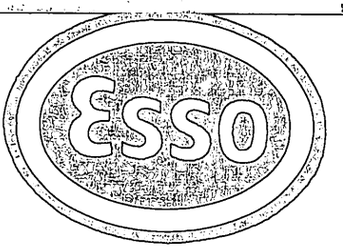

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Well Completion Rpt.

Turrum - 7

(W1300)

TURRUM 7

WELL COMPLETION REPORT

VOLUME 1
BASIC DATA

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

Petroleum Development

COMPILED BY:
Greg Clota
John Anderson

March, 2000

TURRUM 7
VOLUME 1: BASIC DATA

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ENCLOSURES

ESSO AUSTRALIA LTD

1. WELL DATA RECORD

LOCATION	:	Latitude : 38° 15' 52.2558" South Longitude : 148° 15' 49.2257" East X= 610550.0mE Y= 5764066.0mN Map Projection: UTM Co-ordination Base: ANS/AGD AMG Zone 55 Central Meridian: 147° East Geographical Location: Bass Strait, Victoria Field :Turrum
PERMIT	:	Vic/L4
ELEVATION	:	26.0m
WATER DEPTH	:	62.0m
TOTAL DEPTH	:	2830m (Driller) 2830m (Logger)
PLUG BACK TYPE (REASON)	:	Cement Plug (P&A)
MOVE IN	:	23/08/99 at 1718 hours
SPUDDED	:	24/08/99 at 1015 hours
REACHED TD	:	13/09/99 at 1315 hours
RIG RELEASED	:	20/09/99 at 1800 hours
OPERATOR	:	Esso Australia Resources Ltd.
PERMITTEE OR LICENCEE	:	BHP Petroleum (Australia) Pty Ltd and Esso Australia Resources Ltd.
ESSO INTEREST	:	50%
OTHER INTEREST	:	50% BHP Petroleum (Australia) Pty Ltd
CONTRACTOR	:	Sedco Forex
RIG NAME	:	Sedco702
EQUIPMENT TYPE	:	Semi-submersible
TOTAL RIG DAYS	:	28.6
DRILLING AFE NO	:	L61019005
TYPE COMPLETION	:	Plugged and abandoned
WELL CLASSIFICATION	:	Outpost/Extension Test

2. OPERATIONS SUMMARY

1. MOVING/MOORING

The Sedco702 was released at 03:00 hours on the 23rd August, 1999 from the Blackback A-3 location. The rig was in tow by the MV Shogun and MV Challenger at drilling draft to the Turrum #7 location. The rig was at the Turrum #7 location with the #7 anchor dropped at 17:18 hours on the 23rd of August, 1999. All anchors were run and storm tensioned to 350,000lbs. The #3 anchor would not hold and upon retrieval was found to be twisted. The #3 anchor was rerun and held tension at 350,000lbs. All anchors were in place and at the operating tension of 240,000lbs by 09:00 hours on the 24th August, 1999. The final rig location was 1.0m on a bearing of 0.0°T from the called location. The water depth was 62.0m.

2. DRILLING OPERATIONS

36" Hole/30" Casing

A Security S33SGJ4 17½" bit plus tandem 36" hole openers were made up and used to spud Turrum 7 at 1015 hours on the 24th August, 1999. The 17½" hole section was drilled from 88m to 132m (36" hole to 131m). 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 130m was 0°.

Three joints of 30" 310lb/ft casing plus wellhead joint were run with the PGB and cemented in place with 800 sacks of class 'G' cement with 2% $CaCl_2$ in sea water. The shoe was set at 131m.

17½" Hole/13⅜" Casing

A Security 26" S3SJ4 bit was made up and RIH to drill out the cement and float shoe from 125m to 132m. The hole was circulated clean prior to POOH.

The Security 17½" S33SGJ4 used to drill the 36" hole section, was made up and RIH to drill ahead from 132m to 670m. Hi-vis sweeps were pumped after each stand during the drilling of the interval. Totco surveys were run at the following intervals, 439m 0.75° and 670m 0.5°.

A wiper trip was made to the 30" casing shoe and the well was displaced with hi-vis mud prior to tripping out to run casing.

46 joints of 68lb/ft K55 13⅜" casing and shoe joint plus 1 joint of 202.92lb/ft RL-4S 20" casing and the 18¾" wellhead joint were run with the shoe landed at 664.56m. The casing was cemented with a lead of 990 sacks of class 'G' cement with 0.45 GPS Econolite plus 0.01 GPS NF-5 mixed with seawater (12.5ppg) and a tail of 692 sacks class 'G' cement with 0.01 GPS NF-5 mixed with seawater (15.9ppg).

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

12¼" Hole

A 12¼" Hughes Christensen BX536 PDC bit was made up with the MWD and new BHA. Top of cement was tagged at 619m. The cement, float collar and shoetrack 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/Polymer/Glycol mud system. A Phase II PIT was performed (EMW=12.7ppg, jug test) and then drilling proceeded from 673m to 797m. A bit trip was made at 797m to correct the uncontrollable build in inclination.

A 12¼" Reed MHP11GL milled tooth bit was made up to the same BHA and RIH. After extensive reaming and backreaming, to drop inclination, drilling proceeded from 797m to 894m. However, the required drop in inclination could not be achieved and a trip was made for a new BHA.

A 12¼" Security FS2563 PDC bit was made up with a new packed BHA and RIH to drill ahead from 894m to 2330m. A bit trip was made due to the low penetration rate.

A 12¼" ERA22D insert bit was made up with a new BHA and tripped into the hole. Drilling continued from 2330m to 2609m. After geological evaluation of samples at 2609m the decision was made to POOH to cut a core in the L360 reservoir. A Hughes Christensen $9^{7}/_{8}$" ARC425 core bit and 27m core barrel were made up and tripped into the hole. Core #1 was cut from 2609-2636m. The core recovery was 26.1m (96.6%).

A new 12¼" ERA22D was made up and tripped into the hole. After reaming out the $9^{7}/_{8}$" cored rat hole from 2609-2636m drilling proceeded to 2689m. The bit was pulled due to high torque and low rate of penetration.

Another 12¼" ERA22D was made up and tripped into the hole and drilled ahead from 2689m to 2786m. A bit trip was required at 2786m due to the low penetration rate.

A 12¼" Security SS86FD bit and new BHA were made up, after laying down the MWD tool, and tripped into the hole. Drilling continued from 2786m. Total depth was 2830medium, reached at 13:15 hours on the 13th September, 1999. A wiper trip was made to 1500m prior to tripping out the drill string and running the following E-Logs: PEX-HALS, MDT-GR-AMS, FMI-HNGS-AMS, CSAT, CST-GR.

After completion of the wireline logging programme Turrum 7 was plugged and abandoned. Plugs 1,2,3 were spotted from 2700m-2126m, plug 4 from 568m-750m and plug 3 from 112m -175m.

The Sedco702 was released from Turrum 7 on 20th September, 1999 and de-mobilised.

3. CASING DATA

Size	#/FT	Grade	Conn	Interval
(inches)	(ppf)			(metres)
30	457	X-52	RL-4HT	85.5-95.9
30	310	X-52	RL-4S	95.9-131.0
18.750	203	X-56	RL-4S	84.7-91.7
20	203	X-56	RL4S	91.7-94.0
13.375	68	K-55	BTC	94.0-664.11

4. CEMENTING DATA

CASING

			30" Casing	20" Casing
Setting Depth			131m	664m
Lead Slurry	Interval	DF		ML-510m
	Volume pumped	Sacks(G)		
	Volume pumped	bbls		
	Weight	ppg		
	Yield	cfs		
	Mix water	gps		
	Econolite	gps		
	NF-5 (Anti-Foam)	gal/10bbl		
Tail Slurry	Interval	DF	ML-131m	510m-664m
	Volume pumped	Sacks(G)	995	692
	Volume pumped	bbls	197	143
	Weight	ppg	15.9	15.9
	Yield	cfs	1.16	1.16
	Mix water	gps	5.15 (SW)	5.15 (SW
	CaC12	gps	2	
	Mix watNF-5 (Anti-Foam)	gal/10bbl		0.5

PLUG AND ABANDONMENT

			Plug #1	Plug #2	Plug #3	Plug #4	Plug #5
Slurry	Interval	DF	2510-2700m	2320-2510m	2127-2320m	568m-750m	112-170m
	Volume pumped	sacks(G)	460	460	460	470	170
	Volume pumped	bbls	95	95	95	97	35
	weight	ppg	15.8	15.9	15.8	15.9	15.9
	yield	cfs	1.16	1.16	1.16	1.16	1.16
	Mix water	gps	5.15 (FW)	5.15 (FW)	5.15 (FW)	5.15 (FW)	5.15 (FW)
	CaCl2	%					
	SCR-100L(retarder)	gal/10 bbl	4	3	1		
	Halad 413L (Fluid Loss)	gal/10 bbl	20	20			
	Halad 322L (Fluid Loss)	gal/10 bbl			20		
	NF-5 (Anti-foam)	gal/10 bbl	0.5	0.5	0.5		0.5
	CaCl2	%					1

