescence. No streaming cut. Moderately fast, moderately bright yellow/white crush cut. Very poor to no visible porosity.
3355-3360m		
	10	SANDSTONE: as above, 5% hydrocarbon fluorescence with very slow cut, no visible porosity.
	45	SILTSTONE: as above.
	45	COAL: as above.
3360-3364m		
	10	SANDSTONE: as above, some (5%) very slow milky cut from sandy kaolinitic claystone. No visible porosity.
	60	SILTSTONE: as above.
	30	COAL: as above.

3364-3370m	90	SILTSTONE: light grey to brown, argillaceous, micaceous, slightly carbonaceous, slightly sandy. Light grey siltstone is moderately calcareous, firm to moderately hard, slightly water sensitive.
	5	SANDSTONE: dominantly silica cemented aggregates of fine to medium grained, well sorted quartz grains. Minor kaolinite and carbonaceous material in matrix. No visible porosity. Trace moderately bright yellow mineral fluorescence. No hydrocarbon fluorescence or cut.
	5	COAL: black, hard, brittle, silty.
3370-3375m	85	SILTSTONE: as above.
	10	SANDSTONE: as above. 5% moderately bright yellow/white fluorescence. Slow moderately bright yellow/white to no streaming cut, very slow to slow, moderately bright milky white crush cut. Leaves fluorescent residue. An oil show. No visible porosity.
	5	COAL: as above.
3375-3380m	90	SILTSTONE: as above.
	5	SANDSTONE: as above with trace pyrite cemented fine grained sandstone aggregates. 5% moderately bright yellow/white fluorescence. Slow to no dull milky white streaming cut. Weak, dull milky white crush cut. Leaves light fluorescent residue.
	5	COAL: as above.
3380-3385m	90	SILTSTONE: as above.
	5	SANDSTONE: as above. 5% moderately bright yellow/white fluorescence. Slow, diffuse, dull milky white crush cut only. Leaves fluorescent residue. Tight oil show.
	5	COAL: as above.
3385-3389m	65	SILTSTONE: as above.
	30	SANDSTONE: 20% hydrocarbon fluorescence. No stream cut, weak diffuse crush cut.
	5	COAL: as above.
3389-3407m		See Core Description No. 1
3407-3410m	60	SANDSTONE: 2 types - 60% Type 1, very fine to medium grained, well sorted, subangular to subrounded quartz aggregates with moderately strong silica and calcareous cements. Dull orange mineral fluorescence and trace moderately bright yellow hydrocarbon fluorescence. No streaming cut, very slow milky white crush cut. Very poor to no visible porosity. 40% Type 2, medium to very coarse grained, angular to subrounded, moderately well sorted milky white quartz grains set in strong, milky white to clear crystalline silica cement. No to very poor visible porosity, 5% spotty moderately bright yellow/white hydrocarbon fluorescence, no streaming cut, very slow milky white crush cut. Coarse grained sandstone. Type 2 is new.

3407-3410m cont'd	25	SILTSTONE: light grey to brown, firm, argillaceous, slightly to moderately carbonaceous with common carbonaceous laminations, slightly micromicaceous.
	15	COAL: black, hard, brittle, silty in part, conchoidal fracture.
3410-3415m	70	SILTSTONE: as above.
	25	SANDSTONE: 70% Type 1, as above. 30% Type 2, as above. 5% hydrocarbon fluorescence, dominantly associated with Type 1, as above. No streaming cut, weak, slow milky white crush cut.
	5	COAL: as above.
3415-3420m	10	SANDSTONE: 80% Type 1, as above. 20% Type 2, as above. 5% hydrocarbon fluorescence associated dominantly with Type 1. No streaming cut, slow white milky crush cut. No visible porosity.
	85	SILTSTONE: as above, and 5% grey-green, very fine grained siltstone with possible marine fossils?
	5	COAL: as above.
3420-3425m	20	SANDSTONE: 2 types - 95% Type 1, white to buff to light grey, friable to firm, fine to medium grained, subangular to subrounded, moderately sorted quartz aggregates with silica and calcareous cement. Accessory pyrite. Very poor to no visible porosity. Dull yellow mineral fluorescence and bright yellow white hydrocarbon fluorescence, no streaming cut. Slow milky white crush cut.
	80	5% Type 2, white to clear to opaque, coarse to very coarse grained, rounded to well rounded, moderately sorted quartz fragments/aggregates with silica cement. No visible porosity. Only minor, light yellow/white hydrocarbon fluorescence, no streaming cut. Slow milky crush cut. Total fluorescence is approximately 15%
	trace	SILTSTONE: light grey to brown to dark brown argillaceous siltstone and sandy siltstone. Carbonaceous filaments common, micromicaceous. Trace grey green siltstone. COAL
3425-3430m	15	SANDSTONE: as above (10-15% fluorescence).
	65	SILTSTONE: as above.
	20	COAL: as above.
3430-3434m	60	SANDSTONE: 2 types - 60% Type 1, very fine to occasionally medium grained, moderately well sorted, subangular to rounded, white to buff quartz aggregates. Moderately strong to weak silica and calcareous cements. Common lithic fragments and carbonaceous inclusions. Poor to very poor visible porosity. 40% Type 2, fine to dominantly medium grained, subrounded to dominantly angular, clear loose quartz grains. Good visible porosity, provided that it is not cemented subsurface, medium to coarse grains are occasionally found cemented in Type 1 aggregates.

3430-3434m cont'd

Shows: 50% moderately bright to bright yellow/white fluorescence associated dominantly with Type 1 aggregates. Occasionally slow, moderately bright milky white streaming cut, good moderately bright milky white crush cut. Common light brown oil staining. Small gas bubbles observed coming from tighter Type 1 sandstone aggregates for 20 minutes after recovered.

30 SILTSTONE: light grey to brown to medium dark grey, argillaceous, slightly to very carbonaceous grading to silty coal. Slightly calcareous in part, slightly micromicaceous. Gas bubbles seen from sandy siltstone cuttings for 20mins after recovery.

10 COAL: black, hard, brittle, conchoidal fracture, silty in part.

3434-3452m

See Core Description No. 2

3452-3455m

90 SILTSTONE: very light grey to medium dark grey. Moderately hard to hard, micromicaceous, argillaceous, slightly to moderately carbonaceous, non calcareous to moderately calcareous, sandy in part.

5 SANDSTONE: dominantly silica and calcareous cemented aggregates of fine grained, subangular to well rounded, well sorted quartz grains. Poor to no visible porosity. 5% moderately bright yellow/white fluorescence, slow dull milky white crush cut. Rare loose medium to coarse grained, subangular to subrounded milky white to clear quartz grains.

5 COAL: black, hard, vitreous, brittle, conchoidal fracture.

3455-3460m

50 SILTSTONE: as above.

30 COAL: as above.

20 SANDSTONE: as above, with 5% hydrocarbon fluorescence as above.

3460-3465m

5 SANDSTONE: white to buff, very fine to fine grained, friable, subrounded to subangular, moderately sorted siliceous cemented quartz aggregates. Trace pyrite. No visible porosity. Bright yellow fluorescence - slow milky cut.

90 SILTSTONE: very light grey to grey to brown. Moderately hard to water sensitive, micromicaceous, argillaceous siltstone. Slightly carbonaceous and chloritic. No calcitic or calcareous cement noted. Sandy interbeds.

5 COAL: as above.

3465-3470m

85 SILTSTONE: medium light grey to dark grey and occasionally light brown, soft to firm, angular, platy and occasionally subfissile cuttings. Argillaceous, micromicaceous in part, carbonaceous in part, occasionally sandy.

10 COAL: black, hard, brittle, vitreous, occasionally slightly silty.

3465-3470m cont'd	5	<p>SANDSTONE: fine to very fine grained, subangular to subrounded, moderately well sorted quartz in a firm, silica and occasionally slightly calcitic dolomite cemented aggregates. Very poor to no visible porosity. Occasionally slightly silty, occasional carbonaceous matter. Trace dull deep yellow dolomite mineral fluorescence, no shows.</p>
	trace	<p>BRYOZOA: calcareous fossils, occasionally with deep yellow mineral fluorescence, probably cavings.</p>
	trace	<p>QUARTZ: medium to coarse grained, loose, subangular to rounded. Probably cavings.</p>
3470-3475m	75	<p>SILTSTONE: as above, occasionally moderately hard, occasional carbonaceous laminations and slightly calcareous.</p>
	20	<p>COAL: as above.</p>
	5	<p>SANDSTONE: as above. Occasionally medium grained and rounded, greenish black glauconite grains, moderately hard in part. Very poor to no visible porosity. Trace dull deep yellow mineral fluorescence. Trace (1 cutting) slow light yellow crush cut.</p>
3475-3480m	5	<p>SANDSTONE: as above.</p>
	70	<p>SILTSTONE: as above.</p>
	25	<p>COAL: as above.</p>
3480-3485m	50	<p>SILTSTONE: as above, dark grey to greyish black and very carbonaceous in part.</p>
	45	<p>COAL: black, blocky, trace platy with conchoidal fracture, silty in part grading to greyish black, carbonaceous siltstone.</p>
	5	<p>SANDSTONE: as above, trace dolomitic mineral fluorescence as above. No visible porosity, no shows.</p>
	trace	<p>QUARTZ: coarse, subrounded, loose quartz. Probably cavings.</p>
3485-3490m	60	<p>SILTSTONE: light grey to dark grey, soft to firm, angular to platy, argillaceous, carbonaceous in flecks and occasionally laminated, especially in dark grey cuttings. Slightly sandy.</p>
	35	<p>COAL: black, hard, brittle, vitreous, occasionally very silty and greyish black.</p>
	5	<p>SANDSTONE: very fine to fine and occasionally medium grained, moderately well sorted, translucent, subrounded quartz in firm to hard, silica cemented aggregates. No visible porosity. No shows. Trace dolomite cement and mineral fluorescence as above.</p>
	trace	<p>QUARTZ: coarse, subangular to subrounded, translucent, loose quartz. No shows.</p>
	trace	<p>PYRITE: microcrystalline aggregates.</p>
3490-3495m	45	<p>SILTSTONE: as above.</p>
	45	<p>COAL: as above. Trace bright yellow white fluorescence associated with coal and kerogen. Very slow bright yellow white crush cut.</p>
	10	<p>SANDSTONE: as above. Occasionally soft, poor visible porosity. No shows. Trace dolomite mineral fluorescence as above.</p>
	trace	<p>QUARTZ: coarse quartz as above, no shows.</p>

3495-3500m	10	SANDSTONE: as above.
	60	SILTSTONE: as above and brown, firm, argillaceous and carbonaceous, micromicaceous siltstone, trace pyrite.
	30	COAL: as above.
3500-3505m	10	SANDSTONE: as above, trace fluorescence, no shows, no visible porosity.
	45	SILTSTONE: as above.
	45	COAL: as above.
3505-3510m	15	SANDSTONE: as above.
	50	SILTSTONE: as above.
	35	COAL: as above.
3510-3515m	10	SANDSTONE: as above.
	65	SILTSTONE: as above.
	25	COAL: as above.
3515-3520m	20	SANDSTONE: as above, trace fluorescence, slow cut.
	70	SILTSTONE: as above.
	10	COAL: as above.
3520-3525m	40	COAL: black to greyish black, hard, brittle, occasionally pyritic and slightly silty. Vitreous, blocky, occasionally conchoidal fracture.
	55	SILTSTONE: light grey to dark grey, rounded to platy cuttings. Argillaceous, slightly carbonaceous to carbonaceous in part, occasionally sandy, pyritic, slightly calcareous when light grey.
	5	SANDSTONE: 2 types - 100% Type 1, fine to medium to very fine grained, moderately well sorted, subangular to subrounded quartz in moderately hard, rounded aggregates. White to translucent silica and minor dolomitic cement. No visible porosity. Dolomitic cement has bright to dull deep yellow mineral fluorescence. No shows. Trace pyrite cement. Trace Type 2, medium to coarse grained, subangular, translucent loose quartz. Excellent visible porosity. No shows.
	trace	PYRITE: microcrystalline aggregates.
3525-3530m	85	SILTSTONE: as above.
	10	COAL: as above.
	5	SANDSTONE: 100% Type 1, as above, trace dolomite mineral fluorescence as above. Dolomitic cement occasionally buff coloured. No visible porosity. No shows. Trace Type 2, as above, excellent visible porosity, no shows.
3530-3535m	70	SILTSTONE: as above.
	30	COAL: as above.
	trace	SANDSTONE: dominantly fine grained, silica cemented, firm, very poor to no visible porosity, with minor pyrite cemented. No shows. Otherwise as above.

