WCR VOL 1

TURRUM-5

W1145

Esso Australia Ltd.

WELL COMPLETION REPORT

BA KM

TURRUM-5

VOLUME 1

BASIC DATA

GIPPSLAND BASIN, VICTORIA

ESSO AUSTRALIA LTD

Compiled by: G. Clota
J. Reeve

WELL COMPLETION REPORT

VOLUME 1: BASIC DATA

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FIGURES

APPENDICES

1. WELL DATA RECORD

LOCATION	:	Latitude : 38° 14' 55.83" South Longitude : 148° 12' 03.99" East X= 605099mE Y= 5765878mN Map Projection: UTM (proj). AMG Zone 55 Geographical Location: Bass Strait, Victoria Field : Turrum
PERMIT	:	Vic/L3
ELEVATION	:	25m
WATER DEPTH	:	60.3m
TOTAL DEPTH	:	2755m (Driller) 2758m (Logger)
PLUG BACK TYPE	:	Cement Plugs
REASONS FOR PLUGGING BACK	:	Plug and Abandon
MOVE IN	:	22/08/95 2000 hours
SPUDDED	:	23/08/95 0745 hours
REACHED TD	:	11/09/95 1130 hours
RIG RELEASED	:	23/09/95 2030 hours
OPERATOR	:	Esso Australia Resources Ltd.
PERMITTEE OR LICENCEE	:	BHP Petroleum (Bass Strait) Pty Ltd and Esso Australia Resources Ltd
ESSO INTEREST	:	50%
OTHER INTEREST	:	50% BHP Petroleum (Bass Strait) Ltd
CONTRACTOR	:	Diamond Offshore General Company
RIG NAME	:	Ocean Bounty
EQUIPMENT TYPE	:	Semi-submersible
TOTAL RIG DAYS	:	34.3
DRILLING AFE NO	:	L61015106
TYPE COMPLETION	:	Plug and abandon
WELL CLASSIFICATION	:	Outpost/Extension Well. Oil discovery well in L-360 and L-400 reservoirs.

2. OPERATIONS SUMMARY

1. MOVING/MOORING

The Ocean Bounty was released at 0845 hours on the 19th August, 1995 from the BHP operated Champion location in the Otway Basin, Victoria. The rig was in tow by the MV Lady Dawn. The rig was passed from BHP to Esso control 10 nautical miles from the Turrum-5 location with the #6 anchor above the drop point at 2000 hours on the 22nd of August, 1995. After running and tensioning the anchors the final rig location was 8.8m on a bearing of 45°T from the called location. The water depth was 60.3m.

2. DRILLING OPERATIONS

36" Hole/30" Casing

A Hughes ATX-1 14¾" bit plus 26" and 36" hole openers were made up and used to spud Turrum-5 at 0745 hours on the 23rd August, 1995. The 36" hole section was drilled from 85.3m to 128.5m. The well was circulated clean and a wiper trip was made back to the mudline prior to displacing the well with hi-vis mud. The hole deviation at 116m was 0.75°/232°.

Three joints of 30" 310lb/ft casing were run with the PGB and cemented in place with 800 sacks of class 'G' cement with 2% $CaCl_2$ in seawater. The shoe was set at 117m.

17½" Hole/13 3/8" Casing

A Hughes 17½" Max-G1 was made up and drilled out the float shoe, then washed and reamed the rathole to 128.5m. Drilling proceeded from 128.5m to 670m. Hi-vis sweeps were pumped at 15m intervals during the drilling of the interval. Single shot surveys were run at the following intervals, 403m bullseye and 665m 0.25°/133°.

A wiper trip was made to the 30" casing shoe and the well was displaced in stages with hi-vis mud prior to tripping out and rigging up the wireline loggers. Suite #1 Run #1 was AS-LDL-CAL-GR-AMS. The logs were run riserless and without the motion compensator engaged. The logging string was directed to the wellhead by running the tools to the seafloor supported by the rig's utility guideframe.

47 joints of 68lb/ft K55 13 3/8" casing plus 1 joint of 20" 129lb/ft X-56 casing and the 18¾"wellhead joint were run with the shoe landed at 655.5m. The casing was cemented with a lead of 950 sacks of class 'G' cement plus 0.45 GPS Econolite (12.5ppg) and a tail of 700 sacks class 'G' cement (15.8ppg).

The BOP stack was run and latched, pressure and function tested along with the surface lines.

12¼" Hole

A 12¼" Diamond Boart QP19L was made up with an F2000M Dynadrill tandem mud motor and RIH. The float collar and shoe track were drilled out and the rathole cleaned to 670m. New formation was drilled from 670m to 673m where the hole was circulated clean and displaced with a KCl/PHPA mud system. A Phase II PIT was performed (EMW=14.6ppg, no leak-off) and then drilling proceeded from 673m to 1452m. A bit trip was made at 1452m due to the poor rate of penetration. The PDC bit was badly worn after drilling the abrasive and pyritic Latrobe Formation.

The F2000M Dynadrill tandem mud motor was laid out and a new 12¼" Diamond Boart TD19M was made up to a new BHA and tripped into the hole. Drilling continued from 1452m to 1460m. The bit failed to drill, was tripped for a bit change and at surface was seen to be badly worn due to the abrasive nature of the formation.

A Reed 12¼" EHP51HDLK was made up and drilled ahead from 1460m to 1866m. A bit trip was made after experiencing excessive downhole torque. Another Reed 12¼" EHP51HDLK was made up and tripped into the hole to drill ahead from 1866m to 2197m. A sample was circulated for geological evaluation whereupon the decision was made to cut Core #1.

A DBS 12¼ " CD-93 core bit and 18m core barrel were made up and tripped into the hole to cut Core #1 from 2197m to 2205.5m. The core was retrieved at surface with 8.3m recovered (98%). The core barrel was dressed and re-run with the same bit and cut Core #2 from 2205.5m to 2223.5m. 17.3m (96%) of core was recovered.

A Reed 12¼" EHP51HKLK was made up and tripped into the hole to drill ahead from 2223.5m to 2508.5m, where the rotary assembly was tripped to pick up the coring assembly.

A re-run DBS 12¼ " CD-93 core bit and 18m core barrel were made up and tripped into the hole to cut three consecutive 18m cores. Core #3 was cut from 2508.3m to 2526.8m and recovered 18.3m (100%). Core #4 was cut from 2526.8m to 2544.8m and recovered 16.7m (93%). Core #5 was cut from 2544.8m to 2549.8m (5m) where the core jammed off. 5m of core (100%) was recovered.

A Reed 12¼"HP51/HJ was made up and tripped in the hole and drilled ahead to 2568m where core point #6 was reached. The drilling assembly was tripped out of the hole and a Hughes 12¼" RC-425 core bit and 18m core barrel were made up and tripped into the hole to cut Core #6 from 2568m to 2586.5m. At surface 18.5m (100%) of the core was recovered.

A Reed 12¼" EHP51HKLK was made up and tripped into the hole to drill ahead from 2586.5m to of 2755m TD. Total Depth was reached at 11:30 hours on the 11th September, 1995. A wiper trip was made to the 13 3/8" casing shoe prior to running Suite #2 of the E-Log programme. The logs run were DLL-MSFL-AS-GR-AMS, FMI-NGR, LDL-CNL-NGR-AMS, MDT-GR-AMS, VSP, MRIL-GR and CST-GR. The MDT was fished on run #6 after taking samples. Low total salinity mud pill with a KCl content of 2.3% was pumped over the interval 2755m to 2000m for the MRIL log. The MRIL-GR tools were fished from 2440m (top of tool) after becoming stuck whilst logging up.

After the completion of Suite #2 E-Log programme open-ended drillpipe was tripped into the hole and spotted cement plugs over the following intervals; 2753.5-2598m, 2598-2451m, 2451-2305m, 2305-2159m, 2159-1985m, 1607-1432m, 1432-1229m, 701-535m and 175-105m. An EZSV was set at 175m. The wellhead was cut and retrieved prior to abandoning Turrum #5.

3. CASING DATA

Size	#/FT	Grade	Conn	Interval	Shoe Depth
30"	310	X-52 & B	SF-60	83-117m	117m
20"	129.3	X-56	DQ FB-60	82-101m	x/o to 13 3/8" @ 101m
13-3/8"	68	K-55	BTC	101-656m	656m

4. CEMENTING DATA

		30"	20" x 13-3/8"	P&A Plugs 1-3	P&A Plugs 4-5	P&A Plug 6	P&A Plug 7	P&A Plug 8	P&A Plug 9
Setting Depth	**M-RKB**	117	656	2753-2305	2305-1985	1607-1432	1432-1233	701-540	177-107
Lead Slurry									
Volume Pumped	SX		950						
Weight	PPG		12.5						
Additives									
Econolite	GAL/SK		0.45						
Mixwater (FW)	GAL/SK		12.76						
Yield	CUFT/SK		2.18						
Tail Slurry									
Volume Pumped	SX	800	700	1099	814	424	550	402	170
Weight	PPG	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
Additives									
Halad 322L (Fluid Loss)	GAL/10bbl			20	18	17	17		
SCR-100L (Retarder)	GAL/10bbl			3	1				
CaCl2	%	2					2	2	2
Mixwater	GAL/SK	5	5	5	5	5	5	5	5
Yield	CUFT/SK	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Bump Plug?		N/A	Yes						
Calculated TOC (m)		ML	ML	2305	1985	1432	Tagged @ 1233m	Tagged @ 540m	

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

Interval (m)	Type
670 - 2755	Cuttings samples - 3 sets of washed and oven dried and 1 set of lightly washed and air dried cuttings. Samples from 670 - 1300m at 30m intervals. Samples from 1300 - 2755m at 5m intervals.
2197.0-2205.5	Core #1 cut 8.5m and recovered 8.3m (98%)
2205.5-2223.5	Core #2 cut 18m and recovered 17.3m (96%)
2508.5-2526.8	Core #3 cut 18.3m and recovered 18.3m (100%)
2526.8-2544.8	Core #4 cut 18m and recovered 16.7m (93%)
2544.8-2549.8	Core #5 cut 5m and recovered 5m (100%)
2568.0-2586.5	Core #6 cut 18.5m and recovered 18.5m (100%)
2133.5-2756.5	60 side wall core shot, 58 recovered (97%)

6. WIRELINE LOGS AND SURVEYS

Type	Scale	From	To
Suite 1			
AS-LDL-CAL-GR-AMS	1:200	658	106
Suite 2			
DLL-MSFL-GR-SP-AMS	1:200	2643	655
AS-GR-CAL	1:200	2755	655
FMI-NGR	1:40/1:200	2757	2140
LDL-CNL-NGR-AMS	1:200	2757	655
MDT (CQ Gauge Pretests)	(72 pretest, 18 sample points)	2711	1406.5
VSP	(84 levels)	2753	645
MRIL-GR-AMS	1:200	2695	2460
CST-GR (Sidewall Cores)	(60 shot, 58 recovered)	2756.5	2133.5

7. MEASURED WHILE DRILLING (MWD) LOGS

Type	Scale	From	To
GR-ROP-WOB (GR failed 1625-1850)	1:200	1300	2604.5

8. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME

Test and Seat No.	Depth (m) KB	Chamber Litres	Oil Litres	Recover (Litres)		Formation Water Litres	Mud Filtrate Litres	Formation Pressure		Hydrostatic Pressure		Remarks
				Cond. Litres	Gas M^3			MPaa	Psia	MPaa	Psia	
1/1	1406.5	-	-	-	-	-	-	-	2040.0	-	2481	Pretest
1/2	1429.1	-	-	-	-	-	-	-	2044.6	-	2521	Pretest
1/3	1438.6	-	-	-	-	-	-	-	2046.1	-	2536	Pretest
1/4	1444.1	-	-	-	-	-	-	-	2047.7	-	2546	Pretest
1/5	1463.4	-	-	-	-	-	-	-	2051.7	-	2580	Pretest
1/6	1484.6	-	-	-	-	-	-	-	2055.6	-	2617	Pretest
1/7	1490.0	-	-	-	-	-	-	-	2063.7	-	2626	Pretest
1/8	1497.5	-	-	-	-	-	-	-	2056.9	-	2640	Pretest
1/9	1502.1	-	-	-	-	-	-	-	2055.6	-	2648	Pretest
1/10	1522.6	-	-	-	-	-	-	-	2067.3	-	2684	Pretest
1/11	1530.0	-	-	-	-	-	-	-	2077.7	-	2697	Pretest
1/12	1536.0	-	-	-	-	-	-	-	2086.1	-	2707	Pretest
1/13	1560.5	-	-	-	-	-	-	-	2116.4	-	2751	Pretest
1/14	1562.6	-	-	-	-	-	-	-	2119.3	-	2754	Pretest
1/15	1573.0	-	-	-	-	-	-	-	-	-	2773	Pretest
1/16	1596.1	-	-	-	-	-	-	-	2136.0	-	2812	Pretest
1/17	1636.3	-	-	-	-	-	-	-	2217.7	-	2883	Pretest
1/18	2196.0	-	-	-	-	-	-	-	-	-	3859	Pretest
1/19	2201.0	-	-	-	-	-	-	-	3227.0	-	3868	Pretest
1/20	2206.0	-	-	-	-	-	-	-	3227.6	-	3877	Pretest

Test and Seat No.	Depth (m) KB	Chamber Litres	Oil Litres	Recover (Litres)		Formation Water Litres	Mud Filtrate Litres	Formation Pressure		Hydrostatic Pressure		Remarks
				Cond. Litres	Gas M^3			MPaa	Psia	MPaa	Psia	
1/21	2209.6	-	-	-	-	-	-	-	3228.5	-	3883	Pretest
1/22	2221.6	-	-	-	-	-	-	-	-	-	3904	Pretest
1/23	2236.3	-	-	-	-	-	-	-	-	-	3929	Pretest
1/24	2258.5	-	-	-	-	-	-	-	3259.0	-	3969	Pretest
1/25	2290.9	-	-	-	-	-	-	-	-	-	4025	Pretest
1/26	2292.2	-	-	-	-	-	-	-	3368.8	-	4028	Pretest
1/27	2294.1	-	-	-	-	-	-	-	-	-	4032	Pretest
1/28	2294.1	-	-	-	-	-	-	-	3370.6	-	4031	Pretest
1/29	2299.6	-	-	-	-	-	-	-	-	-	4041	Pretest
1/30	2332.0	-	-	-	-	-	-	-	-	-	4091	Pretest
1/31	2333.6	-	-	-	-	-	-	-	-	-	4101	Pretest
1/32	2358.6	-	-	-	-	-	-	-	3423.4	-	4144	Pretest
1/33	2363.3	-	-	-	-	-	-	-	3424.9	-	4153	Pretest
1/34	2379.4	-	-	-	-	-	-	-	3466.5	-	4181	Pretest
1/35	2380.8	-	-	-	-	-	-	-	3472.5	-	4184	Pretest
1/36	2388.2	-	-	-	-	-	-	-	3466.1	-	4197	Pretest
1/37	2390.6	-	-	-	-	-	-	-	3466.9	-	4202	Pretest
1/38	2392.3	-	-	-	-	-	-	-	3467.2	-	n/a	Pretest
1/39	2392.3	-	-	-	-	-	-	-	3467.2	-	4205	Pretest
1/40	2406.9	-	-	-	-	-	-	-	3491.7	-	4230	Pretest
1/41	2414.3	-	-	-	-	-	-	-	3495.1	-	4243	Pretest
1/42	2418.6	-	-	-	-	-	-	-	3495.4	-	4251	Pretest
1/43	2411.7	-	-	-	-	-	-	-	3493.4	-	4239	Pretest
1/44	2526.1	-	-	-	-	-	-	-	3708.9	-	4437	Pretest
1/45	2527.6	-	-	-	-	-	-	-	3709.6	-	4439	Pretest

Test and Seat No.	Depth (m) KB	Chamber Litres	Oil Litres	Recover (Litres)		Formation Water Litres	Mud Filtrate Litres	Formation Pressure		Hydrostatic Pressure		Remarks
				Cond. Litres	Gas M^3			MPaa	Psia	MPaa	Psia	
1/46	2534.1	-	-	-	-	-	-	-	-	-	4451	Pretest
1/47	2538.5	-	-	-	-	-	-	-	-	-	4458	Pretest
1/48	2541.7	-	-	-	-	-	-	-	3725.5	-	4464	Pretest
1/49	2548.1	-	-	-	-	-	-	-	3724.9	-	4476	Pretest
1/50	2568.3	-	-	-	-	-	-	-	-	-	4511	Pretest
1/51	2570.6	-	-	-	-	-	-	-	3738.6	-	4515	Pretest
1/52	2568.8	-	-	-	-	-	-	-	3737.1	-	4512	Pretest
1/53	2580.1	-	-	-	-	-	-	-	3748.7	-	4532	Pretest
1/54	2599.7	-	-	-	-	-	-	-	3712.3	-	4566	Pretest
1/55	2601.6	-	-	-	-	-	-	-	3710.4	-	4569	Pretest
1/56	2604.0	-	-	-	-	-	-	-	3712.7	-	4574	Pretest
1/57	2607.1	-	-	-	-	-	-	-	3715.4	-	4579	Pretest
1/58	2608.6	-	-	-	-	-	-	-	3716.5	-	4582	Pretest
1/59	2613.8	-	-	-	-	-	-	-	3721.9	-	4591	Pretest
1/60	2618.1	-	-	-	-	-	-	-	3725.5	-	4598	Pretest
1/61	2620.8	-	-	-	-	-	-	-	3727.9	-	4604	Pretest
1/62	2622.5	-	-	-	-	-	-	-	3730.0	-	4607	Pretest
1/63	2628.6	-	-	-	-	-	-	-	3743.6	-	4619	Pretest
1/64	2637.1	-	-	-	-	-	-	-	3753.4	-	4633	Pretest
1/65	2651.0	-	-	-	-	-	-	-	3772.6	-	4658	Pretest
1/66	2672.5	-	-	-	-	-	-	-	3800.8	-	4695	Pretest
1/67	2711.1	-	-	-	-	-	-	-	-	-	4762	Pretest
1/68	2438.3	-	-	-	-	-	-	-	3574.2	-	4284	Pretest
1/69	2475.1	-	-	-	-	-	-	-	-	-	4347	Pretest
1/70	2545.1	-	-	-	-	-	-	-	-	-	4469	Pretest
1/71	2547.4	-	-	-	-	-	-	-	3724.0	-	4473	Pretest

TABLE 1: TURRUM-5 MDT FLUID SAMPLE SUMMARY

Run/Sample	Depth (m MDRKB)	Depth (m TVDSS)	Sample Size	Expected Fluid	Result
1/1	2206.0	2181.0	450cc	gas	250cc filtrate
1/2	2206.0	2181.0	450cc	gas	450cc filtrate
1/3	2548.0	2523.0	450cc (not used)	oil	Probe set unsuccessful
1/4	2548.2	2523.2	450cc (not used)	oil	Probe set unsuccessful
1/5	2547.4	2522.4	450cc	oil	450cc filtrate
1/6	2547.4	2522.4	450cc	oil	Chamber empty
1/7	2570.5	2545.5	450cc	oil	Trace gas and filtrate
1/8	2570.5	2545.5	450cc	oil	Chamber empty
2/1	2206.0	2181.0	450cc (preserved)	gas	Laboratory reported chamber empty
2/2	2392.2	2367.2	450cc (preserved)	gas	Laboratory reported chamber empty
2/3	2418.5	2393.5	450cc (not used)	gas	Tool plugged no sample obtained
2/4	2527.5	2502.5	450cc (preserved)	gas	Laboratory reported chamber empty
2/5	2541.6	2516.6	not used	gas	OFA indicated only filtrate - no sample attempted
2/6	2547.4	2522.4	450cc	oil	Chamber empty
2/7	2570.5	2545.5	1 gallon	oil	0.7 cuft gas, 100cc oil, 3 litres filtrate
2/8	2601.5	2576.5	6 gallon	gas	121.4 cuft gas, 250cc condensate, 3.75 litres filtrate
2/9	2620.7	2595.7	2-3/4 gallon (not used)	oil	Tool failed - POOH
3/1	2548.1	2523.1	6 gallon (not used)	oil	Packer failure - POOH
4/1	2548.0	2523.0	6 gallon	oil	19 litres filtrate
4/2	2548.0	2523.0	2-3/4 gallon	oil	9.6 litre filtrate
4/3	2548.0	2523.0	Not reported	oil	Chamber empty
5/1	2548.0	2523.0	12 gallon	oil	36 litres filtrate + oil scum
5/2	2570.5	2545.5	2-3/4 gallon (not used)	oil	Tool failure - POOH
6/1	2570.5	2545.5	1 gallon	oil	10.1 cuft gas, 1.25 litres oil, 1.25 litres filtrate
6/2	2570.5	2545.5	1 gallon	oil	1.5 litres oil, 1.5 litres filtrate
6/3	2548.6	2523.6	12 gallon	oil	2.5 cuft gas, 38 litres filtrate + oil scum
6/4	2548.6	2523.6	2-3/4 gallon	oil	11.9 cuft gas, 3.75 litres oil, 4.5 litres filtrate
6/5	2548.6	2523.6	2-3/4 gallon (preserved)	oil	Laboratory volumes: 100cc oil, 250cc filtrate

9. TEMPERATURE RECORD

Logging Run	Depth (m)	Max Recorded Temperature ^{o}C	Circulation Time (t_k) (hours)	Time After Circulation Stopped (t) (hours)
Suite 1				
AS-LDL-CAL-GR-AMS	652	20	0.83	5.4
Suite 2				
DLL-MSFL-AS-GR-SP	2758	97	1.5	11.17
FMI-LDL-CNL-NGL-AMS	2758	106	1.5	18.83
LDL-CNL-NGL-AMS	2758	110	1.5	23.25
MDT-GR (PRE-TEST)				
CSAT	2758	114	1.5	79.33
MRIL-GR	2695	97	4.1	9.1
CST'S				

FIGURES

FIGURES

PE906493

This is an enclosure indicator page.
The enclosure PE906493 is enclosed within the container PE900857 at this location in this document.

The enclosure PE906493 has the following characteristics:

ITEM_BARCODE	= PE906493
CONTAINER_BARCODE	= PE900857
NAME	= Locality Map
BASIN	= GIPPSLAND
PERMIT	= VIC/L3
TYPE	= WELL
SUBTYPE	= LOCATION_MAP
DESCRIPTION	= Locality Map (figure 1 from WCR vol.1) for Turrum-5
REMARKS	=
DATE_CREATED	= 14/07/95
DATE_RECEIVED	=
W_NO	= W1145
WELL_NAME	= TURRUM-5
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PROPOSED TURRUM-5
LOCALITY MAP

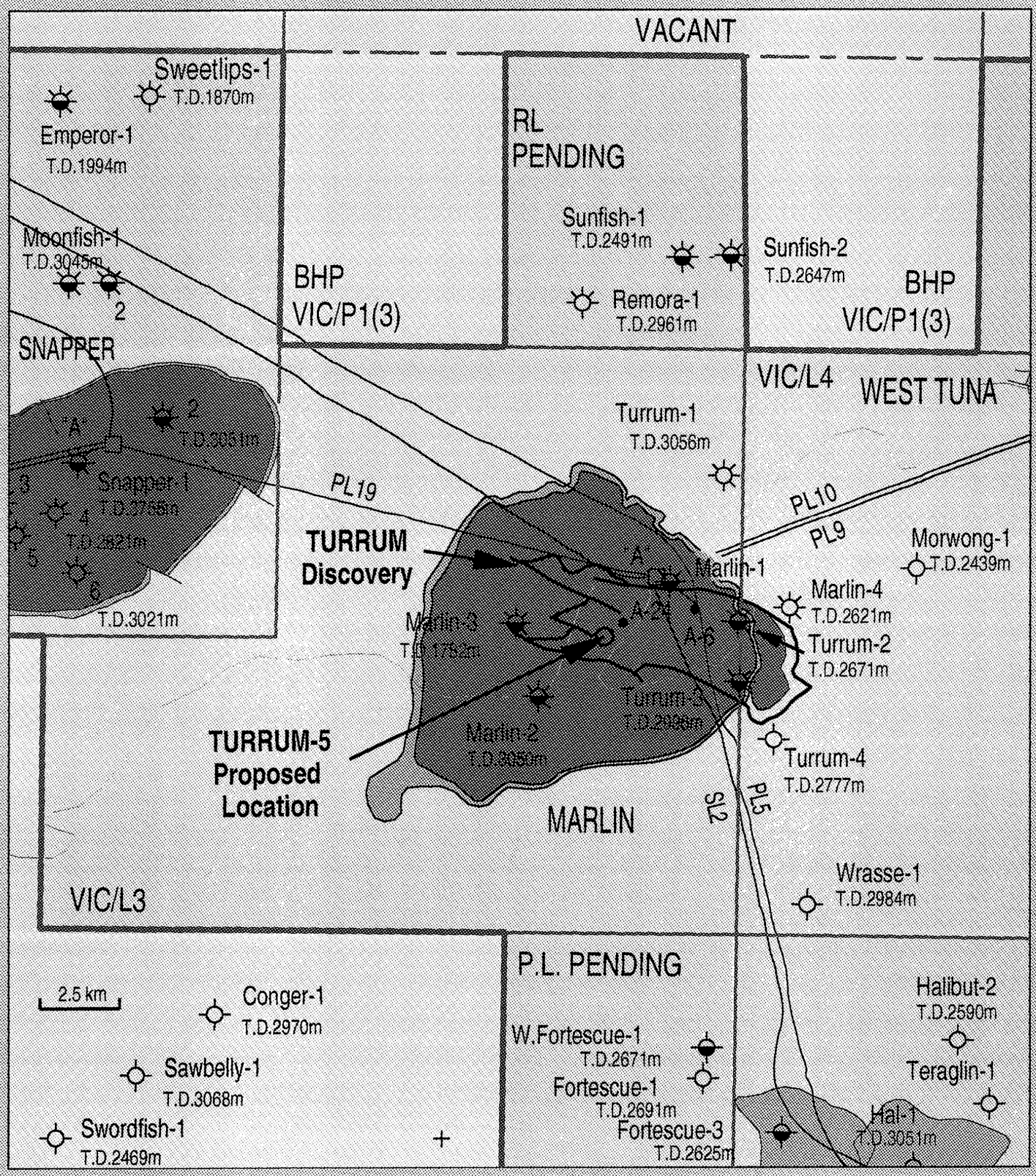


Figure 1

14/7/95 GPV01419

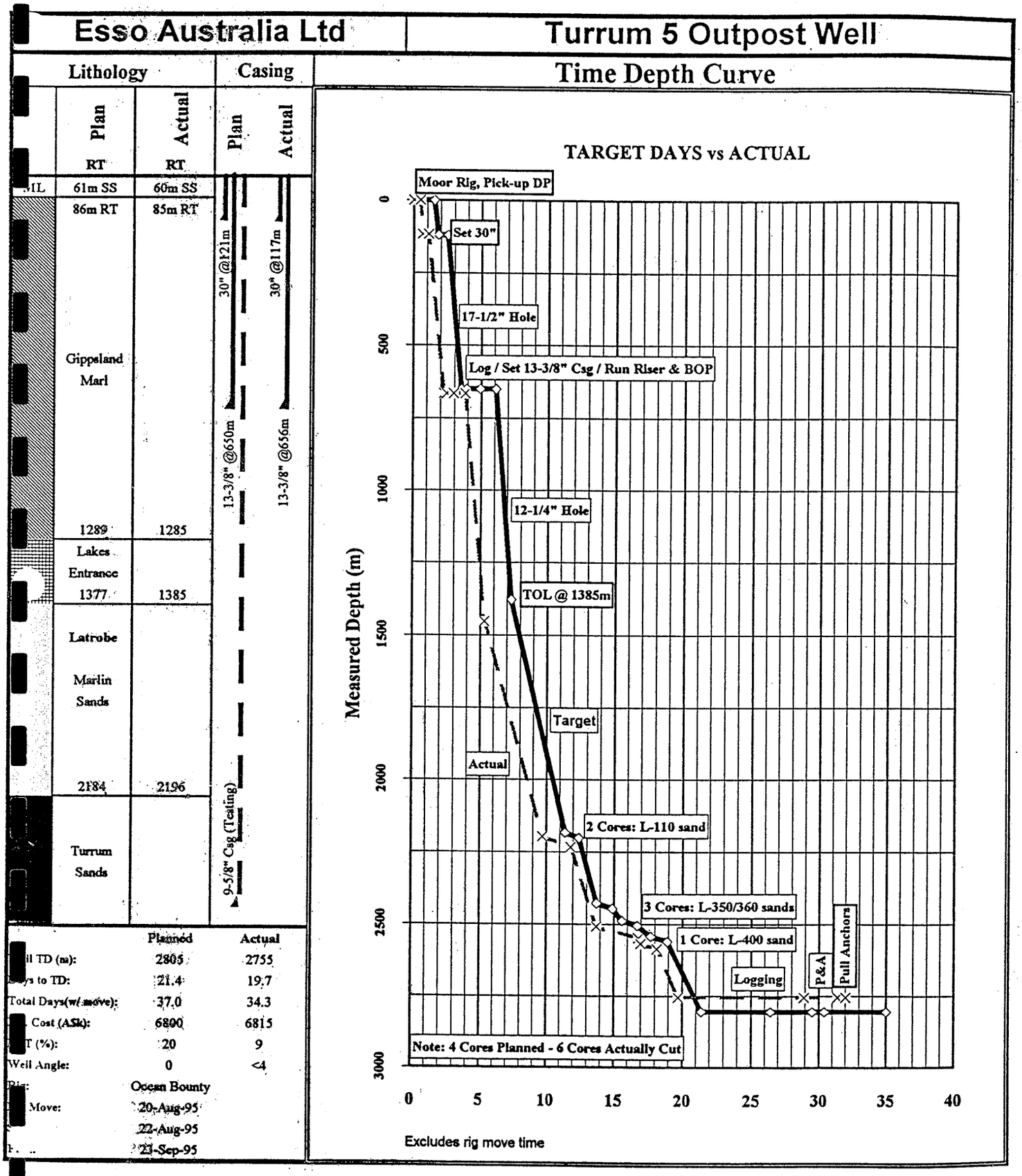

Esso Australia Ltd
Turrum 5 Outpost Well
Lithology
Casing
Time Depth Curve
Plan RT
Actual RT
Plan
Actual
ML
61m SS
60m SS
86m RT
85m RT
30" @121m
30" @117m
Gippsland Marl
13-3/8" @650m
13-3/8" @656m
1289
1285
Lakes Entrance
1377
1385
Latrobe
Marlin Sands
2184
2196
9-5/8" Csg (Testing)
Turrum Sands
Planned
Actual
TD (m):
2805
2755
s to TD:
21.4
19.7
Total Days(w/ move):
37.0
34.3
Cost (A$k):
6800
6815
T (%):
20
9
Well Angle:
0
<4
Ocean Bounty
Move:
20-Aug-95
22-Aug-95
23-Sep-95
TARGET DAYS vs ACTUAL
Moor Rig, Pick-up DP
Set 30"
17-1/2" Hole
Log / Set 13-3/8" Csg / Run Riser & BOP
12-1/4" Hole
TOL @ 1385m
Target
Actual
2 Cores: L-110 sand
3 Cores: L-350/360 sands
1 Core: L-400 sand
Logging
P&A
Pull Anchors
Note: 4 Cores Planned - 6 Cores Actually Cut
Measured Depth (m)
0
500
1000
1500
2000
2500
3000
0
5
10
15
20
25
30
35
40
Excludes rig move time