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

Interval (m)	Type
670 - 2830	Cuttings samples - 3 sets of washed and oven dried and 1 set of lightly washed and air dried cuttings. Samples from 670 - 1620m at 30m intervals. Samples from 1620 - 2830m at 5m intervals.
2609-2636	Core #1 cut 27m and recovered 26.1m (96.6%)

6. WIRELINE LOGS AND SURVEYS

Type and Scale	Suite 1	From	To
PEX-DSI-HALS	1:200	2830	300
FMI-HNGS	1:40	2830	1685
MDT (CQ Gauge Pretests)	(67 Sets)	2230	2730
CSAT (Dual)	(51 Stations)	2800	200
CST-GR (Sidewall cores)	(60 Shots, 58 Rec.)	2806.7	1767.3

7. MEASURED WHILE DRILLING LOGS

Tool	Run	From (m)	To (m)
MWD GR	1	670	797
MWD GR	2	797	894
MWD GR	3	894	2330
MWD GR	4	2330	2609
MWD GR	5	2636	2689
MWD GR	6	2688	2766

8. SUMMARY OF FORMATION TEST PROGRAMME

Interval (m)	Run	Type
2230-2730	1	41 pretest were attempted with 15 repeats due to tight rock or seal failure (56 total)
2444.8-2624.9	2	12 pretests were attempted as a precurser to sample acquisition in suspected oil zones. All tests were aborted due to tight rock, seal failure or OFA showing filtrate.

9. TEMPERATURE RECORD

Logging Run	Depth	Max Temp (deg C)	Circ'n Time	Delta T
Pex; HILT-DSI-HALS	2830.0	98.9	2.0	9.50
FMI-HNGS	2830.0	104	2.0	19.75
MDT; Pressures	2230.0	104.4	2.0	45.78
MDT; Samples	2444.8	104.9	2.0	45.78
CST	2800.0	106.7	2.0	52.58

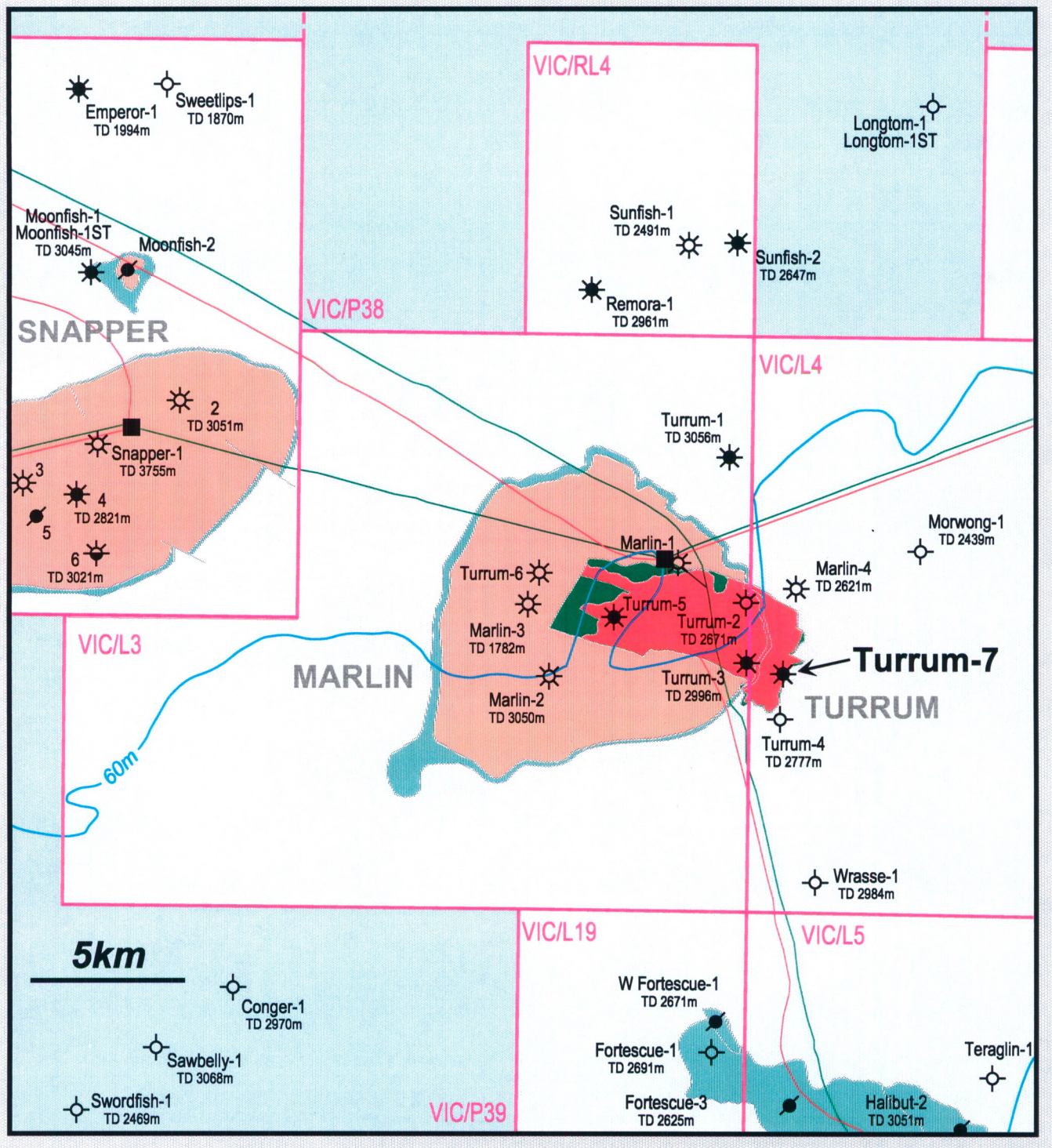
Figures

FIGURES

TURRUM 7

Turrum-7
LOCATION MAP

907504 013



2000 012

PE907504_01

FIGURE 1

ESSO AUSTRALIA LTD.
TURRUM 7

WELL PROGRESS CURVE

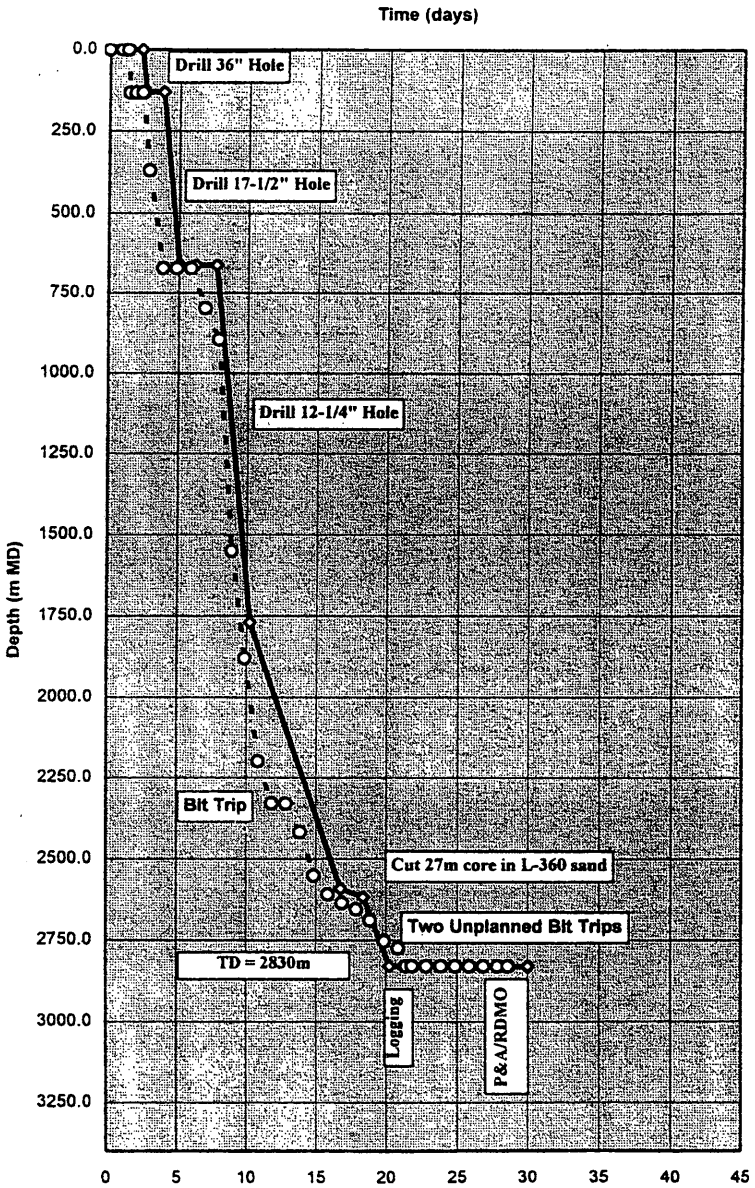
Esso Australia Ltd. | **Turrum 7**

Lithology	Depth Plan MD	Depth Plan TVD	Depth Actual MD	Depth Actual TVD	Formation Evaluation	Casing
	61	61	62	62		30" @ 130m MD/TVD
	87	87	88	88		
Gippsland						
	1519	1519	1521	1521		20" X 13-3/8" @ 660m MD/TVD
Lakes Entrance						
	1770	1770	1764	1764	PEX/AIT/HNGS/FMI/DSI/VSP	
Latrobe						
	2214	2214	2225	2225		
Turrum						
TD =	2830	2830	2830	2830		