3535-3540m	80	SILTSTONE: dominantly medium dark grey to dark grey and non calcareous. Otherwise as above.
	20 trace	COAL: as above. SANDSTONE: Type 1, as above, no shows. Type 2, subrounded, coarse, loose quartz with trace dolomite mineral fluorescence as cement. No shows.
3540-3545m	30	COAL: black to greyish black, blocky to platy, dull, generally silty, grading to very carbonaceous siltstone.
	70	SILTSTONE: medium light grey, trace dominantly dark grey, firm, occasionally platy cuttings. Slightly argillaceous, very carbonaceous when dark grey, minor sand.
	trace	SANDSTONE: very fine to fine grained, subrounded to subangular, friable, well sorted aggregates. Very poor visible porosity, silica cement, slightly carbonaceous. No shows.
3545-3550m	25	COAL: as above.
	75	SILTSTONE: as above.
	trace	SANDSTONE: as above, partly medium grained. No shows. Very poor visible porosity.
3550-3553.6m	70	SILTSTONE: as above.
	20	COAL: as above.
	10	SANDSTONE: 2 types - 60% Type 1, medium to occasionally fine and coarse grained, moderately well sorted, subangular to subrounded quartz in moderately hard silica and minor dolomite cemented aggregates. No visible porosity. Cement is white and buff. Trace yellow mineral fluorescence (dolomite). Trace (4 cuttings) gave slow diffuse yellow crush cut. 40% Type 2, medium to coarse grained, subangular to subrounded, moderately well sorted, translucent loose quartz. Excellent visible porosity, no shows.
3553.6-3555m	60	SILTSTONE: as above.
	20	COAL: as above.
	20	SANDSTONE: 2 types - 50% Type 1, medium to coarse grained, subangular to subrounded, translucent, well sorted quartz in friable to moderately hard, white, silica cemented aggregates. No to poor visible porosity. 5% yellow fluorescence with slow, yellow/white crush cut. 50% Type 2, medium to coarse grained, subangular to subrounded, translucent, well sorted, loose quartz. Excellent visible porosity, no shows.
3555-3558.5m	80	SANDSTONE: 2 types - 60% Type 1, medium to very coarse grained, translucent, well sorted, subangular to subrounded quartz in friable to moderately hard white silica and minor dolomite cemented aggregates. Poor to no visible porosity. 10% dolomite mineral fluorescence as above. 10% dull yellow fluorescence with no streaming but diffuse, slow, weak, yellow/white crush cut leaving dull yellow/white ring residue.



3555-3558.5m cont'd		40% Type 2, as above, excellent visible porosity. No shows.
	15	SILTSTONE: as above.,
	5	COAL: as above.
3558.5-3560m	70	SANDSTONE: 70% Type 1, dominantly fine to medium grained, otherwise as above. 10% dolomitic mineral fluorescence as above. Poor to no visible porosity.
		30% Type 2, as above, excellent visible porosity, no shows.
	25	SILTSTONE: as above.
	5	COAL: as above.
		Ran logs. Set 9-5/8 inch casing at 3562m.
3560-3565m	60	CEMENT
	30	SILTSTONE: medium grey to medium dark grey, firm to occasionally moderately hard, blocky, subrounded to rounded cuttings, carbonaceous.
	10	COAL: black, firm, brittle, vitreous.
		Drilled to 3567m. Ran Phase II PIT.
3565-3570m	20	COAL: black, firm, angular cuttings, vitreous.
	10	SILTSTONE: medium dark grey to dark grey, firm, subrounded to subangular blocky cuttings, carbonaceous to very carbonaceous in parts.
	70	SANDSTONE: 2 types - Type 1, loose quartz; translucent, medium to coarse grained, moderately well sorted, subangular, no shows. Type 2, quartzose aggregates; very light grey, friable to moderately hard, fine to medium grained, occasionally coarse, subangular to subrounded, moderately well sorted to well sorted in parts, dolomite cement, very poor to no visible porosity. 20% dull gold mineral fluorescence, trace moderately bright white to spotty white fluorescence with slow, weak, white, streaming to diffuse cut.
3570-3575m	90	SILTSTONE: medium light grey to medium dark grey, firm to moderately hard, dolomitic in parts, otherwise as above.
	10	SANDSTONE: Type 1, as above.
		Type 2, with occasional carbonaceous inclusions, otherwise as above.
	trace	COAL: as above.
3575-3580m	70	SILTSTONE: as above and grading to carbonaceous shale in parts.
	30	SANDSTONE: predominantly Type 1, loose quartz; as above, and occasionally very coarse grained. Type 2, aggregates; as above, with 10% mineral fluorescence, no shows.
3580-3585m	70	SILTSTONE: as above, and becoming very carbonaceous in parts - grading to "dirty" coal in parts.
	20	COAL: black, firm; angular to subangular cuttings, vitreous in parts, predominantly subvitreous to earthy. Grades from a very carbonaceous siltstone.

3580-3585m cont'd	10	SANDSTONE: Type 1, loose quartz; as above. Predominantly Type 2, aggregates; very light grey, friable, very fine to coarse grained, predominantly very fine to medium grained, subrounded, moderately well sorted to well sorted, dolomite cement and carbonaceous inclusions. Very poor to no visible porosity. Trace, very dull mineral fluorescence, no shows.
3585-3590m	90	SILTSTONE: as above and grading to very carbonaceous shale.
	10	SANDSTONE: Type 1, loose quartz; predominantly medium grained otherwise as above. Type 2, aggregates; as above. Trace dull white fluorescence with slow, very weak white cut.
	trace	COAL: as above.
3590-3595m	95	SILTSTONE/CARBONACEOUS SHALE: occasionally medium grey to predominantly medium dark grey to dark grey, firm, blocky to subfissile, subangular to subrounded cuttings. Carbonaceous to very carbonaceous, coaly fragments and laminae in parts.
	5	COAL: as above.
3595-3600m	100	SILTSTONE: medium dark grey to dark grey, firm, blocky to occasionally subfissile cuttings, carbonaceous to very carbonaceous, grading to coal in parts.
	trace	COAL: as above.
3600-3605m	100	SILTSTONE: as above.
	trace	COAL: as above.
3605-3610m	90	SILTSTONE: as above and grading to shale in parts. Also occasionally medium light grey to medium dark grey, dolomitic in parts.
	trace	COAL: as above.
	10	SANDSTONE: very light grey, friable aggregates, very fine to fine grained, well sorted, dolomite cement, carbonaceous inclusions, very poor to no visible porosity, no shows.
3610-3615m	90	SILTSTONE: as above.
	10	COAL: as above.
	trace	SANDSTONE
3615-3620m	100	SILTSTONE: medium dark grey to dark grey to brown, firm to occasionally moderately hard, blocky, subangular to subrounded cuttings, carbonaceous to very carbonaceous, commonly grades to carbonaceous shale, and coal laminations/fragments.
	trace	COAL
3620-3625m	80	SHALE/SILTSTONE: as above.
	20	COAL: black, firm, brittle in parts, vitreous to earthy, silty in parts.
3625-3630m	100	SILTSTONE: Type 1, also medium grey, otherwise as above. Predominantly Type 2, medium light grey to medium grey, firm to moderately hard, angular to subrounded cuttings, common carbonaceous inclusions, strongly dolomitic.

3630-3635m	80 20	SILTSTONE: predominantly Type 1, as above. Also minor Type 2, as above. COAL: as above.
3635-3640m	100 trace	SILTSTONE: predominantly Type 1, as above. Also minor Type 2, as above. COAL
3640-3645m	100 trace	SILTSTONE: as above, predominantly Type 1, SANDSTONE: quartz aggregates - very light grey, friable, very fine to fine grained, well sorted, dolomitic cement, carbonaceous inclusions, very poor visible porosity. No shows. Dull mineral fluorescence.
3645-3650m	95 5	SILTSTONE: predominantly Type 1, as above. SANDSTONE: as above.
3650-3655m	90 10 trace	SILTSTONE: predominantly Type 1, as above. SANDSTONE: grades in parts to siltstone, otherwise as above. COAL
3655-3660m	80 20 trace	SILTSTONE: Type 1, as above. SANDSTONE: very fine to medium grained, moderately to well sorted otherwise as above. Rare cuttings have moderately bright white fluorescence and slow to moderately fast, weak streaming, white cut, with weak instantaneous white crush cut. COAL
3660-3665m	85 10 5	SILTSTONE: Type 1, as above. SANDSTONE: predominantly very fine to fine grained, otherwise as above. Rare cuttings had moderately bright white fluorescence and slow, weak, streaming white cut and instantaneous, weak, white crush cut. COAL: as above.
3665-3670m	100 trace	SILTSTONE: predominantly Type 1, very carbonaceous, as above. SANDSTONE: aggregates as above, with 1 cutting showing fluorescence and cut as above.
3670-3675m	100	SILTSTONE: medium dark grey to dark grey, brown in parts, occasionally medium light grey, firm, blocky to subfissile. Common carbonaceous inclusions and laminae to very carbonaceous in parts, dolomitic in parts.
3675-3680m	80 20 trace	SILTSTONE: as above. COAL: black, firm, subangular to angular cuttings. Subvitreous, grades from very carbonaceous siltstone. SANDSTONE: aggregates as above.
3580-3585m	90 10	SILTSTONE: as above. COAL: as above.
3685-3690m	100 trace	SILTSTONE: as above and becoming very argillaceous in part. COAL

3690-3695m	100	SILTSTONE: as above and very argillaceous in part, occasionally grading to claystone.
	trace	COAL
3695-3700m	100	SILTSTONE: as above.
	trace	COAL
3700-3705m	90	SILTSTONE: predominantly medium dark grey to dark grey, also brown, occasionally medium light grey and argillaceous, blocky cuttings, carbonaceous to very carbonaceous.
	10	SANDSTONE: 2 types - predominantly Type 1, aggregates; very light grey, friable, very fine to fine grained, subrounded, moderately well sorted, dolomitic cement, fine carbonaceous inclusions. Very poor visible porosity, dull mineral fluorescence. No shows.
		Type 2, loose quartz; translucent, medium to very coarse grained, subrounded to rounded. No shows.
	trace	COAL: black, vitreous, angular cuttings.
3705-3710m	90	SILTSTONE: as above with rare cuttings having moderately bright white fluorescence and weak white streaming cut.
	10	SANDSTONE: Type 1, only - as above.
3710-3715m	100	SILTSTONE: 40% Type 1, as above. 60% Type 2, medium light grey to medium grey, greyish red, brownish grey, firm to soft, well rounded blocky cuttings. Argillaceous, common very fine carbonaceous inclusions, dolomitic in parts. Rare siltstone cuttings (Type 2) show slow, white streaming cut.
	trace	SANDSTONE: Type 1, aggregates; as above. Type 2, loose quartz as above. A couple of very silty, very fine grained aggregates have no fluorescence but weak white slow cut.
3715-3720m	100	SILTSTONE: predominantly Type 1, as above.
	trace	Also minor Type 2, as above, no shows. COAL: as above.
3720-3725m	100	SILTSTONE: predominantly Type 1, less carbonaceous otherwise as above. Type 2, as above.
	trace	SANDSTONE: predominantly Type 2, loose quartz as above. Also occasional aggregates as above.
3725-3730m	100	SILTSTONE: Type 1, approximately 50% as above, i.e. only moderately carbonaceous and argillaceous. Type 2, approximately 50% as above.
3730-3735m	100	SILTSTONE: light grey to medium grey, occasionally medium dark grey, firm to predominantly soft, blocky cuttings, very argillaceous in parts, very fine to silt sized carbonaceous inclusions, dolomitic in parts. A minor number of cuttings cuttings have white fluorescence and very slow weak white cut.
	trace	SANDSTONE: Type 2, loose quartz; translucent, medium to very coarse grained, subangular to rounded, no shows.