Figure 2

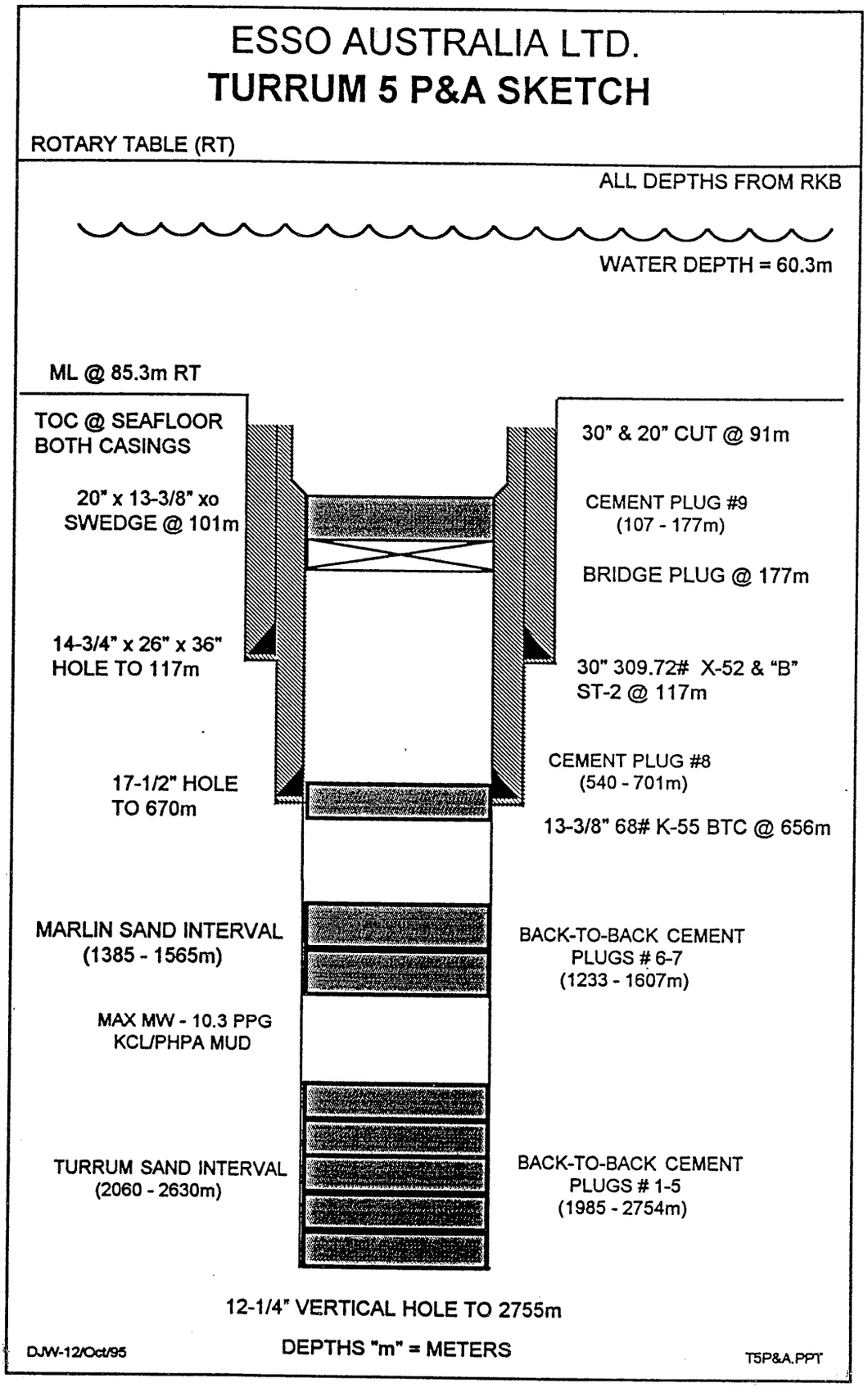

ESSO AUSTRALIA LTD.
TURRUM 5 P&A SKETCH
ROTARY TABLE (RT)
ALL DEPTHS FROM RKB
WATER DEPTH = 60.3m
ML @ 85.3m RT
TOC @ SEAFLOOR
BOTH CASINGS
20" x 13-3/8" xo
SWEDGE @ 101m
14-3/4" x 26" x 36"
HOLE TO 117m
17-1/2" HOLE
TO 670m
MARLIN SAND INTERVAL
(1385 - 1565m)
MAX MW - 10.3 PPG
KCL/PHPA MUD
TURRUM SAND INTERVAL
(2060 - 2630m)
30" & 20" CUT @ 91m
CEMENT PLUG #9
(107 - 177m)
BRIDGE PLUG @ 177m
30" 309.72# X-52 & "B"
ST-2 @ 117m
CEMENT PLUG #8
(540 - 701m)
13-3/8" 68# K-55 BTC @ 656m
BACK-TO-BACK CEMENT
PLUGS # 6-7
(1233 - 1607m)
BACK-TO-BACK CEMENT
PLUGS # 1-5
(1985 - 2754m)
12-1/4" VERTICAL HOLE TO 2755m
DJW-12/Oct/95
DEPTHS "m" = METERS
T5P&A.PPT

Figure 3

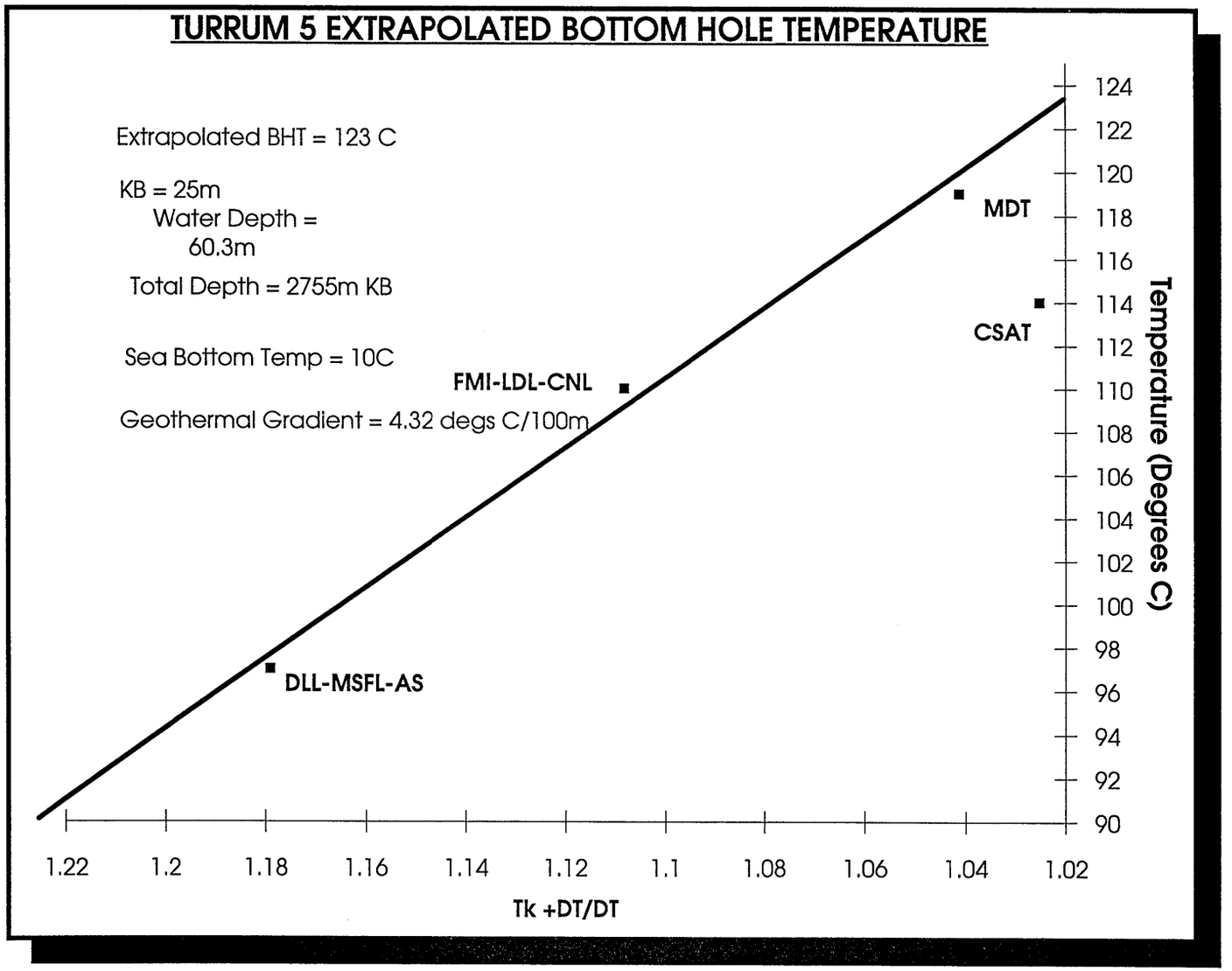

TURRUM 5 EXTRAPOLATED BOTTOM HOLE TEMPERATURE
Extrapolated BHT = 123 C
KB = 25m
Water Depth = 60.3m
Total Depth = 2755m KB
Sea Bottom Temp = 10C
Geothermal Gradient = 4.32 degs C/100m
MDT
CSAT
FMI-LDL-CNL
DLL-MSFL-AS
124
122
120
118
116
114
112
110
108
106
104
102
100
98
96
94
92
90
Temperature (Degrees C)
1.22
1.2
1.18
1.16
1.14
1.12
1.1
1.08
1.06
1.04
1.02
Tk +DT/DT

Figure 4

APPENDICES

APPENDIX 1

APPENDIX I

LITHOLOGY DESCRIPTIONS

LITHOLOGY DESCRIPTIONS

Depth (Riser attached at 670m)	%	Description
690	100	LIMESTONE: Pale grey, light brown grey, calcilutite, micritic, slightly silty, trace carbonaceous specks, rare glauconite, soft to firm, massive.
720	100	LIMESTONE: Predominantly as above, trace fossil fragments.
750	100	LIMESTONE: Light brown, pale grey, calcilutite, micritic, locally moderately silty grades to calcisiltite in part, trace carbonaceous fragments, trace fossil fragments, trace white calcite infill, soft to massive.
780	100	LIMESTONE: Predominantly as above, calcilutite, trace discoidal forams.
810	100	LIMESTONE: Pale grey, light brown grey, calcilutite, micritic, trace carbonaceous fragments, rare glauconite, trace fossil fragments, trace forams, trace to rare disseminated pyrite, soft to firm in part, massive to blocky in part.
840	100	LIMESTONE: As above, calcilutite.
870	100	LIMESTONE: Predominantly as above, calcilutite, trace white calcite infill, trace forams.
900	100	LIMESTONE: Light grey, grey brown, calcisiltite, moderately argillaceous, micritic, abundant forams, trace fossil fragments, locally common carbonaceous fragments, trace white calcite infill, firm to soft, massive to blocky.
930	100	LIMESTONE: Predominantly as above, calcisiltite, locally common nodular pyrite.
960	100	LIMESTONE: Predominantly as above, calcisiltite locally grades to calcilutite, common discoidal forams, trace ooids, soft to firm, massive to blocky.
990	100	LIMESTONE: Light to occasionally medium grey, brown grey, calcilutite, micritic, slightly silty in part, common white calcite spar, soft to slightly dispersive, massive to amorphous in part.
1020	100	LIMESTONE: Predominantly as above, becomes medium grey, calcilutite, trace nodular pyrite, trace ooids, soft to firm, massive.

1050	100	LIMESTONE: Light to medium grey, brown grey, calcilutite, micritic, slightly silty, trace forams, trace carbonaceous specks, trace white calcite spar, trace disseminated pyrite, rare glauconite, soft to firm in part, massive.
1080	100	LIMESTONE: Light to medium grey, brown grey, calcilutite, micritic, slightly silty, trace carbonaceous specks, trace nodular pyrite, rare fossil fragments, trace free calcite spar, trace ooids, soft to slightly dispersive, massive to amorphous in part.
1110	100	LIMESTONE: As above calcilutite.
1140	100	LIMESTONE: Predominantly as above, calcilutite, slightly waxy texture, homogeneous, soft, blocky.
1170	100	LIMESTONE: Light brown grey, medium grey, calcisiltite, micritic, very argillaceous, trace carbonaceous and lithic fragments, trace to rare glauconite, abundant forams, trace nodular pyrite, firm to soft, massive.
1200	100	LIMESTONE: Predominantly as above, calcisiltite, trace forams.
1230	100	LIMESTONE: Predominantly as above, calcisiltite, becomes light brown grey.
1260	100	LIMESTONE: Predominantly as above, calcisiltite, locally common carbonaceous fragments.
1290	80	LIMESTONE: Predominantly as above, becomes grey brown in part, common carbonaceous fragments.
	20	CLAYSTONE: Olive grey, medium grey, moderately silty in part, moderately calcareous grades to calcilutite in part, trace carbonaceous fragments, slightly micromicaceous, trace disseminated pyrite, firm, blocky to massive.
1300	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1305	70	LIMESTONE: Light to medium grey, calcisiltite, moderately argillaceous, micritic, trace carbonaceous fragments, trace very fine calcareous sand in part, slightly glauconitic in part, trace disseminated pyrite, firm, blocky.
	30	CLAYSTONE: Olive grey, medium grey, moderately argillaceous, micromicaceous in part, trace carbonaceous fragments, trace disseminated pyrite, soft, blocky to massive.

1310	70	LIMESTONE: As above.
	30	CLAYSTONE: As above.
1315	70	LIMESTONE: As above.
	30	CLAYSTONE: As above.
1320	60	LIMESTONE: Grey brown, light grey, calcisiltite, micritic, moderately argillaceous, trace carbonaceous specks, common forams, trace nodular pyrite, firm, massive to blocky.
	40	CLAYSTONE: Medium grey, olive grey, moderately calcareous, slightly micromicaceous, trace disseminated pyrite, slightly glauconitic in part, waxy texture, firm, blocky.
1325	60	LIMESTONE: As above.
	40	CLAYSTONE: As above.
1330	70	LIMESTONE: As above.
	30	CLAYSTONE: As above.
1335	70	LIMESTONE: As above.
	30	CLAYSTONE: As above.
1340	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1345	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1355	80	LIMESTONE: Brown grey, light grey, calcisiltite, moderately argillaceous, micritic, trace disseminated pyrite, trace very fine calcareous sand in part, trace to rare glauconite, trace carbonaceous fragments, firm to soft, massive to blocky.
	20	CLAYSTONE: As above.
1360	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1365	90	LIMESTONE: Predominantly as above, calcisiltite becomes increasingly argillaceous grades to calcilutite in part.
	10	CLAYSTONE: As above.
1370	80	LIMESTONE: Brown grey, light grey, calcilutite, slightly silty in part, trace very fine light brown calcarenite inclusions, trace nodular pyrite and pyritized fossil fragments, trace forams, soft to massive.
	20	CLAYSTONE: Olive grey, medium grey, moderately calcareous, slightly silty, slightly micromicaceous, trace carbonaceous fragments, marly texture, soft to firm, massive to blocky.

1375	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1380	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1385	80	LIMESTONE: As above.
	20	CLAYSTONE: As above.
1390	10	SANDSTONE: Light brown, occasionally clear to translucent, very coarse to granular, angular to subangular, moderate sorting, common siliceous cement, common pyritic cement, abundant argillaceous matrix, trace pelletoidal glauconite, trace to common nodular pyrite, loose, inferred poor porosity, no fluorescence.
	80	SILTSTONE: Orange brown, medium grey, moderately argillaceous, weathered/lateritic zone, trace to common glauconite, trace haematite staining, common limonitic staining, trace carbonaceous fragments, firm to soft, slightly dispersive, massive.
	10	LIMESTONE: As above.
1395	10	SANDSTONE: As above.
	80	SILTSTONE: As above.
	10	LIMESTONE: As above.
1400	20	SANDSTONE: Predominantly as above, becomes clear to translucent, coarse to very coarse, no fluorescence.
	70	SILTSTONE: Predominantly as above, becomes medium grey, grey brown, common carbonaceous fragments, mottled texture in part, firm, blocky to massive.
	10	COAL: Brown black, black, sub-bituminous, dull lustre, slightly argillaceous, brittle, blocky.
1405	20	SANDSTONE: As above.
	70	SILTSTONE: As above.
	10	COAL: As above.
1410	90	SANDSTONE: Clear to translucent, frosted, coarse to very coarse, angular to subangular, moderate sorting, trace siliceous cement, trace pyritic cement, trace nodular pyrite, trace smoky quartz, loose good porosity, no fluorescence.
	10	SILTSTONE: As above.
	Trace	COAL: As above.
1415	90	SANDSTONE: As above.
	10	SILTSTONE: As above.

1420	90	SANDSTONE: As above.
	10	SILTSTONE: Medium grey, brown grey, moderately argillaceous, trace carbonaceous fragments, slightly arenaceous in part, slightly micromicaceous, trace biotite, mottled texture, firm, massive.
1425	90	SANDSTONE: As above.
	10	SILTSTONE: As above.
1430	100	SANDSTONE: Clear to translucent, frosted, coarse to very coarse, occasionally granular, angular to subangular, moderately sorted, trace siliceous cement, trace smoky/milky quartz, loose good porosity, no fluorescence.
	Trace	SILTSTONE: As above.
1435	100	SANDSTONE: As above.
1440	100	SANDSTONE: Predominantly as above, becomes medium to coarse, trace nodular pyrite.
1445	100	SANDSTONE: As above, medium to coarse grained.
1450	70	SANDSTONE: Clear to translucent, frosted, medium to very coarse, angular to subrounded, poor to moderate sorting, trace siliceous cement, trace argillaceous matrix, trace smoky quartz, loose, good porosity, no fluorescence.
	30	SILTSTONE: Medium grey, brown grey, moderately argillaceous, trace carbonaceous fragments, slightly micromicaceous, trace very fine quartz sand, firm to occasionally moderately hard, blocky.
1455	20	SANDSTONE: Clear to translucent, frosted, medium, subangular to subrounded, moderate to good sorting, common argillaceous matrix, trace nodular pyrite, trace carbonaceous fragments, trace coarse milky quartz float, loose, good porosity, no fluorescence.
	80	SILTSTONE: Medium grey, occasionally brown grey, very argillaceous, common carbonaceous fragments, slightly micromicaceous, soft to occasionally moderately hard, massive to blocky.
1460	10	SANDSTONE: Predominantly as above, medium to predominantly coarse, trace siliceous cement, common very coarse milky quartz float.
	90	SILTSTONE: As above.

1465	30	SANDSTONE: Clear to translucent, frosted, coarse to very coarse, occasionally granular, angular to subangular, poor sorting, locally common dolomitic/siliceous cement, trace pyrite cement, common kaolinitic matrix, common granular milky quartz float, fair to poor porosity, trace yellow/gold mineral fluorescence only.
	60	SILTSTONE: As above.
	10	COAL: Brown black, moderately argillaceous, slightly silty, sub-bituminous, dull lustre, subconchoidal fracture, brittle, blocky.
1470	10	SANDSTONE: As above.
	60	COAL: As above.
	30	SILTSTONE: Predominantly as above, becomes grey brown to medium grey.
1475	10	SANDSTONE: Predominantly as above, no visible cement, fair to good porosity.
	90	SILTSTONE: Light to medium brown, grey brown, very argillaceous, trace carbonaceous fleck, slightly micromicaceous, mottled texture, firm to occasionally moderately hard, massive to blocky.
1480	Trace	SANDSTONE: Predominantly as above, medium to coarse.
	90	SILTSTONE: Medium brown, grey brown, moderately argillaceous, common carbonaceous fragments, slightly arenaceous in part, slightly micromicaceous, firm to soft, massive to blocky.
	10	COAL: Black, brown black, argillaceous/silty, sub-bituminous, subconchoidal fracture in part, dull lustre, brittle, subfissile to blocky.
1485	100	SILTSTONE: As above.
1490	100	SANDSTONE: Clear to translucent, frosted, medium to occasionally coarse, subangular to subrounded, good sorting, clean, trace rose quartz, trace coaly fragments, rare nodular pyrite, loose, good porosity, no fluorescence.
1495	90	SANDSTONE: Predominantly as above, becomes coarse, trace siliceous cement, no fluorescence.
	10	SILTSTONE: Light brown, light grey brown, very argillaceous, trace lithic fragments, trace carbonaceous specks, trace biotite, soft to firm, massive.
1500	80	SANDSTONE: Predominantly as above, medium to very coarse, poor sorting.
	20	SILTSTONE: Predominantly as above, common carbonaceous fragments.

1505	70	SANDSTONE: Predominantly as above, medium to very coarse, poor sorting, moderately argillaceous matrix in part.
	30	SILTSTONE: As above.
1510	Trace	SANDSTONE: As above.
	100	SILTSTONE: As above.
1515	90	SILTSTONE: As above.
	10	COAL: Brown black, sub-bituminous, argillaceous/silty in part, dull to occasionally subvitreous lustre, brittle, blocky to occasionally subfissile.
1520	90	SILTSTONE: Predominantly as above, common very fine arenaceous inclusions.
	10	COAL: As above.
1525	100	SILTSTONE: Predominantly as above, medium brown, light grey brown, very argillaceous, slightly arenaceous.
1530	90	SANDSTONE: Clear to translucent, medium to very coarse, angular to subangular, moderately sorted, trace siliceous cement, trace kaolinitic matrix, common milky quartz, trace rock fragments, loose, good porosity, no fluorescence.
	10	SILTSTONE: Light brown, medium grey brown, very argillaceous, trace carbonaceous fragments, slightly micromicaceous, firm, blocky.
1535	100	SANDSTONE: Predominantly as above, trace nodular pyrite, trace coaly fragments.
	Trace	SILTSTONE: As above.
1540	20	SANDSTONE: Predominantly as above, medium to very coarse, common very coarse milky quartz float.
	50	SILTSTONE: As above.
	30	COAL: Brown black, black, argillaceous/silty, slightly micromicaceous, subfissile, blocky.
1545	10	SANDSTONE: As above.
	70	SILTSTONE: As above.
	20	COAL: As above.
1550	20	SANDSTONE: Light brown, light grey, clear to translucent, fine to medium, subangular to subrounded, good sorting, strong dolomitic/calcareous cement, trace kaolinitic matrix, trace biotite, trace glauconite, hard, tight, common orange gold mineral fluorescence only.

	80	SILTSTONE: Light grey, medium brown, moderately argillaceous, slightly siliceous in part, trace carbonaceous/lithic fragments, micromicaceous, trace biotite, firm to moderately hard, subfissile to blocky.
1555	10	SANDSTONE: As above.
	80	SILTSTONE: As above.
	10	COAL: As above.
1560	60	SILTSTONE: As above.
	40	COAL: As above.
1565	40	SANDSTONE: Clear to translucent, frosted, fine to coarse, angular to subangular, poor sorting, common argillaceous matrix, common very coarse milky quartz, loose, fair porosity, no fluorescence.
	20	SILTSTONE: As above.
	40	COAL: Black, brown black, silty/argillaceous, dull lustre, sub-bituminous, brittle, blocky to subfissile in part.
1570	30	SANDSTONE: As above.
	50	SILTSTONE: As above.
	20	COAL: As above.
1575	Trace	SANDSTONE: As above.
	40	SILTSTONE: Brown grey, medium grey, very argillaceous, slightly arenaceous in part, trace lithic/carbonaceous fragments, moderately hard, blocky.
	60	COAL: As above.
1580	100	SILTSTONE: Predominantly as above, micromicaceous, occasionally mottled texture.
	Trace	COAL: As above.
1585	10	SANDSTONE: Clear to translucent, frosted, coarse, subangular to subrounded, moderate sorting, common argillaceous matrix, trace nodular pyrite, common milky quartz, loose, fair to good porosity, no fluorescence.
	90	SILTSTONE: Medium brown, grey brown, moderately argillaceous, common biotite, micromicaceous, trace carbonaceous/coaly fragments and microlaminations, firm to moderately hard, blocky.
1590	100	SILTSTONE: As above.
	Trace	COAL: As above.

1595	100	SILTSTONE: As above.
	Trace	COAL: As above.
1600	100	SILTSTONE: As above.
	Trace	COAL: As above.
1605	10	SANDSTONE: Light grey, off white, occasionally clear to translucent, fine, subangular to subrounded, good sorting, common argillaceous silty matrix, trace lithic fragments, trace carbonaceous fragments, friable, very poor porosity, no fluorescence.
	90	SILTSTONE: Light to medium brown, moderately argillaceous, trace carbonaceous fragments and microlaminations, trace biotite, slightly micromicaceous, trace lithic fragments, slightly arenaceous in part, soft to firm, slightly dispersive, massive to blocky.
1610	10	SANDSTONE: Predominantly as above, becomes fine to medium.
	90	SILTSTONE: Predominantly as above, trace arenaceous inclusions, trace glauconite.
1615	Trace	SANDSTONE: As above.
	100	SILTSTONE: As above.
1620	80	SILTSTONE: As above.
	20	COAL: Black, sub-bituminous, dull to subvitreous lustre, subconchoidal fracture, brittle to blocky.
1625	10	SANDSTONE: Off white to light grey, fine, subangular, good sorting, trace siliceous cement, trace biotite, friable to moderately hard, poor to nil porosity, no fluorescence.
	90	SILTSTONE: As above.
1626	100	COAL: As above.
1630	90	SILTSTONE: Predominantly as above, common off white very fine arenaceous inclusions.
	10	COAL: As above.
1635	70	SANDSTONE: Clear to translucent, frosted, fine to medium, occasionally coarse, subangular to subrounded, moderate sorting, common argillaceous matrix, trace milky quartz, loose, fair porosity, no fluorescence.
	30	SILTSTONE: As above.
	Trace	COAL: As above.

1640	80	SANDSTONE: Clear to translucent, light grey, fine to medium, occasionally coarse, subangular to subrounded, moderate to good sorting, common argillaceous matrix, trace lithic fragments, trace carbonaceous /coaly fragments, loose, fair porosity, no fluorescence.
	20	SILTSTONE: As above.
	Trace	COAL: As above.
1645	100	SANDSTONE: Predominantly as above, becomes medium to coarse, clean, loose, no fluorescence.
1650	90	SANDSTONE: As above.
	10	SILTSTONE: Light brown, grey brown, very argillaceous, micromicaceous, trace carbonaceous and lithic fragments, trace biotite, soft to slightly dispersive, massive to blocky.
1655	20	SANDSTONE: Predominantly as above, becomes medium to very coarse, common argillaceous matrix, common milky quartz, loose, poor porosity.
	70	SILTSTONE: Grey brown, light to medium brown, very argillaceous, micromicaceous, trace coal fragments & microlaminations, firm to moderately hard, blocky.
	10	COAL: Black sub-bituminous to bituminous, slightly silty, subvitreous to vitreous lustre, brittle, blocky to subfissile in part.
1660	60	SANDSTONE: Predominantly as above, becomes medium to coarse.
	20	SILTSTONE: As above.
	20	COAL: As above.
1665	20	SANDSTONE: Predominantly as above, trace nodular pyrite.
	80	SILTSTONE: Light grey, light brown, grey brown, very argillaceous grades to claystone in part, trace carbonaceous fragments, slightly arenaceous in part, micromicaceous in part, soft to firm, massive to blocky.
1670	20	SANDSTONE: As above.
	80	SILTSTONE: As above.
1675	40	SANDSTONE: As above.
	50	SILTSTONE: As above.
	10	COAL: Black sub-bituminous to bituminous, slightly silty, subvitreous to vitreous lustre, brittle, blocky to subfissile in part.

1680	10	SANDSTONE: Off white to light grey, occasionally clear, very fine to fine, subangular, good sorting, slightly siliceous cement, common kaolinitic matrix, trace lithic fragments, trace biotite in part, friable, poor porosity, no fluorescence.
	20	SILTSTONE: As above.
	70	COAL: As above.
1685	20	SANDSTONE: Predominantly as above, fine to occasionally medium grained, abundant argillaceous/kaolinitic matrix.
	30	SILTSTONE: Predominantly as above, becomes medium brown grey in part, arenaceous inclusions, very argillaceous in part.
	50	COAL: As above.
1690	100	SILTSTONE: Medium brown grey, olive grey, very argillaceous, common carbonaceous flecks, slightly micromicaceous, trace lithic fragments, firm, massive.
	Trace	COAL: As above.
1695	20	SANDSTONE: Off white to light grey, clear in part, very fine to fine, angular to subangular, common argillaceous/silty matrix, trace biotite, trace carbonaceous fragments, friable, tight, no fluorescence
	80	SILTSTONE: As above.
1700	30	SANDSTONE: Clear to translucent, off white, medium to coarse, angular to subangular moderate sorting, trace to moderate siliceous/dolomitic cement, argillaceous/silty matrix, common coarse milky quartz grains, poor to nil porosity, pale yellow gold mineral fluorescence only.
	60	SILTSTONE: Light to medium brown, grey brown, very argillaceous, trace biotite, trace lithic fragments, mottled texture, soft to firm, blocky to massive.
	10	COAL: As above.
1705	Trace	SANDSTONE: As above.
	80	SILTSTONE: Medium to light brown, very argillaceous grades to claystone, micromicaceous, trace carbonaceous specks in part, occasionally mottled texture, smooth & waxy , firm, blocky to platy in part.
	20	COAL: As above.
1710	80	SILTSTONE: As above.
	20	COAL: As above.
1715	70	SILTSTONE: As above.
	30	COAL: As above.