Drilling Rig : Sedco 702

	Plan	Actual	
Target Time:	30.0	28.6	Days
Proposed TD:	2830	2830	m MD
	2830	2830	m TVD

Days vs. Depth Curve (MD)

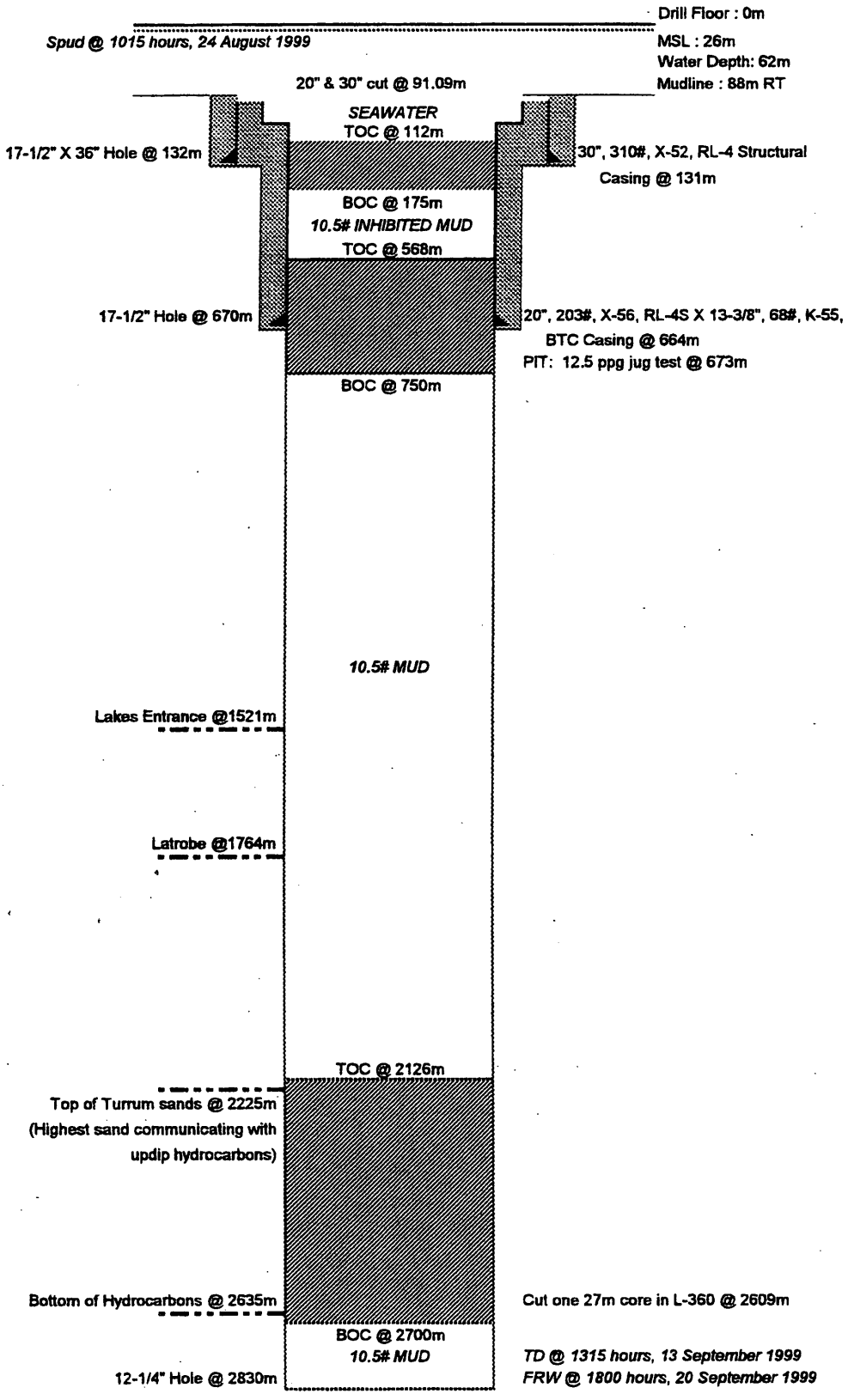


Blackback Drilling Team
03/10/1999
Days vs Depth Curve.xls

FIGURE 2

ESSO AUSTRALIA LTD.
TURRUM 7

Final Wellbore Sketch



Blackback Drill Team
30/09/1999
Wellbore Sketches.xls

FIGURE 3

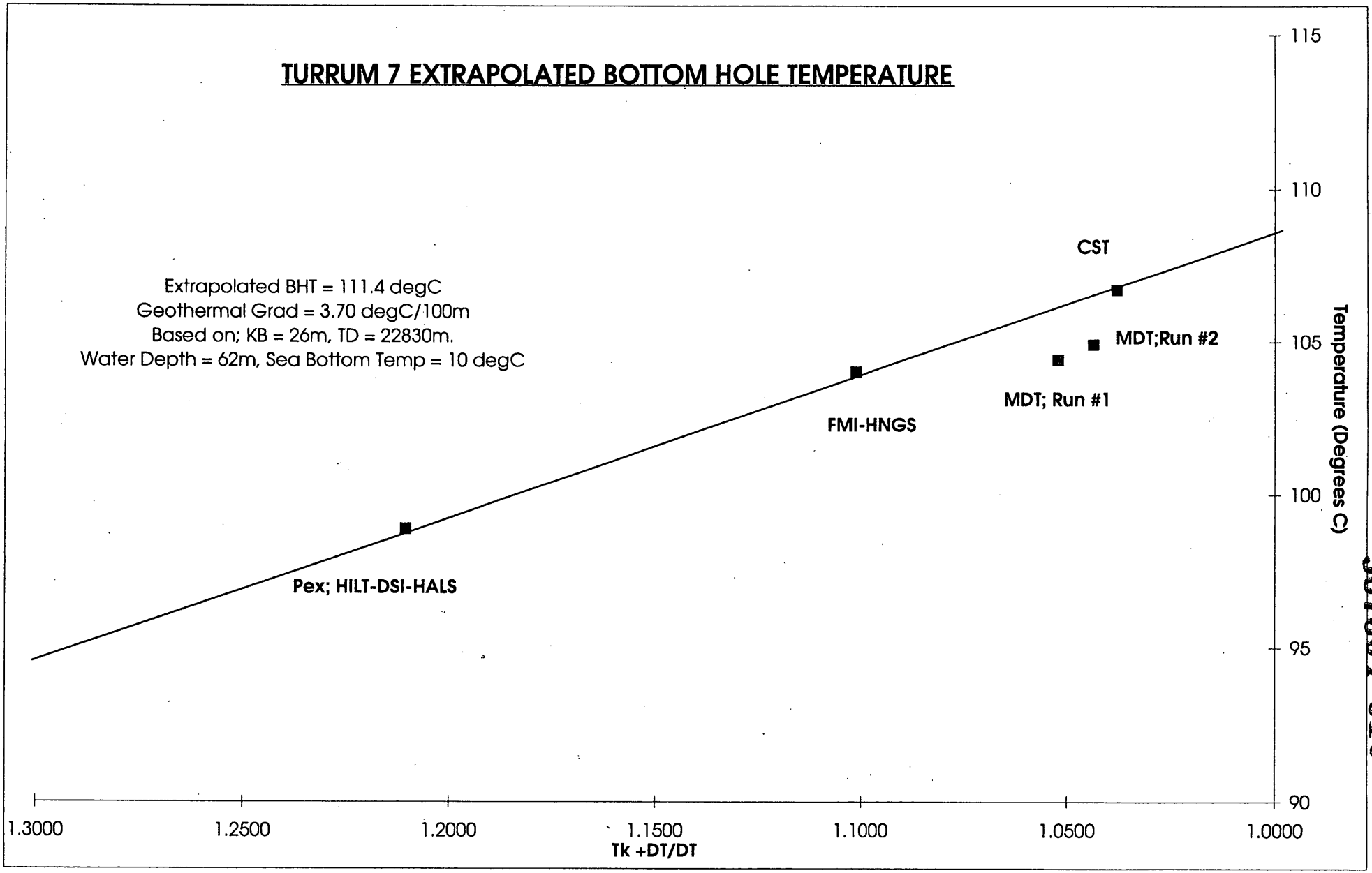


FIGURE 4

Appendix 1

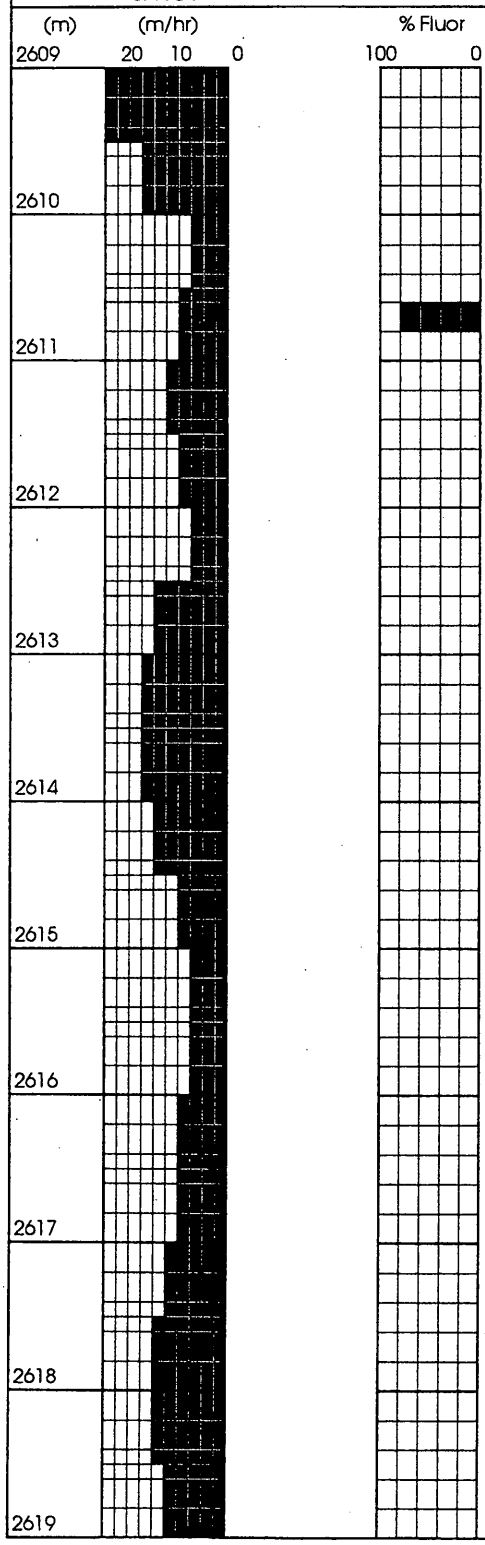
APPENDIX 1

TURRUM 7

Core Descriptions

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	1	**WELL:**	Turrum 7
Interval cored:	2609-2636m	Recovered:	26.1m (96.6%)
Cut:	27m	Bit size:	9.875"
Bit type:	ARC425	Date:	8/9/1999
Described by:	Greg Clota/Martin Turner/Eliza King		



Descriptive Lithology

2609 SILTSTONE: Dark grey to greyish black, slightly argillaceous, finely carbonaceous, fine grained arenaceous inclusions, micromicaceous, hard, subfissile to fissile.

2609.85 SILTSTONE: As above.

2610.85 INTERLAMINATED SANDSTONE AND SILTSTONE
SILTSTONE: As above. SANDSTONE: light grey, very fine grained, well sorted, subangular, siliceous cement, common argillaceous matrix, hard, very poor visual porosity. FLUORESCENCE: 80% bright, even yellowish white fluorescence, instant diffuse direct cut, thick ring residue.

2611.85 SILTSTONE: As above.

2612.85 COAL: Black, dull to subvitreous lustre, brittle, trace pyrite laminae, moderately hard, hackly fracture.

2613.85 SILTSTONE: As above.

2614.85 SILTSTONE: As above, occasionally grading to coal in part.

2615.85 SILTSTONE: As above.

2616.3 SILTSTONE: As above

2618 SILTSTONE: Dark grey to brownish black, slightly argillaceous, micromicaceous, hard, fissile.

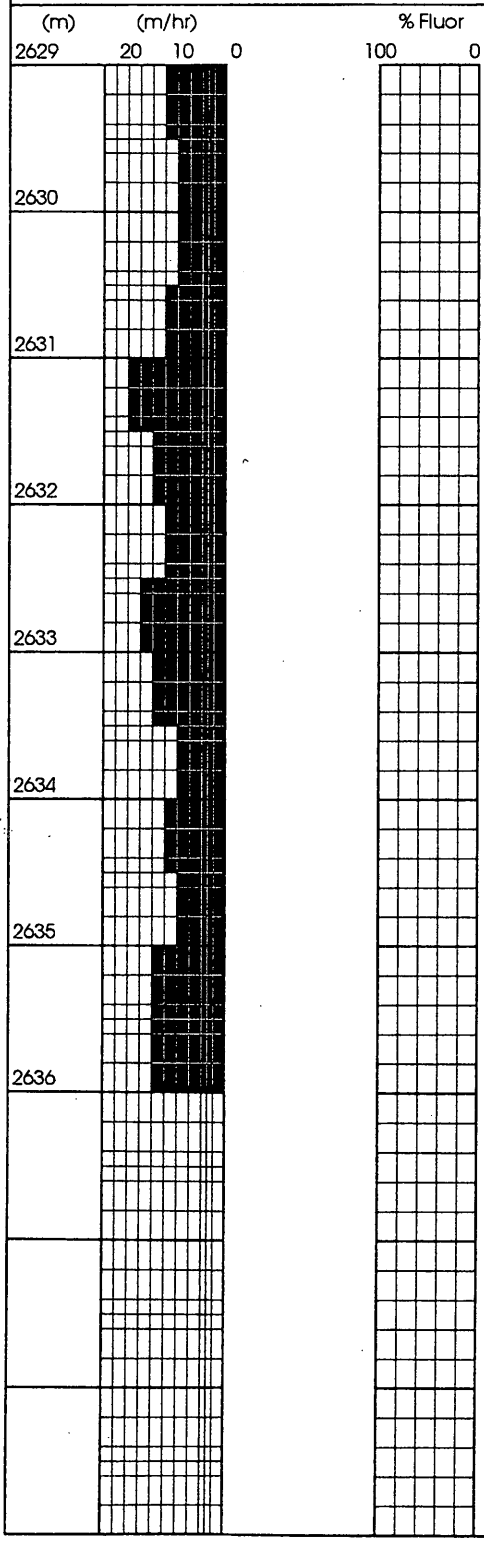
ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	1	**WELL:**	Turrum 7
Interval cored:	2609-2636m	Recovered:	26.1m (96.6%)
Cut:	27m	Bit size:	9.875"
Bit type:	ARC425	Date:	8/9/1999
Described by:	Greg Clota/Martin Turner/Eliza King		

Interval	Depth & ROP	Graphic	Shows	Descriptive Lithology
(m)	(m/hr)		% Fluor	
2619	20 10 0		100 0	