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3735-3740m	100 trace	SILTSTONE: as above. SANDSTONE: Type 1, aggregates; medium light grey, friable to moderately hard, very fine grained, subrounded, well sorted, dolomitic cement. Very fine grain sized carbonaceous inclusions, silty in parts. Very poor to no visible porosity. Occasional cuttings have very weak white cut - very faint to no fluorescence. Type 2, loose quartz; translucent, medium to very coarse grains/fragments (seen to be predominantly fragments), angular to rounded. No shows.
3740-3745m	100 trace	SILTSTONE: as above and also medium dark grey, less argillaceous and more carbonaceous in part. SANDSTONE: predominantly Type 1, aggregates; very fine to fine grained, otherwise as above. No shows. Very occasionally Type 2, as above.
3745-3750m	80  20	SILTSTONE: minor Type 1, as above. Predominantly Type 2, medium grey to medium dark grey, firm, carbonaceous to very carbonaceous in part, non argillaceous, otherwise as above. SANDSTONE: Type 1, aggregates; very fine to fine grained with moderately bright white mineral fluorescence, no shows. Type 2, loose quartz, predominantly rounded ie. quartz grains (not fragments).
3750-3755m	100  trace trace	SILTSTONE: 30% Type 1, argillaceous and soft, as above. 70% Type 2, firm and carbonaceous, as above and finely interlaminated with and grading to coal. SANDSTONE: aggregates - Type 1, and loose quartz - Type 2, as above. COAL: black, firm, subangular cuttings, vitreous to earthy - grades from very carbonaceous siltstone.
3755-3760m	100  trace trace	SILTSTONE: 10% Type 1, as above. 90% Type 2, firm and very carbonaceous, as above. COAL: predominantly vitreous, otherwise as above. SANDSTONE: predominantly Type 1, aggregates with some cuttings with very dull faint white to no fluorescence and slow faint diffuse cut. Minor Type 2, loose quartz as above.
3760-3765m	100 trace	SILTSTONE: predominantly Type 2, very carbonaceous, as above. Trace Type 1, as above. SANDSTONE: predominantly Type 1, aggregates with occasional shows as above. Minor loose quartz as above.
3765-3770m	80	SILTSTONE: predominantly Type 1, argillaceous as above. Minor Type 2, only slightly carbonaceous otherwise as above, occasional cuttings have shows as in sandstone below.

3765-3770m cont'd	20	<p>SANDSTONE: predominantly Type 1, aggregates; as above with very occasional siltier cuttings showing very dull weak fluorescence and very slow faint white diffuse cut. Trace Type 2, loose quartz as above. (Note: occasional coarse quartz grains show evidence of having been clasts in above aggregates).</p>
3770-3775m	85	<p>SILTSTONE: predominantly medium grey to medium dark grey, firm, blocky cuttings, slightly to moderately carbonaceous.</p>
	15	<p>SANDSTONE: predominantly aggregates - less commonly silty, otherwise as above.</p>
	trace	<p>LOOSE QUARTZ: as above.</p>
3775-3780m	90	<p>SILTSTONE: with carbonaceous and argillaceous varieties.</p>
	10	<p>SANDSTONE: predominantly aggregates as above. No shows. Trace loose quartz; predominantly medium grained, otherwise as above.</p>
	trace	<p>COAL</p>
3780-3785m	90	<p>SILTSTONE: medium light grey to medium dark grey, soft to firm, blocky cuttings. Carbonaceous to very carbonaceous in parts, argillaceous in parts, dolomitic and silt sized quartz grains in parts. Occasional cuttings with dull spotty white fluorescence and slow diffuse white cut.</p>
	10	<p>SANDSTONE: quartzose aggregates (Type 1, as above. Poorly sorted in parts, no shows.</p>
	trace	<p>COAL: black, firm, brittle, angular cuttings, vitreous.</p>
3785-3790m	90	<p>SILTSTONE: as above, with shows as above.</p>
	10	<p>COAL: as above.</p>
	trace	<p>SANDSTONE: aggregates as above, with dull, very faint to no fluorescence and very slow, very faint white cut.</p>
3790-3795m	80	<p>Spot Sample</p>
	20	<p>SILTSTONE: as above. SANDSTONE: predominantly Type 1, aggregates; light grey, friable, very fine to medium grained, predominantly very fine to fine grained, subrounded to rounded, moderately well sorted to well sorted, dolomitic cement. Argillaceous in parts (in the very fine grained cuttings mostly), very poor to poor visible porosity. 10% pale, dull whitish yellow spotty fluorescence with very slow moderately weak diffuse cut and instant faint white crush cut. Occasional Type 2, loose quartz grains and fragments; translucent, medium to very coarse grained, subangular (fragments) to rounded. No shows. Note: the loose quartz grains are probably clasts within the above sandstone aggregates).</p>
3790-3795m	100	<p>SILTSTONE: predominantly medium light grey to medium grey, soft and very argillaceous, grades to claystone in parts.</p>

3790-3795m cont'd	trace	SANDSTONE: aggregates as above. Occasional sandstone (especially the siltier aggregates) and siltstone cuttings have dull white fluorescence and very faint, slow diffuse white cut.
	trace	COAL
3795-3800m	100	SILTSTONE: 60% Type 1, very carbonaceous, subfissile, medium dark grey. 40% Type 2, soft, light grey, argillaceous.
	trace	SANDSTONE: aggregates; very fine to fine grained, silty, very faint, very dull yellowish fluorescence, very slow, faint diffuse white cut, weak instantaneous white crush cut.
3800-3805m	80	SILTSTONE: 50% Type 1, firm, medium dark grey carbonaceous. 50% Type 2, soft, medium light grey, argillaceous.
	10	COAL: black, firm, subvitreous to vitreous, grades from coal to very carbonaceous shale or siltstone in part.
	10	SANDSTONE: aggregates as above with trace very dull, spotty, pale yellow fluorescence to no fluorescence, slow diffuse, weak white cut and instant weak to moderately weak white crush cut.
3805-3807m	70	SILTSTONE: as above.
	30	SANDSTONE: aggregates; medium light grey, friable, very fine to fine grained, subrounded, well sorted, dolomitic and siliceous cement. Small carbonaceous inclusions, very poor visible porosity, very dull yellowish fluorescence, very slow, very faint to faint diffuse white cut, instant very faint white crush cut.
3807-3809m	90	SILTSTONE: predominantly firm and carbonaceous, occasionally with thin coal laminations, otherwise as above.
	10	SANDSTONE: aggregates; as above, with shows as above.

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APPENDIX - 2



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GRUNTER-1

SIDEWALL CORE DESCRIPTIONS

<u>No.</u>	<u>Depth</u>	<u>Rec.</u> (mm)	<u>Rock</u> <u>Type</u>	<u>Description</u>
1	3559.5	25	SANDSTONE	Light grey, very fine to fine grained, well sorted, subangular to subrounded, very friable; slightly dolomitic; slightly carbonaceous and slightly micaceous; no shows; trace dull <u>gold</u> mineral fluorescence.
2	3557.0	Nil		PULLED OFF
3	3546.6	Nil		NO RECOVERY
4	3527.0	45	SILTSTONE	Medium dark grey, moderately hard; very argillaceous, pyritic, occasional coaly streaks, carbonaceous.
5	3500.5	40	SILTSTONE	Medium dark grey, firm; argillaceous, very carbonaceous; subfissile.
6	3495.5	15	SILTSTONE/ SANDSTONE	Medium grey to medium dark grey; very fine to fine grained, poorly sorted, subangular sandstone quartz grains; firm; slightly micaceous; siltstone and very fine grained argillaceous sandstone laminations; sandstone has poor visible porosity; trace patchy bright, pale yellow fluorescence, faint white crush cut.
7	3481.5	Nil		PULLED OFF.
8	3464.4	Nil		PULLED OFF.
9	3449.9	8	SILTSTONE	Medium grey, firm; slightly carbonaceous.
10	3424.0	25	SILTSTONE	Medium dark grey, firm; slightly calcareous, slightly micaceous.
11	3406.0	10	SILTSTONE	Medium dark grey, firm; slightly calcareous in part, argillaceous, slightly pyritic, carbonaceous to coaly in parts.
12	3389.9	Nil		PULLED OFF.
13	3373.5	25	SILTSTONE/ SANDSTONE	Light to medium grey; very fine grained, well sorted, firm; carbonaceous; micaceous; no fluorescence, very faint slow white cut; very fine siltstone and sandstone laminations (predominantly siltstone).
14	3360.0	20	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous.
15	3345.0	20	SILTSTONE	Medium dark grey, firm; slightly calcareous, argillaceous, carbonaceous tending to coaly in parts.

16	3330.0	25	SANDSTONE	Predominantly light grey, very fine grained, well sorted, friable; 30% spotty, moderately bright, white fluorescence, slow weak streaming cut, moderately bright crush cut, white ring residue; sandstone with thin carbonaceous laminations, poor to occasionally moderate visible porosity.
17	3317.5	10	SILTSTONE	Medium grey, firm to moderately hard.
18	3300.0	10	SILTSTONE	Medium grey, firm; carbonaceous, micromicaceous; contains very fine grained to silt sized quartz grains.
19	3282.0	35	SILTSTONE	Medium dark grey, firm; carbonaceous, micromicaceous; tending to subfissile in parts.
20	3266.9	15	SILTSTONE	Medium grey, firm; carbonaceous.
21	3250.0	20	SILTSTONE	Medium dark grey, firm; very carbonaceous, argillaceous.
22	3233.0	30	SILTSTONE	Medium grey, firm; carbonaceous, micromicaceous, tending to coaly in part; no shows; occasional very fine sandstone (very fine grained) laminae.
23	3217.0	23	SANDSTONE	Medium light grey, very fine grained, well sorted, friable; slightly calcareous, slightly carbonaceous; no shows.
24	3204.0	10	SILTSTONE	Medium dark grey, firm to moderately hard; carbonaceous, micaceous.
25	3188.9	15	SILTSTONE	Medium dark grey, firm to moderately hard; very carbonaceous to coaly in part, very fine to fine grained quartz grain inclusions in parts.
26	3180.8	20	SANDSTONE	Light grey, very fine to fine grained, well sorted, subrounded, very friable; carbonaceous; no fluorescence; very slow, weak, white crush cut; poor visible porosity.
27	3175.0	20	SILTSTONE	Medium grey, firm; slightly carbonaceous, occasional quartz grain inclusions, micaceous.
28	3155.1	15	SILTSTONE	Medium grey, firm; common very fine grained quartz grain inclusions.
29	3140.0	10	SILTSTONE	Medium grey, firm to moderately hard; argillaceous, slightly carbonaceous.
30	3125.0	22	SILTSTONE	Medium dark grey, firm; carbonaceous, micromicaceous in parts.
31	3112.0	Nil		MISFIRE.
32	3100.5	Nil		MISFIRE.