1720	90	SILTSTONE: As above.
	10	COAL: As above.
1725	10	SANDSTONE: Off white, light grey, very fine to fine, abundant argillaceous/silty matrix, trace carbonaceous flecks, friable tight, no fluorescence. Sandstone grades to siltstone in part.
	30	SILTSTONE: As above.
	60	COAL: As above.
1730	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
1735	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
1740	90	SILTSTONE: Light brown, pale grey brown, slightly arenaceous, very argillaceous grades to claystone in part, trace carbonaceous fragments and microlaminations, slightly micromicaceous, soft to plastic, massive to blocky, occasionally hygroturgid.
	10	COAL: As above.
1745	20	SANDSTONE: Clear to translucent, frosted, fine, subangular, good sorting, trace siliceous cement, trace argillaceous/silty matrix, trace carbonaceous specks, rare biotite, friable to loose, poor porosity, no fluorescence.
	80	SILTSTONE: Light brown, grey brown, moderately argillaceous, common carbonaceous fragments and microlaminations, micromicaceous, trace biotite, mottled texture in part, soft to firm, occasionally moderately hard, blocky to subfissile.
1750	60	SANDSTONE: Predominantly as above, becomes medium, subangular to subrounded, moderate sorting, argillaceous/silty matrix, trace carbonaceous fragments, friable to loose, fair porosity, no fluorescence.
	40	SILTSTONE: As above.
1755	50	SANDSTONE: As above.
	50	SILTSTONE: As above.

1760	20	SANDSTONE: Predominantly as above, becomes fine to medium, common argillaceous matrix, trace nodular pyrite.
	80	SILTSTONE: Olive grey, light brown grey, very argillaceous, slightly arenaceous, trace carbonaceous fragments, common biotite, trace lithic/carbonaceous fragments, trace coaly microlaminations, firm, soft, massive to blocky.
1765	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
1770	100	SILTSTONE: Predominantly as above, becomes medium brown in part, common arenaceous inclusions, trace glauconite.
1775	90	SILTSTONE: Predominantly as above, becomes medium dark brown.
	10	COAL: Black, sub-bituminous, argillaceous/silty, dull lustre, brittle, blocky to subfissile.
1780	10	SANDSTONE: Clear to translucent, off white, fine to occasionally medium, subangular to subrounded, moderate to good sorting, trace siliceous cement, trace kaolinitic matrix, trace coarse milky quartz grains, loose to friable, fair porosity, no fluorescence.
	60	SILTSTONE: As above.
	30	COAL: As above.
1785	10	SANDSTONE: Predominantly as above, off white, becomes very fine to fine, common argillaceous/silty matrix, friable, tight.
	90	SILTSTONE: As above.
	30	COAL: As above.
1790	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
1795	100	SILTSTONE: Olive grey, medium brown, very argillaceous grades to claystone, trace carbonaceous fragments and microlaminations, slightly micromicaceous, homogeneous, slightly waxy, firm, occasionally moderately hard, blocky to subfissile in part.
	Trace	COAL: As above.
1800	20	SANDSTONE: Clear to translucent, frosted, fine to occasionally medium, angular to subrounded, moderate to good sorting, common argillaceous/silty matrix, slightly kaolinitic, trace lithic fragments, trace coal fragments, friable to loose, poor porosity, no fluorescence.

	70	SILTSTONE: Light to medium brown, grey brown, moderately argillaceous, trace carbonaceous fragments, micromicaceous, soft to slightly dispersive, massive.
	10	COAL: As above.
1805	30	SANDSTONE: Predominantly as above, abundant argillaceous/silty matrix.
	70	SILTSTONE: As above.
	Trace	COAL: As above.
1810	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
1815	40	SANDSTONE: Clear to translucent, frosted, medium, subangular to subrounded, good sorting, common kaolinitic matrix, slightly silty, trace milky quartz grains, loose, good porosity, no fluorescence.
	60	SILTSTONE: Light brown, light grey brown, moderately argillaceous, slightly arenaceous locally grades to silty sandstone, trace biotite, trace carbonaceous & lithic fragments, firm, massive to blocky.
1820	50	SANDSTONE: As above.
	10	SILTSTONE: As above.
	40	COAL: As above.
1825	20	SANDSTONE: Predominantly as above, becomes off white, light grey, fine, common kaolinitic matrix, trace siliceous cement, friable, tight, no fluorescence.
	60	SILTSTONE: Predominantly as above, becomes very argillaceous grades to claystone in part.
	20	COAL: As above.
1830	60	SANDSTONE: Predominantly as above, becomes, clear to translucent, fine to medium, angular, moderate to good sorting, fair to good porosity, no fluorescence.
	30	SILTSTONE: As above.
	10	COAL: As above.
1835	60	SANDSTONE: As above.
	30	SILTSTONE: As above.
	10	COAL: As above.
1840	50	SANDSTONE: As above.
	20	SILTSTONE: As above.
	30	COAL: As above.

1845	40	SANDSTONE: Clear to translucent, frosted, fine to medium, angular to subangular, moderate sorting, trace to common siliceous/dolomitic cement, trace nodular pyrite, trace coarse milky quartz, loose, occasionally hard aggregates, poor porosity. Dull orange mineral fluorescence only.
	30	SILTSTONE: Light brown, light grey brown, moderately argillaceous, trace lithic fragments, trace carbonaceous specks, slightly micromicaceous in part, soft to firm, massive.
	20	COAL: Black, sub-bituminous to bituminous, moderately argillaceous in part, subvitreous lustre, subconchoidal fracture, brittle, blocky to subfissile.
1850	20	SANDSTONE: Off white, very fine to fine, angular, good sorting, trace dolomitic cement, common kaolinitic/silty matrix, trace lithic fragments, friable to occasionally moderately hard, tight. Trace dull orange mineral fluorescence only.
	40	SILTSTONE: Predominantly as above, becomes medium brown grey in part, mottled texture, common biotite.
	30	COAL: As above.
	10	DOLOMITE: As above.
1855	20	SANDSTONE: Predominantly as above, becomes fine to occasionally medium, trace dolomitic cement, loose, occasionally hard aggregates.
	80	SILTSTONE: Predominantly as above, very argillaceous, common arenaceous inclusions.
	Trace	COAL: As above.
1860	30	SANDSTONE: Clear to translucent, light brown, fine to occasionally medium, angular to subangular, moderate to good sorting, abundant dolomitic/calcareous cement, trace argillaceous & kaolinitic matrix in part, loose, hard aggregates in part, tight. Dull orange mineral fluorescence only.
	60	SILTSTONE: Medium brown, olive grey, very argillaceous locally grades to claystone, trace carbonaceous fragments, trace biotite, firm, waxy, blocky.
	10	COAL: As above.
1865	20	SANDSTONE: Predominantly as above, trace dolomitic cement, trace nodular pyrite, fair porosity. Trace dull orange mineral fluorescence only.
	80	SILTSTONE: As above.
	Trace	COAL: As above.
1870	80	SILTSTONE: Light brown, light grey brown, olive grey in part, very argillaceous locally grades to claystone, slightly arenaceous, common carbonaceous fragments, micromicaceous, slightly mottled texture in part, firm to moderately hard, blocky.

	20	COAL: Black, bituminous, argillaceous/silty in part, subvitreous lustre, subconchoidal fracture, brittle, blocky.
1875	80	SILTSTONE: Predominantly as above, trace lithic fragments.
	20	COAL: As above.
1880	10	SANDSTONE: Off white to light grey, very fine to fine, subangular, good sorting, common kaolinitic matrix, locally very silty grades to arenaceous siltstone in part, trace biotite, trace coaly fragments, friable, tight, no fluorescence.
	70	SILTSTONE: Predominantly as above, becomes olive grey, medium to dark grey in part.
	20	COAL: As above.
1885	10	SANDSTONE: Predominantly as above, becomes medium grained in part.
	90	SILTSTONE: Medium brown, olive grey, moderately argillaceous, slightly arenaceous, micromicaceous, trace carbonaceous fragments and microlaminations, firm, blocky.
	Trace	COAL: As above.
1890	30	SANDSTONE: Off white to light brown in part, light grey, fine, subangular, good sorting, moderate dolomitic cement, trace siliceous cement, trace feldspar, trace smoky quartz, moderately hard, tight, no fluorescence.
	60	SILTSTONE: As above.
	10	COAL: As above.
1895	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
1900	10	SANDSTONE: Light grey, off white, very fine to fine, subangular, good sorting, strong siliceous cement, trace kaolinitic matrix, trace biotite, trace carbonaceous fragments, friable to moderately hard, very poor to nil porosity, no fluorescence.
	90	SILTSTONE: As above.
1905	100	SILTSTONE: Predominantly as above, becomes predominantly olive grey, trace to common carbonaceous/coaly fragments,.
1910	100	SILTSTONE: Predominantly as above, off white, trace arenaceous inclusions.
1915	95	SILTSTONE: Predominantly as above, grading to claystone.
	5	SANDSTONE: As above.

1925	100	SILTSTONE: Generally as above, brownish grey to brownish black, firm, sub-fissile, soft and dispersive in part, extremely micromicaceous, argillaceous, common, carbonaceous specks, trace pyrite nodules, occasionally arenaceous and becoming light grey, predominantly grading to claystone.
1930	100	SILTSTONE: As above, very argillaceous, grading to silty claystone.
	Trace	SANDSTONE: Off white, friable, very fine to fine in part, sub-angular, well sorted, sub-spherical, weak calcareous cement, abundant off white matrix, no visual porosity, no show.
1935	80	SILTSTONE: As above, very argillaceous, grading to claystone, with disseminated pyrite in part.
	20	SANDSTONE: Medium dark grey, slightly greenish, friable to very hard, very fine grained, well sorted, sub-angular - sub-rounded, moderate sphericity, moderately to strong dolomitic cement, abundant white argillaceous matrix in part, rare carbonaceous specks and laminations, no porosity, no show.
1940	70	SILTSTONE: As above.
	20	SANDSTONE: As above.
	10	COAL: Black, dull to sub-vitreous, firm, blocky to angular, argillaceous and sub-fissile in part, grading to carbonaceous claystone.
1945	70	SILTSTONE: As above, very argillaceous, becoming off white in part and very arenaceous, grading to arenaceous siltstone.
	30	SANDSTONE: Off white to light brown, very friable to dispersive, very fine to silt, occasional fine grained, well sorted, angular to sub-rounded, moderate sphericity, trace to occasionally moderate dolomitic cement, abundant white argillaceous matrix, trace mica flakes, no visual porosity, no show.
	Trace	COAL: As above.
1950	90	SILTSTONE: As above, very argillaceous, grading to silty claystone.
	10	SANDSTONE: As above, trace well rounded quartz grains.
	Trace	CARBONACEOUS SHALE.
1955	80	SILTSTONE: Generally as above, brown grey to brown black, firm, sub-fissile, soft and dispersive in part, extremely argillaceous, commonly micromicaceous with occasional mica flakes, trace carbonaceous specks, trace disseminated pyrite and nodules of pyrite, occasional carbonaceous laminations, arenaceous in part, generally grading to silty claystone.

	20	SANDSTONE: Off white to light grey, occasionally brownish, friable and dispersive, silt to fine grained, occasional scattered medium grains, sub-rounded to angular, moderately sorted, high sphericity, weak calcareous cement in part, abundant white argillaceous matrix, abundant carbonaceous detritus in part, trace mica flakes, trace to nil porosity, no show.
1960	60	SANDSTONE: As above, predominantly off white to grey brown, fine - medium grained, occasionally very fine grained, moderately sorted, predominantly disaggregated, air inferred porosity, no show.
	40	SILTSTONE: As above, predominantly arenaceous.
	Trace	COAL: As above, black, dull to sub-vitreous, firm, brittle in part, sub-fissile to sub-blocky.
1965	80	SILTSTONE: As above, very argillaceous, grading to silty claystone.
	20	SANDSTONE: fine grained as above.
	Trace	COAL: As above.
1970	70	SANDSTONE: Light brown to light grey brown, friable and predominantly disaggregated, very fine to predominantly fine to medium, angular to sub-rounded, moderately to high sphericity, moderately to poorly sorted, with scattered coarse quartz grains, weak calcareous cement in part, abundant off white argillaceous matrix with carbonaceous detritus, and mica flakes, poor inferred porosity, no show.
	30	SILTSTONE: As above.
1975	60	SILTSTONE: As above.
	40	SANDSTONE: As above, predominantly fine grained, trace to poor porosity, no show.
1980	60	SANDSTONE: As above, predominantly fine grained, with carbonaceous micro-laminations, poor to trace porosity, no show.
	40	SILTSTONE: As above, grading to silty claystone.
1985	60	SANDSTONE: As above, fine to medium grained, friable to disaggregated, with abundant matrix, poor to trace inferred porosity, no show.
	40	SILTSTONE: As, above, very arenaceous, grading to silty sandstone with carbonaceous laminations.
1990	50	SILTSTONE: Predominantly as above, brown grey to brown black, soft to firm, sub-fissile to fissile, very argillaceous, very micromicaceous, carbonaceous specks and laminations, disseminated pyrite and nods, grading to silty claystone.

	50	SANDSTONE: Off white, light brown, friable very fine to medium, occasional scattered coarse grained, sub-angular, moderate to high sphericity, poorly sorted, weak calcareous cement, abundant white argillaceous matrix, trace to 5% white feldspar grains, <1% white mica flakes, trace carbonaceous detritus, fair to trace porosity, no show.
1995	50	SANDSTONE: As above.
	50	SILTSTONE: As above.
2000	60	SANDSTONE: As above.
	40	SILTSTONE: As above.
2005	70	SILTSTONE: As above, predominantly brownish grey, very argillaceous, grading to silty claystone.
	30	SANDSTONE: As above.
	Trace	COAL: As above.
2010	60	SILTSTONE: As above.
	40	SANDSTONE: As above, very fine to coarse, generally fine to predominantly medium grained, as above, poor porosity, no show.
2015	70	SILTSTONE: As above.
	30	SANDSTONE: As above, 5-10% feldspar.
	Trace	COAL: As above.
2020	90	SILTSTONE: As above with off white sandy siltstone laminations.
	10	SANDSTONE: As above, disaggregated.
2025	80	SILTSTONE: Grey brown, firm to moderately hard, sub-fissile to fissile, very argillaceous, extremely micromicaceous, common carbonaceous specks, occasional pyrite nods, occasional off white sandy laminations, occasional disseminated pyrite, grading to silty claystone.
	20	SANDSTONE: Light grey, off white, predominantly friable, fine to occasional very fine to medium, well sorted, sub-angular, moderate to high sphericity, trace calcareous cement in part, occasional well cemented with pyrite, abundant white argillaceous matrix, 5% white feldspar grains, trace mica flakes, trace carbonaceous laminations, no porosity, no show.
2030	90	SILTSTONE: As above.
	10	SANDSTONE: As above.
2035	100	SILTSTONE: very argillaceous, with locally abundant disseminated pyrite and rare carbonaceous specks.

2040	100	SILTSTONE: As above.
	Trace	SANDSTONE: Off white to colourless, disaggregated, fine quartz, rare very coarse to coarse well rounded quartz grained with weak pyrite cement, in aggregate fine grained, sub-angular, moderately to well sorted, poorly cemented, trace argillaceous matrix, trace carbonaceous specks, and pyrite cement, poor porosity. FLUORESCENCE: Trace dim spotty to patchy white fluorescence, no cut, weak slow crush cut, trace colourless ring residue.
2045	10	SANDSTONE: Off white, light grey, fine to medium, subangular, good sorting, weak siliceous cement, common kaolinitic matrix, trace carbonaceous specks, trace biotite, friable, poor porosity, trace fluorescence, as above.
	90	SILTSTONE: As above.
2050	30	SANDSTONE: Predominantly as above, very fine to fine, trace dolomitic cement in part, locally very argillaceous/silty matrix, trace lithic fragments, very poor to nil porosity, no fluorescence. Sandstone locally grades to silty sandstone.
	70	SILTSTONE: As above.
2055	30	SANDSTONE: As above.
	70	SILTSTONE: As above.
2060	20	SANDSTONE: Predominantly as above, light grey, occasionally off white, very fine, very silty matrix.
	80	OILSTONE: As above.
2065	10	SANDSTONE: Off white, light grey, very fine to fine, subangular, good sorting, weak siliceous cement, trace dolomitic cement in part, common kaolinitic/silty matrix, trace smoky quartz, very poor to nil porosity, no fluorescence.
	90	SILTSTONE: Olive grey, medium brown, very argillaceous, micromicaceous, trace carbonaceous fragments, trace off white arenaceous inclusions, trace disseminated pyrite, firm to moderately hard, blocky.
2070	20	SANDSTONE: Predominantly as above, trace lithic fragments, trace rose quartz.
	80	SILTSTONE: as above.
2075	20	SANDSTONE: Predominantly as above, becomes very fine to silty, common argillaceous/silty matrix, grades to silty sandstone.
	80	SILTSTONE: Predominantly as above, locally common carbonaceous microlaminantions & fragments.

2080	30	SANDSTONE: Predominantly as above, fine to medium, common argillaceous/silty matrix, trace lithic fragments, friable, very poor porosity, no fluorescence.
	70	SILTSTONE: Predominantly as above, becomes medium brown, grey brown.
	Trace	COAL: Black, bituminous, dull to subvitreous lustre, brittle, blocky.
2085	Trace	SANDSTONE: As above.
	100	SILTSTONE: As above.
2090	20	SANDSTONE: Off white, light grey, fine to very fine, subangular, good sorting, common kaolinitic/silty matrix, trace carbonaceous microlaminations, trace lithic fragments, friable, very poor to nil porosity, no fluorescence.
	80	SILTSTONE: Medium brown, olive grey, very argillaceous, slightly arenaceous, trace carbonaceous/coaly microlaminations, micromicaceous, trace lithic fragments, soft to firm, subfissile to blocky.
2095	30	SANDSTONE: Predominantly as above, light brown in part, becomes fine, trace dolomitic cement, very poor to nil porosity.
	70	SILTSTONE: Predominantly as above, locally becomes very argillaceous grades to claystone.
2100	30	SANDSTONE: Predominantly as above, becomes very fine to fine, abundant argillaceous/silty matrix, grades to silty sandstone in part.
	70	SILTSTONE: As above.
2105	40	SANDSTONE: Predominantly as above, very fine to fine, trace pyritic cement, abundant kaolinitic/silty matrix, trace lithic fragments, trace biotite & muscovite, common carbonaceous fragments. FLUORESCENCE: 5% Dull patchy blue/white fluorescence, very faint crush cut, no residue.
	60	SILTSTONE: As above.
2110	20	SANDSTONE: Predominantly as above, trace nodular pyrite, no fluorescence.
	80	SILTSTONE: Predominantly as above, becomes light to medium brown, grey brown.
2115	10	SANDSTONE: Off white, light grey, very fine to fine, subangular, good sorting, trace pyritic cement in part, common kaolinitic/silty matrix, trace carbonaceous flecks, trace lithic fragments, trace to common biotite in part, rare glauconite, friable, very poor to nil porosity, no fluorescence.

	90	SILTSTONE: Light to medium brown, grey brown, very argillaceous, arenaceous in part grades to silty sandstone, trace carbonaceous fragments/microlaminations, micromicaceous, firm, blocky to subfissile.
2120	20	SANDSTONE: As above, no fluorescence.
	80	SILTSTONE: As above.
2125	30	SANDSTONE: Clear to translucent, off white to light grey, very fine to predominantly fine, subangular to subrounded, moderate sorting, trace siliceous cement, occasionally trace dolomitic cement, locally common kaolinitic/silty matrix, trace medium to coarse quartz float, trace carbonaceous flecks, trace lithic fragments, trace altered feldspar, friable to moderately hard, poor to very poor porosity. FLUORESCENCE: 5% Very dull patchy blue/white fluorescence, very faint crush cut, no residue.
	70	SILTSTONE: As above.
2130	10	SANDSTONE: Predominantly as above, occasionally light brown, no fluorescence.
	90	SILTSTONE: As above.
2135	20	SANDSTONE: Predominantly as above, becomes fine to very fine, common argillaceous/silty matrix, no fluorescence.
	80	SILTSTONE: As above.
2140	10	SANDSTONE: As above.
	80	SILTSTONE: Predominantly as above, becomes olive grey in part, very argillaceous grades to claystone in part.
	10	COAL: Black, bituminous, vitreous lustre in part, subconchoidal to conchoidal fracture in part, brittle, blocky.
2145	20	SANDSTONE: Off white to light grey, occasionally very light brown, very fine to predominantly fine, angular, good sorting, weak siliceous cement in part, common to abundant kaolinitic/silty matrix, trace carbonaceous flecks, trace lithic fragments, rare biotite, friable, very poor to nil porosity, no fluorescence.
	80	SILTSTONE: Light grey, light brown grey, occasionally medium brown, very argillaceous grades to claystone in part, micromicaceous, trace carbonaceous specks, trace lithic fragments, slightly arenaceous in part, firm to moderately hard in part, blocky to subfissile.
2150	100	SILTSTONE: Predominantly as above, becomes medium brown, olive grey in part, very argillaceous grades to claystone in part, trace off white silty/arenaceous inclusions.

2155	100	SILTSTONE: Medium grey brown, olive grey, moderately to locally very angular, grading to claystone, micromicaceous, slightly arenaceous, trace carbonaceous specks, firm to moderately hard, blocky to sub-fissile.
	Trace	SANDSTONE: Off white, light grey, very fine to fine grained, sub-angular, well sorted, weak siliceous cement, common kaolinitic/silty matrix, trace lithic grains, trace carbonaceous specks and micro-laminations, trace biotite in part, friable - to moderately hard, tight, no shows.
2160	20	SANDSTONE: Predominantly as above, occasionally light brown, becoming very silty in part, grading to silty sandstone, no show.
	70	SILTSTONE: As above.
	10	COAL: Black, bituminous, vitreous lustre, conchoidal fracture, hard, brittle, blocky.
2165	10	SANDSTONE: As above, trace fluorescence: Dull patchy blue white flour, very faint cut, no residue.
	85	SILTSTONE: As above, locally very argillaceous, grading to carbonaceous claystone.
	5	COAL: As above.
2170	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
2175	100	SILTSTONE: As above.
	Trace	SANDSTONE: As above.
2180	20	SANDSTONE: Off white to light grey, clear to translucent in part, fine grained, sub-angular, well sorted, moderate siliceous cement, locally common kaolinitic matrix, trace coarse milky quartz floating, trace lithic grains, trace nodules pyrite, moderately hard, friable, very poor porosity, no show.
	80	SILTSTONE: As above.
2185	100	SILTSTONE: As above, trace carbonaceous fragments and micro-laminations.
	Trace	SANDSTONE: As above.
2190	10	SANDSTONE: As above, predominantly light grey, very fine to fine.
	90	SILTSTONE: As above.
2195	30	SANDSTONE: As above, becoming fine grained.
	70	SILTSTONE: As above.

2197	40	SANDSTONE: Clear to translucent, light grey, fine to medium grained, sub-angular - sub-rounded, moderately to well sorted, clean, common carbonaceous & coaly fragments, trace lithic grains, trace mica flakes, disaggregated, fair porosity, no show.
	60	SILTSTONE: As above.

Core #1 - Chip Descriptions

2197	100	SHALE with silty laminations. SHALE: Very dark brownish grey to brown black, firm, fissile to sub-fissile, silty texture, extremely micaceous, with abundant carbonaceous specks, abundant white to cream altered feldspar grained, trace carbonaceous laminations, common wispy off white to light grey silt rich laminations and streaks.
2197.85	100	SANDSTONE: Light grey to light olive grey, friable to hard, fine grained, well sorted, sub-angular to sub-rounded, moderate to high sphericity, weak to moderate siliceous cement, abundant off white to buff kaolinitic matrix, predominantly quartzose, 5% white altered feldspar grains, common white mica flakes, trace red orange and grey lithic grains trace to poor porosity, no show. Moderately petroliferous odour.
2198.85	100	SANDSTONE: Light grey to light olive grey, generally as above, hard, occasionally friable, very fine to fine grained, occasional scattered medium grains, moderately sorted, sub-rounded to sub-angular, moderate to high sphericity, weak to moderate siliceous cement with abundant off white kaolinitic matrix, 1-5% altered feldspar grains, abundant mica flakes and micro-laminations, trace carbonaceous specks, trace green, red orange and grey opaque grains, trace to occasionally poor porosity, no show. Moderate to poor petroliferous odour.
2199.85	100	SANDSTONE with wispy SHALE laminations commonly with horizontal polished slikensides. SANDSTONE: Light grey to olive grey, hard, fine grained, well sorted, sub-angular, moderate to high sphericity, weak siliceous cement, abundant off white argillaceous matrix, 5-10% altered feldspar, common carbonaceous specks, common mica flakes, trace dark grey and orange red lithic grains, trace porosity, no show. SHALE: Very dark brown to brown black, hard, mica, carbonaceous, fissile, dispersive.
2200.85	100	SANDSTONE with wispy SHALE laminations and partings as above, occasional ripple marks.

2201.85	100	SANDSTONE with irregular carbonaceous wisps and partings. SANDSTONE: Light olive grey, friable to poorly friable, very fine to predominantly fine to lower medium, sub-angular, high sphericity, well sorted, poor to trace siliceous cement, abundant off white kaolinitic matrix, 10% altered feldspar grains, common to abundant muscovite flakes, trace carbonaceous/asphaltic fragments and laminations, trace to occasional poor porosity, no show.
2202.85	100	SANDSTONE with carbonised plant debris. SANDSTONE: Light olive grey, moderately friable to occasionally hard, very fine to medium grained, predominantly fine to medium, angular to sub-angular, moderate to high sphericity, well sorted, weak to occasionally moderate siliceous cement with trace quartz overgrowths, trace to common off white kaolinitic matrix, clean streaks and patches, trace to 5% altered feldspar grains, trace dark grey lithic grains, occasional common white mica flakes, rare orange red quartz grains, fair porosity, (15%), fair permeability, (200mD), no show, moderate petroliferous odour.
2203.85	100	SANDSTONE with carbonaceous laminations and fossil plant fragments. SANDSTONE: Generally as above, friable to moderate hard, medium to occasionally fine grained in part, well sorted, trace to common kaolinitic matrix in part, commonly clean, trace to 5% altered feldspar grains, trace grey lithic grains and clay clasts, rare carbonaceous detritus, rare green and orange red quartzose grains, fair to good porosity, (15 - 20%), fair permeability, (200 - 500mD) no show, poor petroliferous odour.
2204.70	100	SANDSTONE: As above, light olive grey, friable, occasionally hard, medium grained, well sorted, angular to sub-angular, moderate sphericity, weak to moderate siliceous cement and quartz overgrowths, trace to locally common off white argillaceous matrix, common mica flakes, <5% altered feldspar grains, trace smoky quartz grains and carbonaceous specks, fair to good porosity, (17-22%), 200 - 500mD permeability, no show.
2205.30	100	SANDSTONE with carbonaceous laminations and fossil plant fragments. SANDSTONE: Generally as above at 2203.85m, fine to medium grained, common matrix, fair to good porosity, (12 - 17%), fair permeability, (200mD), no show.

Core #2 Chip Descriptions

2205.5	100	Interlaminated Sandstone and Shale. SANDSTONE: Off white, light grey, fine -predominantly medium, angular - sub-rounded, well sorted, strong siliceous cement, trace kaolinitic matrix, trace carbonaceous flakes, trace chloritic grains, common dark brown shale laminations, hard, very poor porosity, no fluorescence, weak petroliferous odour.
2206.35	100	SANDSTONE: Light grey, medium grained, sub-angular to sub-rounded, well sorted, weak to moderate siliceous cement, trace kaolinitic matrix, trace quartz overgrowths, trace coaly fragments, trace rock fragments, trace smoky quartz, trace argillaceous inclusions, friable to moderate hard, poor to fair porosity, no fluorescence.
2207.35	100	SANDSTONE: Light grey, medium grained, sub-angular to sub-rounded, well sorted, strong siliceous cement, trace kaolinitic matrix, locally common altered feldspar, trace rock fragments, rare chloritic grains, trace muscovite, trace smoky quartz, common carbonaceous laminations, moderate hard, poor to very poor visual porosity, no flourescence, weak petroliferous odour.
2208.35	100	SHALE: Black, dark brown black, micromicaceous, trace coal inclusions, hard, fissile.
2209.35	100	SANDSTONE: Light grey, pale yellow, fine to occasional m grained, sub-angular to sub-rounded, moderately sorted, 60% pyrite cement, strong siliceous cement, trace light brown quartz grained, very hard, tight , no show, (common pyrite lenses).
2210.35	100	SANDSTONE: Dark brown, fine to occasional m grained, sub-angular to sub-rounded, moderately sorted, strong siliceous cement, common muscovite flakes, trace rock fragments, common carbonaceous and argillaceous micro-laminations, hard, tight, no show.
2211.35	100	SHALE: Very dark brown, brown black, silty laminations in part, trace carbonaceous & coaly fragments, trace carbonaceous fossil leaves and fronds, micromicaceous, hard, sub-fissile to fissile.
2212.35	100	SHALE: As above.
2212.87	100	SHALE: As above.
2213.55	100	SHALE: As above.