2620				2619: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: Light grey, very fine to fine, well sorted, subangular, siliceous cement, trace pyritic cement, common kaolinitic matrix, common muscovite, hard, very poor visual porosity. FLUORESENCE: none directly: trace dull yellow-white very weak diffuse cut, thin film residue. SILTSTONE: Dark grey to brownish black, slightly argillaceous, micromicaceous, hard, fissile. 2620: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above. SILTSTONE: As above.
2621				2621: SANDSTONE: Light grey to pale yellowish brown, very fine to predominantly fine, occasional coarse grains, well sorted, subangular, siliceous cement, occasional dolomitic cement, trace nodular pyrite, abundant kaolinitic matrix, common muscovite, trace carbonaceous matter, moderately hard, poor visual porosity. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. 2622: SILTSTONE: Dark grey to brownish grey, slightly agrillaceous, common micromica and mica, hard, fissile.
2622				
2623				2623: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above. FLUORESENCE: none directly; dull yellowish white very weak crush cut, patchy film residue. SILTSTONE: As above.
2624				2624: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. SILTSTONE: As above.
2625				2625: SANDSTONE: Predominantly as above, very fine to fine, common dolomitic cement, very hard. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. 2625.35: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. SILTSTONE: As above. 2626: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above, no FLUORESCENCE. SILTSTONE: As above.
2626				
2627				2627: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: Light grey, very fine to fine, subangular to subrounded, well sorted, siliceous cement, trace dolomitice cement, common to abundant kaolinitic matrix, common muscovite, trace carbonaceous material, hard, poor visual porosity. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. SILTSTONE: As above. 2628: INTERLAMINATED SANDSTONE AND SILTSTONE: SANDSTONE: As above. FLUORESENCE: none directly; dull yellowish white very weak crush cut, thin film residue. SILTSTONE: Greyish balck to brownish grey, slightly argillaceous, arenaceous in part,
2628				
2629				