33	3091.1	Nil		MISFIRE.
34	3085.6	Nil		MISFIRE.
35	3070.4	Nil		MISFIRE.
36	3057.1	Nil		MISFIRE.
37	3038.5	Nil		MISFIRE.
38	3025.0	Nil		MISFIRE.
39	3007.0	Nil		MISFIRE.
40	2993.1	Nil		MISFIRE.
41	2975.1	Nil		MISFIRE.
42	2949.1	Nil		MISFIRE.
43	2929.1	Nil		MISFIRE.
44	2913.9	Nil		MISFIRE.
45	2887.0	Nil		MISFIRE.
46	2865.1	Nil		MISFIRE.
47	2836.0	Nil		MISFIRE.
48	2801.0	Nil		MISFIRE.
49	2774.2	Nil		MISFIRE.
50	2751.0	Nil		MISFIRE.
51	2725.0	Nil		MISFIRE.
52	3112.0	35	SILSTONE	Brownish grey, moderately hard; carbonaceous, argillaceous, slightly micaceous.
53	3100.5	15	SANDSTONE	Light grey, very fine to fine grained, well sorted, subrounded, friable; slightly calcareous, carbonaceous, glauconite?/chlorite?; trace spotty, moderately bright, white fluorescence; very slow, very weak, white cut and crush cut; poor visible porosity. ✓
54	3091.0	17	SILTSTONE	Medium light grey, firm; carbonaceous - coal laminae in parts, slightly micromicaceous.
55	3085.5	25	SANDSTONE	Light grey, very fine to fine grained, moderately well sorted, subrounded, very friable; carbonaceous; trace spotty, dull, faint white fluorescence; extremely slow, extremely weak white cut; poor visible porosity. ✓
56	3070.6	16	SANDSTONE	Medium light grey, very fine grained, moderately well sorted, very friable; very argillaceous, carbonaceous; no shows.

57	3057.0	10	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous.
58	3038.5	25	SILTSTONE	Medium dark grey, firm to moderately hard; carbonaceous, very fine grained quartz grain inclusions.
59	3025.1	22	SANDSTONE	Medium light grey, very fine grained, well sorted, friable; carbonaceous, argillaceous; no shows.
60	3007.1	26	SILTSTONE	Medium dark grey, firm; carbonaceous.
61	2993.0	10	SILTSTONE	Medium light grey, firm; slightly calcareous, very carbonaceous, very argillaceous.
62	2975.0	28	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous.
63	2949.0	34	SILTSTONE	Medium dark grey to dark grey, firm; micaceous.
64	2929.0	30	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous; common very fine grained to silt sized quartz grain inclusions.
65	2914.0	32	SILTSTONE	Dark grey, firm; micaceous.
66	2887.1	25	SILTSTONE	Medium dark grey, firm; argillaceous.
67	2865.0	30	SILTSTONE	Medium light grey to medium dark grey, firm; carbonaceous in parts; occasional very thin sandstone laminae.
68	2836.0	30	SHALE	Medium dark grey, firm; slightly carbonaceous, argillaceous; subfissile.
69	2801.0	27	SILTSTONE	Medium grey, firm; carbonaceous; common very fine grained to silt sized quartz grain inclusions.
70	2774.1	Nil		PULLED OFF.
71	2751.1	32	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous.
72	2725.1	37	SILTSTONE	Medium dark grey to dark grey, firm; carbonaceous; micaceous; common coal laminae.
73	2698.1	Nil		PULLED OFF.
74	2683.1	30	SILTSTONE	Medium grey, firm; slightly micaceous.
75	2678.0	23	SILTSTONE	Medium grey, firm; silt sized quartz grains.
76	2673.1	25	SILTSTONE	Medium grey, firm; very carbonaceous; common very fine grained to silt size quartz grain inclusions.
77	2645.0	26	SILTSTONE	Medium dark grey, firm; slightly micaceous.

78	2604.6	Nil		PULLED OFF.
79	2590.1	25	SILTSTONE	Medium dark grey, firm; trace glauconite?.
80	2581.0	35	SILTSTONE	Medium dark grey, firm; slightly micaceous; very fine grained to silt size quartz grains.
81	2570.1	22	SILTSTONE	Medium dark grey, firm; micromicaceous.
82	2554.0	15	SILTSTONE	Medium dark grey, firm.
83	2539.0	Nil		MISFIRE.
84	2536.0	15	SILTSTONE	Medium grey, firm; carbonaceous with common silt sized to occasionally very fine grained quartz grains.
85	2533.1	Nil		NO RECOVERY.
86	2528.1	Nil		MISFIRE.
87	2440.0	24	SANDSTONE	Medium grey, fine to medium grained, moderately well sorted, subangular to subrounded, occasional medium to coarse grained, well rounded grains; no shows friable; moderately calcareous, common carbonaceous matter.
88	2439.1	10	SANDSTONE	Medium light grey, very fine to fine grained, well sorted, subangular, very friable; no shows.
89	2430.1	Nil		MISFIRE.
90	2425.0	34	SILTSTONE	Medium dark grey to dark grey, firm; micromicaceous.
91	2411.0	22	SILTSTONE	Medium dark grey, firm; slightly micaceous.
92	2396.1	Nil		MISFIRE.
93	2389.1	10	SILTSTONE/ SANDSTONE	Medium light grey to medium dark grey; very fine grained, very well sorted sandstone; moderately hard to firm; finely laminated siltstone and very fine grained sandstone; no shows.
94	2374.0	17	SILTSTONE	Medium grey, firm; micromicaceous.
95	2366.0	Nil		MISFIRE.
96	2340.1	23	SILTSTONE	Medium grey, firm; carbonaceous, micromicaceous.
97	2315.5	27	SANDSTONE	Medium light grey, very fine to fine grained, well sorted, subangular to subrounded, friable; carbonaceous; no shows.
98	2306.5	Nil		MISFIRE.

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99	2274.5	20	COAL	Black, firm, brittle.
100	2268.0	23	SANDSTONE	Very light grey, predominantly very fine grained to occasionally fine grained, very well sorted, very friable; slightly carbonaceous; no shows.
101	2244.6	Nil		MISFIRE.
102	2213.0	20	SILTSTONE	Medium grey to medium dark grey, firm.
103	2201.6	20	SILTSTONE/ SANDSTONE	Medium dark grey, firm; with fine to medium grained, rounded, quartz grains scattered throughout. Siltstone with occasional thin sandstone (fine to medium grained, subrounded, silty matrix) laminations.
104	2200.0	Nil		PULLED OFF.
105	2176.0	26	SILTSTONE	Medium dark grey, firm; carbonaceous, micaceous.
106	2172.0	34	SILTSTONE	Medium dark grey, firm to moderately hard; carbonaceous, micaceous.
107	2167.0	36	SILTSTONE	Medium dark grey, firm to moderately hard; carbonaceous.
108	2162.0	30	SANDSTONE	Medium light grey, very fine to medium grained, predominantly fine grained, moderately well sorted, subrounded to rounded, friable; slightly calcareous, carbonaceous; no shows.
109	2145.0	35	SILTSTONE	Medium dark grey, moderately hard; micaceous.
110	2128.0	30	SILTSTONE	Medium dark grey, moderately hard; carbonaceous, micaceous.
111	2120.1	30	SANDSTONE	Medium grey, very fine grained, moderately well sorted, subangular to subrounded, friable; carbonaceous, silty; trace glauconite inclusions.
112	2105.0	Nil		PULLED OFF.
113	2103.0	34	SILTSTONE	Medium dark grey, firm; micaceous.
114	2066.1	Nil		PULLED OFF.
115	2052.0	35	SILTSTONE	Medium dark grey, firm; carbonaceous; with very fine grained to silt sized quartz grains.
116	2039.0	Nil		PULLED OFF.
117	2024.5	Nil		PULLED OFF.
118	2021.0	30	SILTSTONE	Medium dark grey, firm; micaceous.
119	2011.1	30	SILTSTONE	Medium dark grey, firm; carbonaceous, common mica inclusions.

120	2009.0	29	SILTSTONE	Medium dark grey, firm; carbonaceous, common mica inclusions.
121	1981.0	30	SILTSTONE	Medium light grey, firm; carbonaceous, micaceous; with very fine grained to silt sized quartz grains.
122	1975.6	26	SANDSTONE	Medium grey, very fine grained, well sorted, friable; carbonaceous, micaceous, silty; no shows.
123	1940.0	30	SILTSTONE	Predominantly medium dark grey, firm; carbonaceous. Siltstone with occasional thin laminations of light grey, silt sized quartz grains that occasionally grade to very fine grain size.
124	1926.5	Nil		PULLED OFF.
125	1919.1	25	SILTSTONE	Medium dark grey, firm; slightly carbonaceous, micaceous.
126	1912.0	37	SILTSTONE	Medium grey, firm; carbonaceous; with common very fine grained quartz grains.
127	1911.0	38	SILTSTONE	Medium grey, firm; carbonaceous.
128	1901.6	Nil		PULLED OFF.
129	1895.0	30	SILTSTONE	Medium dark grey, firm. Siltstone with thin light grey laminations of silt sized quartz grains.
130	1889.6	24	SILTSTONE	Medium dark grey, firm; contains medium to coarse grained, rounded, quartz grain inclusions.
131	1887.0	49	SILTSTONE	Medium dark grey, firm; micaceous.
132	1885.0	Nil		PULLED OFF.
133	1881.0	Nil		PULLED OFF.
134	1875.0	25	SILTSTONE	Medium grey, firm; carbonaceous; with common silt sized quartz grains.
135	1870.0	32	SILTSTONE	Medium grey, firm; carbonaceous.
136	1865.1	40	SANDSTONE	Medium grey, very fine to fine grained, moderately well sorted, subrounded, friable; carbonaceous, silty matrix; poor visible porosity; no shows.
137	1860.0	33	SANDSTONE	Medium grey, very fine grained, well sorted, subrounded, friable; carbonaceous, silty matrix; poor visible porosity.
138	1858.0	35	SILTSTONE	Dark grey to brown, moderately hard; slightly calcareous, micromicaceous; abundant glauconite inclusions.