2214.35	100	SHALE: Black, slightly silty, very carbonaceous, hard, fissile.
2215.35	100	SHALE: Black, very dark brown black, silty in part, common vitrified fossil leaf fragments, hard, sub-fissile to fissile.
2216.35	100	SHALE: As above.
2217.35	100	SHALE: Very dark brown, black, slightly silty in part, micromicaceous, common carbonaceous & coaly fossil leaves & fronds, hard, sub-fissile to fissile.
2218.35	100	SHALE: As above.
2219.35	100	SANDSTONE: Medium grey, fine grained, sub-angular, well sorted, strong siliceous cement, trace argillaceous matrix, trace coaly fragments, trace muscovite flakes, trace altered feldspar grains, common rock fragments, hard, tight, no show.
2220.35	100	SHALE: Very dark brown, black, silty in part, trace vitrified fossil leak fragments, slightly micromicaceous, trace muscovite flakes, hard, sub-fissile.
2221.35	100	SANDSTONE: Medium brown, medium grey, medium to coarse grained, angular to sub-rounded, poor to moderately sorted, strong siliceous cement, trace silty/ argillaceous matrix, common rock fragments, common very coarse to coarse milky quartz floating, rare carbonaceous fragments, very hard, tight, no show.
2222.35	100	SANDSTONE: As above.
2222.80	100	SHALE: Very dark brown, brown black, slightly silty, micromicaceous, trace muscovite, trace coaly fossil leaf and frond fragments, hard, sub-fissile.
2225.0	70	CARBONACEOUS SHALE grading to COAL. Probably cavings.
	20	SILTSTONE: As above.
	10	SANDSTONE: As above.
2230.0	90	SILTSTONE: Very dark brown to brown black, hard, blocky to sub-fissile, extremely argillaceous, silty texture, abundant micromicaceous, very carbonaceous in part, grading to silty claystone.
	10	SANDSTONE: Off white to light grey, pale yellow, hard to very hard, very fine to fine grained, moderately sorted, sub-angular, moderate sphericity, strong siliceous and pyritic cement, tight, no show.

2235.0	80	SILTSTONE: As above, grading to carbonaceous claystone.
	10	SANDSTONE: As above, predominantly hard to very hard, with common carbonaceous laminations & muscovite flakes, dolomitic cement in part.
	10	CLAYSTONE: Medium to dark brown, occasionally tan, blocky to sub-fissile, trace carbonaceous micro-laminations, soft to firm, occasional dolomitic and very hard.
	Trace	CALCITE: Colourless, transparent, fibrous "beef steak" type crystals consistent with growth in angular slikenside zone.
2240.0	80	SILTSTONE: Medium dark brown to brown black, firm to hard, predominantly powdered by the bit, micromicaceous, carbonaceous specks and laminations, locally pyritic, common very argillaceous and grading to silty carbonaceous claystone.
	20	CARBONACEOUS SHALE: Brown black to black, common laminations of clay and coal, occasional silt and sandy laminations, extremely carbonaceous, grading to argillaceous coal in part, trace amber.
2245.0	70	SILTSTONE: As above.
	30	SANDSTONE: Off white to light grey, friable to hard in part, fine grained, sub-rounded, moderate to high sphericity, well sorted, weak to strong siliceous cement, abundant off white kaolinitic matrix, trace altered feldspar, common muscovite flakes, trace carbonaceous specks, poor porosity, no show.
	Trace	COAL & CARBONACEOUS SHALE: As above.
2250	70	SILTSTONE: As above, extremely argillaceous, grading to claystone.
	30	SANDSTONE: As above, fine to medium grained, occasional scattered coarse grains, moderate sorted, sub-angular to sub-rounded, predominantly friable and disaggregated, trace very hard and well cemented aggregates with pyrite cement, white matrix as above, fair to good inferred porosity, trace dull patchy blue white fluorescence, very weak crush cut, no residue.
2255.0	100	SILTSTONE: As above, extremely argillaceous, grading to claystone.
2258, Spot	100	SANDSTONE: Off white to light grey, very friable to predominantly disaggregated, very fine to coarse grained, poorly sorted, angular to sub-rounded, moderate to high sphericity, weak siliceous cement with quartz overgrowths, abundant white matrix in part, common muscovite flakes, 10% white feldspar grained, fair to good porosity, 50% patchy dull white fluorescence, very weak crush cut, no residue.

2260	100	SANDSTONE: (1) Off white to light grey, disaggregated to friable, very fine to medium grained, subangular, moderate sorting, weak siliceous cement, abundant white argillaceous matrix, common muscovite, trace carbonaceous specks, poor porosity, no fluorescence. (2) Off white to light brow, fine to silty, hard to very hard, well sorted, strong Fe carbonate cement, trace carbonaceous specks, trace lithic fragments, no porosity, dull orange mineral fluorescence only.
2265	20	SANDSTONE: (1) Predominantly as above, very fine grained, with abundant white argillaceous matrix. Trace (2) as above.
	80	SILTSTONE: Predominantly as above grades to claystone.
	Trace	COAL: Black, bituminous, locally very argillaceous grades to carbonaceous shale in part, locally vitreous lustre, conchoidal fracture in part, brittle, blocky to subfissile.
2270	80	SILTSTONE: As above.
	20	COAL: As above.
2275	100	SILTSTONE: As above.
2280	10	SANDSTONE: Off white to light grey, pale brown, very fine to fine, subangular, good sorting, trace siliceous & pyritic cement, trace kaolinitic matrix, common carbonaceous/coaly fragments, trace muscovite, friable, very poor to nil porosity, no fluorescence.
	90	SILTSTONE: Predominantly as above, becomes medium brown to olive grey in part.
2285	100	SILTSTONE: As above.
2290	80	SILTSTONE: Medium brown, dark grey brown, moderately to very argillaceous locally grades to claystone, trace carbonaceous fragments, micromicaceous, trace disseminated pyrite, trace very fine arenaceous inclusions, soft to firm, occasionally moderately hard, massive to blocky, occasionally subfissile.
	20	COAL: Black bituminous, vitreous lustre, subconchoidal fracture, brittle, blocky.
2295	60	SANDSTONE: Clear to translucent, light grey, occasionally off white, fine to occasionally medium, subangular to subrounded, moderate sorting, trace calcareous/dolomitic cement, trace pyritic cement, trace argillaceous matrix in part, trace lithic fragments, trace coaly fragments, friable to loose, poor to fair porosity. Dull yellow gold mineral fluorescence only.
	40	SILTSTONE: As above.
	Trace	COAL: As above.

2300	10	SANDSTONE: Predominantly as above, becomes very fine to fine, common argillaceous/silty matrix, poor to nil porosity, no fluorescence.
	90	SILTSTONE: Predominantly as above, grades to claystone in part.
2305	Trace	SANDSTONE: As above.
	100	SILTSTONE: As above.
2307 Spot	10	SANDSTONE: Predominantly as above, becomes clear to translucent, locally common kaolinitic matrix. FLUORESCENCE: Trace dull blue/white patchy fluorescence, weak crush cut, no residue.
	90	SILTSTONE: As above.
2310	100	SILTSTONE: Medium brown, olive grey, very argillaceous grades to claystone in part, trace off white arenaceous inclusions, trace coaly/carbonaceous fragments, slightly micromicaceous, firm to moderately hard, blocky.
2315	20	SANDSTONE: Clear to translucent, off white in part, fine to medium, angular to subangular, moderate sorting, moderate siliceous cement, trace pyritic cement in part, locally common kaolinitic matrix, trace smoky quartz, trace orange/brown quartz grains, loose to friable, occasionally moderately hard, poor to fair porosity, no fluorescence.
	80	SILTSTONE: As above.
2320	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
2325	80	SILTSTONE: Predominantly as above, becomes very argillaceous grades to claystone.
	20	COAL: Black, bituminous, subvitreous lustre, locally slightly argillaceous, subconchoidal fracture, brittle, blocky.
2330	20	SANDSTONE: Clear to translucent, frosted, fine to medium, subangular, good sorting, trace pyritic cement, slightly argillaceous matrix, trace muscovite, trace coarse quartz float, loose, occasionally friable, fair porosity, no fluorescence.
	70	SILTSTONE: Olive grey, grey brown, very argillaceous grades to claystone in part, slightly micromicaceous, common carbonaceous fragments, mottled texture in part, firm, moderately hard, blocky to subfissile.
	10	COAL: As above.

2335	10	SANDSTONE: Predominantly as above, becomes fine, common argillaceous matrix.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
2340	10	SANDSTONE: Predominantly as above, abundant argillaceous/silty matrix.
	80	SILTSTONE: As above.
	10	COAL: As above.
2345	10	SANDSTONE: As above.
	80	SILTSTONE: As above.
	10	COAL: As above.
2350	Trace	SANDSTONE: As above.
	80	SILTSTONE: Predominantly as above, locally common arenaceous inclusions, trace disseminated pyrite.
	20	COAL: As above.
2355	Trace	SANDSTONE: As above.
	90	SILTSTONE: As above.
	10	COAL: As above.
2360	10	SANDSTONE: Clear to translucent, occasionally frosted, fine to rarely medium grained, angular to sub-angular, moderately sorted, trace to moderate siliceous cement, trace dolomitic cement, occasional trace kaolinitic matrix, trace lithic fragments, rare altered feldspar grains, trace carbonaceous specks, friable to moderate hard in part, poor porosity, no fluorescence.
	80	SILTSTONE: Medium brown to olive grey in part, occasional dark brown, moderate to locally very argillaceous, grading to claystone in part, common carbonaceous fragments, slightly micromicaceous, trace arenaceous inclusions, firm, moderate hard, blocky.
	10	COAL: Black, bituminous, argillaceous in part, vitreous lustre, subconchoidal fracture, brittle, blocky.
2365	10	SANDSTONE: Predominantly as above, common kaolinitic matrix.
	50	SILTSTONE: As above.
	40	COAL: As above.

2370	10	SANDSTONE: Clear, translucent, light grey, fine to medium grained, sub-angular to sub-rounded, moderate sorted, common kaolinitic matrix, trace carbonaceous fragments, rare pyrite nods, friable to loose, fair to poor porosity, no fluorescence.
	70	SILTSTONE: As above.
	20	COAL: As above.
2375	20	SANDSTONE: Predominantly as above, becoming orange white in part, abundant kaolinitic matrix in part, trace scattered milky quartz grains.
	70	SILTSTONE: As above.
	10	COAL: As above.
2380	30	SANDSTONE: Off white to light olive grey, disaggregated to friable, very hard in part, very fine to predominantly fine to medium, occasional scattered coarse grains, sub-angular to sub-rounded, high sphericity, moderately sorted, weak siliceous cement, locally strong Fe calcareous cement, abundant white kaolinitic matrix, carbonaceous and coaly laminations in part, trace altered feldspar grains and muscovite flakes, poor porosity, trace blue white fluorescence, very weak crush cut, no residue.
	10	COAL: As above.
	60	SILTSTONE: As above, grading to Claystone.
2385	50	SANDSTONE: Off white to pale orange brown, very friable, very fine to fine grained, occasional medium, well to moderately sorted, sub-rounded to sub-angular, moderate to high sphericity, trace siliceous cement, abundant white to tan kaolinitic matrix, grading to sandy claystone, trace altered feldspar grains, poor visual porosity, no show, occasional well cemented aggregates with strong Fe calcareous cement having dull orange mineral fluorescence.
	50	SILTSTONE: As above, commonly light brown mottled off white, very argillaceous grading to claystone.
	Trace	COAL: As above.
2390	60	SANDSTONE: As above, predominantly very fine to medium, poor to moderately sorted, trace feldspar, very argillaceous grading to claystone.
	40	SILTSTONE: Extremely argillaceous, grading to Claystone.
2395	50	SANDSTONE: As above, fine to medium grained, very friable to disaggregated, extremely argillaceous in part, grading to matrix supported sandy Claystone.
	40	SILTSTONE: As above, common off white to light brown, extremely argillaceous grading to Claystone.

	10	COAL: Brown black to black, dull to sub-vitreous lustre, earthy in part, bituminous, hard, brittle, commonly argillaceous with shaley laminations grading to Carbonaceous Shale.
2400	30	SANDSTONE: As above.
	60	SILTSTONE: Very dark brown to brown black, grey brown in part, soft to moderate hard, micromicaceous, extremely argillaceous, trace to common carbonaceous specks and micro-laminations, grading to Claystone, occasional dolomitic nods & concretions, trace pyrite aggregates.
	10	COAL: As above.
2401 Spot	40	COAL: Black to brown black, dull with vitreous lenses and laminations, bituminous, hard, brittle, earthy in part with common clay laminations, predominantly vitrain with minor fusains.
	60	CLAYSTONE : Pale grey brown to off white and orange brown, soft to firm, micromicaceous, silty with trace carbonaceous specks.
2405	10	COAL: As above, locally pyritic.
	20	CLAYSTONE: As above.
	40	SILTSTONE: As above.
	30	SANDSTONE: Colourless, translucent, friable, very fine to medium grained, angular to sub-angular, moderate sorted, moderate siliceous cement, with quartz overgrowths, trace muscovite flakes, abundant argillaceous matrix, poor to fair porosity, no show, matrix supported in part.
2410	50	SANDSTONE: Colourless, white, friable and disaggregated, very fine to coarse, predominantly medium grained, angular to sub-angular, high sphericity, moderately sorted, weak siliceous cement with abundant quartz overgrowths and frosting, common kaolinitic matrix in part, trace altered feldspar grained, common muscovite flakes, fair porosity, no show.
	50	SILTSTONE: Light brown to brown grey, very dark brown, friable to firm, very argillaceous, carbonaceous in part, micromicaceous in part, trace pyrite nods, trace dolomitic concretions and nodules, grading to claystone in part as above.
2415	70	SANDSTONE: As above, predominantly m to coarse grained, moderate to poorly sorted in part, pyrite cement in part, cleaner, less matrix; in part off white, medium grained, hard, angular to sub-angular, well sorted, strong Fe calcareous cement, with no porosity but dull to dim pinkish orange mineral fluorescence.
	30	SILTSTONE: As above.

2420	80	SANDSTONE: Predominantly as above, off white, colourless quartz, friable and disaggregated, very fine to coarse, predominantly fine to medium, sub-angular to angular, poor to moderately sorted, high sphericity, weak siliceous cement, abundant white kaolinitic matrix, occasional pyrite cemented aggregates, 10% Fe calcareous cemented aggregates with mineral fluorescence as above, trace muscovite flakes, altered feldspar, fair porosity, no show.
	20	SILTSTONE: Predominantly light grey brown as above, very argillaceous grading to Claystone.
2425	Trace	COAL: Black, dull, firm to hard, blocky, argillaceous grading to carbonaceous shale.
	30	SANDSTONE: As above, off white to light brown, fine to medium grained, moderately sorted, sub-angular to sub-rounded, moderate to high sphericity, disaggregated, occasional well cemented aggregates, with pyrite & Fe calcareous cement, abundant white dispersive kaolinitic matrix, poor to fair porosity, no show.
	70	SILTSTONE: As above.
2430	90	SILTSTONE: Medium brown grey, soft to firm, dispersive, extremely argillaceous, grading to claystone, trace carbonaceous specks, trace micromicaceous, occasionally very hard with dolomitic cement.
	10	SANDSTONE: Light brown, friable to hard, very fine grained, sub-rounded, well sorted, moderate calcareous and siliceous cement, common brown argillaceous matrix, trace mica flakes and carbonaceous micro-laminations, no porosity, trace dull orange mineral fluorescence.
2431 Spot	70	SILTSTONE: As above.
	30	COAL: Black to brown black, dull to vitreous lustre, argillaceous in part, sub-bituminous to bituminous, platy to subconchoidal fracture, brittle to hard, blocky.
2435	90	SILTSTONE: Predominantly as above, becomes very argillaceous grades to claystone.
	10	COAL: As above.
2440	40	SANDSTONE: Off white to light brown grey, very fine to fine, subangular, well sorted, abundant white argillaceous matrix, trace mica, trace carbonaceous specks, trace loose medium quartz grains, friable, poor porosity, no fluorescence.
	40	SILTSTONE: As above.
	20	COAL: Predominantly as above, becomes very argillaceous in part, grades to carbonaceous shale.

2445	30	SANDSTONE: Clear to translucent, frosted, occasionally off white, fine to occasionally medium, subangular to subrounded, good sorting, trace kaolinitic matrix, trace carbonaceous fragments, rare muscovite, friable to predominantly loose, fair porosity. FLUORESCENCE: 5% Dull to moderately bright patchy blue/white fluorescence, very slow streaming cut, trace very thin ring residue.
	70	SILTSTONE: Brown grey, olive grey in part, very argillaceous grades to claystone in part, trace carbonaceous fragments, slightly micromicaceous, firm to moderately hard, massive to occasionally subfissile.
2450	40	SANDSTONE: Predominantly a above, becomes fine to medium, loos, fair to good porosity. FLUORESCENCE: Trace fluorescence, as above.
	60	SILTSTONE: As above.
2455	20	SANDSTONE: Predominantly as above, becomes light brown in part, predominantly fine, trace dolomitic cement, poor to nil porosity, dull orange brown mineral fluorescence only.
	70	SILTSTONE: Predominantly as above, becomes light grey brown, olive grey in part.
	10	COAL: Black, bituminous, vitreous lustre, subconchoidal fracture, hard to brittle, blocky.
2460	20	SANDSTONE: Off white to light brown, very fine to fine, subangular, good sorting, strong siliceous/dolomitic cement, common kaolinitic matrix, trace nodular pyrite, trace rock fragments, hard, tight, dull orange mineral fluorescence only.
	80	SILTSTONE: Olive grey, grey brown, very argillaceous grades to claystone in part, trace lithic fragments, trace carbonaceous specks, soft to firm, massive.
	Trace	COAL: Black, bituminous, vitreous lustre, subconchoidal fracture, hard to brittle, blocky, locally becomes very argillaceous grades to carbonaceous shale in part.
2465	70	SILTSTONE: Predominantly as above, trace off white arenaceous inclusions.
	30	COAL: As above.
2466.5 Spot	30	SANDSTONE: Off white to light brown, light grey, fine, angular to subrounded, moderate to good sorting, strong siliceous/dolomitic cement, common nodular pyrite, trace lithic fragments, moderately hard to hard, tight, dull orange mineral fluorescence only.
	60	SILTSTONE: As above.
	10	COAL: As above.

2470	30	SANDSTONE: Off white to light brown, light grey, fine, angular to subangular, moderate to good sorting, strong dolomitic/siliceous cement, common pyrite nodules, trace lithic fragments, moderately hard to hard, tight, dull orange mineral fluorescence only.
	60	SILTSTONE: As above.
	10	COAL: As above.
2475	Trace	SANDSTONE: As above.
	70	SILTSTONE: Medium brown, olive grey, very argillaceous, micromicaceous, trace nodular a& disseminated pyrite, trace carbonaceous/coaly laminations, firm, massive to blocky.
	30	COAL: As above.
2480	80	SILTSTONE: Predominantly as above, becomes light grey brown, olive grey, locally very argillaceous grades to claystone.
	20	COAL: As above.
2485	10	SANDSTONE: Off white to white, light grey, very fine, subangular, good sorting, trace pyritic cement, abundant kaolinitic matrix, trace lithic fragments, trace carbonaceous specks, friable, tight, no fluorescence.
	90	SILTSTONE: Light brown, light grey brown, occasionally medium brown grey, very argillaceous, micromicaceous, trace arenaceous inclusions, trace carbonaceous flecks, firm to occasionally moderately hard, massive to blocky.
	Trace	COAL: As above.
2490	10	SANDSTONE: Predominantly as above, becomes light brown in part.
	80	SILTSTONE: Light brown, light grey brown, very argillaceous grades to claystone in part, micromicaceous, trace carbonaceous/lithic fragments, trace arenaceous inclusions, soft to firm, massive.
	10	COAL: As above.
2495	10	COAL: Black, dull, bituminous, hard, blocky to platy, shaley laminations.
	50	SILTSTONE: Very argillaceous as above.
	40	SANDSTONE: Off white to pale brown grey, friable, very fine to occasionally fine grained, sub-angular to sub-rounded, well sorted, high sphericity, weak to moderate Fe dolomitic cement, abundant white argillaceous matrix, trace muscovite flakes, poor porosity, no show, abundant dull orange mineral fluorescence.

2500	30	SILTSTONE: As above.
	50	SANDSTONE: As above, becoming predominantly fine to medium grained, with abundant white kaolinitic matrix, also yellow brown, friable to very hard, medium grained, angular, well sorted, moderate Fe calcareous cement, moderate to trace matrix, no visual porosity, no show, abundant dull pinkish orange mineral fluorescence.
	20	COAL: Black to brown black, firm to hard, dull to sub-vitreous, occasionally vitreous, irregular to sub-conchoidal fracture, angular in part, bituminous, brittle.
2503.5 Spot	30	COAL: As above.
	20	SANDSTONE: As above.
	50	SILTSTONE: Light grey brown as above.
2505 Spot	80	COAL: Black, vitreous to sub-vitreous, bituminous, hard, brittle.
	20	SILTSTONE: As above.
2507.5 Spot	40	COAL: Black to brown black, dull lustre, bituminous, hard, platy to blocky, brittle, argillaceous in part.
	20	SANDSTONE: Off white, colourless, disaggregated, firm to hard in part, fine grained, well sorted, sub-rounded, high sphericity, generally poorly cemented, strong Fe calcareous cement in part with no porosity, predominantly common white argillaceous ,matrix, trace mica flakes, carbonaceous specks and micro-laminations, trace red orange lithic grains, poor to fair porosity, no show.
	40	SILTSTONE: As above, very dark brown to brown black, also light grey brown, soft to firm sub-fissile, very argillaceous grading to claystone, micromicaceous, very carbonaceous in part.
2508.5 Spot	30	COAL: As above.
	30	SANDSTONE: As above.
	40	SILTSTONE: As above.

Core 3 Chip Descriptions.

2508.5	SHALE with carbonaceous and coaly laminations and lenses. Brown black, dark brown streaks, hard, fissile, micromicaceous, abundant carbonaceous detritus and plant debris, scattered trace pyrite nods.
2509.35	SHALE as above with abundant fossil leaves and frond fragments with locally abundant pyrite nods.
2510.35	SHALE Very dark brown to brown black, hard, fissile to sub-fissile, micromicaceous, trace carbonaceous specks, trace casts of leaves and winged seeds, trace micro pyrite aggregates.
2511.35	SILTY SHALE Brown black to olive black, hard, silty, sub-fissile, micromicaceous, carbonaceous specks, occasional laminations of quartz silt occasionally with very fine grained quartz.
2512.35	SHALE as above at 2510.35m, with abundant fossil leaves and frond fragments with locally abundant pyrite nods.
2513.35	SHALE Generally as above, very dark brown to brown black, fissile, slightly to moderate micromicaceous, trace micro-pyritic aggregates, trace casts of leaf and frond fragments.
2514.35	SHALE As above but only with carbonaceous specks, no casts of plant fragments.
2515.35	COAL Black to brown black, dull with vitreous streaks, hard, brittle, bituminous, flaky, abundant pyrite replacement of plant fragments, 30% pyrite.
2516.35	SHALE with carbonaceous and coaly laminations and lenses. Brown black, hard, fissile, brittle, moderately micromicaceous, trace disseminated pyrite, abundant fossil leaves and fronds, grading to shale Coal in part.
2516.95	SHALE with occasional carbonised plant fragments as above, and syndepositional dewatering slump and sole markings.
2517.65	SHALE with abundant plant debris as above. Dark brown to brown black, hard, fissile.
2518.65	COAL Black, dull with vitreous vitrain streaks, firm to hard, brittle, fissile to sub-fissile, sub-conchoidal, bituminous.

2519.65	SHALE with abundant carbonised plant debris and occasional coaly lenses as above.
2520.65	SILTY SHALE Dark brown black, hard to very hard, sub-fissile, very silty, abundant carbonaceous specks, trace pyrite nods.
2521.65	SANDSTONE with occasional carbonised leaf fragments. Light olive grey to pale brown, friable to hard, medium to coarse grained, well sorted, angular to sub-angular, poor to moderate sphericity, moderate siliceous cement with common quartz overgrowths, trace to abundant patchy tan kaolinitic matrix, < 5% altered feldspar grains, 5% dark grey clay clasts, trace muscovite flakes, rare coal fragments, patchy trace to good porosity, generally fair, nil to good permeability, strong petroliferous odour, no visual fluorescence, very slow milky cut leaving angular dull yellowish white residue, colourless in natural light.
2522.65	SANDSTONE: As above, friable, fine to medium grained, moderate sorted, moderate siliceous cement with quartz overgrowths, common to abundant kaolinitic matrix, poor to fair porosity, (10-15%), poor to fair permeability, moderate petroliferous odour as above, show as above.
2523.65	SANDSTONE: As above, friable to hard, coarse to very coarse, well sorted, angular, with quartz overgrowths, moderate siliceous cement, cleaner than above with less matrix, good to excellent porosity(20%), good permeability, (200-500mD), moderate petroliferous odour as above, show as above.
2524.65	SANDSTONE: As above, friable to hard, coarse grained, well sorted, angular, moderate siliceous cement, quartz overgrowths, trace to common matrix, good to excellent porosity, (20%), good permeability as above, moderate petroliferous odour as above, show as above.
2525.65	SANDSTONE: As above, friable to very hard, c-very coarse, moderately sorted, angular, moderate siliceous cement with quartz overgrowths, common kaolinitic matrix as above, clay clasts and carbonaceous fragments as above, trace muscovite flakes, trace altered feldspar, fair to good porosity, (15%), poor to fair permeability, (50-200mD), moderate petroliferous odour as above, show as above.

2526.25

SANDSTONE with carbonaceous and micaceous micro cross laminations. Light olive grey with dark grey streaks and laminations, hard, very fine to fine grained, well sorted, sub-rounded, moderate sphericity, moderate siliceous cement, abundant off white Kaolinitic matrix, trace muscovite, trace red lithic grains, trace green chloritic grains, no visual porosity, speckled dull orange mineral fluorescence.

Core #4 Chip Descriptions

2562.8	SANDSTONE: Light to medium grey, medium, subangular, moderate to good sorting, strong siliceous cement, trace pyritic cement, trace kaolinitic matrix, trace carbonaceous specks, trace altered feldspar, trace muscovite, hard, tight, no fluorescence.
2527.65	SANDSTONE: Medium grey, grey brown in part, medium to predominantly coarse, subangular, good sorting, strong siliceous cement, patchy dolomitic cement, trace coal fragments, trace altered feldspar, trace biotite, hard, tight, yellow orange mineral fluorescence along fracture planes.
2528.65	SANDSTONE: Medium grey, coarse to very coarse, angular to subangular, moderate sorting, 30-40% pyritic cement, strong siliceous cement, common smoky quartz, trace quartz overgrowths, trace altered feldspar, hard, very poor to nil porosity, trace dull orange mineral fluorescence.
2529.65	SANDSTONE: Light to medium grey, fine to occasionally medium, angular to subangular, moderate to good sorting, strong siliceous cement, trace pyritic cement, trace patchy dolomitic cement, trace biotite, trace rock fragments, rare chlorite, trace coaly fragments, hard, tight, dull orange mineral fluorescence only.
2530.65	SANDSTONE: Light grey, light brown grey, fine to medium, subangular, good sorting, moderate siliceous cement, common dolomitic cement, trace to common kaolinitic matrix, common altered feldspar, trace carbonaceous/argillaceous laminae with common disseminated pyrite, trace black mafic minerals, hard, tight, dull orange mineral fluorescence only.
2531.65	SANDSTONE: Predominantly as above, common pyritic/carbonaceous microlaminations, dull orange mineral fluorescence only.
2532.65	SANDSTONE: Predominantly as above, trace pyritic/dolomitic cement, hard, very poor porosity, mineral fluorescence only.
2533.65	SANDSTONE: Light grey, off white, fine to medium, subangular to subrounded, moderate sorting, moderate siliceous cement, trace kaolinitic matrix, trace chlorite, trace fine grained nodular pyrite, trace rock fragments, moderately hard, very poor to poor porosity, no fluorescence.

2534.65	SANDSTONE: Light grey, off white, fine to medium subangular, good sorting, common kaolinitic matrix, trace nodular pyrite, trace altered feldspar, trace muscovite, trace carbonaceous/pyritic microlaminae with dolomitic cement, moderately hard to hard, very poor porosity. FLUORESCENCE: Trace pin-point blue/white moderately bright fluorescence, very weak milky cut, trace ring residue.
2535.65	SANDSTONE: Light grey, fine to predominantly medium to coarse, angular to subrounded, poor to moderate sorting, trace siliceous cement, common silty/kaolinitic matrix,, trace altered feldspar, trace smoky quartz, trace chlorite, trace carbonaceous laminations, moderately hard to hard, poor porosity, no fluorescence.
2536.65	ARGILLACEOUS SANDSTONE: Dark grey, grey black, coarse, angular, moderate sorting, abundant black argillaceous matrix, matrix supported, common coaly laminations, common biotite, common white calcite crystals, trace dolomitic crystals, hard, tight, mineral fluorescence only.
2537.65	SANDSTONE: Off white to light grey, medium to predominantly coarse, angular to subangular, moderate sorting, moderate siliceous cement, trace quartz overgrowths, trace to moderate kaolinitic matrix, trace nodular pyrite, moderately hard, poor to fair porosity, no fluorescence.
2538.65	SANDSTONE: Light grey, medium, subangular, good sorting, moderate siliceous cement, common kaolinitic matrix, common argillaceous microlaminations, trace altered feldspar, common carbonaceous fragments/microlaminations, common muscovite, common disseminated pyrite, moderately hard, poor porosity, no fluorescence.
2539.65	SANDSTONE: Off white to light grey, medium to coarse, angular to subangular, moderate sorting, moderate to strong siliceous cement, common quartz overgrowths, trace kaolinitic inclusions, common smoky quartz, trace disseminated pyrite, moderately hard, fair to poor porosity. FLUORESCENCE: Trace pin-point moderately bright blue white fluorescence, faint milky cut, no residue.
2540.65	SANDSTONE: Light grey, pale brown, coarse to very coarse, angular, moderate sorting, strong siliceous cement, trace quartz overgrowths, trace smoky quartz, trace carbonaceous fragments, trace altered feldspar, moderately hard, very poor porosity. FLUORESCENCE: 80% Moderately bright to bright pale yellow to blue/white solid fluorescence, slow streaming cut, thin to moderately bright ring residue.