ESSO AUSTRALIA LTD
CORE DESCRIPTION

CORE No.:	1	**WELL:**	Turrum 7
Interval cored:	2609-2636m	Recovered:	26.1m (96.6%)
Cut:	27m	Bit size:	9.875"
Bit type:	ARC425	Date:	8/9/1999
Described by:	Greg Clota/Martin Turner/Eliza King		



Interval | **Depth & ROP** | **Graphic** | **Shows** | **Descriptive Lithology**

2629: INTERLAMINATED SANDSTONE AND SILTSTONE:
SANDSTONE: Light grey to pale yellowish brown, very fine to fine, well sorted, subangular to subrounded, trace dolomitic and siliceous cement, abundant kaolinitic matrix, common muscovite, trace carbonaceous material, moderately hard, fissile, poor visual porosity. FLUORESENCE: none directly, dull yellowish white very weak crush cut, thin film residue. SILTSTONE: Greyish balck to brownish grey, slightly argillaceous, arenaceous in part, micromicaceous, trace carbonaceous material, hard, fissile.

2630: SILTSTONE: dark grey to brownish black, slightly argillaceous, micromicaceous, common carbonaceous material, grading to coal in parts, hard, fissile.

2631: SILTSTONE: As above.

2632: SILTSTONE: As above.

2633: COAL: Subvitreous lustre, moderately hard, brittle, hackly fracture.

2634: COAL: As above.

2634.75: COAL: As above.

2635.1: COAL: As above.

Appendix 2

APPENDIX 2

TURRUM 7

Sidewall Core Descriptions

SIDEWALL CORE DESCRIPTIONS

No.	Depth (m)	Rec. (mm)	B/R	Description
1	2806.7	20	B	SANDSTONE: Medium light grey, fine to medium, subangular to subrounded, moderate to good sorting, abundant kaolinitic matrix, trace carbonaceous fleck, trace chlorite, friable, fair porosity, no fluorescence.
2	2798.8	20	B	SANDSTONE: Medium light grey, very fine to fine, subangular, good sorting, weak siliceous cement, abundant kaolinitic matrix, trace muscovite/biotite, trace lithic fragments, friable to moderate hard, tight, no fluorescence, with interlaminated CLAYSTONE: Brown black to dark grey, silty, micromicaceous, trace nodular pyrite, trace carbonaceous specks, firm to moderate hard, subfissile.
3	2788	30	B	CLAYSTONE: Grey black to brown black, very carbonaceous grades to carbonaceous shale, common light grey very fine grained sandstone laminae, micromicaceous, trace disseminated pyrite, moderately hard, subfissile.
4	2775.8	30	B	CLAYSTONE: As above.
5	2765.5	20	B	SANDSTONE: Very light grey, translucent, medium to coarse, angular to subangular, moderate sorting, weak siliceous cement, rare pyrite cement, trace coarse smoky quartz float, friable, good porosity. FLUORESCENCE: Trace dull patchy pale yellow fluorescence, faint diffuse crush cut, trace film residue.
6	2736.6	30	B	CLAYSTONE: Grey black to brown black, very silty, micromicaceous, trace fine to medium quartz float, trace lithic fragments, firm to moderate hard, subfissile to massive.

7	2726.8	20	B	SANDSTONE: Very light grey, fine to medium in part, subangular, good sorting, abundant kaolinitic matrix, trace altered feldspar, trace carbonaceous specks, friable, tight, no fluorescence.
8	2713.6	25	B	SANDSTONE: Dark grey, fine, subangular, good sorting, abundant argillaceous/silty matrix, trace glauconite, trace lithic fragments, common argillaceous inclusions, friable, tight, no fluorescence.
9	2706.5	15	B	SANDSTONE: Light grey, very fine to fine, subangular, good sorting, trace siliceous cement, abundant kaolinitic matrix, common brown black argillaceous laminae, friable, tight, no fluorescence.
10	2699.5	25	B	SANDSTONE: Predominantly as above, trace lithic fragments.
11	2690.4	30	B	SANDSTONE: Light grey, very fine to fine, subangular to subrounded, well sorted, trace siliceous cement, abundant kaolinitic matrix, occasional glauconite, trace carbonaceous material, firm, poor porosity, no fluorescence.
12	2677.5	25	B	SANDSTONE: Light grey to very pale brown, predominantly fine to coarse, subangular to subrounded, poorly sorted, trace siliceous cement, trace calcareous cement, trace disseminated pyrite, abundant kaolinitic matrix, trace glauconite, trace biotite, firm, poor porosity, no fluorescence.
13	2650.7	25	B	SANDSTONE: Light grey, fine, subangular to subrounded, well sorted, trace siliceous cement, abundant kaolinitic matrix, occasional muscovite, trace glauconite, trace carbonaceous material, firm, poor porosity, FLUORESCENCE: Trace very dull patchy pale yellow, slow diffuse crush cut, thin film residue, interlaminated with SILTSTONE: Dusky yellowish brown, argillaceous, micromicaceous, common carbonaceous material, firm, fissile.

14	2634.7	25	B	SILTSTONE: Dark yellowish brown to dusky yellowish brown, argillaceous, arenaceous in part, micromicaceous, common carbonaceous material, hard, fissile. (C1 0.52%, C2 0.09%, C3 0.04%, iC4 0.01%, nC4 0.01%, iC5 trace)
15	2630	30	B	SANDSTONE: Light grey, very fine to fine, subangular to subrounded, well sorted, trace siliceous cement, abundant kaolinitic matrix, trace lithics, trace carbonaceous specks, firm to friable, poor porosity, no fluorescence, interlaminated with SILTSTONE: Predominantly as above, dark yellowish grey. (C1 0.07%, C2 0.01%, C3 0.01%)
16	2628.2	25	B	SILTSTONE: Brownish grey to dusky yellowish brown, argillaceous in part, micromicaceous, trace carbonaceous material, moderately hard, fissile, interlaminated with SANDSTONE: Light grey, very fine to medium, moderate sorting, subangular to aubraounded, trace siliceous cement, abundant argillaceous matrix, trace muscovite, trace carbonaceous specks, firm, poor porosity, no fluorescence. (C1 0.23%, C2 0.04%, C3 0.03%, iC4 0.01%, nC4 0.01%)
17	2626.5	25	B	SILTSTONE: Moderate yellowish brown to dusky yellowish brow n, argillaceous, common micromica, trace carbonaceous material, firm, subfissile, interbedded with SANDSTONE: As above. (C1 0.13%, C2 0.03%, C3 0.02%, iC4 0.01%, nC4 0.01%, iC5 0.01%)
18	2624	30	B	SANDSTONE: Light grey to very pale brown, very fine to fine, well sorted, subangular to subrounded, trace siliceous cement, trace nodular pyrite, abundant kaolinitic matrix, trace mica, firm, poor porosity, FLUORESCENCE: Trace very dull pale yellow pinpoint, slow diffuse cut, thin film residue, interlaminated with SILTSTONE: Moderate yellowish brown to brownish black, argillaceous, common

				carbonaceous material grading to coal in places, common micromica, firm, fissile. (C1 0.06%, C2 0.02%, C3 0.01%, iC4 0.01%, nC4 0.01%)
19	2619.4	25	B	SILTSTONE: Brownish black, slightly argillaceous in parts, micromicaceous, moderately hard, massive, fissile. (C1 0.88%, C2 0.08%, C3 0.04%, iC4 0.01%, nC4 0.01%, iC5 0.01%, IC5 trace)
20	2614.5	25	B	SANDSTONE: Very light grey to very pale brown, very fine to fine, subangular to subrounded, well sorted, trace siliceous cement, abundant kaolinitic matrix, occasional muscovite, friable, poor porosity, FLUORESCENCE: 20% moderately bright patchy pale blueish white, slow diffuse crush cut, thin film residue. (C1 0.02%, C2 0.02%, C3 0.16%, iC4 0.17%, nC4 0.21%, iC5 0.17%, IC5 0.14%)
21	2614	20	B	SANDSTONE: Very light grey, very fine to fine, subangular, good sorting, weak calcareous cement, abundant kaolinitic matrix, trace rock fragments, friable to firm, very poor porosity. FLUORESCENCE: 30% patchy moderately bright yellow green fluorescence, instant streaming cut, thick ring residue. (C1 0.01%, C2 0.01%, C3 0.01%, iC4 0.02%, nC4 0.02%, iC5 0.05%, IC5 0.04%)
22	2608.8	25	B	CLAYSTONE: Brown black to olive black, trace muscovite, micromicaceous, very carbonaceous, homogeneous, waxy texture, firm, subfissile. (C1 0.96%, C2 0.06%, C3 0.03%, iC4 0.01%, nC4 0.01%, iC5 0.01%, IC5 trace)
23	2575.5	20	B	CLAYSTONE: As above.
24	2540.7	25	B	CLAYSTONE: Brown black to olive black, slightly silty, very carbonaceous, micromicaceous, common muscovite, homogeneous, firm to moderate hard, subfissile.