139	1856.0	38	SILTSTONE	Dark grey to brown, moderately hard to hard; moderately calcareous, micromicaceous; abundant glauconite inclusions.
140	1854.0	22	SILTSTONE	Dark grey to brown, moderately hard; moderately calcareous, micromicaceous; common glauconite inclusions.
141	1851.9	30	SILTSTONE	Medium grey, moderately hard; very calcareous; abundant glauconite inclusions.
142	1850.0	36	SILTSTONE	Medium grey, moderately hard; very calcareous, very argillaceous; common glauconite inclusions.
143	1848.1	41	SILTSTONE	Medium grey, moderately hard; very calcareous, very argillaceous.
144	1846.1	38	CLAYSTONE	Medium grey, hard; very calcareous, occasional glauconite inclusions, occasional pyrite inclusions, occasional well rounded, fine to medium grained quartz grain inclusions.
145	1844.0	37	CLAYSTONE	Medium grey, hard; very calcareous, occasional glauconite inclusions.
146	1842.0	37	CLAYSTONE	Medium grey, moderately hard to hard; very calcareous, occasional glauconite inclusions, occasional well rounded, fine grained quartz grain inclusions.
147	1840.0	37	CLAYSTONE	Medium grey, moderately hard; very calcareous, occasional well rounded, fine grained quartz grain inclusions.
148	1837.0	43	CLAYSTONE	Medium grey, moderately hard; very calcareous, uniform, homogenous.
149	1833.1	26	CLAYSTONE	Medium grey, moderately hard to hard; very calcareous, generally uniform, with few carbonaceous inclusions.
150	1818.9	35	CLAYSTONE	Medium grey, hard; very calcareous, with rounded, silt sized quartz grain inclusions.
151	1800.0	30	CLAYSTONE	Medium grey, moderately hard; very calcareous, with occasional rounded silt sized quartz grain inclusions.
152	1783.1	38	CLAYSTONE	Medium grey, moderately hard; with occasional rounded silt sized grain inclusions.
153	1750.0	38	CLAYSTONE	Medium grey, moderately hard; moderately calcareous, with occasional silt sized quartz grain inclusions.



154	3557.0	30	SANDSTONE	Light grey, very fine to fine grained, well sorted, subangular to subrounded, friable; occasional carbonaceous/coaly inclusions; dolomitic and siliceous cement; poor to occasional moderate visible porosity; 10% spotty, dull, pale, gold fluorescence; extremely slow, extremely faint white cut and crush cut. ✓
155	3180.8	Nil		PULLED OFF.
156	2995.0	30	SANDSTONE	Light grey, very fine to fine grained, well sorted, subangular, friable; carbonaceous inclusions; siliceous cement, poor visible porosity; no shows.
157	2989.0	25	SILTSTONE	Medium grey, firm; carbonaceous, micromicaceous; common silt sized to occasional very fine grain sized quartz grains.
158	2968.1	25	SILTSTONE	Medium dark grey, firm to moderately hard; micromicaceous.
159	2961.0	20	SILTSTONE	Medium dark grey, firm to moderately hard; slightly carbonaceous.
160	2877.0	24	SILTSTONE	Medium light grey to medium dark grey, firm; light and dark siltstone laminations.
161	2853.1	25	SILTSTONE	Medium light grey, firm; thin carbonaceous laminae in parts.
162	2774.1	24	SILTSTONE	Medium grey, firm.
163	2660.5	30	SILTSTONE	Medium dark grey, firm; slightly carbonaceous, slightly micaceous.
164	2656.6	33	SILTSTONE	Medium grey, firm to moderately hard; common carbonaceous inclusions tending to coal in parts.
165	2654.0	35	SANDSTONE/ COAL	Medium light grey, predominantly very fine grained, also fine grained, well sorted, subangular, firm. Sandstone with numerous thin coal laminations.
166	2649.0	27	SILTSTONE	Medium grey, firm; finely laminated - light and dark siltstone.
167	2628.5	Nil		PULLED OFF.
168	2604.5	Nil		PULLED OFF.
169	2539.1	30	SILTSTONE	Medium grey, firm; micromicaceous.
170	2528.0	15	SANDSTONE	Medium grey, very fine to fine grained - dominantly very fine grained, well sorted, subangular to subrounded, friable; poor visible porosity; no shows.
171	2430.1	Nil		PULLED OFF.
172	2402.5	Nil		PULLED OFF.

173	2395.9	30	SANDSTONE	Medium light grey, very fine grained, very well sorted, subrounded, friable; carbonaceous inclusions; poor visible porosity; no shows.
174	2366.0	42	COAL	Black, moderately hard to brittle; vitreous.
175	2306.5	50	SHALE	Dark grey, firm, fissile; carbonaceous.
176	2297.0	20	SILTSTONE	Medium grey, firm; contains common fine to coarse grained, subrounded to rounded, quartz grains.
177	2282.0	35	SANDSTONE	Medium grey, fine to very coarse grained, poorly sorted, subangular to rounded, friable; silty matrix; poor visible porosity; no shows.
178	2250.1	Nil		PULLED OFF.
179	2244.6	25	SILTSTONE	Medium dark grey, firm; slightly micaceous.
180	2225.0	31	SANDSTONE	Medium grey, fine to coarse grained - predominantly fine to medium grained, poorly sorted, subangular to rounded, very friable; moderately good visible porosity; no shows.
181	2215.0	38	SANDSTONE	Brown, fine to medium grained, poorly sorted, subrounded to rounded, very friable; carbonaceous; quartz grains in brown silty matrix; moderate visible porosity; no shows.
182	1926.5	26	SANDSTONE	Medium grey, medium to very coarse grained - predominantly medium to coarse grained, poorly sorted, subrounded to well rounded, unconsolidated to very friable; inferred very good visible porosity; no shows.
183	1901.6	36	SANDSTONE	Medium grey, fine to medium grained - predominantly medium grained, moderately well sorted, subrounded to rounded, very friable; occasional carbonaceous inclusions; very good visible porosity; no shows.
184	3808.1	Nil		PULLED OFF.
185	3797.0		SILTSTONE	Grey, silt size grains, firm; sandy, silty.
186	3792.0	Nil		PULLED OFF.
187	3785.0		SILTSTONE	Grey, silt size to fine grained, firm to friable; moderately calcareous, sandy, silty.
188	3778.1	Nil		PULLED OFF.

189	3770.0		SILTSTONE	Light grey, silt size to very fine grained, firm to friable; moderately calcareous, sandy, carbonaceous, argillaceous.
190	3761.0	Nil		PULLED OFF.
191	3753.2	Nil		PULLED OFF.
192	3746.0		SHALE	Black, firm; carbonaceous, argillaceous.
193	3732.5	Nil		PULLED OFF.
194	3729.5		SILTSTONE	Dark grey, firm; carbonaceous, argillaceous, micaceous.
195	3716.0	Nil		PULLED OFF.
196	3711.0		SANDSTONE	Buff, medium grained, poorly sorted, subrounded, firm, quartzose, micaceous.
197	3702.0	Nil		PULLED OFF.
198	3683.5		SANDSTONE	Buff, medium grained, poorly sorted, subrounded, firm, quartzose, micaceous.
199	3681.0	Nil		PULLED OFF.
200	3679.0	Nil		PULLED OFF.
201	3676.0	Nil		PULLED OFF.
202	3668.0	Nil		PULLED OFF.
203	3665.7	Nil		PULLED OFF.
204	3651.0	Nil		PULLED OFF.
205	3642.5	Nil		PULLED OFF.
206	3630.0	Nil		PULLED OFF.
207	3614.5		SILTSTONE	Light grey, firm; sandy.
208	3604.0		SILTSTONE	Light grey, firm; slightly calcareous, sandy.
209	3583.0	Nil		PULLED OFF.
210	3578.5		SHALE	Dark grey; subfissile; carbonaceous, coaly.
211	3573.9	Nil		PULLED OFF.
212	3571.0		SANDSTONE	White, fine grained, moderately sorted, subrounded, firm; slightly calcareous, quartzose.
213	3567.5		SILTSTONE	Dark grey, hard; carbonaceous, argillaceous.
214	3810.1	Nil		NO RECOVERY (N.B: 3810.0m - Loggers Depth).

215	3808.1	Nil		PULLED OFF.
216	3799.6	Nil		NO RECOVERY.
217	3792.1	Nil		NO RECOVERY.
218	3778.0	Nil		NO RECOVERY.
219	3760.9		COAL	Black, firm to hard.
220	3757.0	Nil		NO RECOVERY.
221	3753.3		COAL	Black, firm to hard.
222	3732.6		COAL	Black, firm to hard.
223	3722.2	Nil		NO RECOVERY - smashed bullet.
224	3716.1		SHALE	Black, hard; subfissile to fissile, very carbonaceous, micaceous.
225	3702.0		SHALE	Dark grey, hard; very carbonaceous, subfissile.
226	3689.3		SHALE	Dark grey, hard; very carbonaceous, with coaly laminations, subfissile.
227	3680.9		SHALE	Dark grey, hard; very carbonaceous, with coaly laminations, subfissile.
228	3679.1		COAL	Black, hard.
229	3676.0		SILTSTONE	Medium grey, firm; argillaceous, carbonaceous.
230	3668.1	Nil		NO RECOVERY.
231	3665.8		SANDSTONE	Buff, medium to coarse grained, poorly sorted, subrounded, quartzose; slightly calcareous, micaceous.
232	3651.0	Nil		NO RECOVERY.
233	3642.5		SHALE	Carbonaceous, micaceous, coaly, subfissile to fissile.
234	3637.1	Nil		PULLED OFF.
235	3630.1		SHALE	Fissile, very carbonaceous to coaly, micaceous, with thin discrete parallel coaly laminations.
236	3623.6	Nil		PULLED OFF.
237	3618.6		SHALE	Very carbonaceous, coaly; fissile, coal partings.
238	3591.6		SANDSTONE	Beige, medium grained, poorly sorted, subrounded, quartzose, firm; fragments; sample is at a sandstone/coal contact.
239	3583.0		SILTSTONE	Light grey, firm; argillaceous.
240	3574.0	Nil		PULLED OFF.

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241 3562.6 Nil

NO RECOVERY.

242 3555.0 Nil

NO RECOVERY.

243 3550.0 SHALE

Dark grey, firm; fissile; slightly calcareous, very carbonaceous to coaly.

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GRUNTER-1

SIDEWALL CORE GAS ANALYSIS

NO.	DEPTH	C1	C2	C3	C4	C5	C6
1	3559.5	2246	648	317	83	trace	-
2	3556.8	NO SAMPLE					
6	3495.5	1404	370	170	71	trace	trace
16	3330.1	463	101	18.3	trace	-	-
26	3180.8	2752	772	366	95	trace	trace
53	3100.5	-	-	-	-	-	-
55	3085.5	-	-	-	-	-	-
87	2440.0	-	-	-	-	-	-
88	2439.0	-	-	-	-	-	-
92	2396.0	NO SAMPLE					
110	2128.0	trace	trace	trace	5.9	10.3	18.7
113	2103.0	-	-	-	trace	3.5	5.0
123	1940.0	trace	3.5	3.0	15 ✓	14	23.4
141	1851.9	-	-	-	-	-	-
142	1850.0	-	-	-	-	-	-
143	1848.1	-	-	-	trace	4.1	5.0
144	1846.1	14	trace	-	-	-	-
145	1844.0	35	7.5	trace	-	-	-
146	1842.0	-	-	-	-	-	-
147	1840.0	-	-	-	-	-	-
148	1837.0	-	-	-	-	-	-
154	3556.96	-	-	-	-	trace	trace
173	2395.93	-	-	-	-	trace	trace

N.B: Check gas run every third sample as a check of results.