2541.65	SANDSTONE: Off white to light grey, medium to coarse, subangular, moderately sorted, strong siliceous cement, common kaolinitic matrix, trace muscovite, trace altered feldspar, moderately hard, poor to very poor porosity. FLUORESCENCE: 80% Bright blue/white fluorescence, moderately fast streaming cut, moderate ring residue.
2542.65	SANDSTONE: Light grey, grey brown in part, fine, subangular, good sorting, strong siliceous cement, common argillaceous matrix, common light grey argillaceous microlaminations, trace carbonaceous flecks, trace nodular pyrite, trace lithic fragments, hard, tight, no fluorescence.
2543.5	SANDSTONE: Light grey, fine to medium, occasionally coarse, subangular, good sorting, moderate siliceous cement, moderate kaolinitic matrix, trace quartz overgrowths, common disseminated & nodular pyrite, common smoky quartz, moderately hard, friable in part, poor to occasionally fair porosity. FLUORESCENCE: 80% As above.

Core #5 Chip Descriptions

2544.8 — SANDSTONE: Light to medium grey, fine to medium, occasionally coarse, angular to subrounded, moderate sorting, moderate to strong siliceous cement, trace to common pyritic cement, trace altered feldspar, trace smoky quartz, hard, very poor porosity. FLUORESCENCE: 80% Bright yellow green solid fluorescence, slow streaming cut, thin to moderate residual ring.

2545.55 — SANDSTONE: Light brown, off white, medium to coarse, angular to subangular, moderate sorting, trace siliceous cement, trace quartz overgrowths, trace rock fragments, trace carbonaceous specks, friable, good porosity. FLUORESCENCE: 100% Yellow green solid fluorescence, instant cut, thick ring residue.

2546.55 — SANDSTONE: Light brown, off white, medium to coarse, angular to subangular, moderate sorting, locally mod siliceous cement, trace pyritic cement, trace kaolinitic matrix, trace rock fragments, trace muscovite, moderately hard, poor to fair porosity. FLUORESCENCE: 100% As above.

2547.55 — SHALE: Dark brown, brown black, slightly silty, common very fine light grey arenaceous laminations, common mica, hard, dense, massive to subfissile.

2548.55 — CARBONACEOUS SHALE: Dark brown to black, slightly silty common mica, common vitrified plant/leaf fragments, hard, subfissile to fissile.

2549.05 — SHALE: Dark brown to black, micromicaceous, slightly silty, micromicaceous, common carbonised fossil fragments (plants/leaves), hard, subfissile to fissile.

2549.8 — CARBONACEOUS SHALE: Dark brown black, abundant vitrified plant/leaf fragments, brittle, fissile, locally grades to and interceded with subituminous high ash coal.

Cuttings descriptions from 2549.8m

2550 — 70 — SILTSTONE: Medium brown, dark brown in part, slightly to locally very argillaceous, very carbonaceous, micromicaceous, trace nodular pyrite, hard, subfissile.

30 — COAL: Black, argillaceous in part, sub-bituminous to bituminous, subvitreous lustre, subconchoidal fracture, brittle, blocky.

2555	90	SILTSTONE: Medium brown, dark grey brown in part, slightly siliceous, very carbonaceous/coaly, micromicaceous, hard, subfissile.
	10	COAL: As above.
2560	Trace	SANDSTONE: Off white, light grey, very fine to fine, moderately sorted, common kaolinitic matrix, trace nodular pyrite, trace loose medium quartz float, trace lithic fragments, trace muscovite, trace carbonaceous specks, moderately hard, loose in part, tight, no fluorescence.
	90	SILTSTONE: Predominantly as above, becomes medium brown, trace coal fragments.
	10	COAL: As above.
2565	20	SANDSTONE: Clear to translucent, frosted, fine to medium, occasionally coarse, subangular, moderate to good sorting, trace kaolinitic matrix, trace nodular pyrite, trace carbonaceous fragments, trace medium to coarse milky quartz, loose, fair porosity. FLUORESCENCE: Trace moderately bright to bright pin point to patchy yellow green fluorescence, slow faint streaming cut, trace ring residue.
	70	SILTSTONE: As above.
	10	COAL: As above.
2568	30	SANDSTONE: Predominantly as above, becomes medium to coarse, common coarse milky quartz grains, fair to good porosity. FLUORESCENCE: 10% Fluorescence as above.
	70	SILTSTONE: As above.
	Trace	COAL: As above.

Core #6 Chip Descriptions

2568	SANDSTONE: Light grey, grey brown, medium to coarse, angular to subrounded, moderate to good sorting, moderate siliceous cement, common argillaceous matrix, trace to common disseminated pyrite and cement, common smoky quartz, trace muscovite, trace dark grey argillaceous inclusions, friable to moderately hard, poor porosity. FLUORESCENCE: 70% Moderately bright yellow green patchy fluorescence, moderate instant cut, moderate ring residue. Moderate petroliferous odour.
2568.85	SANDSTONE: Light grey, light brown, coarse, angular, moderate to good sorting, trace siliceous cement, trace quartz overgrowths, trace argillaceous matrix, trace rock fragments, trace muscovite, trace nodular pyrite and rare pyritic cement, trace smoky quartz, friable, fair to good porosity. FLUORESCENCE: 100% Bright solid pale yellow fluorescence, good instant cut, moderate ring residue. Moderate petroliferous odour.
2569.85	SANDSTONE: Light brown, coarse, angular, moderate to good sorting, trace to moderate siliceous cement, trace argillaceous/silty matrix, trace quartz overgrowths, trace rock fragments, trace smoky quartz, trace to common carbonaceous/coaly fragments, friable to moderately hard, fair porosity. FLUORESCENCE: 80% Bright solid pale yellow fluorescence, moderate instant cut, moderate ring residue. Moderate petroliferous odour.
2570.85	SHALE: Black, slightly siliceous, abundant vitrified plant fragments, slightly micromicaceous, hard, subfissile to fissile.
2571.85	SHALE: Dark brown black, black, silty in part, common muscovite along bedding planes, trace vitrified plant remains, trace disseminated pyrite, hard, dense, subfissile to massive.
2572.85	SHALE: Predominantly as above, with common off white to light grey, very fine grained arenaceous lenses, no fluorescence.
2573.85	SHALE: Predominantly as above, becomes silty grades to silty shale, trace disseminated pyrite and common muscovite.
2574.85	SHALE: Predominantly as above, very fine grained arenaceous microlaminations.

2575.85	SHALE: Black to brown black, trace muscovite, slightly siliceous, trace carbonaceous/coaly fragments, homogeneous, hard, dense, subfissile to fissile.
2576.75	SANDSTONE: Light grey, pale brown, medium to coarse, subangular to subrounded, moderate to good sorting, weak siliceous cement, trace kaolinitic matrix, trace quartz overgrowths, common coaly fragments/laminations, common rock fragments, trace smoky quartz, moderately hard, fair to poor porosity. FLUORESCENCE: Trace dull patchy pale yellow fluorescence, slow weak streaming cut, trace patchy ring residue.
2577.85	SANDSTONE: Light grey, fine to coarse, angular to subrounded, poor sorting, moderate siliceous cement, trace silty/argillaceous matrix, trace quartz overgrowths, trace altered feldspar, trace carbonaceous fragments, moderately hard, fair porosity. FLUORESCENCE: 60-70% Moderately bright to patchy bright pale yellow fluorescence, slow weak streaming cut, moderate to thin ring residue.
2578.85	SILTSTONE: Dark grey, grey black, very argillaceous, common off white very fine grained arenaceous laminations, common muscovite, moderately to very carbonaceous, hard, dense, subfissile to massive.
2579.85	SHALE: Dark brown black, grey black, very silty grades to silty shale, common muscovite, common arenaceous inclusions and laminations, dense, hard, massive.
2580.85	SILTSTONE: Dark grey, grey black, very argillaceous, common arenaceous microlaminations and inclusions, trace muscovite, trace carbonaceous fragments, trace disseminated pyrite, hard, dense, massive to subfissile.
2581.85	SILTSTONE: As above.
2582.85	SHALE: Brown black, black, slightly silty, trace to common muscovite, common vitrified plant fragments, trace disseminated pyrite, hard, dense, subfissile to massive.
2583.85	SHALE: Predominantly as above, common very fine grained arenaceous laminations, trace muscovite.
2584.85	SHALE: As above.
2585.85	SHALE: Predominantly as above, common arenaceous microlaminations, common disseminated pyrite, abundant muscovite, slightly silty grades to silty shale.

2586.5		SHALE: Predominantly as above, with common off white to light brown arenaceous laminations.

Cuttings Descriptions from 2586.5m

2590	40	SANDSTONE: Clear to translucent, frosted, fine to predominantly medium, subangular to subrounded, moderate sorting, weak calcareous cement in part, trace nodular pyrite, trace carbonaceous fragments, trace biotite, friable to loose, good porosity, no fluorescence.
	60	SILTSTONE: Medium brown, grey brown, slightly argillaceous, arenaceous in part, abundant biotite, common carbonaceous flecks and coaly laminations, firm to moderately hard, hard in part, subfissile.
	Trace	COAL: Black, bituminous, slightly argillaceous, dull to subvitreous lustre, subconchoidal fracture, moderately hard, brittle, blocky.
2595	10	SANDSTONE: Predominantly as above, becomes off white in part, very fine to fine, abundant kaolinitic matrix.
	90	SILTSTONE: Predominantly as above, becomes light grey brown, locally very argillaceous, common carbonaceous fragments and coaly microlaminations.
	Trace	COAL: As above.
2600	70	SANDSTONE: Off white, clear to translucent, fine, subangular to subrounded, moderate to good sorting, abundant kaolinitic matrix, trace medium to coarse milky quartz float, trace carbonaceous fragments, trace bituminous staining, common muscovite, trace chlorite, trace nodular/disseminated pyrite, firm to loose, poor porosity. FLUORESCENCE: Trace dull yellow green fluorescence, faint very weak slow cut, trace to nil ring residue.
	30	SILTSTONE: As above.
	Trace	COAL: As above.
2605	80	SANDSTONE: Clear to translucent, light grey, fine to medium, subangular to subrounded, good sorting, trace siliceous cement, trace pyritic cement, trace kaolinitic matrix, common coarse milky quartz float, trace quartz overgrowths, friable to loose, good porosity. FLUORESCENCE: 60% Moderately bright to bright yellow green fluorescence, very slow weak streaming cut, thin ring residue.
	10	SILTSTONE: As above.
	10	COAL: As above.

2610	20	SANDSTONE: Predominantly as above, becomes coarse to very coarse, common kaolinitic matrix, good porosity. FLUORESCENCE: 20% As above.
	20	SILTSTONE: As above.
	60	COAL: As above.
2615	90	SANDSTONE: Predominantly as above, becomes coarse to occasionally very coarse. FLUORESCENCE: 40% As above.
	Trace	SILTSTONE: As above.
	10	COAL: As above.
2620	80	SANDSTONE: Clear to translucent, off white, medium to coarse, angular to subangular, moderate sorting, strong siliceous cement, trace quartz overgrowths, locally common kaolinitic matrix, common carbonaceous fragments, slightly chloritic, trace disseminated pyrite, loose, occasionally hard aggregates, poor porosity. FLUORESCENCE: 40% Dull to moderately bright patchy yellow green fluorescence, very faint slow cut, trace to nil ring residue.
	5	SILTSTONE: Light to medium grey, grey brown, very argillaceous, micromicaceous, trace carbonaceous fragments, trace disseminated pyrite, hard, subfissile to blocky.
	15	COAL: As above.
2625	30	SANDSTONE: Predominantly as above, common very coarse milky quartz float. FLUORESCENCE: 20% As above.
	60	SILTSTONE: As above.
	10	COAL: As above.
2630	30	SANDSTONE: Predominantly as above, coarse to very coarse, trace nodular pyrite. FLUORESCENCE: 10% As above.
	60	SILTSTONE: As above.
	10	COAL: As above.
2635	50	SANDSTONE: Predominantly as above. FLUORESCENCE: 10% Dull patchy yellow green fluorescence, very faint cut, no residue.
	50	SILTSTONE: As above.
	Trace	COAL: As above.
2640	90	SANDSTONE: Clear to translucent, frosted, fine to medium, occasionally coarse, angular to subangular, moderate sorting, weak calcareous cement, common kaolinitic matrix in part, trace nodular pyrite, slightly chloritic, common very coarse milky quartz float, loose, good porosity, no fluorescence.

2645	30	SANDSTONE: Predominantly as above, common very coarse milky quartz float.
	60	SILTSTONE: Olive grey, brown grey, very argillaceous grades to claystone in part, common carbonaceous fragments, trace very fine arenaceous inclusions, soft to firm, massive to blocky.
	10	COAL: As above.
2650	10	SANDSTONE: As above.
	90	SILTSTONE: As above.
	Trace	COAL: As above.
2655	30	SANDSTONE: Predominantly as above, trace siliceous cement, friable to loose, fair porosity, no fluorescence.
	70	SILTSTONE: Predominantly as above, becomes medium brown, very argillaceous grades to claystone.
2660	90	SANDSTONE: Clear to translucent, frosted, medium to coarse, angular to subrounded, moderate sorting, trace siliceous cement, trace quartz overgrowths, trace kaolinitic matrix, trace chlorite, trace nodular pyrite, trace to common coaly fragments, common very coarse milky quartz float, lose, good porosity, no fluorescence.
	10	SILTSTONE: As above.
2665	40	SANDSTONE: Clear to translucent, frosted, medium to coarse, angular t subangular, poor to moderate sorting, trace siliceous/pyritic cement, common kaolinitic matrix, trace rock fragments, common very coarse to granular milky quartz float, fair to good porosity, no fluorescence.
	60	SILTSTONE: Olive grey, light to medium brown, very argillaceous grades to claystone in part, slightly micromicaceous, trace lithic fragments, trace biotite, soft to firm, massive.
	Trace	COAL: As above.
2670	70	SANDSTONE: As above.
	30	SILTSTONE: As above.
2675	70	SANDSTONE: Clear to translucent, fine to predominantly medium to coarse, angular to subangular, moderate sorting, trace kaolinitic matrix, trace carbonaceous fragments, trace nodular pyrite, common very coarse milky quartz, trace chlorite, loose, good porosity, no fluorescence.
	30	SILTSTONE: As above.

2680	30	SANDSTONE: Predominantly as above, becomes light brown, fine grained, locally moderate siliceous cement, poor to fair porosity. FLUORESCENCE: 10% Moderately bright patchy yellow gold fluorescence, slow weak streaming cut, moderate crush cut, thin to moderate ring residue.
	60	SILTSTONE: Predominantly as above, becomes olive grey, very argillaceous grades to claystone.
	10	COAL: Brown black, black, bituminous, slightly argillaceous, dull to subvitreous lustre, brittle to moderately hard, blocky to subfissile.
2685	20	SANDSTONE: As above. FLUORESCENCE: 5% As above.
	70	SILTSTONE: As above.
	10	COAL: As above.
2690	40	SANDSTONE: Light brown, off white, fine to occasionally medium, subangular, good sorting, locally moderate siliceous cement, trace kaolinitic matrix, trace lithic fragments, trace coaly fragments, trace biotite, occasionally coarse milky quartz float, friable, poor porosity, no fluorescence.
	60	SILTSTONE: Predominantly as above, becomes olive grey, occasionally medium brown.
2695	40	SANDSTONE: Predominantly as above, abundant kaolinitic matrix.
	60	SILTSTONE: As above.
2700	70	SANDSTONE: Clear to translucent, medium to very coarse, angular, poor sorting, mod siliceous cement, common quartz overgrowths, trace rose quartz, loose, common fractured grains,, poor to fair porosity, no fluorescence.
	30	SILTSTONE: As above.
	Trace	COAL: Black to brown black, slightly argillaceous, bituminous, subconchoidal fracture, dull to subvitreous lustre, moderately hard, brittle, blocky to subfissile.
2705	10	SANDSTONE: Light grey, clear to translucent, fine to medium, angular to subangular, good sorting, moderate siliceous cement, weak calcareous cement, trace coarse milky quartz, friable, poor porosity, no fluorescence.
	80	SILTSTONE: Olive grey, light grey, very argillaceous grades to claystone in part, micromicaceous, trace carbonaceous fragments, slightly arenaceous in part, soft to firm, massive.
	10	COAL: As above.
2710	10	SANDSTONE: Predominantly as above, becomes light brown, locally common kaolinitic matrix.
	90	SILTSTONE: Predominantly as above, common carbonaceous/coaly fragments.

2715	30	SANDSTONE: Predominantly as above, light grey, moderate siliceous cement, trace biotite, trace lithic fragments, trace carbonaceous fragments, friable to moderately hard. FLUORESCENCE: Trace dull patchy yellow gold fluorescence, v slow weak streaming cut, trace to nil ring residue.
	70	SILTSTONE: Predominantly as above, becomes light grey.
2720	10	SANDSTONE: As above. FLUORESCENCE: Trace fluorescence, as above.
	90	SILTSTONE: As above.
2725	20	SANDSTONE: Clear to translucent, light grey, fine to coarse, angular to subangular, poor sorting, weak siliceous cement, trace calcareous cement, trace lithic fragments, trace smoky quartz, common coaly laminations & specks, friable, very poor porosity. FLUORESCENCE: Trace fluorescence, as above.
	80	SILTSTONE: As above.
2730	30	SANDSTONE: Predominantly as above, abundant kaolinitic matrix, very poor porosity. FLUORESCENCE: Trace fluorescence, as above.
	60	SILTSTONE: As above.
	10	COAL: Black, bituminous, slightly argillaceous, trace disseminated pyrite in part, dull to subvitreous lustre, brittle to moderately hard, blocky to occasionally subfissile.
2735	10	SANDSTONE: Predominantly as above, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, very poor to nil porosity. FLUORESCENCE: Trace fluorescence, as above.
	80	SILTSTONE: Predominantly as above, becomes light brown to light grey.
	10	COAL: Predominantly as above, moderately silty/argillaceous, vitreous lustre.
2740	10	SANDSTONE: Light grey, off white, fine, subangular, good sorting, moderate. siliceous cement, locally common kaolinitic matrix, trace carbonaceous fragments, trace biotite, friable, poor porosity, no fluorescence.
	80	SILTSTONE: As above.
	10	COAL: As above.
2745	20	SANDSTONE: As above.
	70	SILTSTONE: As above.
	10	COAL: As above.

2750	20	SANDSTONE: Off white, light grey, fine to occasionally medium, subangular, good sorting, weak siliceous/calcareous cement, trace to common kaolinitic matrix, common coarse milky quartz float in part, trace biotite, trace carbonaceous fragments, trace nodular pyrite, friable, poor porosity, mineral fluorescence only.
	70	SILTSTONE: As above.
	10	COAL: As above.
2755TD	30	SANDSTONE: Predominantly as above, becomes loose, fair to good porosity, trace mineral fluorescence only.
	60	SILTSTONE: Light grey brown, olive grey in part, very argillaceous grades to claystone, slightly micromicaceous, trace carbonaceous fragments, firm to moderately hard, massive to blocky.
	10	COAL: As above.

APPENDIX 2

APPENDIX II

CORE DESCRIPTIONS

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	1	**WELL:**	TURRUM-5
Interval cored:	2197-2205.5	Recovered:	2197-2205.3M, 8.3M, 98%
Cut:	8.5m	Bit size:	12 1/4"
Bit type:	DBS CD-93	Date:	2-Sep-95
Described by:	J. Reeve		

Interval (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
2197	20 16 12 8 4 0		2197m : SHALE with silty laminations.
			SHALE: Very dark brownish grey to brown black, firm, fissile to sub-fissile,
			silty texture, extremely micaceous, with abundant carbonaceous specks,
			abundant white to cream altered feldspar grained, trace laminations,
			carbonaceous common wispy off white to light grey silt rich laminations
2198			and streaks.
			2197.85m : SANDSTONE: Light grey to light olive grey, friable to
			hard, fine grained, well sorted, sub-angular to sub-rounded, moderate to
			high sphericity, weak to moderate siliceous cement, abundant off white to
2199			buff kaolinitic matrix, predominantly quartzose, 5% white altered feldspar
			grains, common white mica flakes, trace red orange and grey lithic grains
			trace to poor porosity, no show. Moderately petroliferous odour.
2200			2198.85m : SANDSTONE: Light grey to light olive grey, generally as
			above, hard, occasionally friable, very fine to fine grained, occasional
			scattered medium grains, moderately sorted, sub-rounded to sub-angular,
			moderate to high sphericity, weak to moderate siliceous cement with
2201			abundant off white kaolinitic matrix, 1-5% altered feldspar grains, abundant
			mica flakes and micro-laminations, trace carbonaceous specks, trace
			green, red orange and grey opaque grains, trace to occasionally poor
2202			porosity, no show. Moderate to poor petroliferous odour.
			2199.85m : SANDSTONE with wispy SHALE laminations commonly
			with horizontal polished slikensides.
			SANDSTONE: Light grey to olive grey, hard, fine grained, well sorted,
			sub-angular, moderate to high sphericity, weak siliceous cement,
			abundant off white argillaceous matrix, 5-10% altered feldspar, common
			carbonaceous specks, common mica flakes, trace dark grey and orange
			red lithic grains, trace porosity, no show.
			SHALE: Very dark brown to brown black, hard, mica, carbonaceous,
			fissile, dispersive.
			2200.85m : SANDSTONE with wispy SHALE laminations and partings
			as above, occasional ripple marks.
			2201.85m : SANDSTONE with irregular carbonaceous wisps and partings.
			SANDSTONE: Light olive grey, friable to poorly friable, very fine to
			predominantly fine to lower medium, sub-angular, high sphericity, well
			sorted, poor to trace siliceous cement, abundant off white kaolinitic matrix,
			10% altered feldspar grains, common to abundant muscovite flakes,
			trace carbonaceous/asphatic fragments and laminations, trace to
			occasional poor porosity, no show.
			2202.85m : SANDSTONE with carbonised plant debris.
			SANDSTONE: Light olive grey, moderately friable to occasionally hard,
			very fine to medium grained, predominantly fine to medium, angular to
			sub-angular, moderate to high sphericity, well sorted, weak to occasionally
			moderate siliceous cement with trace quartz overgrowths, trace to common
			off white kaolinitic matrix, clean streaks and patches, trace to 5% altered
			feldspar grains, trace dark grey lithic grains, occasional common white
			mica flakes, rare orange red quartz grains, fair porosity, (15%), fair
			permeability, (200mD), no show, moderate petroliferous odour.

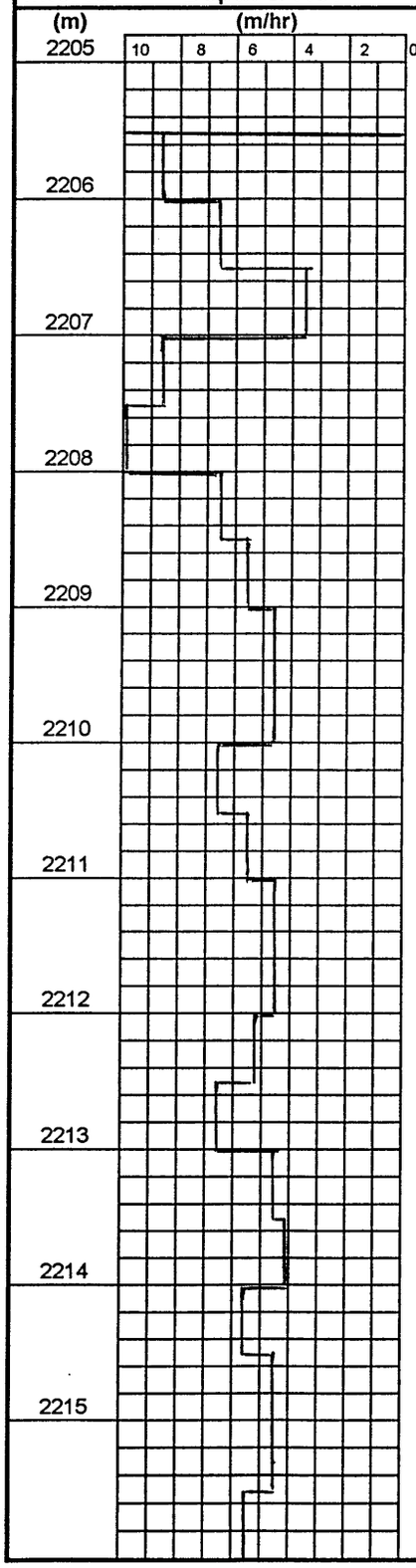
ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	**1 (continued)**	**WELL:**	**TURRUM-5**
Interval cored:	2197-2205.5	Recovered:	2197-2205.3M, 8.3M, 98%
Cut:	8.5m	Bit size:	12 1/4"
Bit type:	DBS CD-93	Date:	2-Sep-95
Described by:	J. Reeve		

Interval (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
2203	20 16 12 8 4 0		2203.85m : SANDSTONE with carbonaceous laminations and fossil plant fragments.
			SANDSTONE: Generally as above, friable to moderate hard, medium to occasionally fine grained in part, well sorted, trace to common kaolinitic matrix in part, commonly clean, trace to 5% altered feldspar grains, trace grey lithic grains and clay clasts, rare carbonaceous detritus, rare green and orange red quartzose grains, fair to good porosity, (15 - 20%), fair permeability, (200 - 500mD) no show, poor petroliferous odour.
2204			
			2204.70m : SANDSTONE: As above, light olive grey, friable, occasionally hard, medium grained, well sorted, angular to sub-angular, moderate sphericity, weak to moderate siliceous cement and quartz overgrowths, trace to locally common off white argillaceous matrix, common mica flakes, <5% altered feldspar grains, trace smokey quartz grains and carbonaceous specks, fair to good porosity, (17-22%), 200 - 500mD permeability, no show.
2205			
2206			2205.30m : SANDSTONE with carbonaceous laminations and fossil plant fragments.
			SANDSTONE: Generally as above at 2203.85m, fine to medium grained, common matrix, fair to good porosity, (12 - 17%), fair permeability, (200mD), no show.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	2	**WELL:**	TURRUM-5
Interval cored:	2205.5-2223.5m	Recovered:	17.3m (96%)
Cut:	18m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	3-Sep-95
Described by:	Greg Clota		



Descriptive Lithology

2205.51m : Interlaminated Sandstone and Shale.
SANDSTONE: Off white, light grey, fine - predominantly medium, angular sub-rounded, well sorted, strong siliceous cement, trace kaolinitic matrix, trace carbonaceous flakes, trace chloritic grains, common dark brown shale laminations, hard, very poor porosity, no fluorescence, weak petroliferous odour.

2206.35m : SANDSTONE: Light grey, medium grained, sub-angular to sub-rounded, well sorted, weak to moderate siliceous cement, trace kaolinitic matrix, trace quartz overgrowths, trace coaly fragments, trace rock fragments, trace smoky quartz, trace argillaceous inclusions, friable moderately hard, poor to fair porosity, no fluorescence.

2207.35m : SANDSTONE: Light grey, medium grain, sub-angular, to sub-rounded, good sorting, strong siliceous cement, trace kaolinitic matrix, common altered feldspar trace rock fragments, rare chlorite trace muscovite trace smoky quartz, common carbonaceous laminae, moderately hard poor to very poor, visual porosity, no fluorescence, a weak petroliferous odour.

2208.35m : SHALE: Black, dark brown black, micromicaceous, trace coal inclusions, hard, fissile.

2209.35m : SANDSTONE: Light grey, pale yellow, fine to occasional medium grained, sub-angular to sub-rounded, moderately sorted, 60% pyrite cement, strong siliceous cement, trace light brown quartz grained, very hard, tight, no show, (common pyrite lenses).

2210.35m : SANDSTONE: Dark brown, fine to occasional medium grained, sub-angular to sub-rounded, moderately sorted, strong siliceous cement, common musc flakes, trace rock fragments, common carbonaceous and argillaceous micro-laminations, hard, tight, no show.

2211.35m : SHALE: Very dark brown, brown black, silty laminations in part, trace carbonaceous and coaly fragments, trace carbonaceous fossil leaves and fronds, micromicaceous, hard, sub-fissile to fissile.

2212.35m : SHALE: As above.

2212.87m : SHALE: As above.

2213.55m : SHALE: As above.

2214.35m : SHALE: Black, slightly silty, very carbonaceous, hard, fissile.

2215.35m : SHALE: Black, very dark brown black, silty in part, common vitrified fossil leaf fragments, hard, sub-fissile to fissile.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	**2 (continued)**	**WELL:**	**TURRUM-5**
Interval cored:	2205.5-2223.5m	Recovered:	17.3m (96%)
Cut:	18m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	3-Sep-95
Described by:	Greg Clota		

Interval (m)	Depth & ROP (m/hr) 10 8 6 4 2 0	Graphic Shows	Descriptive Lithology
2216			2216.35m : SHALE: As above.
2217			2217.35m : SHALE: Very dark brown, black, slightly silty in part, micromicaceous, common carbonaceous and coaly fossil leaves and fronds, hard, sub-fissile to fissile.
2218			2218.35m : SHALE: As above.
2219			2219.35m : SANDSTONE: Medium grey, fine grained, sub-angular, well sorted, strong siliceous cement, trace argillaceous matrix, trace coaly fragments, trace muscovite flakes, trace altered feldspar grains, common rock fragments, hard, tight, no show.
2220			2220.35m : SHALE: Very dark brown, black, silty in part, trace vitrified fossil leak fragments, slightly micromicaceous, trace muscovite flakes, hard, sub-fissile.
2221			2221.35m : SANDSTONE: Medium brown, medium grey, medium to coarse grained, angular to sub-rounded, poor to moderatly sorted, strong siliceous cement, trace silty/ argillaceous matrix, common rock fragments, common very coarse to coarse milky quartz floating, rare carbonaceous fragments, very hard, tight, no show.
2222			2222.35m : SANDSTONE: As above.
			2222.80m : SHALE: Very dark brown, brown black, slightly silty, micromicaceous, trace muscovite, trace coaly fossil leaf and frond fragments, hard, sub-fissile.