25	2518.8	25	B	CLAYSTONE: Brown grey, very silty, common light grey to dark brown very fine grained arenaceous laminae/inclusions, trace carbonaceous specks/flecks, micromicaceous, firm to moderate hard, massive.
26	2505.8	20	B	CLAYSTONE: As above.
27	2480.5	20	B	CLAYSTONE: Brown black to olive black, slightly micromicaceous, trace muscovite, very carbonaceous, homogeneous, waxy texture, subfissile.
28	2467.5	25	B	SILTSTONE: Dark yellow brown to brown grey, slightly calcareous, very argillaceous, trace carbonaceous specks, trace lithic fragments, slightly arenaceous in part, firm to moderately hard, massive.
29	2456.8	20	B	CLAYSTONE: Brown grey, slightly silty, micromicaceous, trace carbonaceous specks, homogeneous, waxy texture, moderate hard, subfissile.
30	2448.7			Lost
31	2446.3	25	B	SANDSTONE: Very light grey, fine to medium, subangular to subrounded, poor to moderately sorted, weak calcareous/siliceous cement, silty/argillaceous matrix, trace rock fragments, trace carbonaceous specks, friable, poor porosity, no fluorescence. (C1 0.06%, C2 0.02%, C3 0.08%, iC4 0.06%, nC4 0.12%, iC5 0.07%, IC5 0.08%)
32	2444.2	25	B	SANDSTONE: Very light grey, fine, subangular, good sorting, abundant kaolinitic matrix, common coaly microlaminae (stylolitic), trace rock fragments, common altered feldspar, friable, poor porosity. FLUORESCENCE: 5% Very dull patchy yellow green fluorescence, weak diffuse crush cut, thin ring residue. (C1 0.04%, C2 0.01%, C3 0.01%, iC4 0.01%, nC4 0.01%, iC5 0.01%, IC5 0.01%)

33	2439.6	25	B	SILTSTONE: Brown grey, very argillaceous, common carbonaceous/coaly fragments, micromicaceous, moderate hard, massive, with interlaminated SANDSTONE: Light grey, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, trace carbonaceous specks, friable to firm, tight, no fluorescence. (C1 0.65%, C2 0.10%, C3 0.06%, iC4 0.01%, nC4 0.02%, iC5 0.01%, IC5 0.01%)
34	2430.4	20	B	SANDSTONE: Very light to light grey, very fine to fine, subangular, good sorting, weak calcareous cement, abundant argillaceous/silty matrix, common coaly fragments, common dark brown argillaceous laminae, tight, no fluorescence. (C1 0.13%, C2 0.04%, C3 0.03%, iC4 0.01%, nC4 0.01%, iC5 0.01%)
35	2403.4	30	B	CLAYSTONE: B rn black to olive black, slightly micromicaceous, trace light grey arenaceous microlaminae, homogeneous, waxy texture, moderate hard, subfissile.
36	2376.5	25	B	CLAYSTONE: Brown black to olive black, slightly micromicaceous, trace disseminated pyrite, very carbonaceous, homogeneous, waxy texture, moderate hard, subfissile.
37	2367.7	30	B	CLAYSTONE: Predominantly as above, slightly silty.
38	2357.8	20	B	SANDSTONE: Light grey to light brown grey, fine, subangular, good sorting, abundant kaolinitic matrix, common carbonaceous microlaminae, trace chlorite, friable, very poor to nil porosity. FLUORESCENCE: Trace dull yellow green patchy fluorescence, moderate diffuse crush cut, thin ring residue. (C1 0.03%, C2 0.02%, C3 0.02%, iC4 0.02%, nC4 0.02%, iC5 0.01%, IC5 0.01%)
39	2354.6	25	B	SANDSTONE: Very light grey, fine to medium, angular to subangular, moderately sorted, weak calcareous/siliceous cement, trace quartz overgrowths, trace coaly

				fragments, rare chlorite, friable, fair porosity. FLUORESCENCE: Trace dull patchy yellow green fluorescence, moderate diffuse crush cut, moderately thick ring residue. (C1 0.06%, C2 0.01%, C3 0.02%, iC4 0.01%, nC4 0.02%, iC5 0.02%, IC5 0.02%)
40	2351.5	25	B	SILTSTONE: Brown grey to brown black, very argillaceous, common light grey arenaceous inclusions, trace disseminated pyrite, trace muscovite, moderate hard, massive. (C1 0.76%, C2 0.17%, C3 0.10%, iC4 0.02%, nC4 0.03%, iC5 0.01%, IC5 0.01%)
41	2349	30	B	SANDSTONE: Very light grey, medium, subangular, good sorting, weak siliceous cement, trace kaolinitic matrix, trace carbonaceous fragments, trace smoky quartz, trace haematitic staining, friable, good porosity. FLUORESCENCE: 10% Dull to moderately bright patchy yellow green fluorescence, weak instant cut, thin film residue. (C1 0.07%, C2 0.01%, C3 0.02%, iC4 0.02%, nC4 0.03%, iC5 0.04%, IC5 0.05%)
42	2343.3	25	B	SANDSTONE: Very light grey, translucent, fine to medium, angular to subangular, moderate to good sorting, weak siliceous cement, trace quartz overgrowths, trace smoky quartz, friable, good porosity. FLUORESCENCE: 30% Moderate bright patchy yellow green fluorescence, moderate instant cut, moderate ring residue. (C1 0.07%, C2 0.01%, C3 0.02%, iC4 0.02%, nC4 0.03%, iC5 0.03%, IC5 0.04%)
43	2323.2	25	B	CLAYSTONE: Brown grey, slightly silty, trace light grey arenaceous laminae, micromicaceous, firm, massive to subfissile.
44	2305.3	25	B	CLAYSTONE: Brown black, very carbonaceous, homogeneous, waxy texture, firm to moderate hard, subfissile.

45	2278.2	25	B	CLAYSTONE: Predominantly as above, with minor light grey vf arenaceous laminae.
46	2273.8	20	B	SANDSTONE: Medium light grey, light brown grey, fine subangular, good sorting, common to abundant dark brown argillaceous matrix/laminae, trace carbonaceous/coaly fragments, trace rock fragments, poor to fair porosity. FLUORESCENCE: 20% Dull patchy yellow green fluorescence, moderate slow streaming cut, moderately thick ring residue.
47	2272.2	20	B	SANDSTONE: Light grey, clear to translucent, fine to predominantly medium to coarse, poor sorting, weak siliceous cement, trace kaolinitic matrix, trace smoky quartz, trace carbonaceous fragments, friable, good sorting. FLUORESCENCE: 5% Dull patchy yellow green fluorescence, weak slow streaming cut, thin ring residue.
48	2270.8	25	B	SILTSTONE: Brown black, very argillaceous, occasional light grey fine arenaceous inclusions, micromicaceous, very carbonaceous, moderate hard, massive.
49	2267	35	B	SANDSTONE: Light grey fine, subangular, good sorting, common kaolinitic matrix, common carbonaceous fragments, common smoky quartz, friable to firm, very poor porosity, no fluorescence.
50	2263.5	25	B	CLAYSTONE: Brown black, to olive black, slightly micromicaceous, common very fine light grey arenaceous lam, trace carbonaceous flecks, trace disseminated pyrite, moderate hard, massive.
51	2245.8	30	B	CLAYSTONE: Brown black to olive black, very carbonaceous, slightly micromicaceous, homogeneous, waxy texture, moderate hard, subfissile.
52	2214			Misfire