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APPENDIX - 3

Core No. 1

Well : GRUNTER-1

Interval Cored : 3389.0 - 3407.0m

Cut : 18m

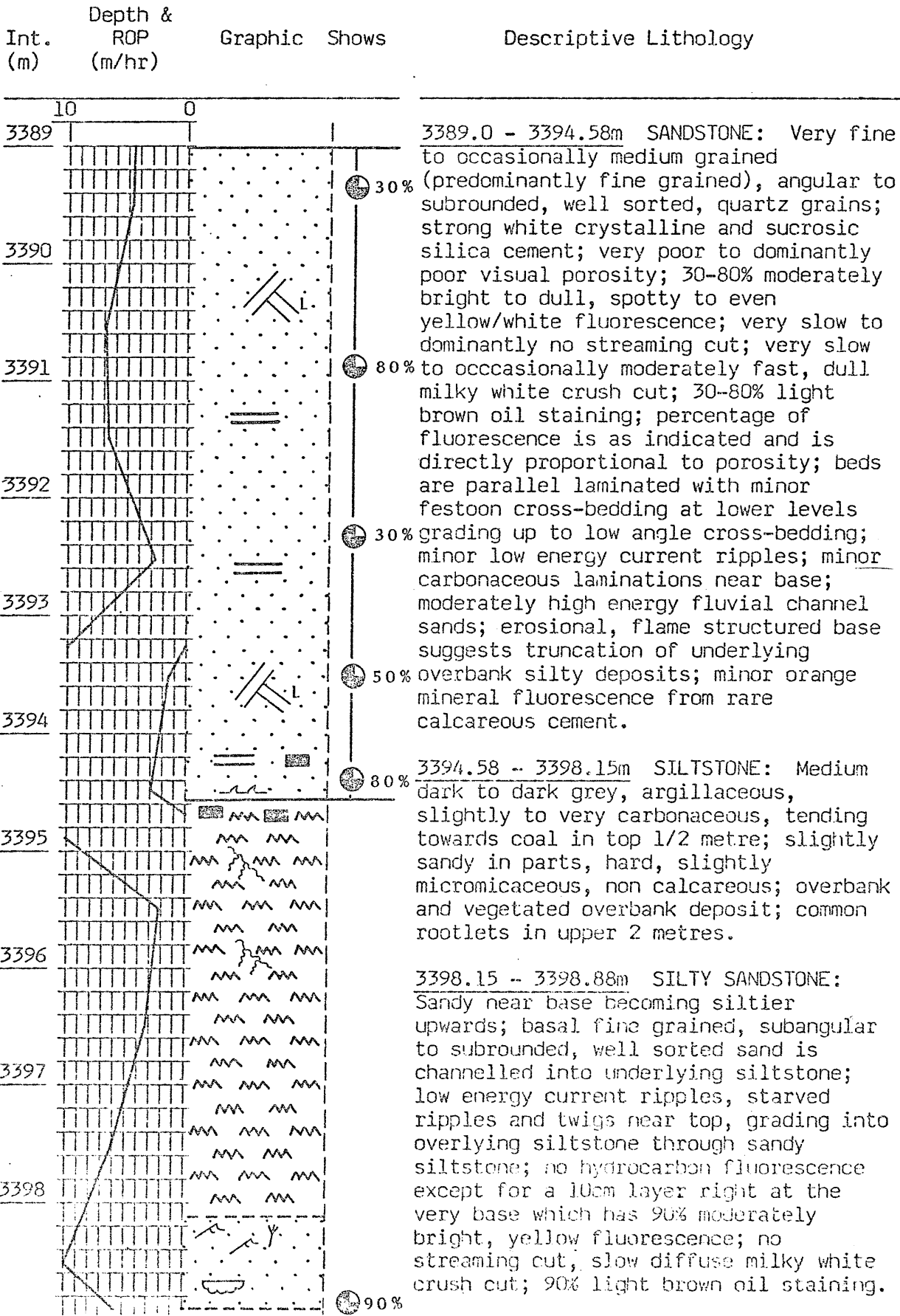
Recovered : 17.8m (99%)

Bit Type : Christ C23

Bit Size : 8-1/2"

Described by : R. Neumann

Date : 11/10/84

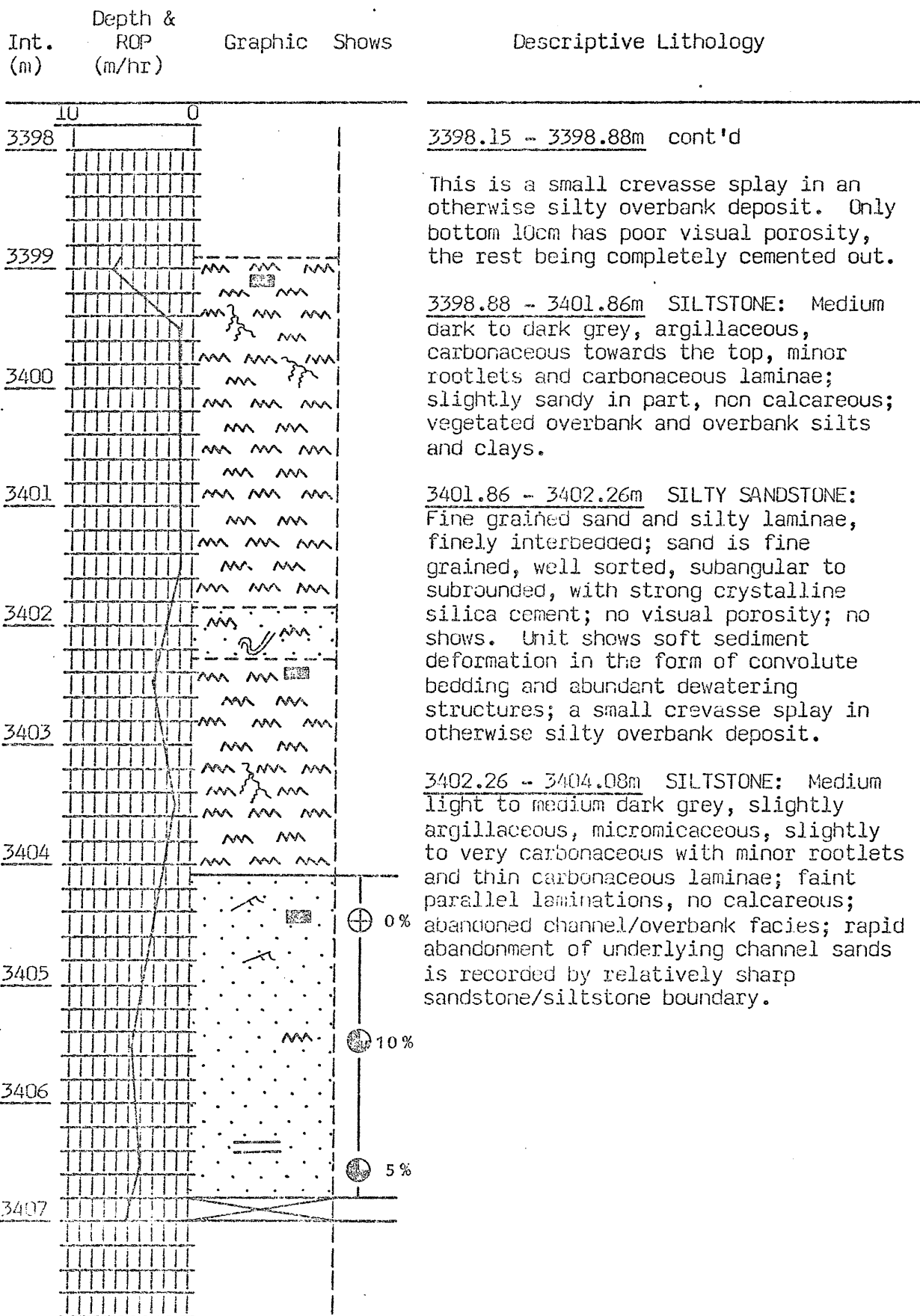




Core No. 1 cont'd Well : GRUNTER-1

Interval Cored : 3389.0 - 3407.0m  
 Cut : 18m  
 Bit Type : Christ C23  
 Described by : R. Neumann

Recovered : 17.8m (99%)  
 Bit Size : 8-1/2"  
 Date : 11/10/84



Core No. 1 cont'd Well : GRUNTER-1

Interval Cored : 3389.0 - 3407.0m

Cut : 18m Recovered : 17.8m (99%)

Bit Type : Christ C23 Bit Size : 8-1/2"

Described by : R. Neumann Date : 11/10/84

Int. (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
10	0		
			3404.08 - 3406.8m SANDSTONE: Very fine to occasionally medium grained, angular to subrounded, well sorted with strong white crystalline silica and orange fluorescing calcareous cements; very poor to predominantly no visual porosity; 0-10% spotty dull to occasionally moderately bright, yellow/white fluorescence; no streaming cut; very slow, diffuse dull milky white crush cut; small percentage possible light brown oil staining; gas bubbles were observed on the surface of the core for approximately 10 minutes after recovery; sand is from a low to moderate energy fluvial channel which was rapidly abandoned; characteristic "middle zone" of point bar.
			3406.8 - 3407.0m NO RECOVERY.

Core No. 2

Well : GRUNTEK-1

Interval Cored : 3434.0 - 3452.0m

Cut : 18.0m

Recovered : 16.9m (94%)

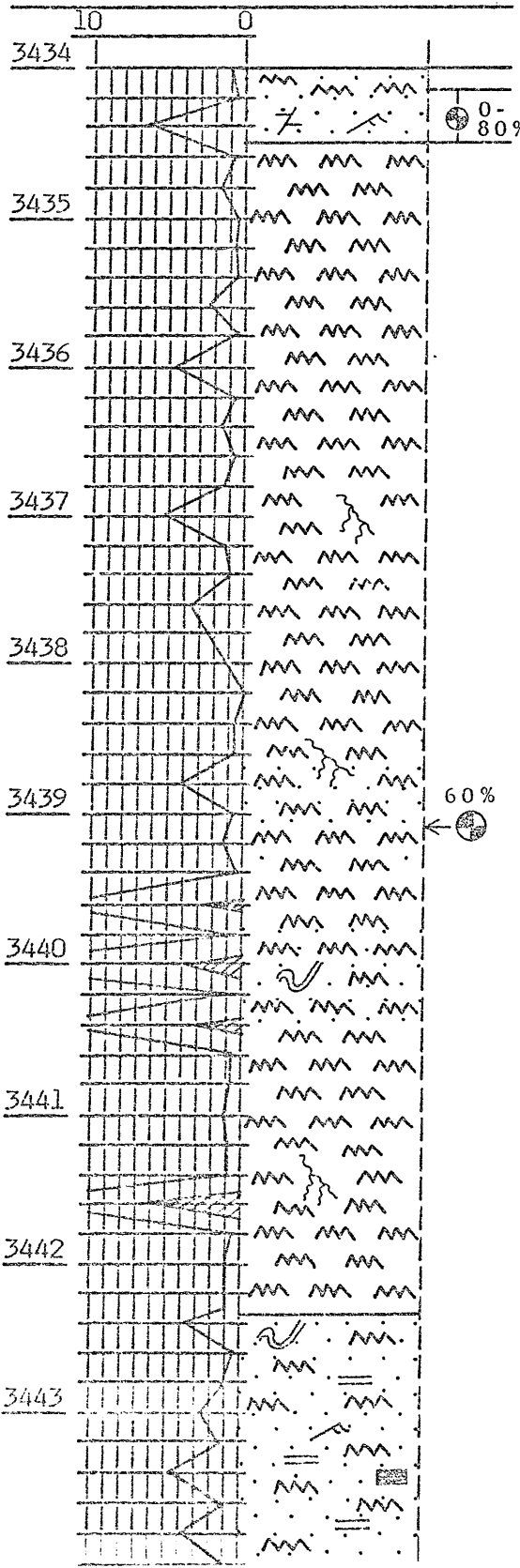
Bit Type : Christ C23

Bit Size : 8-1/2"

Described by : R. Neumann

Date : 15/10/84

Int. (m)      Depth & ROP (m/hr)      Graphic Shows      Descriptive Lithology



3434.0 - 3434.5m SANDSTONE: Silty, grading to sandy siltstone at top; fine to occasionally medium grained, subangular to subrounded, well sorted quartz grains set in strong, clear crystalline silica and calcareous cements; minor lithic siltstone fragments; common silty laminae and carbonaceous material; small scale current ripples, parallel laminae, and microfaulting.