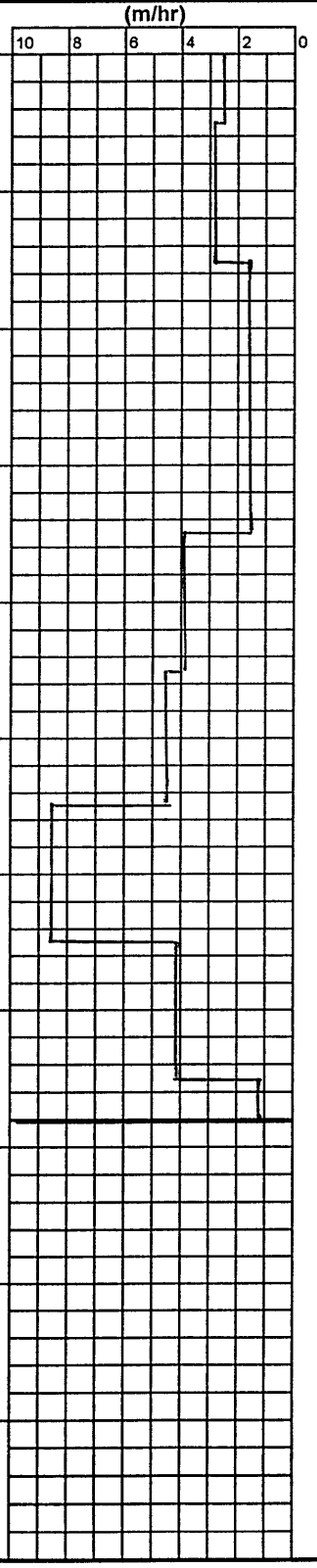
ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	3	**WELL:**	TURRUM-5
Interval cored:	2508.5-2526.8m	Recovered:	18.3m (100%)
Cut:	18.3m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	6-Sep-95
Described by:	J. Reeve		

Interval (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
2508	10 8 6 4 2 0		2508.53m: SHALE with carbonaceous and coaly laminations and lenses. Brown black, dark brown streaks, hard, fissile, micromicaceous, abundant carbonaceous detritus and plant debris, scattered trace pyrite nodules.
2509			2509.35m : SHALE as above with abundant fossil leaves and frond fragments with locally abundant pyrite nodules.
2510			2510.35m : SHALE Very dark brown to brown black, hard, fissile to sub-fissile, micromicaceous, trace carbonaceous specks, trace casts of leaves and winged seeds, trace micro pyrite aggregates.
2511			2511.35m : SILTY SHALE Brown black to olive black, hard, silty, sub-fissile, micromicaceous, carbonaceous specks, occasional laminations of quartz silt occasionally with very fine grained quartz.
2512			2512.35m : SHALE as above at 2510.35m, with abundant fossil leaves and frond fragments with locally abundant pyrite nodules.
2513			2513.35m : SHALE Generally as above, very dark brown to brown black, fissile, slightly to moderate micromicaceous, trace micro-pyritic aggregates, trace casts of leaf and frond fragments.
2514			2514.35m : SHALE As above but only with carbonaceous specks, no casts of plant fragments.
2515			2515.35m : COAL Black to brown black, dull with vitreous streaks, hard, brittle, bituminous, flakey, abundant pyrite replacement of plant fragments, 30% pyrite.
2516			2516.35m : SHALE with carbonaceous and coaly laminations and lenses. Brown black, hard, fissile, brittle, moderately micromicaceous, trace disseminated pyrite, abundant fossil leaves and fronds, grading to shale Coal in part.
2517			2516.95m : SHALE with occasional carbonized plant fragments as above, and syndepositional dewatering slump and sole markings.
2518			2517.65m : SHALE with abundant plant debris as above. Dark brown to brown black,hard, fissile.
			2518.65m : COAL Black, dull with vitreous streaks, firm to hard, brittle, fissile to sub-fissile, sub-conchoidal, bituminous.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	3 (continued)	**WELL:**	TURRUM-5
Interval cored:	2508.5-2526.8m	Recovered:	18.3m (100%)
Cut:	18.3m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	6-Sep-95
Described by:	J. Reeve		

Interval (m)	Depth & ROP (m/hr) 10 8 6 4 2 0	Graphic Shows	Descriptive Lithology
2519			2519.65m : SHALE with abundant carbonized plant debris and occasional coaly lenses as above.
2520			2520.65m : SILTY SHALE Dark brown black, hard to very hard, sub-fissile, very silty, abundant carbonaceous specks, trace pyrite nodules.
2521			2521.61m : SANDSTONE with occasional carbonized leaf fragments. Light olive grey to pale brown, friable to hard, medium to coarse grained, well sorted, angular to sub-angular, poor to moderate sphericity, moderate siliceous cement with common quartz overgrowths, trace to abundant patchy tan kaolinitic matrix, <%5 altered feldspar grains, 5% dark grey clay clasts, trace muscovite flakes, rare coal fragments, patchy trace to good porosity, generally fair, nil to good permeability, strong petroliferous odour, no visual fluorescence, very slow milky cut leaving angular dull yellowish white residue, colourless in natural light.
2522			
2523			2522.65m : SANDSTONE: As above, friable, fine to medium grained, moderate sorted, moderate siliceous cement with quartz overgrowths, common to abundant kaolinitic matrix, poor to fair porosity, (10-15%), poor to fair permeability, moderate petroliferous odour as above, show as above.
2524			2523.65m : SANDSTONE: As above, friable to hard, coarse to very coarse, well sorted, angular, with quartz overgrowths, moderate siliceous cement, cleaner than above with less matrix, good to excellent porosity (20%), good permeability, (200-500mD), moderate petroliferous odour as above, show as above.
2525			2524.65m : SANDSTONE: As above, friable to hard, coarse grained, well sorted, angular, moderate siliceous cement, quartz overgrowths, trace to common matrix, good to excellent porosity, (20%), good permeability as above, moderate petroliferous odour as above, show as above.
2526			2525.65m : SANDSTONE: As above, friable to very hard, coarse-very coarse, moderately sorted, angular, moderate siliceous cement with quartz overgrowths, common kaolinitic matrix as above, clay clasts and carbonaceous fragments as above, trace muscovite flakes, trace altered feldspar, fair to good porosity, (15%), poor to fair permeability, (50-200mD), moderate petroliferous odour as above, show as above.
			2526.25m : SANDSTONE with carbonaceous and micaceous micro cross laminations. Light olive grey with dark grey streaks and laminations, hard, very fine to fine grained, well sorted, sub-rounded, moderate sphericity, moderate siliceous cement, abundant off white kaolinitic matrix, trace muscovite, trace red lithic grains, trace green chloritic grains, no visual porosity, speckled dull orange mineral fluorescence.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	4	**WELL:**	TURRUM-5
Interval cored:	2526.8-2544.8m	Recovered:	16.7m (93%)
Cut:	18m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	7-Sep-95
Described by:	Greg Clota		

Interval (m)	Depth & ROP (m/hr)	Graphic	Shows	Descriptive Lithology
2526	10 8 6 4 2 0			2526.8m : SANDSTONE: Light to medium grey, medium, subangular, moderate to good sorting, strong siliceous cement, trace pyritic cement, trace kaolinitic matrix, trace carbonaceous specks, trace altered feldspar, trace muscovite, hard, tight, no fluorescence.
2527				2527.65m : SANDSTONE: Medium grey, grey brown in part, medium to predominantly coarse, subangular, good sorting, strong siliceous cement, patchy dolomitic cement, trace coal fragments, trace altered feldspar, trace biotite, hard, tight, yellow-orange mineral fluorescence along fracture planes.
2528				2528.65m : SANDSTONE: Medium grey, coarse to very coarse, angular to subangular, moderate sorting, 30-40% pyritic cement, strong siliceous cement, common smoky quartz, trace quartz overgrowths, trace altered feldspar, hard, very poor to nil porosity, trace dull orange mineral fluorescence.
2529				2529.65m : SANDSTONE: Light to medium grey, fine to occasionally medium, angular to subangular, moderate to good sorting, strong siliceous cement, trace pyritic cement, trace patchy dolomitic cement, trace biotite, trace rock fragments, rare chlorite, trace coaly fragments, hard, tight, dull orange mineral fluorescence only.
2530				2530.60m : SANDSTONE: Light grey, light brown grey, fine to medium, subangular, good sorting, moderate siliceous cement, common dolomitic cement, trace to common kaolinitic matrix, common altered feldspar, trace carbonaceous/argillaceous laminae with common disseminated pyrite, trace black mafic minerals, hard, tight, dull orange mineral fluorescence only.
2531				2531.65m : SANDSTONE: Predominantly as above, common pyritic/ carbonaceous microlaminations, dull orange mineral fluorescence only.
2532				2532.65m : SANDSTONE: Predominantly as above, trace pyritic/dolomitic cement, hard, very poor porosity, mineral fluorescence only.
2533				2533.65m : SANDSTONE: Light grey, off white, fine to medium, subangular to subrounded, moderate sorting, moderate siliceous cement, trace kaolinitic matrix, trace chlorite, trace fine grained nodular pyrite, trace rock fragments, moderately hard, very poor to poor porosity, no fluorescence.
2534				2534.65m : SANDSTONE: Light grey, off white, fine to medium subangular, good sorting, common kaolinitic matrix, trace nodular pyrite, trace altered feldspar, trace muscovite, trace carbonaceous/pyritic microlaminae with dolomitic cement, moderately hard to hard, very poor porosity. FLUORESCENCE: Trace pin-point blue/white moderately bright fluorescence, very weak milky cut, trace ring residue.
2535				2535.65m : SANDSTONE: Light grey, fine to predominantly medium to coarse, angular to subrounded, poor to moderate sorting, trace siliceous cement, common silty/kaolinitic matrix, trace altered feldspar, trace smoky quartz, trace chlorite, trace carbonaceous laminations, moderately hard to hard, poor porosity, no fluorescence.

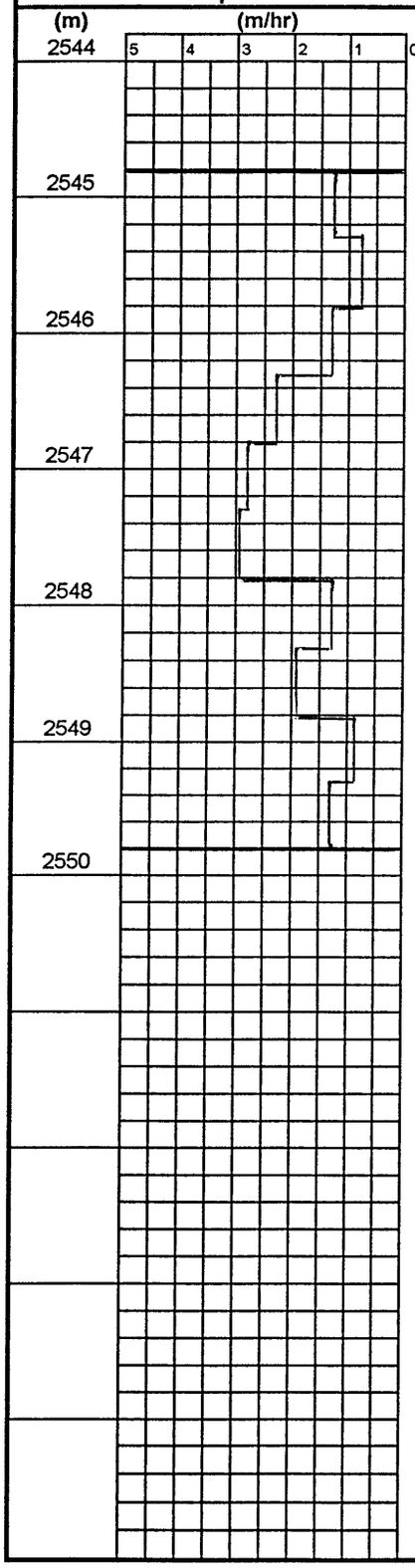
ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	**4 (continued)**	**WELL:**	**TURRUM-5**
Interval cored:	2526.8-2544.8m	Recovered:	16.7m (93%)
Cut:	18m	Bit size:	12 1/4"
Bit type:	CD-93	Date:	7-Sep-95
Described by:	Greg Clota		

Interval (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
2536	10 8 6 4 2 0		
			2536.65m : ARGILLACEOUS SANDSTONE: Dark grey, grey black, coarse, angular, moderate sorting, abundant black argillaceous matrix, matrix supported, common coaly laminations, common biotite, common white calcite crystals, trace dolomitic crystals, hard, tight, mineral fluorescence only.
2537			
			2537.65m : SANDSTONE: Off white to light grey, medium to predominantly coarse, angular to subangular, moderate sorting, moderate siliceous cement, trace quartz overgrowths, trace to moderate kaolinitic matrix, trace nodular pyrite, moderately hard, poor to fair porosity, no fluorescence.
2538			
			2538.65m : SANDSTONE: Light grey, medium, subangular, good sorting, moderate siliceous cement, common kaolinitic matrix, common argillaceous microlaminations, trace altered feldspar, common carbonaceous fragments/ microlaminations, common muscovite, common disseminated pyrite, moderately hard, poor porosity, no fluorescence.
2539			
			2539.65m : SANDSTONE: Off white to light grey, medium to coarse, angular to subangular, moderate sorting, moderate to strong siliceous cement, common quartz overgrowths, trace kaolinitic inclusions, common smoky quartz, trace disseminated pyrite, moderately hard, fair to poor porosity. FLUORESCENCE: Trace pin-point moderately bright blue white fluorescence, faint milky cut, no residue.
2540			
2541			
			2540.65m : SANDSTONE: Light.grey, pale brown, coarse to very coarse, angular, moderate sorting, strong siliceous cement, trace quartz overgrowths, trace smoky quartz, trace carbonaceous fragments, trace altered feldspar, moderately hard, very poor porosity. FLUORESCENCE: 80% Moderately bright to bright pale yellow to blue/ white solid fluorescence, slow streaming cut, thin to moderately bright ring residue.
2542			
2543			
			2541.65m : SANDSTONE: Off white to light grey, medium to coarse, subangular, moderately sorted, strong siliceous cement, common kaolinitic matrix, trace muscovite, trace altered feldspar, moderately hard, poor to very poor porosity. FLUORESCENCE: 80% Bright blue/white fluorescence, moderately fast streaming cut, moderate ring residue.
2544			
			2542.65m : SANDSTONE: Light grey, grey brown in part, fine, subangular, good sorting, strong siliceous cement, common argillaceous matrix, common light grey argillaceous microlaminations, trace carbonaceous flecks, trace nodular pyrite, trace lithic fragments, hard, tight, no fluorescence.
			2543.53m : SANDSTONE: Light grey, fine to medium, occasionally coarse, subangular, good sorting, moderate siliceous cement, moderate kaolinitic matrix, trace quartz overgrowths, common disseminated and nodular pyrite, common smoky quartz, moderately hard, friable in part, poor to occasionally fair porosity. FLUORESCENCE: 80% As above.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	5	**WELL:**	TURRUM-5
Interval cored:	2544.8-2549.8m	Recovered:	5m (100%)
Cut:	5	Bit size:	12 1/4"
Bit type:	CD-93	Date:	8-Sep-95
Described by:	Greg Clota		



Descriptive Lithology

2544.8m : SANDSTONE: Light to medium grey, fine to medium, occasionally coarse, angular to subrounded, moderate sorting, moderate to strong siliceous cement, trace to common pyritic cement, trace altered feldspar, trace smoky quartz, hard, very poor porosity.
FLUORESCENCE: 80% Bright yellow green solid fluorescence, slow streaming cut, thin to moderate residual ring.

2545.55m : SANDSTONE: Light brown, off white, medium to coarse, angular to subangular, moderate sorting, trace siliceous cement, trace quartz overgrowths, trace rock fragments, trace carbonaceous specks, friable, good porosity.
FLUORESCENCE: 100% Yellow green solid fluorescence, instant cut, thick ring residue.

2546.55m : SANDSTONE: Light brown, off white, medium to coarse, angular to subangular, moderate sorting, locally moderate siliceous cement, trace pyritic cement, trace kaolinitic matrix, trace rock fragments, trace muscovite, moderately hard, poor to fair porosity.
FLUORESCENCE: 100% As above.

2547.55m : SHALE: Dark brown, brown black, slightly silty, common very fine light grey arenaceous laminations, common mica, hard, dense, massive to subfissile.

2548.55m : CARBONACEOUS SHALE: Dark brown to black, slightly silty common mica, common vitrified plant/leaf fragments, hard, subfissile to fissile.

2549.05m : SHALE: Dark brown to black, micromicaceous, slightly silty, micromicaceous, common carbonised fossil fragments (plants/leaves), hard, subfissile to fissile.

2549.81m : CARBONACEOUS SHALE: Dark brown black, abundant vitrified plant/leaf fragments, brittle, fissile, locally grades to and interbedded with subituminous high ash coal.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	6	**WELL:**	TURRUM-5
Interval cored:	2568-2586.5m	Recovered:	18.5M (100%)
Cut:	18.5m	Bit size:	12 1/4"
Bit type:	ARC-425	Date:	9-Sep-95
Described by:	Greg Clota		

Interval (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
2568	20 16 12 8 4 0		2568m : SANDSTONE: Light grey, grey brown, medium to coarse, angular to subrounded, moderate to good sorting, moderate siliceous cement, common argillaceous matrix, trace to common disseminated pyrite and cement, common smoky quartz, trace muscovite, trace dark grey argillaceous inclusions, friable to moderately hard, poor porosity. FLUORESCENCE: 70%Moderately bright yellow green patchy fluorescence, moderate instant cut, moderate ring residue. Moderate petroliferous odour.
2569			2568.85m : SANDSTONE: Light grey, light brown, coarse, angular, moderate to good sorting, trace siliceous cement, trace quartz overgrowths, trace argillaceous matrix, trace rock fragments, trace muscovite, trace nodular pyrite and rare pyritic cement, trace smoky quartz, friable, fair to good porosity. FLUORESCENCE: 100% Bright solid pale yellow fluorescence, good instant cut, moderate ring residue. Moderate petroliferous odour.
2570			2569.85m : SANDSTONE: Light brown, coarse, angular, moderate to good sorting, trace to moderate siliceous cement, trace argillaceous/silty matrix, trace quartz overgrowths, trace rock fragments, trace smoky quartz, trace to common carbonaceous/coaly fragments, friable to moderately hard, fair porosity. FLUORESCENCE: 80% Bright solid pale yellow fluorescence, moderate instant cut, moderate ring residue. Moderate petroliferous odour.
2571			2570.85m : SHALE: Black, slightly siliceous, abundant vitrified plant fragments, common coaly interlaminations, slightly micromicaceous, hard, subfissile to fissile.
2572			2571.85m : SHALE: Dark brown black, black, silty in part, common muscovite along bedding planes, trace vitrified plant remains, trace disseminated pyrite, hard, dense, subfissile to massive.
2573			2572.85m : SHALE: Predominantly as above, with common off white to light grey, very fine grained arenaceous lenses, no fluorescence.
2574			2573.85m : SHALE: Predominantly as above, becomes silty grades to silty shale, trace disseminated pyrite and common muscovite.
2575			2574.85m : SHALE: Predominantly as above, very fine grained arenaceous microlaminations.
2576			2575.85m : SHALE: Black to brown black, trace muscovite, slightly siliceous, trace carbonaceous/coaly fragments, homogeneous, hard, dense, subfissile to fissile.
2577			2576.75m : SANDSTONE: Light grey, pale brown, medium to coarse, subangular to subrounded, moderate to good sorting, weak siliceous cement, trace kaolinitic matrix, trace quartz overgrowths, common coaly fragments laminations, common rock fragments, trace smoky quartz, moderately hard, fair to poor porosity. FLUORESCENCE: Trace dull patchy pale yellow fluorescence, slow weak streaming cut, trace patchy ring residue.

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	**6 (continued)**	**WELL:**	**TURRUM-5**
Interval cored:	2568-2586.5M	Recovered:	18.5m (100%)
Cut:	18.5m	Bit size:	12 1/4"
Bit type:	arc-425	Date:	9-Sep-95
Described by:	Greg Clota		

Interval (m)	Depth & ROP (m/hr) 20 16 12 8 4 0	Graphic Shows	Descriptive Lithology
2577			2577.85m : SANDSTONE: Light grey, fine to coarse, angular to subrounded, poor sorting, moderate siliceous cement, trace silty/ argillaceous matrix, trace quartz overgrowths, trace altered feldspar, trace carbonaceous fragments, moderately hard, fair porosity. FLUORESCENCE: 60-70% Moderately bright to patchy bright pale yellow fluorescence, slow weak streaming cut, moderate to thin ring residue.
2578			2578.85m : SILTSTONE: Dark grey, grey black, very argillaceous, common off white very fine grained arenaceous laminations, common muscovite, moderately to very carbonaceous, hard, dense, subfissile to massive.
2579			2579.85m : SHALE: Dark brown black, grey black, very silty grades to silty shale, common muscovite, common arenaceous inclusions and laminations, dense, hard, massive.
2580			2580.85m : SILTSTONE: Dark grey, grey black, very argillaceous, common arenaceous microlaminations and inclusions, trace muscovite, trace carbonaceous fragments, trace disseminated pyrite, hard, dense, massive to subfissile.
2581			2581.85m : SILTSTONE: As above.
2582			2582.85m : SHALE: Brown black, black, slightly silty, trace to common muscovite, common vitrified plant fragments, trace disseminated pyrite, hard, dense, subfissile to massive.
2583			2583.85m : SHALE: Predominantly as above, common very fine grained arenaceous laminations, trace muscovite.
2584			2584.85m : SHALE: As above.
2585			2585.85m : SHALE: Predominantly as above, common arenaceous microlaminations, common disseminated pyrite, abunant muscovite, slightly silty grades to silty shale.
2586			2586.58m : SHALE: Predominantly as above, with common off white to light brown arenaceous laminations.
2587			

APPENDIX 3

APPENDIX III

SIDEWALL CORE DESCRIPTIONS

SIDEWALL CORE DESCRIPTIONS

WELL NAME: Turrum-5 **GEOLOGIST:** Greg Clota

SWC No:	Depth (m)	REC (mm)	Bought Reject	Lithological Description, Fluorescence etc ...
1	2756.5	15	B	SHALE: Brownblack, black, moderately silty, very carbonaceous, trace very fine grained nodular pyrite, slightly micromicaceous, moderately hard, subfissile to massive.
2	2748.3	15	B	SHALE: Predominantly as above, trace very fine quartz sand.
3	2732.8	10	B	SHALE: Predominantly as above, becomes medium to dark grey, brown grey, with arenaceous laminations. SANDSTONE: Off white, very fine to fine, subangular good sorting, abundant kaolinitic matrix, trace carbonaceous specks and microlaminations, tight, no fluorescence.
4	2721	15	B	SANDSTONE: Off white, light brown, fine to medium, subangular to subrounded, moderate to good sorting, moderate siliceous cement, weak calcareous/dolomitic cement, moderately argillaceous matrix, race carbonaceous microlaminations, moderately hard, very poor porosity. FLUORESCENCE: 30% Moderately bright pale yellow patchy fluorescence, very weak slow cut, trace ring residue.
5	2716.5	15	B	SHALE: Dark grey, grey black, trace disseminated pyrite, moderately to very carbonaceous, homogeneous, moderately hard to hard, subfissile.
6	2708.5	15	B	SHALE: Predominantly as above, hard to very hard, with SANDSTONE LAMINATIONS: Off white, light grey, very fine, subangular, good sorting, abundant kaolinitic matrix, trace disseminated pyrite, hard, tight, no fluorescence.
7	2703	20	B	SHALE with SANDSTONE LAMINAE: As above.
8	2695	20	B	SHALE: Dark grey, dark brown black, slightly silty, trace mica, moderately carbonaceous, moderately hard to hard, subfissile.
9	2685.5	20	B	SILTSTONE: Medium grey, moderately argillaceous, moderately to very arenaceous grades to silty sandstone, common carbonaceous/coaly fragments, firm, massive.
10	2681.5	25	B	CLAYSTONE: Dark brown, brown black, slightly silty, micromicaceous, trace coal microlaminations, trace disseminated and nodular pyrite, hard, massive to subfissile.
11	2675.6	15	B	SHALE: Dark grey, grey black, trace disseminated/fine nodular pyrite, trace arenaceous inclusions, trace carbonaceous frgments, moderately hard to hard, subfissile.

SWC No:	Depth (m)	REC (mm)	Bought Reject	Lithological Description, Fluorescence etc ...
12	2659	20	B	SHALE: Dark brown, slightly silty, slightly micromicaceous, trace disseminated pyrite, moderately hard, subfissile, with interlaminated SANDSTONE: Off white, very fine, subangular, good sorting, abundant kaolinitic matrix, hard, tight, no shows.
13	2645	25	B	SHALE: Dark grey, grey black, trace mica, trace disseminated pyrite, homogeneous, subfissile to massive.
14	2642.8		R	Missing.
15	2627	15	B	SHALE: Predominantly as above, with SANDSTONE LAMINAE: Off white, fine, subangular, good sorting, strong siliceous cement, common kaolinitic matrix, hard, tight, dull orange mineral fluorescence only.
16	2625.5	15	B	SANDSTONE: Off white to light grey, fine, subangular, good sorting, moderate siliceous cement, common kaolinitic matrix, race brown argillaceous inclusions, trace chlorite, friable to moderately hard, tight, no shows.
17	2598	10	B	SANDSTONE: Light grey to off white, fine, subangular, good sorting, strong siliceous cement, moderae kaolinitic matrix, trace carbonaceous/coal fragments, trace smoky quartz, trace altered feldspar, hard, tight, trace dull orange mineral fluorescence only.
18	2596.4	10	B	SANDSTONE: Light grey, fine, subangular to subrounded, good sorting, abundant kaolinitic matrix, common brown argillaceous microlaminations, trace carbonaceous micrlaminations, moderately hard, tight, no shows.
19	2589.5	10	B	SANDSTONE: Light grey, light brown, very fine, subangular, good sorting, strong siliceous cement, moderately argillaceous/silty matrix, common medium brown argillaeous microlaminations, trace muscovite, trace disseminated pyrite, moderately hard, tight, no shows.
20	2585.3	10	B	SHALE: Dark brown, dark grey brown, trace muscovite, trace arenaceous microlaminations and inclusions, hard, subfissile.
21	2578	15	B	LAMINATED SHALE & SANDSTONE: Off white, very fine, subangular, good sorting, abundant kaolinitic matrix, hard, tight, no shows.
22	2565.2	10	B	SILTSTONE: Medium brown, dark brown grey, moderately argillaceous, slightly arenaceous, trace coal fragments and microlaminations, moderately hard, massive.
23	2559.5	15	B	SHALE: Dark grey brown, brown black, homogeneous, trace coal fragments, hard, subfissile.

SWC No:	Depth (m)	REC (mm)	Bought Reject	Lithological Description, Fluorescence etc ...
24	2549.8	20	B	SILTSTONE: Dark brown, very argillaceous, common muscovite, trace coal laminae, hard, massive.
25	2520.5	25	B	SHALE: Dark grey, dark brown grey, homogeneous, trace coal fragments and inclusions, trace disseminated pyrite, hard, subfissile.
26	2515.5	20	B	SHALE Dark brown, moderately silty, common muscovite, trace carbonaceous fragments, moderately hard, massive to subfissile, grades to silty shale.
27	2510.5	15	B	SHALE: Medium to dark brown, slightly silty, micromicaceous, trace carbonaceous fragments, trace disseminated pyrite, slightly siliceous, moderately hard, subfissile.
28	2499.5	15	B	SHALE: As above, trace coal laminations.
29	2491.5	10	B	SANDSTONE: Light brown, light grey brown, very fine, subangular to subrounded, good sorting, abundant argillaceous/silty matrix, moderate siliceous cement, common carbonaceous fragments, trace lithic fragments, hard, tight, no shows.
30	2486.5	15	B	SANDSTONE: Off white, fine, subangular, good sorting, abundant kaolinitic matrix, common dark brown argillaceous microlaminae, common carboaceous specks, moderately hard, tight, no shows.
31	2484.5	15	B	SANDSTONE: Off white to light brown, very fine to fine, subangular, good sorting, moderate siliceous cement, common kaolinitic/silty matrix, common medium brown argillaceous laminae, common carbonaceous specks, trace lithic fragments, hard, tight, no shows.
32	2478.5	15	B	SILTSTONE: Medium grey, medium brown grey, slightly siliceous, moderately argillaceous, slightly micromicaceous, trace lithic fragments, moderately hard to hard, subfissile to massive.
33	2472.6	20	B	SANDSTONE: Light brown, light to medium grey, very fine to fine, subangular, good sorting, slightly siliceous cement, abundant argillaceous/silty matrix, common carbonaceous fragments, common lithic/altered feldspar clasts, moderately hard, tight, no shows.
34	2462.8	20	B	SHALE: Olive grey, dark brown grey, homogeneous, moderately carbonaceous, slightly siliceous, hard, subfissile.
35	2458.5	25	B	SHALE: As above.
36	2455.5	25	B	SHALE: Predominantly as above, trace disseminated pyrite.
37	2453	15	B	SANDY SILTSTONE: Light grey, light brown grey, moderately argillaceous, slightly siliceous, veery arenaceous, common lithic fragments, common carbonaceous fragments, hard, massive.