53	1804.7	25	B	CLAYSTONE: Brown black, slightly micromicaceous, trace light grey very fine arenaceous inclusions, occasional medium quartz float, moderate hard, massive to subfissile.
54	1795	20	B	SILTSTONE: Brown grey, very argillaceous, arenaceous grades to silty sandstone, common biotite, common light grey very fine to fine grained arenaceous laminae, trace carbonaceous flecks, moderately hard, massive.
55	1786	25	B	CLAYSTONE: Brown black, slightly micromicaceous, very carbonaceous, trace light grey very fine to fine arenaceous microlaminae/inclusions, wxt texture, moderate hard, subfissile.
56	1782	25	B	CLAYSTONE: As above.
57	1779.2	30	B	SANDSTONE: Medium grey, fine, subangular, good sorting, weak siliceous cement, predominantly clean, trace smoky quartz, friable, good sorting, no fluorescence.
58	1777	25	B	CLAYSTONE: Brown black, slightly micromicaceous, very carbonaceous, trace light grey very fine to fine arenaceous microlaminae/inclusions, wxt texture, moderate hard, subfissile.
59	1773	40	B	SANDSTONE: Medium grey, fine to medium, subangular, good sorting, weak siliceous cement, trace dark brown argillaceous lam, trace carbonaceous fragments, common smoky quartz, trace biotite, friable, good porosity, no no fluorescence.
60	1767.3	30	B	CLAYSTONE: Brown black, silty in part, micromicaceous, very carbonaceous, trace light grey very fine to fine arenaceous microlaminae/inclusions, waxy texture, moderate hard, subfissile.

Appendix 3

Turrum 7 Lithology / Show Descriptions

Interval (m) From	To	%	Lithology / Show Description
			Geologist onboard from 670mMD
670	690	100	**LIMESTONE:** Medium light to medium grey, calcilutite, slightly silty, micritic, trace fine rounded calcareous sand, trace carbonaceous material, marly texture, soft to dispersive, massive to amorphous.
690	720	100	**LIMESTONE:** Medium grey, light brown grey, calcisiltite grades to calcarenite, very argillaceous, micritic, trace glauconite in part, trace forams, soft to sticky, massive to amorphous.
720	750	100	**LIMESTONE:** Medium grey to light brown grey, calcisiltite, very argillaceous, micritic, common very fine calcareous sand, common coarse sparry calcite, marly texture in part, soft to sticky, dispersive in part, massive to amorphous.
750	780	100	**LIMESTONE:** Predominantly as above, abundant forams, abundant coarse sparry calcite.
780	810	100	**LIMESTONE:** Medium light grey, brown grey, calcisiltite, very argillaceous, micritic, trace carbonaceous specks, common very fine calcareous sand, rare glauconite, trace forams, soft, dispersive in part, massive to amorphous.
810	840	100	**LIMESTONE:** Medium dark grey to olive grey, calcisiltite, very argillaceous, micritic, common very fine calcareous sand locally grades to calcarenite, trace carbonaceous specks, rare glauconite, soft to firm in part, massive to blocky.
840	870	100	**LIMESTONE:** Medium light grey to light olive grey, calcilutite, moderately silty, micritic, common very fine sand, trace carbonaceous specks, trace spicules, rare forams, soft to firm, slightly dispersive, massive to blocky in part.
870	900	100	**LIMESTONE:** Medium dark grey to olive grey, calcilutite, moderately silty, micritic, trace carbonaceous specks, trace very fine calcareous sand, trace forams, soft, massive to blocky.
900	930	100	**LIMESTONE:** Predominantly as above, trace white calcite infill, slightly dispersive, massive to amorphous.
930	960	100	**LIMESTONE:** Medium dark grey to olive grey, brown grey in part, calcilutite, slightly silty in part, micritic, trace carbonaceous flecks and microlaminae, rare glauconite, trace forams, trace fine calcareous sand, soft to firm in part, slightly dispersive, massive to blocky.
960	990	100	**LIMESTONE:** As above.
990	1020	100	**LIMESTONE:** Medium dark grey to olive grey, calcilutite, slightly silty, micritic, trace carbonaceous specks, trace white calcite infill, trace forams, soft to firm, massive.
1020	1050	100	**LIMESTONE:** Predominantly as above, trace white to clear coarse calcite spar, trace yellow orange argillaceous inclusions, trace pale yellow mineral fluorescence.

1050-1080	100	**LIMESTONE:** Medium dark grey, brown grey, olive grey in part, calcisiltite, very argillaceous, micritic, trace carbonaceous specks, trace fine calcareous sand, soft to firm, massive to blocky.
1080-1110	100	**LIMESTONE:** Medium dark grey to olive grey, calcilutite, slightly silty, micritic, trace carbonaceous specks, trace forams, marly texture in part, soft to sticky, firm in part, massive to amorphous.
1110-1140	100	**LIMESTONE:** As above.
1140-1170	100	**LIMESTONE:** As above.
1170-1200	100	**LIMESTONE:** Medium dark grey, brown grey, calcilutite, slightly silty, micritic, trace carbonaceous specks, trace forams, trace dark grey hard cryptocrystalline calcite inclusions, locally light grey very fine calcarenite inclusions, soft to firm, massive to blocky.
1200-1230	100	**LIMESTONE:** Predominantly as above, locally becomes very silty grades to calcisiltite.
1230-1260	100	**LIMESTONE:** Predominantly as above, trace yellow orange argillaceous inclusions.
1260-1290	100	**LIMESTONE:** Medium grey to grey green in part, brown grey, calcisiltite, very argillaceous, trace glauconite, trace very fine calcareous sand, trace forams, soft to slightly dispersive, massive to amorphous.
1290-1320	100	**LIMESTONE:** As above.
1320-1350	100	**LIMESTONE:** Medium dark grey to olive grey, calcilutite, moderately silty in part, micritic, trace carbonaceous specks, rare glauconite, trace dark grey cryptocrystalline hard nodules/inclusions, trace forams, soft to slightly dispersive, massive to blocky.
1350-1380	100	**LIMESTONE:** Predominantly as above, common forams, locally abundant fine to medium calcareous sand.
1380-1410	100	**LIMESTONE:** Medium dark to dark grey, calcilutite, slightly silty, micritic, trace forams, trace carbonaceous specks, common fossil fragments, trace white calcite infill, trace glauconite, soft to firm, massive to blocky.
1410-1440	100	**LIMESTONE:** As above.
1440-1470	100	**LIMESTONE:** Medium dark to dark grey, calcilutite, slightly silty, micritic, trace disseminated pyrite, trace glauconite, trace forams, trace ooids, common free white to clear calcite spar, firm to locally moderately hard, massive to blocky.
1470-1500	100	**LIMESTONE:** Predominantly as above, trace light grey very fine calcarenite inclusions.
1500-1530	70	**LIMESTONE:** As above.
	30	**CLAYSTONE:** Light grey to medium light grey, very calcareous grades to calcilutite, trace carbonaceous specks, slightly micromicaceous, soft to slightly dispersive, massive to amorphous.
1530-1560	60	**LIMESTONE:** Medium dark to dark olive grey, calcisiltite, very argillaceous, locally common very fine calcareous sand, trace fossil fragments & forams, trace ooids, locally common cryptocrystalline calcite inclusions, firm, massive.

	40	**CLAYSTONE:** Predominantly as above, very calcareous grades to calcilutite, marly texture.
1560-1590	80	**LIMESTONE:** Predominantly as above, common glauconite.
	20	**CLAYSTONE:** As above.
1590-1620	60	**CLAYSTONE:** Dark grey, olive grey, very calcareous grades to calcilutite, slightly silty, trace glauconite, trace nodular pyrite, trace carbonaceous specks, firm, massive to blocky.
	40	**LIMESTONE:** Light grey, calcilutite, trace carbonaceous specks, trace free white calcite spar, marly texture, soft to slightly dispersive, massive to amorphous.
1620-1625	60	**CLAYSTONE:** As above.
	40	**LIMESTONE:** As above.
1625-1630	70	**CLAYSTONE:** As above.
	30	**LIMESTONE:** As above.
1630-1635	90	**CLAYSTONE:** As above.
	10	**LIMESTONE:** Predominantly as above, common glauconite.
1635-1640	90	**CLAYSTONE:** As above.
	10	**LIMESTONE:** Predominantly as above, trace pelletal glauconite.
1640-1645	100	**CLAYSTONE:** Medium dark to dark grey, moderately calcareous, slightly silty, common forams, trace glauconite, trace carbonaceous specks, trace nodular pyrite, firm, massive to blocky.
1645-1650	100	**CLAYSTONE:** As above.
1650-1655	100	**CLAYSTONE:** As above.
1655-1660	100	**CLAYSTONE:** As above.
1660-1665	100	**CLAYSTONE:** As above.
1665-1670	100	**CLAYSTONE:** As above. Abundant Barocarb contamination from 1670m
1670-1675	100	**CLAYSTONE:** Medium light grey to medium dark grey, slightly to moderately calcareous, trace nodular pyrite, rare glauconite, occasional dark brown cryptocrystalline dolomitic inclusions, trace carbonaceous specks, marly texture in part, soft to dispersive, firm, massive to amorphous, blocky in part.
1675-1680	100	**CLAYSTONE:** As above.
1680-1685	100	**CLAYSTONE:** As above.
1685-1690	100	**CLAYSTONE:** As above.
1690-1695	100	**CLAYSTONE:** Medium dark grey, olive grey, light grey in part, slightly to moderate calcareous, trace carbonaceous specks, trace glauconite, trace fine calcareous sand, marly texture in part, soft to slightly dispersive, firm, massive
1695-1700	100	**CLAYSTONE:** As above.
1700-1705	100	**CLAYSTONE:** Medium dark to dark grey, slightly to moderate calcareous, trace carbonaceous specks, trace glauconite, trace white calcite infill, trace disseminated pyrite, trace forams, soft to firm, massive to blocky.
1705-1710	100	**CLAYSTONE:** As above.