SHOWS: (3434.2 - 3434.5m) - 0-80% patchy, moderately bright, yellow/white fluorescence; occasionally slow, dull milky white streaming cut; moderately fast dull milky white crush cut; common light brown oil staining and strong petroliferous odour; very poor to poor visual porosity, common dull to moderately bright orange mineral fluorescence associated with calcareous cement.

3434.5 - 3442.37m SILTSTONE: Sandy in two places (around 3439.0m and 3439.5 - 3440.5m), medium dark to dark grey, moderately hard to hard, argillaceous, slightly to very micromicaceous, commonly carbonaceous with rootlets up to 1 cm thick as indicated; non calcareous; common faint parallel laminations; small slump beds and small scale current ripples in sandy section which also has a small (1 cm x 5 cm) patch of 60% dull yellow/white fluorescence; no streaming cut; very slow, dull milky white crush cut; no obvious oil staining; sharp contact with underlying silty sandstone.

3442.37 - 3444.1m SILTY SANDSTONE: Thin parallel interbeds of very fine to fine grained sandstone and siltstone; sandstone is angular to subrounded, well sorted and completely cemented with strong crystalline silica and dolomite cements; dolomite cement gives even, moderately bright orange mineral fluorescence; no visual porosity; no hydrocarbon fluorescence; minor small

Core No. 2 cont'd Well : GRUNTER-1

Interval Cored : 3434.0 - 3452.0m  
 Cut : 18.0m Recovered : 16.9m (94%)  
 Bit Type : Christ C23 Bit Size : 8-1/2"  
 Described by : R. Neumann Date : 15/10/84

Int. (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
3444			3442.37 - 3444.1m cont'd current ripples, starved ripples, dewatering structures and slumped and microfaulted beds near the top; common carbonaceous laminae and carbonaceous material in sandstone matrix.
3445			3444.1 - 3445.8m SILTSTONE: Medium dark to dark grey, moderately to very hard, argillaceous, micromicaceous, slightly carbonaceous, no calcareous, minor fine rootlets, small slumped beds near top, sandy towards top, grading into overlying silty sandstone; gradational into underlying silty sandstone.
3446			
3447			3445.8 - 3447.08m SILTY SANDSTONE: convolute bedded fine to very fine grained sandstone and interbedded thin siltstones; abundant soft sediment folding near base; sandstone is subangular to subrounded, well sorted, well cemented with strong clear crystalline silica and dolomite cements; dolomite cement fluorescents - moderately bright to dull orange; small sand filled channels, small scale current ripples, dewatering structures and a sharp erosional base.
3448			
3449			
3450			
3451			SHOWS: 0-80% (as indicated) moderately bright to dull yellow/white fluorescence; no streaming cut, slow dull milky white crush cut, common oil staining; poor to predominantly very poor visual porosity; gas observed bubbling from this zone for approximately 20 minutes after recovery.
3452			3447.08 - 3450.9m SILTSTONE: Medium to medium dark grey, hard to moderately hard, argillaceous, moderately micromicaceous, slightly to very carbonaceous with common rootlets as indicated; non calcareous; massive to faintly parallel laminated, with carbonaceous material defining parallel laminae.
			3450.9 - 3452.0m NO RECOVERY.



GRUNTER-1 VELOCITY SURVEY REPORT

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1. Marine Velocity Survey Report
2. Schlumberger Data Acquisition
3. Schlumberger Processing Parameters
4. Schlumberger Field Report
5. Check Shot Data - observed and corrected
6. Gun Geometry Sketch

ENCLOSURES

1. Schlumberger Geogram
2. Schlumberger Seismic Calibration Log
3. Schlumberger Raw and Stacked Shots Log
4. Time-Depth Curve.

1.

MARINE WELL VELOCITY SURVEY

Well ..... Grunter-1 .....

Basin..... Gippsland .....

Latitude..... 38° 16' 21.29: S .....

Longitude..... 148° 30' 56.25" E .....

INTRODUCTION

Esso Personnel ..... A. Bramall .....

Contractor..... Schlumberger - D.Dawson (engineer) .....

- (1) Instruments..... C.S.U. ....
- (2) Personnel

Seismic Observer... D.Dawson/W.Pearce .....

Marine Shooter .... N/A .....

Navigation ..... N/A .....

- (3) Licenced Shooting Boat

Name ..... N/A - vertical well .....

Date Loaded..... .....

Date Released..... .....

Agent..... .....

- (4) Seismic Source

Air Gun/~~Water Gun~~ ..... 1 x 120 cu.in. ....

Gas Pressures ..... 2000 psi .....

Personnel and Instruments

Assembled at ... Sale..... Date 19th Oct. 1984

Boarded (rig) Southern Cross ..... Date 19th Oct. 1984

Date of survey.. 24.10.84 .....

Well information .....

Vertical/~~Deviated~~ (max angle).....

Casing Depth ..... 836 m .....

T.D. when shot ..... 3809m MDKB .....

Water depth ..... 108.0 .....

.....metres

SURVEY PROCEDURE

Weather: Wind ..... Light breeze  
 Swell..... less than 0.5m  
 Sea ..... Calm  
 Rig Movement ..... Nil  
 Rig Noise ..... Negligible  
 Accelerometer: Number ..... 1  
~~Hydrophones:~~ Depth below sea level 9.14m below MSL  
 Position ..... At same location as source  
 .....  
 Source: Number of shots per level from 3 to 9 (generally 3 to 4)  
 Gun depth ..... 9.14m below MSL  
 Gun offset ..... 38.5 m  
 Well phone positioning:  
 No. of depths ..... 15 levels  
 Time: First shot ..... 2200 hrs on 24/10  
 Last shot ..... 0251 hrs on 25/10  
 Total rig time ..... 7 hours

RESULTS

Quality of results (good)..... 33 shots - All stacked shots good  
 (fair)..... 18 shots  
 (poor)..... 4 shots  
 (not used)..... 19 of above total of 55 shots  
 Data available on magnetic tape..... 9 track..... format..... SEGY.....  
 1600 BPI

COMMENTS



2.

DATA ACQUISITION

FIELD EQUIPMENT

Energy Source : Bolt airgun (model 1900B)  
120 cu.in.

Source Offset : 38.5m

Source Depth : 9.14m below MSL

Source Azimuth : 22 Deg.

Reference Sensor : Accelerometer

Sensor Offset : 38.5m

Sensor Depth : 9.14m below MSL

Downhole Geophone : Geospace HS-1  
High temperature (350 Deg. F), Coil Resistance  
225 + 10%, Natural Frequency 8-12 Hz, Sensitivity  
0.45 V/in/sec. Maximum tilt angle 60 Deg. Min.

Recording Instrument

Recording was made on the Schlumberger Computerized Service Unit (CSU)  
using LIS format.

PROCESSING PARAMETERS

Seismic Reference Datum (SRD) : Mean Sea Level

Elevation SRD : Mean Sea Level

Elevation Derrick Floor : 20.7m AMSL

Elevation Ground Level : -108.0m AMSL

Well Deviation : 0 Deg.

Total Depth : 3824m below DF

Sonic Log Interval : 270 - 3815m below DF

Density Log Interval : 855 - 3815m below DF



WELL SEISMIC SERVICE FIELD REPORT

124/126

COMPANY	WELL	DATE	LOCATION	ENGINEER	WITNESSED BY
SSO AUST.LTD	GRUNTER 1	OCT. 84	SEA	DAWSON	A. BRAMALL
FEET <input type="checkbox"/> METRES <input checked="" type="checkbox"/>	JACK UP <input type="checkbox"/> SHIP <input type="checkbox"/> PLATFORM <input type="checkbox"/> SEMI-SUB <input checked="" type="checkbox"/>	WEATHER:			
SCHLUMBERGER ZERO	DF	AT ELEVATION	20.7m	RELATIVE TO MEAN SEA LEVEL (M.S.L.)	
LOG MEASURED FROM	DF	AT ELEVATION	0m	RELATIVE TO SCHLUMBERGER ZERO	
DRILLING MEASURED FROM	DF	AT ELEVATION	0m	RELATIVE TO SCHLUMBERGER ZERO	

SOURCE		TIDEL INFORMATION		DISTANCE	HOUR	DATE
GUN TYPE	WATER <input type="checkbox"/> AIR <input checked="" type="checkbox"/>	TIDE LEVEL TO M.S.L.				
VOLUME	1 x 120 CU INCHES	(RECORD IF LEVEL VARIES MORE THAN 2 METRES DURING SURVEY)				
PRESSURE	_____ BARS	CSU SOFTWARE VERSION:		MAX. HOLE DEV:	AZIM:	
VIBRATOR TYPE	_____					
SWEEP LENGTH	_____ SECONDS					
FROM	_____ HZ TO _____ HZ					

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

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

SHOT NO.	DEPTH	GUN PRESSURE	FILTERS	TRANSIT TIME	HOUR SHOT	FILE	STACK	STACKED SHOTS	QUALITY / REMARKS
1	700m	120 BAR		318.8	2200	#2	3	10	GOOD
2	700m			318.6	2201	"	3	11	GOOD
3	700m			318.6	2202	"	3	12	GOOD
4	3504m			1175.5	2308	"	4	23	GOOD
5	3504m			1175.5	2311	"	4	24	GOOD
6	3504m			1175.5	2315	"	4	26	GOOD
7	3310m			1121.5	2328	"	5	29	
8	3310m			1122.6	2330	"	5	30	
9	3310m			1120.8	2331	"	5	31	
10	3310m			1121.4		"	5	32	
11	3310m			1118.9		"	5	34	
12	3310m			1121.0	2336	"	5	35	
13	3250m			1102.5	2343	"	6	36	GOOD
14	3250m			1102.3	2346	"	6	37	GOOD
15	3250m			1103.1		2	6	38	GOOD
16	3000m			1039.8	0000	2	7	39	
17	3000m			-	0001	2			POOR
18	3000m			1039.3	0002	2	7	41	GOOD
18	3000m			1039.5	0003	2	7	42	GOOD
19	2805m			988.4	0017	3	8	43	OK
20	2805m			991.7	0020	3	8		GOOD
21	2805m			906	0021	3			POOR
22	2805m			990.7	0022	3	8	46	GOOD
23	2805m			986	0023	3	8	47	POOR
24	2805m			988.6	0024	3	8	48	OK
25	2805m			986	0025	3	8	49	OK
26	2610m			937.9	0037	3	9	50	OK
27	2610m			936.3	0040	3	9	51	OK
28	2610m			936.2	0041	3	9	52	OK
29	2610m			935.3	0042	3	9	53	OK
30	2450m			893.7	0055	3	10	54	OK
31	2450m			888.9	0057	3	-		POOR
32	2450m			893.7	0058	3	10	55	OK
33	2450m			894.2	0059	3	10	56	OK

Distribution: 1/10 - computer centre Green - District Pink - Location

5.