SWC No:	Depth (m)	REC (mm)	Bought Reject	Lithological Description, Fluorescence etc ...
38	2448.5	15	B	SANDY SILTSTONE: As above, trace muscovite.
39	2443.5	20	B	SANDY SILTSTONE: Predominantly as above, grades to very fine grained sandstone.
40	2442	20	B	SANDY SILTSTONE: As above.
41	2432.5	20	B	SILTSTONE: Dark bown, dark brown grey, slightly siliceous, very argillaceous, trace carbonaceous/coaly fragments, trace muscovite, slightly arenaceous/arenaceous inclusions, hard, subfissile
42	2426.2	20	B	SILTSTONE: As above, very argillaceous grades to shole.
43	2421	30	B	SHALE: Dark brown, dark grey brown, slightly silty, common muscovite, moderately hard, subfissile.
44	2404	20	B	SILTSTONE: Medium to dark grey brown, moderately argillaceous, common light brown arenaceous inclusions/laminations, micromicaceous, trace carbonaceous fragments, moderately hard, massive.
45	2399.6	20	B	SILTSTONE: Predominantly as above, with laminated SANDSTONE: Off white, very fine, subangular, good sorting, abundant kaolinitic matrix, trace siliceous cement, trace carbonaceous fragments, hard, tight, no shows.
46	2396.7	30	B	SHALE: Very dark brown, olive grey, slightly siliceous, common vitrinite fragments (plant debris?), homogeneous, smooth, waxy , hard, subfissile to fissile.
47	2382	20	B	SHALE: Medium brown, brown grey, slightly silty, trace carbonaceous fragments, homogeneous, slightly siliceous, hard, subfissile.
48	2369.4	15	B	SANDSTONE: Light brown, off white, very fine grades to siltstone, subangular, good sorting, abundant argillaceous/silty matrix, common light to medium brown argillaceous laminae, trace lithic fragmnets, tracecarbonaceous fragments, slightly micromicaceous, hard, tinght, no shows.
49	2338	30	B	SHALE: Olive grey, dark brown grey, homogeneous, slightly silty, moderately carbonaceous, slightly micromicaceous, hard, subfissile.
50	2317.5	20	B	SHALE: Olive grey, dark brown grey, slightly micromicaceous, slightly silty, trace carbonaceous specks, hard, subfissile.
51	2298	15	B	SHALE: As above, slightly silty.

SWC No:	Depth (m)	REC (mm)	Bought Reject	Lithological Description, Fluorescence etc ...
52	2269.1	25	B	SHALE: As above, trace muscovite.
53	2253.2	30	B	SHALE: Olive grey, dark grey, common arenaceous microlaminae/inclusions, trace disseminated pyrite, moderately carbonaceous, smooth, hard, subfissile.
54	2235.4	15	B	SILTSONE: Dark brown grey, olive grey, moderately argillaceous, moderately carbonaceous, slightly arenaceous, moderately hard to hard, massive.
55	2191	15	B	CLAYSTONE: Dark grey to grey black, trace muscovite, homogeneous, smooth, hard, massive to subfissile.
56	2179.5	10	B	SILTSTONE: Dark brown grey, very argillaceous, common muscovite, slightly arenaceous, slightly siliceous, hard, massive.
57	2169		R	Missing.
58	2159.5	30	B	CLAYSTONE: Dark brown, olive grey, slightly silty, trace carbonaceous fragments/ microlaminations, slightly micromicaceous, trace lithic fragments, hard, subfissile to massive.
59	2151	30	B	CLAYSTONE: Predominantly as above, common nodular pyrite, very carbonaceous.
60	2133.5	20	B	CLAYSTONE: Medium brown grey, olive grey, moderately to vry silty grades to siltstone, common muscovite, slightly arenaceous, trace carbonaceous fragments, moderately hard, massive.

Appendix 4

APPENDIX IV

MDT RESULTS

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	1 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/1 P	1406.5	1381.5	2482	10.4	4:14	410.1	2040.0	8.5	72.7	4:19	2481	10.4	05:00	20cc pretests set MD/CP=12.8
1/2 P	1429.1	1404.1	2521	10.4	4:29	2040.8	2044.6	8.4	73.0	4:32	2521	10.4	03:00	MD/CP=1494.5
1/3 P	1438.6	1413.6	2537	10.3	4:37	2023.1	2046.1	8.3	73.4	4:41	2536	10.3	04:00	MD/CP=175.8
1/4 P	1444.1	1419.1	2547	10.4	4:45	2040.5	2047.7	8.3	73.5	4:48	2546	10.3	03:00	MD/CP=520.2
1/5 P	1463.4	1438.4	2580	10.3	4:53	2036.6	2051.7	8.2	73.8	4:57	2580	10.3	04:00	MD/CP=425.2
1/6 P	1484.6	1459.6	2617	10.3	5:04	2051.2	2055.6	8.1	74.4	5:09	2617	10.3	05:00	MD/CP=569.7
1/7 P	1490.0	1465.0	2627	10.3	5:13	2052.8	2063.7	8.1	74.9	5:21	2626	10.3	08:00	Slow buildup but apparently good pt. MD/CP=149.6
1/8 P	1497.5	1472.5	2640	10.3	5:25	2054.6	2056.9	8.1	75.3	5:30	2640	10.3	05:00	MD/CP=795.6
1/9 P	1502.1	1477.1	2648	10.3	5:34	2055.4	2055.6	8.0	75.7	5:37	2648	10.3	03:00	MD/CP=37067.3
1/10 P	1522.6	1497.6	2685	10.3	5:48	2067.0	2067.3	8.0	76.2	5:51	2684	10.3	03:00	MD/CP=25031.0

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	2 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/11 P	1530.0	1505.0	2697	10.3	5:54	2077.5	2077.7	8.0	76.4	5:57	2697	10.3	03:00	MD/CP=40138.5
1/12 P	1536.0	1511.0	2707	10.3	6:01	2084.3	2086.1	8.0	76.6	6:05	2707	10.3	04:00	MD/CP=4406.3
1/13 P	1560.5	1535.5	2751	10.3	6:11	2067.6	2116.4	8.0	76.9	6:14	2751	10.3	03:00	MD/CP=143.7
1/14 P	1562.6	1537.6	2754	10.3	6:17	2118.9	2119.3	8.0	77.1	6:20	2754	10.3	03:00	MD/CP=36390.6
1/15 P	1573.0	1548.0	2773	10.3	6:24	414.3	-	-	77.2	6:27	2773	10.3	03:00	Aborted - tight coal bed MD/CP=0
1/16 P	1596.1	1571.1	2812	10.3	6:33	2121.8	2136.0	7.9	77.7	6:36	2812	10.3	03:00	MD/CP=497.3
1/17 P	1636.3	1611.3	2883	10.3	6:42	2216.9	2217.7	8.0	78.6	6:45	2883	10.3	03:00	MD/CP=7281.5
1/18 P	2196.0	2171.0	3859	10.3	7:34	384.0	-	-	91.4	7:37	3859	10.3	03:00	Aborted - tight MD/CP=0
1/19 P	2201.0	2176.0	3868	10.3	7:42	2866.6	3227.0	8.6	92.6	7:47	3868	10.3	05:00	10cc pretests set MD/CP=11.9
1/20 P	2206.0	2181.0	3877	10.3	7:50	3215.5	3227.6	8.6	93.0	7:53	3877	10.3	03:00	20cc pretests set MD/CP=582.0

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	3 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/21 P	2209.6	2184.6	3883	10.3	7:57	3182.0	3228.5	8.6	93.2	8:00	3883	10.3	03:00	MD/CP=165.5
1/22 P	2221.6	2196.6	3904	10.3	8:06	293.3	-	-	92.9	8:09	3904	10.3	03:00	Aborted - tight MD/CP=0
1/23 P	2236.3	2211.3	3930	10.3	8:15	311.2	-	-	93.2	8:18	3929	10.3	03:00	Aborted - tight MD/CP=0
1/24 P	2258.5	2233.5	3969	10.3	8:26	3231.6	3259.0	8.5	94.2	8:30	3969	10.3	04:00	10cc pretests set MD/CP=255.7
1/25 P	2290.9	2265.9	4025	10.3	8:36	441.1	-	-	95.2	8:46	4025	10.3	10:00	Aborted - tight MD/CP=0
1/26 P	2292.2	2267.2	4028	10.3	8:50	3273.5	3368.8	8.6	95.3	8:53	4028	10.3	03:00	MD/CP=65.4
1/27 P	2294.1	2269.1	4032	10.3	8:57	2576.1	-	-	95.4	9:01	4032	10.3	04:00	Lost seat MD/CP=n/a
1/28 P	2294.1	2269.1	4031	10.3	9:00	2688.0	3370.6	8.6	95.6	9:08	4031	10.3	08:00	MD/CP=9.1
1/29 P	2299.6	2274.6	4041	10.3	9:14	273.1	-	-	95.9	9:18	4041	10.3	04:00	Aborted - tight MD/CP=0
1/30 P	2332.0	2307.0	4091	10.3	9:27	307.7	-	-	95.6	9:32	4091	10.3	05:00	Aborted - tight MD/CP=0

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	4 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure (PPg)	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure (PPg)	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure (PPg)	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/31 P	2333.6	2308.6	4101 10.3	9:36	381.1	- -	95.9	9:40	4101 10.3	04:00	Aborted - tight MD/CP=0
1/32 P	2358.6	2333.6	4144 10.3	9:47	3418.5	3423.4 8.5	96.9	9:50	4144 10.3	03:00	MD/CP=939.2
1/33 P	2363.3	2338.3	4153 10.3	9:54	3415.7	3424.9 8.5	97.3	9:58	4153 10.3	04:00	MD/CP=162
1/34 P	2379.4	2354.4	4181 10.3	10:03	1736.7	3466.5 8.5	98.0	10:16	4181 10.3	13:00	Tight sand but apparently good pt. MD/CP=0.5
1/35 P	2380.8	2355.8	4184 10.3	10:20	1423.5	3472.5 8.6	98.5	10:34	4184 10.3	14:00	Tight sand - potential seal leak MD/CP=0.5
1/36 P	2388.2	2363.2	4197 10.3	10:41	3190.3	3466.1 8.5	99.0	10:46	4197 10.3	05:00	MD/CP=18.5
1/37 P	2390.6	2365.6	4202 10.3	10:54	3100.4	3466.9 8.5	99.4	10:57	4202 10.3	03:00	MD/CP=14.4
1/38 P	2392.3	2367.3	4205 10.3	11:01	3464.1	3467.2 8.5	99.7	11:05	n/a ######	04:00	Final hydrostatic not observed-operator error MD/CP=n/a
1/39 P	2392.3	2367.3	4205 10.3	11:10	3464.7	3467.2 8.5	99.8	11:14	4205 10.3	04:00	Point 1/38 re-done MD/CP=1491.3
1/40 P	2406.9	2381.9	4230 10.3	11:20	3347.4	3491.7 8.5	99.8	11:23	4230 10.3	03:00	MD/CP=51.2

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	5 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/41 P	2414.3	2389.3	4242	10.3	11:28	3441.5	3495.1	8.5	100.1	11:33	4243	10.3	05:00	MD/CP=96.7
1/42 P	2418.6	2393.6	4251	10.3	11:38	3492.0	3495.4	8.5	100.6	11:42	4251	10.3	04:00	MD/CP=1235.2
1/43 P	2411.7	2386.7	4239	10.3	11:46	3485.4	3493.4	8.5	100.7	11:49	4239	10.3	03:00	MD/CP=516.4
1/44 P	2526.1	2501.1	4438	10.3	12:17	3584.6	3708.9	8.6	103.9	12:21	4437	10.3	04:00	MD/CP=37.4
1/45 P	2527.6	2502.6	4440	10.3	12:25	3654.9	3709.6	8.6	104.1	12:29	4439	10.3	04:00	MD/CP=87.3
1/46 P	2534.1	2509.1	4451	10.3	12:32	1932.7	-	-	105.0	12:40	4451	10.3	08:00	Aborted - supercharged MD/CP=0.3
1/47 P	2538.5	2513.5	4458	10.3	12:44	1717.8	-	-	104.8	12:50	4458	10.3	06:00	Aborted - tight MD/CP=2.5
1/48 P	2541.7	2516.7	4464	10.3	12:54	3462.8	3725.5	8.6	106.1	12:58	4464	10.3	04:00	MD/CP=26.2
1/49 P	2548.1	2523.1	4476	10.3	13:02	3694.4	3724.9	8.6	106.8	13:06	4476	10.3	04:00	MD/CP=123.1
1/50 P	2568.3	2543.3	4511	10.3	13:12	1754.3	-	-	107.1	13:16	4511	10.3	04:00	Aborted - tight MD/CP=53.0

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	6 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/51 P	2570.6	2545.6	4515	10.3	13:24	3702.5	3738.6	8.5	108.5	13:28	4515	10.3	04:00	MD/CP=127.6
1/52 P	2568.8	2543.8	4512	10.3	13:31	3663.8	3737.1	8.5	109.0	13:34	4512	10.3	03:00	MD/CP=21.5
1/53 P	2580.1	2555.1	4532	10.3	13:41	3610.9	3748.7	8.5	109.7	13:44	4532	10.3	03:00	MD/CP=38.5
1/54 P	2599.7	2574.7	4566	10.3	13:51	2358.8	3712.3	8.4	111.0	13:57	4566	10.3	06:00	MD/CP=3.2
1/55 P	2601.6	2576.6	4569	10.3	14:01	3679.1	3710.4	8.4	111.7	14:04	4569	10.3	03:00	MD/CP=214.9
1/56 P	2604.0	2579.0	4574	10.3	14:09	3562.9	3712.7	8.4	112.4	14:14	4574	10.3	05:00	MD/CP=33.9
1/57 P	2607.1	2582.1	4579	10.3	14:18	3598.8	3715.4	8.4	113.0	14:22	4579	10.3	04:00	MD/CP=40.5
1/58 P	2608.6	2583.6	4582	10.3	14:26	3478.4	3716.5	8.4	113.6	14:31	4582	10.3	05:00	MD/CP=22.3
1/59 P	2613.8	2588.8	4591	10.3	14:36	3503.0	3721.9	8.4	113.9	14:40	4591	10.3	04:00	MD/CP=18.7
1/60 P	2618.1	2593.1	4599	10.3	14:45	3295.7	3725.5	8.4	114.5	14:50	4598	10.3	05:00	MD/CP=14.6

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	7 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/61 P	2620.8	2595.8	4604	10.3	14:54	3548.9	3727.9	8.3	115.0	14:57	4604	10.3	03:00	MD/CP=38.2
1/62 P	2622.5	2597.5	4607	10.3	15:02	3395.3	3730.0	8.3	115.3	15:05	4607	10.3	03:00	MD/CP=14.6
1/63 P	2628.6	2603.6	4619	10.3	15:10	2434.6	3743.6	8.4	115.6	15:14	4619	10.3	04:00	MD/CP=3.4
1/64 P	2637.1	2612.1	4633	10.3	15:21	3707.3	3753.4	8.4	116.0	15:24	4633	10.3	03:00	MD/CP=91.7
1/65 P	2651.0	2626.0	4658	10.3	15:33	3634.0	3772.6	8.4	116.6	15:36	4658	10.3	03:00	MD/CP=36.6
1/66 P	2672.5	2647.5	4695	10.3	15:44	3508.6	3800.8	8.3	117.2	15:48	4695	10.3	04:00	MD/CP=20.1
1/67 P	2711.1	2686.1	4762	10.3	15:56	1317.1	-	-	118.6	16:01	4762	10.3	05:00	Aborted - tight MD/CP=0
1/68 P	2438.3	2413.3	4284	10.3	18:31	2937.7	3574.2	8.6	102.1	18:37	4284	10.3	06:00	20cc pretests set MD/CP=11.2
1/69 P	2475.1	2450.1	4348	10.3	18:46	1276.1	-	-	104.2	18:54	4347	10.3	08:00	Aborted - supercharged MD/CP=1.0
1/70 P	2545.1	2520.1	4469	10.3	18:58	761.8	-	-	106.5	19:07	4469	10.3	09:00	Aborted - tight MD/CP=0

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-5	Page	8 of 8
Date	13-Sep-95	Geologist-Engineer	Mike Scott
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (P=Pretest S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/71 P	2547.4	2522.4	4473	10.3	19:11	3619.9	3724.0	8.6	107.9	19:15	4473	10.3	04:00	10cc pretests set MD/CP=63.5

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well			TURRUM-5			Page			of		
Date			13-Sep-95			Geologist-Engineer			Mike Scott		
Tool Type (MDT, RFT)			Schlumberger MDT			KB (metres):			25		
Gauge Type			CQG			Probe type			Long nose		
Pressure units (psia, psig)			PSIA			Temperature units (degF, degC)			degC		
Run-Seat Number (P=Pretest, S=Sample)	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure PPg	Time Set (HH:MM:SS)	Minimum Flowing Pressure	Formation Pressure PPg	Temp	Time Retract (HH:MM:SS)	Final Hydrostatic Pressure PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/1		-25.0	######			######			######		

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	1/1	1/2
Sample depth		m mdrkb	2206.0	2206.0
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number		#	(1) AA485	(2) AA 487
Probe type			LONG NOSE	LONG NOSE
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	13/9/95	13/9/95
Initial hydrostatic		psia	3879.0	
Tool Set		hh:mm	17:53	
Pretest start		hh:mm	17:55	
Initial formation pressure (pretest)		psia	3228.0	
Pretest end		hh:mm	17:56	
Pretest duration		*hh:mm*	*0:01*	
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*		
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	17:57	18:03
Minimum sampling pressure		psia	2949.4	2937.7
Final formation pressure		psia	3228.0	3227.8
Seal chamber		hh:mm	18:02	18:08
Chamber fill time		*hh:mm*	*0:05*	*0:05*
Tool retract		hh:mm		18:11
Final hydrostatic		psia		3879.0
Total time		*hh:mm*		*0:18*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	94.6	95.9
Rm@sample depth (AMS)		ohm-m	0.04	0.04
D. Sample Recovery At Surface				
Surface opening pressure		psig	800	0
Volume gas		cuft	TSTM	0
Volume oil/condensate		litres	-	-
Volume water/filtrate		litres	250cc	450cc
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.102 @ 18	0.102 @ 17
	K+ ion calculated from KCL%	ppm	23500	23800
	Chlorides titrated	ppm	38000	36000
	Tritium	DPM	Not used	Not used
	pH		7.5	6.35
	Type		Filtrate	Filtrate
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		**psia**	**3872**	**3872**

H. Remarks and Comments

General	*Sample specific*	
Pump out chamber inoperable. One 450cc used as dump chamber	1st dump chamber	Sample?
in attempt to capture gas samples.		

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	1/3	1/4
Sample depth		m mdrkb	2548.0	2548.2
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number		#	Not used	Not used
Probe type			LONG NOSE	LONG NOSE
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	13/9/95	13/9/96
Initial hydrostatic		psia	4474.0	4475.0
Tool Set		hh:mm	19:19	19:36
Pretest start		hh:mm	19:23	19:37
Initial formation pressure (pretest)		psia		
Pretest end		hh:mm		
Pretest duration		*hh:mm*		
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	*0:00*
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm		
Minimum sampling pressure		psia		
Final formation pressure		psia		
Seal chamber		hh:mm		
Chamber fill time		*hh:mm*	*0:00*	*0:00*
Tool retract		hh:mm		
Final hydrostatic		psia		
Total time		*hh:mm*		
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)			degC	108.9	110.8
Rm@sample depth (AMS)			ohm-m	0.04	0.04
D. Sample Recovery At Surface				
Surface opening pressure			psig		
Volume gas			cuft		
Volume oil/condensate			litres		
Volume water/filtrate			litres		
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1		ppm		
	C2		ppm		
	C3		ppm		
	C4		ppm		
	C5		ppm		
	C6+		ppm		
	CO2		%		
	H2S		ppm		
Oil/Condensate	API @ degC		degrees	@	@
	Colour				
	Fluorescence				
	GOR or CGR		cuft/bbl or mmscf/bbl		
	Pour point		degC		
Water/Filtrate	Rmud @ degC		ohm-m@degC	@	@
	K+ ion calculated from KCL%		ppm		
	Chlorides titrated		ppm		
	Tritium		DPM		
	pH				
	Type				
F. Mud Filtrate Properties				
Rmud @ degC			ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%			ppm	26400	26400
Chlorides titrated			ppm	35500	35500
pH				9	9
Tritium			DPM	Not used	Not used
G. General Calibration				
Reported mud weight			ppg	10.3	10.3
Calculated hydrostatic			psia	4472	4472
H. Remarks and Comments				
General				*Sample specific*	
Pump out inoperable. Depth correlation after 1/3.				Probe set unsuccessful	Probe set unsuccessful

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	1/5	1/6
Sample depth		m mdrkb	2547.4	2547.4
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number		#	(5) AA479	(6) AA478
Probe type			LONG NOSE	LONG NOSE
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	13/09/95	13/09/95
Initial hydrostatic		psia	4473.0	
Tool Set		hh:mm	19:43	
Pretest start		hh:mm	19:44	
Initial formation pressure (pretest)		psia	3723.6	
Pretest end		hh:mm	19:46	
Pretest duration		*hh:mm*	*0:02*	*0:00*
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	*0:00*
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	19:47	19:53
Minimum sampling pressure		psia	2003.2	3421.6
Final formation pressure		psia	3722.8	3723.1
Seal chamber		hh:mm	19:52	19:55
Chamber fill time		*hh:mm*	*0:05*	*0:02*
Tool retract		hh:mm		19:56
Final hydrostatic		psia		4473.0
Total time		*hh:mm*		*0:13*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	111.0	111.3
Rm@sample depth (AMS)		ohm-m	0.05	0.05
D. Sample Recovery At Surface				
Surface opening pressure		psig	25	0
Volume gas		cuft	0	0
Volume oil/condensate		litres	0	0
Volume water/filtrate		litres	450cc	0
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.099@19	@
	K+ ion calculated from KCL%	ppm	24700	
	Chlorides titrated	ppm	37000	
	Tritium	DPM	Not used	
	pH		7.4	
	Type		Filtrate	
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	4471	4471

H. Remarks and Comments		
General	*Sample specific*	
Pump out inoperable.		Chamber empty

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	1/7	1/8
Sample depth		m mdrkb	2570.5	2570.5
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number		#	(3) AA477	(4) AA482
Probe type			LONG NOSE	LONG NOSE
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	13/09/95	13/09/95
Initial hydrostatic		psia	4516.0	
Tool Set		hh:mm	20:02	
Pretest start		hh:mm	20:03	
Initial formation pressure (pretest)		psia	3738.5	
Pretest end		hh:mm	20:05	
Pretest duration		*hh:mm*	*0:02*	*0:00*
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	*0:00*
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	20:06	20:08
Minimum sampling pressure		psia	3240.6	3734.5
Final formation pressure		psia	3738.2	3788.2
Seal chamber		hh:mm	20:07	20:09
Chamber fill time		*hh:mm*	*0:01*	*0:01*
Tool retract		hh:mm		Not recorded
Final hydrostatic		psia		Not recorded
Total time		*hh:mm*		
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	112.0	112.0
Rm@sample depth (AMS)		ohm-m	0.03	0.03
D. Sample Recovery At Surface				
Surface opening pressure		psig	1500	0
Volume gas		cuft	TSTM	0
Volume oil/condensate		litres		0
Volume water/filtrate		litres	Not recorded	0
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm	181891	
	C2	ppm	68798	
	C3	ppm	53533	
	C4	ppm	28461	
	C5	ppm	4767	
	C6+	ppm	N/A	
	CO2	%	4%	
	H2S	ppm	0	
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	@
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	4512	4512

H. Remarks and Comments		
General	*Sample specific*	
Pump out inoperable.		Chamber empty

(MTS/ResTech/T5_S178.XLS/19/12/95)

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	2/1	2/2
Sample depth		m mdrkb	2206.0	2392.2
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number		#	(2) AA162	(3) AA192
Probe type			MARTINEAU	MARTINEAU
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic		psia	3888.0	4211.0
Tool Set		hh:mm	2:44	3:19
Pretest start		hh:mm	2:46	3:20
Initial formation pressure (pretest)		psia	3229.0	3469.0
Pretest end		hh:mm	2:47	3:21
Pretest duration		*hh:mm*	*0:01*	*0:01*
Pumpout start		hh:mm	2:48	3:22
Pumpout end		hh:mm	3:00	3:25
Pumpout duration		*hh:mm*	*0:12*	*0:03*
Pumpout volume		litres	8.2	2.9
OFA indication		colour	RED	GREEN/PURPLE
Interpreted fluid at OFA		-	GAS	OIL + FILTRATE
Maximum resisitivity at probe		ohm-m	22	22
Chamber open		hh:mm	3:01	3:26
Minimum sampling pressure		psia	3211.7	3464.2
Final formation pressure		psia	3227.8	3468.1
Seal chamber		hh:mm	3:04	3:28
Chamber fill time		*hh:mm*	*0:03*	*0:02*
Tool retract		hh:mm	3:06	3:29
Final hydrostatic		psia	3886.0	4211.0
Total time		*hh:mm*	*0:22*	*0:10*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	97.3	101.4
Rm@sample depth (AMS)		ohm-m	0.04	0.04
D. Sample Recovery At Surface				
Surface opening pressure		psia		
Volume gas		cuft		
Volume oil/condensate		litres		
Volume water/filtrate		litres		
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6 +	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m	@	@
	K + ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m	0.096 @ 21	0.096 @ 21
K + ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	3872	4199

H. Remarks and Comments		
General	*Sample specific*	
Depth correlation prior to 2/1.	Sample preserved	Sample preserved
Bottle (1) did not function for 2/1 - bottle (2) used.		

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification

Run/seat number	#/#	2/3	2/4
Sample depth	m mdrkb	2418.5	2527.5
Pretest volume	cc	20cc	20cc
Chamber size	cc/litre/gallon	450cc	450cc
Chamber serial number	#	Not used	(5) AA160
Probe type		MARTINEAU	MARTINEAU
Choke size		4 x 20/1000 ths	4 x 20/1000 ths

B. Sampling History

Date	dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic	psia	4257.0	4447.0
Tool Set	hh:mm	3:43	4:01
Pretest start	hh:mm	3:45	4:03
Initial formation pressure (pretest)	psia	3497.0	3711.0
Pretest end	hh:mm	3:47	4:04
Pretest duration	*hh:mm*	*0:02*	*0:01*
Pumpout start	hh:mm	3:48	4:04
Pumpout end	hh:mm	3:52	4:08
Pumpout duration	*hh:mm*	*0:04*	*0:04*
Pumpout volume	litres	2.3	4.1
OFA indication	colour	GREEN/BLUE	GREEN/PURPLE
Interpreted fluid at OFA	-	OIL+FILTRATE	OIL+FILTRATE
Maximum resisitivity at probe	ohm-m	22	22
Chamber open	hh:mm	-	4:10
Minimum sampling pressure	psia	-	3709.0
Final formation pressure	psia	-	3709.7
Seal chamber	hh:mm	-	4:14
Chamber fill time	*hh:mm*	-	*0:04*
Tool retract	hh:mm	3:52	4:15
Final hydrostatic	psia	4257.0	4445.0
Total time	*hh:mm*	*0:09*	*0:14*

C. Sample Downhole Temperature And Resistivity

At sample depth (AMS)	degC	100.6	106.7
Rm@sample depth (AMS)	ohm-m	0.04	0.04

D. Sample Recovery At Surface

Surface opening pressure	psia		
Volume gas	cuft		
Volume oil/condensate	litres		
Volume water/filtrate	litres		

E. Sample Properties Measured On-Site

Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m	@	@
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			

F. Mud Filtrate Properties

Rmud @ degC	ohm-m	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%	ppm	26400	26400
Chlorides titrated	ppm	35500	35500
pH		9	9
Tritium	DPM	Not used	Not used

G. General Calibration

Reported mud weight	ppg	10.3	10.3
Calculated hydrostatic	psia	4245	4436

H. Remarks and Comments

General	*Sample specific*	
Depth correlation prior to 2/3.	Tool plugged	Sample preserved
Bottle (4) did not function for 2/4 - bottle (5) used.	No sample obtained	

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification

Run/seat number	#/#	2/5	2/6
Sample depth	m mdrkb	2541.6	2547.4
Pretest volume	cc	20cc	20cc
Chamber size	cc/litre/gallon	450cc	450cc
Chamber serial number	#	Not used	(6) AA193
Probe type		MARTJNEAU	MARTINEAU
Choke size		4 x 20/1000 ths	4 x 20/1000 ths

B. Sampling History

Date	dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic	psia	4471.0	4480.0
Tool Set	hh:mm	4:20	4:35
Pretest start	hh:mm	4:22	4:36
Initial formation pressure (pretest)	psia	3727.0	3724.0
Pretest end	hh:mm	4:23	4:38
Pretest duration	*hh:mm*	*0:01*	*0:02*
Pumpout start	hh:mm	4:23	4:38
Pumpout end	hh:mm	4:29	4:45
Pumpout duration	*hh:mm*	*0:06*	*0:07*
Pumpout volume	litres	2.9	4.7
OFA indication	colour	BLUE	BLUE
Interpreted fluid at OFA	-	FILTRATE	FILTRATE
Maximum resisitivity at probe	ohm-m	0.03	0.03
Chamber open	hh:mm	-	4:45
Minimum sampling pressure	psia	-	3048.3
Final formation pressure	psia	-	3722.0
Seal chamber	hh:mm	-	4:52
Chamber fill time	*hh:mm*	-	*0:07*
Tool retract	hh:mm	4:30	4:53
Final hydrostatic	psia	4470.0	4480.0
Total time	*hh:mm*	*0:10*	*0:18*

C. Sample Downhole Temperature And Resistivity

At sample depth (AMS)	degC	110.0	112.0
Rm@sample depth (AMS)	ohm-m	0.03	0.03

D. Sample Recovery At Surface

Surface opening pressure	psia		Chamber empty
Volume gas	cuft		
Volume oil/condensate	litres		
Volume water/filtrate	litres		

E. Sample Properties Measured On-Site

Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m	@	@
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			

F. Mud Filtrate Properties

Rmud @ degC	ohm-m	0.96 @ 21	0.96 @ 21
K+ ion calculated from KCL%	ppm	26400	26400
Chlorides titrated	ppm	35500	35500
pH		9	9
Tritium	DPM	Not used	Not used