VELOCITY SURVEY - GRUNTER -1

<u>LEVEL NUMBER</u>	<u>MEASURED DEPTH FROM DF</u> (M)	<u>VERTICAL DEPTH FROM SRD</u> (M)	<u>VERTICAL DEPTH FROM GL</u> (M)	<u>OBSERVED TRAVEL TIME HYD/GEO</u> (M/S)	<u>VERTICAL TRAVEL TIME SRC/GEO</u> (M/S)	<u>VERTICAL TRAVEL TIME SRD/GEO</u> (M/S)	<u>AVERAGE VELOCITY SRD/GEO</u> (M/S)	<u>DELTA DEPTH BETWEEN SHOTS</u> (M)	<u>DELTA TIME BETWEEN SHOTS</u> (M/S)	<u>INTERVAL VELOCITY BETWEEN SHOTS</u> (M/S)
1	128.70	108.00	0	71.68	66.79	72.97	1480			
2	700.00	679.30	571.30	318.00	317.48	323.65	2099	571.30	250.68	2279
3	900.00	879.30	771.30	388.00	387.62	393.80	2233	200.00	70.14	2851
4	1250.00	1229.30	1121.30	504.00	503.75	509.93	2411	350.00	116.13	3014
5	1600.00	1579.30	1471.30	626.00	625.81	631.99	2499	350.00	122.06	2867
6	1855.00	1834.30	1726.30	717.00	716.84	723.02	2537	255.00	91.03	2801
7	1890.00	1869.30	1761.30	727.00	726.84	733.02	2550	35.00	10.00	3499
8	2180.00	2159.30	2051.30	814.00	813.87	820.05	2633	290.00	87.03	3332
9	2450.00	2429.30	2321.30	894.00	893.89	900.06	2699	270.00	80.02	3374
10	2610.00	2589.30	2481.30	935.00	934.90	941.07	2751	160.00	41.01	3902
11	2805.00	2784.30	2676.30	987.00	986.91	993.08	2804	195.00	52.01	3749
12	3000.00	2979.30	2871.30	1039.00	1038.91	1045.09	2851	195.00	52.01	3749
13	3250.00	3229.30	3121.30	1102.00	1101.92	1108.10	2914	250.00	63.01	3968
14	3310.00	3289.30	3181.30	1120.00	1119.92	1126.10	2921	60.00	18.00	3333
15	3505.00	3484.30	3376.30	1175.00	1174.93	1181.10	2950	195.00	55.00	3545

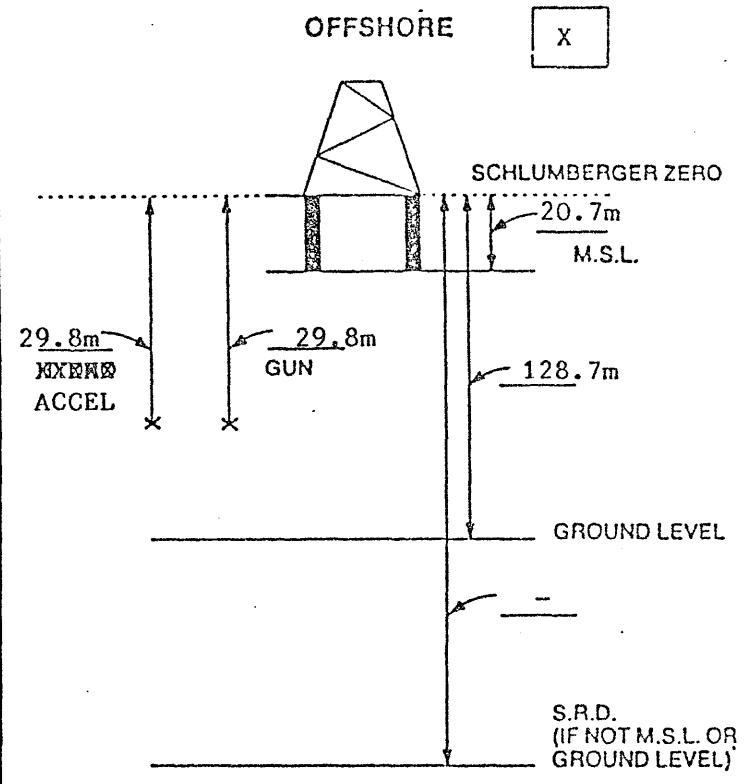
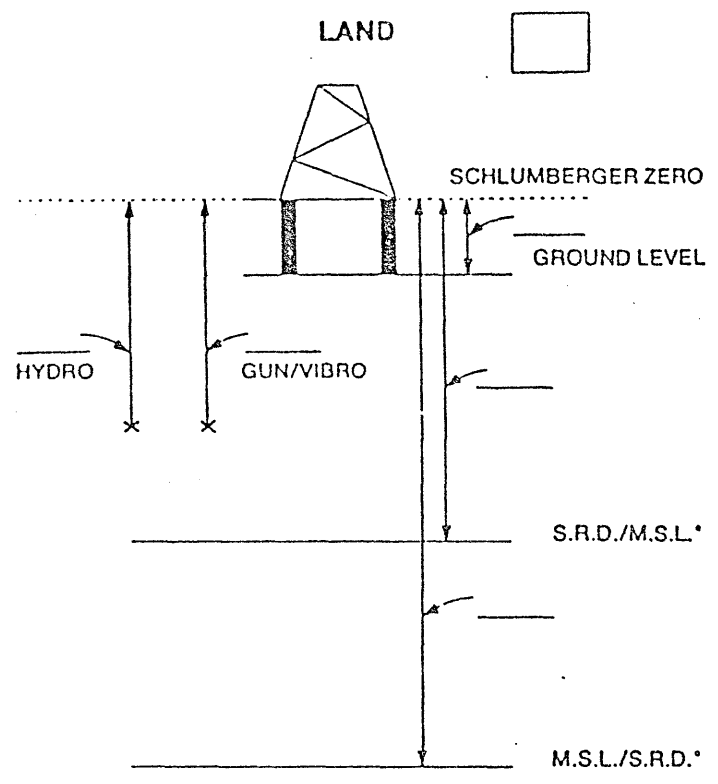
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CLIENT: ESSO AUSTRALIA LTD.

WELL: GRUNTER #1

DATE: OCT. 84

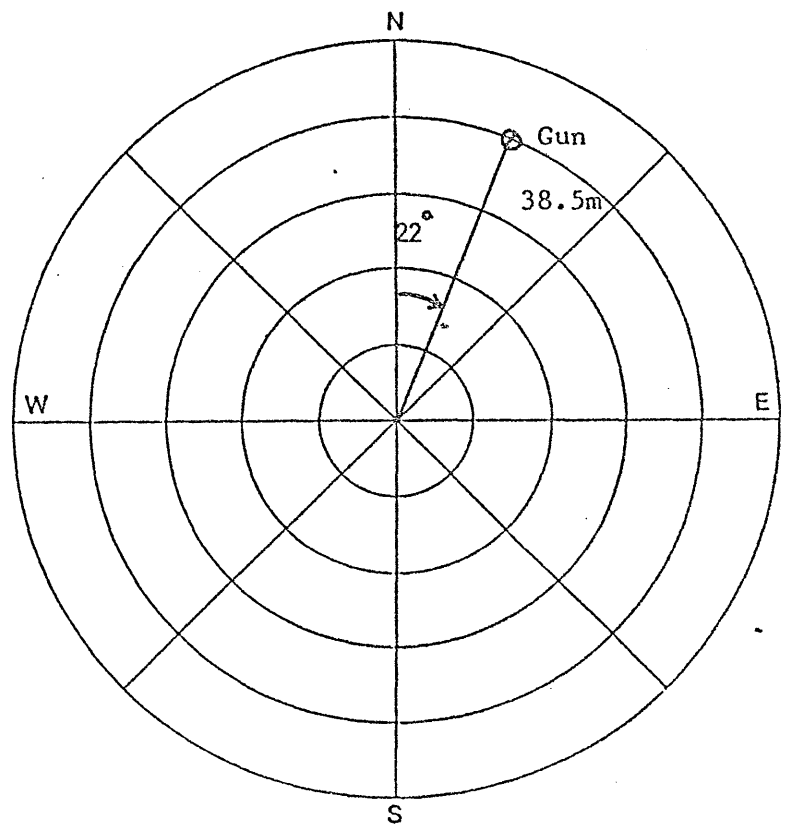


INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO

INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO

\* DELETE AS APPLICABLE

SHOT POS'N	GUN OFFSET	HYDRO OFFSET	GUN DEPTH	HYDRO DEPTH
1	38.5m	38.5m	9.14m	9.14m
2				
3				
4				
5				
6				
7				



INDICATE GUN/VIBRO AND HYDROPHONE OFFSET AND AZIMUTH RELATIVE TO NORTH

PE601196

This is an enclosure indicator page.  
The enclosure PE601196 is enclosed within the  
container PE902452 at this location in this  
document.

The enclosure PE601196 has the following characteristics:

- ITEM\_BARCODE = PE601196
- CONTAINER\_BARCODE = PE902452
  - NAME = Seismic Calibration Log
  - BASIN = GIPPSLAND
  - PERMIT =
  - TYPE = WELL
  - SUBTYPE = VELOCITY\_CHART
- DESCRIPTION = Seismic Calibration Log
- REMARKS =
- DATE\_CREATED = 12/12/1984
- DATE\_RECEIVED = 14/05/1985
  - W\_NO = W879
  - WELL\_NAME = Grunter-1
  - CONTRACTOR = Schlumberger
  - CLIENT\_OP\_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902453

This is an enclosure indicator page.  
The enclosure PE902453 is enclosed within the  
container PE902452 at this location in this  
document.

The enclosure PE902453 has the following characteristics:

ITEM\_BARCODE = PE902453  
CONTAINER\_BARCODE = PE902452  
NAME = Time Depth Curve  
BASIN = GIPPSLAND  
PERMIT =  
TYPE = WELL  
SUBTYPE = VELOCITY\_CHART  
DESCRIPTION = Time Depth Curve  
REMARKS =  
DATE\_CREATED = 21/12/1984  
DATE\_RECEIVED = 14/05/1985  
W\_NO = W879  
WELL\_NAME = Grunter-1  
CONTRACTOR = ESSO  
CLIENT\_OP\_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)



PE902454

This is an enclosure indicator page.  
The enclosure PE902454 is enclosed within the  
container PE902452 at this location in this  
document.

The enclosure PE902454 has the following characteristics:

- ITEM\_BARCODE = PE902454
- CONTAINER\_BARCODE = PE902452
  - NAME = Raw and Stacked Shots
  - BASIN = GIPPSLAND
  - PERMIT =
  - TYPE = WELL
  - SUBTYPE = VELCOITY\_CHART
- DESCRIPTION = Raw and Stacked Shots
- REMARKS =
- DATE\_CREATED = 01/11/1984
- DATE\_RECEIVED = 14/05/1985
  - W\_NO = W879
  - WELL\_NAME = Grunter-1
  - CONTRACTOR = Schlumberger
  - CLIENT\_OP\_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902455

This is an enclosure indicator page.  
The enclosure PE902455 is enclosed within the  
container PE902452 at this location in this  
document.

The enclosure PE902455 has the following characteristics:

- ITEM\_BARCODE = PE902455
- CONTAINER\_BARCODE = PE902452
  - NAME = Geogram - Synthetic Seismogram
  - BASIN = GIPPSLAND
  - PERMIT =
  - TYPE = WELL
  - SUBTYPE = SYNTH\_SEISMOGRAM
- DESCRIPTION = Geogram - Synthetic Seismogram
- REMARKS =
- DATE\_CREATED = 13/12/1984
- DATE\_RECEIVED = 14/05/1985
  - W\_NO = W879
  - WELL\_NAME = Grunter-1
  - CONTRACTOR = Schlumberger
  - CLIENT\_OP\_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)