G. General Calibration

Reported mud weight	ppg	10.3	10.3
Calculated hydrostatic	psia	4461	4471

H. Remarks and Comments

General	*Sample specific*	
	Sample aborted	Sample attempted
	only water indicated	even though OFA=blue

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification

Run/seat number	#/#	2/7	2/8
Sample depth	m mdrkb	2570.5	2601.5
Pretest volume	cc	20cc	20cc
Chamber size	cc/litre/gallon	1 Gallon	6 Gallon
Chamber serial number	#	MRSC-BB90	MRSC-BB22
Probe type		MARTINEAU	MARTINEAU
Choke size		4 x 20/1000 ths	4 x 20/1000 ths

B. Sampling History

Date	dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic	psia	4520.0	4573.0
Tool Set	hh:mm	4:59	5:23
Pretest start	hh:mm	5:01	5:23
Initial formation pressure (pretest)	psia	3738.6	3710.4
Pretest end	hh:mm	5:02	5:26
Pretest duration	*hh:mm*	*0:01*	*0:03*
Pumpout start	hh:mm	5:02	5:26
Pumpout end	hh:mm	5:11	5:30
Pumpout duration	*hh:mm*	*0:09*	*0:04*
Pumpout volume	litres	9.4	4.1
OFA indication	colour	BLUE	RED
Interpreted fluid at OFA	-	FILTRATE	GAS
Maximum resisitivity at probe	ohm-m	0.03	22
Chamber open	hh:mm	5:13	5:30
Minimum sampling pressure	psia	514.8	677.9
Final formation pressure	psia	3738.0	3708.6
Seal chamber	hh:mm	5:16	5:38
Chamber fill time	*hh:mm*	*0:03*	*0:08*
Tool retract	hh:mm	5:18	5:40
Final hydrostatic	psia	4520.0	4575.0
Total time	*hh:mm*	*0:19*	*0:17*

C. Sample Downhole Temperature And Resistivity

At sample depth (AMS)	degC	114.0	116.0
Rm@sample depth (AMS)	ohm-m	0.03	0.03

D. Sample Recovery At Surface

Surface opening pressure	psig	1475	1925
Volume gas	cuft	0.7	121.4
Volume oil/condensate	litres	100cc (oil)	250cc (cond)
Volume water/filtrate	litres	3	3.75

E. Sample Properties Measured On-Site

Gas via chromatograph	C1	ppm	TSTM	188817
	C2	ppm		61923
	C3	ppm		32654
	C4	ppm		12115
	C5	ppm		1720
	C6+	ppm		-
	CO2	%		10%
	H2S	ppm		0
Oil/Condensate	API @ degC	degrees	0.81g/cc @ 25	49.15 @ 60deg F
	Colour		LT BRN	CLR-LT BRN
	Fluorescence		YELLOW/STRAW	BL/WHITE
	GOR or CGR	cuft/bbl or mmscf/bbl	1113	3.05
	Pour point	degC	22.2	>0
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.111@19	0.110@16
	K+ ion calculated from KCL%	ppm	17500	16900
	Chlorides titrated	ppm	36000	35500
	Tritium	DPM	Not used	Not used
	pH		6.45	6
	Type		Filtrate	Filtrate

F. Mud Filtrate Properties

Rmud @ degC	ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%	ppm	26400	26400
Chlorides titrated	ppm	35500	35500
pH		9	9
Tritium	DPM	Not used	Not used

G. General Calibration

Reported mud weight	ppg	10.3	10.3
Calculated hydrostatic	psia	4512	4566

H. Remarks and Comments

General	*Sample specific*	
		Incomplete sample

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	2/9	/
Sample depth		m mdrkb	2620.7	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	2-3/4 Gallon	
Chamber serial number		#	MRSC-DB68	
Probe type			MARTINEAU	
Choke size			4 x 20/1000 ths	
B. Sampling History				
Date		dd/mm/yy	14/09/95	
Initial hydrostatic		psia	4610.0	
Tool Set		hh:mm	5:46	
Pretest start		hh:mm	5:47	
Initial formation pressure (pretest)		psia	5:55	
Pretest end		hh:mm		
Pretest duration		*hh:mm*		
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm		
Minimum sampling pressure		psia		
Final formation pressure		psia		
Seal chamber		hh:mm		
Chamber fill time		*hh:mm*	*0:00*	
Tool retract		hh:mm		
Final hydrostatic		psia		
Total time		*hh:mm*		
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC		
Rm@sample depth (AMS)		ohm-m		
D. Sample Recovery At Surface				
Surface opening pressure		psig		
Volume gas		cuft		
Volume oil/condensate		litres		
Volume water/filtrate		litres		
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6 +	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	
	K + ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	
K + ion calculated from KCL%		ppm	26400	
Chlorides titrated		ppm	35500	
pH			9	
Tritium		DPM	Not used	
G. General Calibration				
Reported mud weight		ppg	10.3	
Calculated hydrostatic		psia	4600	

H. Remarks and Comments		
General	*Sample specific*	
Tool failed after 2/9 - pooh.	Aborted tight	

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE SHEET

Well: Turrum-5

A. Sample Identification

Run/seat number	#/#	3/1	
Sample depth	m mdrkb	2548.1	
Pretest volume	cc	20cc	
Chamber size	cc/litre/gallon	6 Gallon	
Chamber serial number	#	Not used	
Probe type		MARTINEAU	
Choke size		4 x 20/1000 ths	

B. Sampling History

Date	dd/mm/yy	14/09/95	
Initial hydrostatic	psia	4489.0	
Tool Set	hh:mm	11:08	
Pretest start	hh:mm	11:10	
Initial formation pressure (pretest)	psia		
Pretest end	hh:mm	11:12	
Pretest duration	*hh:mm*	*0:02*	
Pumpout start	hh:mm		
Pumpout end	hh:mm		
Pumpout duration	*hh:mm*	*0:00*	
Pumpout volume	litres		
OFA indication	colour		
Interpreted fluid at OFA	-		
Maximum resisitivity at probe	ohm-m		
Chamber open	hh:mm	11:12	
Minimum sampling pressure	psia		
Final formation pressure	psia		
Seal chamber	hh:mm		
Chamber fill time	*hh:mm*		
Tool retract	hh:mm		
Final hydrostatic	psia		
Total time	*hh:mm*		

C. Sample Downhole Temperature And Resistivity

At sample depth (AMS)	degC		
Rm@sample depth (AMS)	ohm-m		

D. Sample Recovery At Surface

Surface opening pressure	psig		
Volume gas	cuft		
Volume oil/condensate	litres		
Volume water/filtrate	litres		

E. Sample Properties Measured On-Site

Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			

F. Mud Filtrate Properties

Rmud @ degC	ohm-m@degC	0.096 @ 21	
K+ ion calculated from KCL%	ppm	26400	
Chlorides titrated	ppm	35500	
pH		9	
Tritium	DPM	Not used	

G. General Calibration

Reported mud weight	ppg	10.3	
Calculated hydrostatic	**psia**	**4472**	

H. Remarks and Comments

General	*Sample specific*	
MDT pump out and OFA inoperable. 6 gallon used as dump chamber.	Seat Failure.	
Possible packer failure at 3/1 - POOH.		

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	4/1	4/2
Sample depth		m mdrkb	2548.0	2548.0
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	6 Gallon	2 3/4 Gallon
Chamber serial number		#	Not reported	Not reported
Probe type (Long nose, MARTINEAU)			MARTINEAU	MARTINEAU
Choke size			4x20/1000 ths	4x20/1000 ths
B. Sampling History				
Date		dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic		psia	4487.0	
Tool Set		hh:mm	13:42	
Pretest start		hh:mm	13:43	
Initial formation pressure (pretest)		psia	3727.0	
Pretest end		hh:mm	13:44	
Pretest duration		*hh:mm*	*0:01*	*0:00*
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*		
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	13:48	14:18
Minimum sampling pressure		psia	1008.0	194.0
Final formation pressure		psia	Not reported	3035.0
Seal chamber		hh:mm	14:18	14:47
Chamber fill time		*hh:mm*	*0:30*	*0:29*
Tool retract		hh:mm		
Final hydrostatic		psia		
Total time		*hh:mm*		*0:00*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	108.0	108.0
Rm@sample depth (AMS)		ohm-m	0.04	0.04
D. Sample Recovery At Surface				
Surface opening pressure		psig	425	145
Volume gas		cuft	-	-
Volume oil/condensate		litres	-	-
Volume water/filtrate		litres	19	9.6
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.110 @ 21	0.108 @ 22
	K+ ion calculated from KCL%	ppm	17,200	17,800
	Chlorides titrated	ppm	37,000	37,000
	Tritium	DPM	Not used	Not used
	pH		6.4	6.35
	Type		Filtrate	Filtrate
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	4472	4472

H. Remarks and Comments		
General	*Sample specific*	
Pump out inoperable		

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE SHEET

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	4/3	
Sample depth		m mdrkb	2548.0	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	Not reported	
Chamber serial number		#	Not reported	
Probe type			MARTINEAU	
Choke size			4 x 20/1000 ths	
B. Sampling History				
Date		dd/mm/yy	14/09/95	
Initial hydrostatic		psia		
Tool Set		hh:mm		
Pretest start		hh:mm		
Initial formation pressure (pretest)		psia		
Pretest end		hh:mm		
Pretest duration		*hh:mm*	*0:00*	
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	14:50	
Minimum sampling pressure		psia	1130.0	
Final formation pressure		psia	3720.0	
Seal chamber		hh:mm	14:51	
Chamber fill time		*hh:mm*	*0:01*	
Tool retract		hh:mm	14:57	
Final hydrostatic		psia	4481.0	
Total time		*hh:mm*		
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	108.0	
Rm@sample depth (AMS)		ohm-m	0.04	
D. Sample Recovery At Surface				
Surface opening pressure		psig	125	
Volume gas		cuft		
Volume oil/condensate		litres		
Volume water/filtrate		litres		
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	
K+ ion calculated from KCL%		ppm	26400	
Chlorides titrated		ppm	35500	
pH			9	
Tritium		DPM	Not used	
G. General Calibration				
Reported mud weight		ppg	10.3	
Calculated hydrostatic		psia	4472	

H. Remarks and Comments

General	*Sample specific*	
Chamber 4/3 plugged - no recovery	Final flowing pressure	
	=3091 psia	

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	5/1	5/2
Sample depth		m mdrkb	2548.0	2570.5
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	12 Gallon	2 3/4 Gallon
Chamber serial number		#	Not reported	Not used
Probe type (Long nose, MARTINEAU)			MARTINEAU	MARTINEAU
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	15/09/95	15/09/95
Initial hydrostatic		psia	4481.0	
Tool Set		hh:mm	15:36	
Pretest start		hh:mm	15:36	
Initial formation pressure (pretest)		psia	3737.0	
Pretest end		hh:mm	15:37	
Pretest duration		*hh:mm*	*0:01*	*0:00*
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		*hh:mm*	*0:00*	*0:00*
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at probe		ohm-m		
Chamber open		hh:mm	15:42	
Minimum sampling pressure		psia	164.0	
Final formation pressure		psia	3097.0	
Seal chamber		hh:mm	18:50	
Chamber fill time		*hh:mm*	*3:08*	*0:00*
Tool retract		hh:mm		
Final hydrostatic		psia		
Total time		*hh:mm*		*0:00*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	110.0	
Rm@sample depth (AMS)		ohm-m	0.04	
D. Sample Recovery At Surface				
Surface opening pressure		psig	500	
Volume gas		cuft	-	
Volume oil/condensate		litres	Trace oily scum	
Volume water/filtrate		litres	36	
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour		BROWN	
	Fluorescence		BLUE/WHITE	
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.114 @ 22	@
	K+ ion calculated from KCL%	ppm	18,300	
	Chlorides titrated	ppm	37,000	
	Tritium	DPM	-	
	pH		6.1	
	Type		Filtrate	
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21
K+ ion calculated from KCL%		ppm	26400	26400
Chlorides titrated		ppm	35500	35500
pH			9	9
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	0	0

H. Remarks and Comments

General	*Sample specific*	
50 volt power supply halting telemetry. Lost seat when sealing	Lost seat when sealing	Tool would not seat.
chamber 5/1. Pooh at 5/2.	chamber.	POOH.

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5				
A. Sample Identification				
Run/seat number		#/#	6/1	6/2
Sample depth		m mdrkb	2570.5	2570.5
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	1 Gallon	1 Gallon
Chamber serial number		#	Not reported	Not reported
Probe type (Long nose, Martineau)			MARTINEAU	MARTINEAU
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	16/09/95	16/09/95
Initial hydrostatic		psia	4514.0	
Tool Set		hh:mm	15:45	
Pretest start		hh:mm	15:46	
Initial formation pressure (pretest)		psia	3739.0	
Pretest end		hh:mm	15:48	
Pretest duration		*hh:mm*	*0:02*	*0:00*
Pumpout start		hh:mm	15:49	
Pumpout end		hh:mm	16:54	
Pumpout duration		*hh:mm*	*1:05*	*0:00*
Pumpout volume		litres	60	
OFA indication		colour	NOT REPORTED	
Interpreted fluid at OFA		-	NOT REPORTED	
Maximum resisitivity at probe		ohm-m	NOT REPORTED	
Chamber open		hh:mm	16:55	17:08
Minimum sampling pressure		psia	1949.0	2182.0
Final formation pressure		psia	3733.0	3734.0
Seal chamber		hh:mm	17:07	17:19
Chamber fill time		*hh:mm*	*0:12*	*0:11*
Tool retract		hh:mm		17:21
Final hydrostatic		psia		4514.0
Total time		*hh:mm*		*1:36*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	88.0	94.0
Rm@sample depth (AMS)		ohm-m	0.05	0.05
D. Sample Recovery At Surface				
Surface opening pressure		psig	1725	Seal failed
Volume gas		cuft	10.1	Not available
Volume oil/condensate		litres	1.25	1.5
Volume water/filtrate		litres	1.25	1.5
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm	62006	
	C2	ppm	31474	
	C3	ppm	15907	
	C4	ppm	1974	
	C5	ppm	129	
	C6+	ppm	-	
	CO2	%	10%	
	H2S	ppm	0	
Oil/Condensate	API @ degC	degrees	41.7 @ 15.5	41.7 @ 15.5
	Colour		GRN/BRN	GRN/BRN
	Fluorescence		PALE YELLOW	PALE YELLOW
	GOR or CGR	cuft/bbl or mmscf/bbl	1248.7	-
	Pour point	degC	21	-
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.127 @ 17	0.127 @ 17
	K+ ion calculated from KCL%	ppm	16900	16900
	Chlorides titrated	ppm	34000	34000
	Tritium	DPM	Not used	Not used
	pH		6.0	6.0
	Type		Filtrate	Filtrate
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.109 @ 19	0.109 @ 19
K+ ion calculated from KCL%		ppm	21480	21480
Chlorides titrated		ppm	34500	34500
pH			9.1	9.1
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	4512	4512
H. Remarks and Comments				
General			*Sample specific*	
			Final sample pressure	Final sample pressure
			=3349	=3238

(MTS/ResTech/T5_S612.XLS/20/12/95)

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5

A. Sample Identification				
Run/seat number		#/#	6/3	6/4
Sample depth		m mdrkb	2548.6	2548.6
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	12 Gallon	2 - 3/4 Gallon
Chamber serial number		#	Not reported	Not reported
Probe type (Long nose, Martineau)			MARTINEAU	MARTINEAU
Choke size			4 x 20/1000 ths	4 x 20/1000 ths
B. Sampling History				
Date		dd/mm/yy	16/09/95	17/09/95
Initial hydrostatic		psia	4468.0	
Tool Set		hh:mm	17:38	
Pretest start		hh:mm	17:38	
Initial formation pressure (pretest)		psia	3722.0	
Pretest end		hh:mm	17:40	
Pretest duration		*hh:mm*	*0:02*	*0:00*
Pumpout start		hh:mm		0:22
Pumpout end		hh:mm		0:44
Pumpout duration		*hh:mm*	*0:00*	*0:22*
Pumpout volume		litres		3.57
OFA indication		colour		Not reported
Interpreted fluid at OFA		-		Not reported
Maximum resisitivity at probe		ohm-m		Not reported
Chamber open		hh:mm	17:40	0:45
Minimum sampling pressure		psia	175.0	278.0
Final formation pressure		psia	3399.0	3248.0
Seal chamber		hh:mm	0:21	3:25
Chamber fill time		*hh:mm*		*2:40*
Tool retract		hh:mm		
Final hydrostatic		psia		
Total time		*hh:mm*		*0:00*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	95.0	103.0
Rm@sample depth (AMS)		ohm-m	0.04	0.04
D. Sample Recovery At Surface				
Surface opening pressure		psig	825	1525
Volume gas		cuft	2.5	11.9
Volume oil/condensate		litres	Trace oil scum	3.75
Volume water/filtrate		litres	38	4.5
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm	37167	20577
	C2	ppm	6706	2020
	C3	ppm	2071	783
	C4	ppm	444	200
	C5	ppm	3	15
	C6+	ppm	-	-
	CO2	%	20%	12%
	H2S	ppm	0	-
Oil/Condensate	API @ degC	degrees	TSTM	40.9 @ 15.5
	Colour		GRN/BRN	GRN/BRN
	Fluorescence		PALE YELLOW	PALE YELLOW
	GOR or CGR	cuft/bbl or mmscf/bbl	TSTM	504.6
	Pour point	degC	TSTM	24
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.131 @ 20	0.126 @ 20
	K+ ion calculated from KCL%	ppm	18100	17500
	Chlorides titrated	ppm	33540	34000
	Tritium	DPM	-	-
	pH		6.3	6.1
	Type		Filtrate	Filtrate
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.109 @ 19	0.109 @ 19
K+ ion calculated from KCL%		ppm	21480	21480
Chlorides titrated		ppm	34500	34500
pH			9.1	9.1
Tritium		DPM	Not used	Not used
G. General Calibration				
Reported mud weight		ppg	10.3	10.3
Calculated hydrostatic		psia	4473	4473

H. Remarks and Comments

General	*Sample specific*	
Final pressure for 6/3 & 6/4 incomplete.	Final sample pressure	Final sample pressure
3.57l pumped after sealing 6/3, 0.5l pumped after sealing 6/4.	=2680 psia	= 2722 psia

ESSO AUSTRALIA LTD - MDT FLUID SAMPLE DATA

Well: Turrum-5				
A. Sample Identification				
Run/seat number		#/#	6/5	/
Sample depth		m mdrkb	2548.6	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	2 - 3/4 Gallon	
Chamber serial number		#	DA -16	
Probe type (Long nose, Martineau)			MARTINEAU	
Choke size			4 x 20/1000 ths	
B. Sampling History				
Date		dd/mm/yy	17/09/95	
Initial hydrostatic		psia		
Tool Set		hh:mm		
Pretest start		hh:mm		
Initial formation pressure (pretest)		psia		
Pretest end		hh:mm		
Pretest duration		*hh:mm*	*0:00*	*0:00*
Pumpout start		hh:mm	3:25	
Pumpout end		hh:mm	3:28	
Pumpout duration		*hh:mm*	*0:03*	*0:00*
Pumpout volume		litres	0.5	
OFA indication		colour	Not reported	
Interpreted fluid at OFA		-	Not reported	
Maximum resisitivity at probe		ohm-m	Not reported	
Chamber open		hh:mm	3:28	
Minimum sampling pressure		psia	681.0	
Final formation pressure		psia	3708.0	
Seal chamber		hh:mm	4:45	
Chamber fill time		*hh:mm*	*1:17*	*0:00*
Tool retract		hh:mm	4:45	
Final hydrostatic		psia	Not reported	
Total time		*hh:mm*	*11:07*	*0:00*
C. Sample Downhole Temperature And Resistivity				
At sample depth (AMS)		degC	10.3	
Rm@sample depth (AMS)		ohm-m	0.04	
D. Sample Recovery At Surface				
Surface opening pressure		psig		
Volume gas		cuft		
Volume oil/condensate		litres		
Volume water/filtrate		litres		
E. Sample Properties Measured On-Site				
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	@
	K+ ion calculated from KCL%	ppm		
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Type			
F. Mud Filtrate Properties				
Rmud @ degC		ohm-m@degC	0.109 @ 19	@
K+ ion calculated from KCL%		ppm	21480	
Chlorides titrated		ppm	34500	
pH			9.1	
Tritium		DPM	Not used	
G. General Calibration				
Reported mud weight		ppg	10.3	
Calculated hydrostatic		psia	4473	0
H. Remarks and Comments				
General			*Sample specific*	
			Sample preserved.	
			Final pressure = 2478.	

APPENDIX 5

APPENDIX V

VELOCITY SURVEY REPORT

See separate report; Schlumberger "Well Seismic Processing Report, Zero Offset VSP and Geogram, TURRUM-5".

APPENDIX 6

APPENDIX VI

SURVEY DATA

Halliburton

Survey Report

Job No: 0041-95-0019
Date: 11/9/95
Time: 4:57 pm
Wellpath ID: Turrum #5
Date Created: 28/8/95
Last Revision: 11/9/95

Calculated using the Minimum Curvature Method
Computed using WIN-CADDS REV2.1.B
Vertical Section Plane: 311.45 deg.

Survey Reference: STRUCTURE ORIGIN
Reference World Coordinates: Lat. 38.14.56 S - Long. 148.12.04 E
Reference GRID System: Australian (UTM) Zone: 55, Cent. Merid: 147.00.00 E
Reference GRID Coordinates: (m): 5765872.00 N 605093.00 E
North Aligned To: TRUE NORTH
Offset, Reference To WellHead: (m): 6.22 N 6.22 E 0.00 TVD
Vertical Section Reference: STRUCTURE ORIGIN
Closure Reference: STRUCTURE ORIGIN
TVD Reference: STRUCTURE ORIGIN

Esso Australia Ltd.
Gipsland Basin
Outpost/Extension Well
Turrum Field
Well Turrum #5

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	TOTAL Rectangular Offsets (m)	(m)	Closure Dist. (m)	Dir. (deg.)	DLS (dg/30m)	Cum. Dogleg (deg)
0.00	0.00	0.00	0.00	0.00	6.22N	6.22 E	8.80@	45.00	0.00	0.0
Tie-in at mudline										
83.50	0.00	0.00	83.50	83.50	6.22N	6.22 E	8.80@	45.00	0.00	0.0
24/08/95-SS Surveys										
403.00	0.00	0.00	319.50	403.00	6.22N	6.22 E	8.80@	45.00	0.00	0.0
665.00	0.25	133.00	262.00	665.00	5.83N	6.64 E	8.83@	48.71	0.03	0.3
27/08/95-Bha #3- HDS MWD										
699.30	0.80	75.40	34.30	699.30	5.84N	6.92 E	9.06@	49.86	0.61	0.9
728.40	0.30	80.80	29.10	728.40	5.90N	7.20 E	9.31@	50.64	0.52	1.5
757.20	0.20	48.60	28.80	757.20	5.95N	7.31 E	9.42@	50.86	0.18	1.6
786.50	0.20	50.90	29.30	786.50	6.01N	7.39 E	9.53@	50.85	0.01	1.6
815.80	0.30	44.50	29.30	815.80	6.10N	7.48 E	9.65@	50.80	0.11	1.7
845.00	0.20	41.40	29.20	844.99	6.19N	7.57 E	9.78@	50.70	0.10	1.8
874.40	0.30	42.80	29.40	874.39	6.29N	7.65 E	9.91@	50.59	0.10	1.9
903.10	0.30	37.60	28.70	903.09	6.40N	7.75 E	10.05@	50.44	0.03	2.0
933.10	0.40	44.40	30.00	933.09	6.54N	7.87 E	10.23@	50.28	0.11	2.1
960.00	0.30	39.50	26.90	959.99	6.66N	7.98 E	10.40@	50.15	0.12	2.2
989.10	0.40	35.80	29.10	989.09	6.80N	8.09 E	10.57@	49.94	0.11	2.3
1019.00	0.40	24.70	29.90	1018.99	6.98N	8.19 E	10.77@	49.57	0.08	2.4
1047.30	0.40	42.40	28.30	1047.29	7.15N	8.30 E	10.95@	49.28	0.13	2.5
1076.50	0.40	34.20	29.20	1076.49	7.30N	8.43 E	11.15@	49.08	0.06	2.5
1105.90	0.40	26.10	29.40	1105.89	7.48N	8.53 E	11.35@	48.75	0.06	2.6
1134.00	0.30	11.80	28.10	1133.99	7.64N	8.59 E	11.50@	48.34	0.14	2.7
1162.80	0.40	17.90	28.80	1162.79	7.81N	8.64 E	11.64@	47.87	0.11	2.8
1193.00	0.40	20.60	30.20	1192.99	8.01N	8.71 E	11.83@	47.38	0.02	2.8
1220.70	0.40	4.10	27.70	1220.69	8.20N	8.75 E	11.99@	46.85	0.12	3.0
1249.60	0.30	2.20	28.90	1249.59	8.37N	8.76 E	12.12@	46.28	0.10	3.1

Halliburton

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	TOTAL Rectangular Offsets (m)	(m)	Closure Dist. (m)	Dir. (deg.)	DLS (dg/30m)	Cum. Dogleg (deg)
1279.30	0.40	6.90	29.70	1279.29	8.55N	8.77E	12.25@	45.72	0.11	3.2
1309.00	0.40	338.40	29.70	1308.99	8.75N	8.75E	12.37@	44.98	0.20	3.4
1338.40	0.40	341.00	29.40	1338.38	8.95N	8.67E	12.46@	44.12	0.02	3.4
28/08/95-BHA #4										
1432.00	0.40	316.60	93.60	1431.98	9.49N	8.34E	12.64@	41.32	0.05	3.5
29/08/95-BHA #5										
1458.50	0.40	313.70	26.50	1458.48	9.62N	8.21E	12.65@	40.48	0.02	3.6
1487.90	0.30	305.20	29.40	1487.88	9.74N	8.08E	12.65@	39.67	0.11	3.7
1517.10	0.30	268.50	29.20	1517.08	9.78N	7.94E	12.60@	39.06	0.19	3.9
1546.30	0.50	272.80	29.20	1546.28	9.79N	7.73E	12.47@	38.32	0.21	4.1
1575.70	0.20	299.40	29.40	1575.68	9.82N	7.56E	12.39@	37.60	0.34	4.4
1604.40	0.50	338.70	28.70	1604.38	9.96N	7.47E	12.45@	36.88	0.38	4.8
1633.80	0.80	318.10	29.40	1633.78	10.23N	7.29E	12.56@	35.47	0.38	5.2
1662.50	0.60	332.70	28.70	1662.47	10.51N	7.09E	12.68@	33.98	0.28	5.4
30/08/95										
1691.60	0.20	304.10	29.10	1691.57	10.68N	6.97E	12.75@	33.15	0.45	5.9
1720.30	0.20	52.80	28.70	1720.27	10.74N	6.97E	12.80@	33.00	0.34	6.2
1749.50	0.50	27.50	29.20	1749.47	10.88N	7.07E	12.98@	33.02	0.34	6.5
1778.60	0.30	31.30	29.10	1778.57	11.06N	7.17E	13.18@	32.96	0.21	6.7
1807.30	0.30	25.60	28.70	1807.27	11.19N	7.24E	13.33@	32.91	0.03	6.7
1826.10	0.50	48.20	18.80	1826.07	11.29N	7.32E	13.46@	32.98	0.40	7.0
31/08/95-BHA #6										
1863.40	0.90	339.60	37.30	1863.37	11.67N	7.34E	13.79@	32.18	0.69	7.8
1892.10	0.70	52.10	28.70	1892.07	11.99N	7.40E	14.09@	31.69	1.00	8.8
1980.00	1.00	55.40	87.90	1979.96	12.75N	8.46E	15.30@	33.55	0.10	9.1
01/9/95										
2067.40	0.90	50.40	87.40	2067.35	13.63N	9.61E	16.68@	35.21	0.04	9.2
2154.00	0.90	34.40	86.60	2153.93	14.62N	10.52E	18.01@	35.74	0.09	9.5
03/09/95-BHA #9										
2240.96	0.60	18.70	86.96	2240.89	15.62N	11.05E	19.13@	35.30	0.12	9.8
04/09/95										
2328.20	0.90	266.40	87.24	2328.12	16.00N	10.52E	19.15@	33.31	0.43	11.1
2414.70	2.50	262.00	86.50	2414.58	15.70N	7.97E	17.61@	26.92	0.56	12.7
05/09/95										
2443.90	3.00	269.80	29.20	2443.75	15.61N	6.58E	16.94@	22.85	0.64	13.3
2477.90	3.40	258.50	34.00	2477.70	15.40N	4.70E	16.10@	16.96	0.66	14.1
08/09/95										
2502.70	3.50	266.80	24.80	2502.45	15.22N	3.22E	15.55@	11.96	0.62	14.6
2531.70	3.00	273.70	29.00	2531.40	15.21N	1.58E	15.30@	5.93	0.66	15.2
09/09/95-Bha #15										
2560.60	3.00	279.10	28.90	2560.26	15.38N	0.08E	15.38@	0.30	0.29	15.5
2755.00	3.63	310.70	194.40	2754.35	20.20N	9.61W	22.37@	334.56	0.29	17.4

APPENDIX 7

APPENDIX VII

MUD LOG

PE600666

This is an enclosure indicator page.
The enclosure PE600666 is enclosed within the container PE900857 at this location in this document.

The enclosure PE600666 has the following characteristics:

ITEM_BARCODE	= PE600666
CONTAINER_BARCODE	= PE900857
NAME	= Formation Evaluation Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L3
TYPE	= WELL
SUBTYPE	= MUD_LOG
DESCRIPTION	= Formation Evaluation Log/ Mud Log (enclosure from WCR vol.1) for Turrum-5
REMARKS	=
DATE_CREATED	= 11/09/95
DATE_RECEIVED	= 7/03/96
W_NO	= W1145
WELL_NAME	= Turrum-5
CONTRACTOR	= Halliburton
CLIENT_OP_CO	= Esso Australia Pty Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)