1710-1715	100	**CLAYSTONE:** Medium light to dark grey, olive grey in part, slightly silty, trace glauconite, trace carbonaceous specks, trace nodular pyrite, soft to firm, massive to blocky.
1715-1720	100	**CLAYSTONE:** Predominantly as above, trace pelletal glauconite.
1720-1725	100	**CLAYSTONE:** As above.
1725-1730	100	**CLAYSTONE:** Medium light to medium dark grey, slightly calcareous, slightly silty, trace glauconite, trace carbonaceous specks, trace forams, trace white calcite infill (birdseye), soft to firm, massive to blocky.
1730-1735	100	**CLAYSTONE:** As above.
1735-1740	100	**CLAYSTONE:** Predominantly as above, becomes medium light grey, marly texture, slightly dispersive, massive to amorphous.
1740-1745	100	**CLAYSTONE:** As above.
1745-1750	100	**CLAYSTONE:** Medium dark to dark grey, brown grey, moderately calcareous, slightly silty, slightly micromicaceous, trace carbonaceous specks, trace micro & pelletal glauconite, trace white calcite infill, trace dark brown cryptocrystalline hard dolomitic inclusions, marly texture in part, soft to slightly disseminated, firm, massive to amorphous, blocky in part.
1750-1755	100	**CLAYSTONE:** As above.
1755-1760	100	**CLAYSTONE:** Predominantly as above, trace discoidal forams, trace pelletal glauconite, trace free clear to white coarse calcite spar.
1760-1765	60	**SILTSTONE:** Grey brown, moderate brown to dark brown, very argillaceous grades to silty claystone, micromicaceous, trace lithic fragments, trace to common disseminated pyrite, slightly arenaceous, soft to dispersive, massive to amorphous.
	40	**CLAYSTONE:** As above.
1765-1770	90	**SILTSTONE:** Predominantly as above, trace nodular pyrite, trace pelletal glauconite, becoming very arenaceous in part.
	10	**CLAYSTONE:** As above.
1770-1775	10	**SANDSTONE:** Clear to translucent, frosted, medium to coarse, subangular to subrounded, moderately sorted, trace pyrite cement, predominantly clean, trace glauconite, disaggregated, good porosity, no fluorescence.
	90	**SILTSTONE:** As above.
1775-1780	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
1780-1785	10	**SANDSTONE:** Predominantly as above, becomes medium grained.
	90	**SILTSTONE:** Grey brown to moderate brown, very argillaceous grades to silty claystone, micromicaceous, trace biotite, trace lithic fragments, trace disseminated pyrite, slightly arenaceous, soft to dispersive, massive to amorphous.
1785-1790	10	**SANDSTONE:** Clear to translucent, frosted, light grey, fine to medium, subangular to subrounded, moderate to good sorting, abundant kaolinitic matrix, trace disseminated pyrite, friable to disaggregated, very poor porosity, no fluorescence.
	90	**SILTSTONE:** Predominantly as above, trace carbonaceous microlaminae.

1790-1795	5	**SANDSTONE:** Predominantly as above, becomes very fine to fine, occasionally medium.
	95	**SILTSTONE:** As above.
1795-1800	100	**SILTSTONE:** Predominantly as above, common disseminated pyrite.
1800-1805	10	**SANDSTONE:** Clear to translucent, light grey, fine to medium, subangular to subrounded, moderate sorted, strong calcareous/siliceous cement, common kaolinitic matrix, trace nodular pyrite, trace coarse quartz float, hard, tight, no fluorescence.
	90	**SILTSTONE:** Moderate brown to brown grey, dark yellow brown, very argillaceous grades to silty claystone, micromicaceous, trace biotite, slightly arenaceous in part, trace disseminated pyrite, dispersive, soft, amorphous to massive.
1805-1810	20	**SANDSTONE:** Clear to translucent, light grey, fine to medium, angular to subrounded, moderately sorted, trace calcareous cement, common kaolinitic matrix, common coarse quartz float, trace nodular pyrite, friable to disaggregated, very poor porosity, no fluorescence.
	80	**SILTSTONE:** As above.
1810-1815	5	**SANDSTONE:** Predominantly as above, becomes medium to coarse.
	95	**SILTSTONE:** As above.
1815-1820	30	**SANDSTONE:** Clear to translucent, frosted, medium to coarse, subangular to subrounded, moderately sorted, weak calcareous cement, trace kaolinitic matrix, common very coarse milky/smoky quartz float, trace nodular pyrite, rare glauconite, very good porosity, no fluorescence.
	70	**SILTSTONE:** As above.
1820-1825	30	**SANDSTONE:** Clear to translucent, frosted, coarse to very coarse, granular in part, angular to subrounded, poor sorting, predominantly clean, trace pyritic cement, common fractured granular milky/smoky quartz float, disaggregated, very good porosity, no fluorescence.
	70	**SILTSTONE:** Grey brown, moderate brown, dark yellow brown, very argillaceous grades to silty claystone, micromicaceous, slightly arenaceous, trace biotite, trace lithic fragments, dispersive, massive to amorphous.
1825-1830	20	**SANDSTONE:** Clear to translucent, frosted, very coarse to granular, angular-subangular, poor sorting, trace calcareous/dolomitic cement, trace nodular pyrite, common fractured granular milky quartz float, disaggregated, good porosity, no fluorescence.
	60	**SILTSTONE:** As above.
	20	**COAL:** Brown black to black, subbituminous, common argillaceous laminae, dull lustre, earth texture in part, brittle, blocky to subfissile.
1830-1835	30	**SANDSTONE:** Light grey, clear to translucent, fine to medium, subangular-subrounded, good sorting, abundant kaolinitic matrix, trace coarse quartz float, friable to disaggregated, poor porosity, no fluorescence.
	60	**SILTSTONE:** As above.
	10	**COAL** As above.

1835-1840	10	**SANDSTONE:** White to light grey, very fine to fine, subangular to subrounded, good sorting, abundant kaolinitic matrix, weak calcareous cement, micromicaceous, trace carbonaceous microlaminae, rare coarse quartz float, friable, tight, no fluorescence.
	90	**SILTSTONE:** Dark yellow brown, moderate brown, grey brown, very argillaceous grades to silty claystone, trace biotite, trace carbonaceous specks, trace disseminated pyrite, trace lithic fragments, soft to dispersive, massive to amorphous.
1840-1845	20	**SANDSTONE:** Predominantly as above, trace disseminated/nodular pyrite.
	80	**SILTSTONE:** Predominantly as above, slightly arenaceous in part.
	Trace	**COAL:** Brown black to black, subbituminous, common argillaceous laminae, dull lustre, earth texture in part, brittle, blocky to subfissile.
1845-1850	30	**SANDSTONE:** Clear to translucent, light brown grey, fine, subangular to subrounded, good sorting, weak calcareous cement in part, abundant kaolinitic matrix, trace medium quartz float, common biotite, trace nodular pyrite, friable to disaggregated in part, tight, no fluorescence.
	40	**SILTSTONE:** As above.
	30	**CLAYSTONE:** Medium dark to dark grey, slightly micromicaceous, trace carbonaceous specks, waxy texture, homogeneous, firm to moderate hard, blocky to subfissile.
1850-1855	30	**SANDSTONE:** Predominantly as above, becomes medium grained, trace nodular pyrite.
	70	**SILTSTONE:** Dark brown, moderate brown, dark yellow brown, very argillaceous, micromicaceous, trace lithic fragments, trace carbonaceous laminae and fragments, arenaceous in part, soft to firm, dispersive in part, massive to amorphous.
1855-1860	60	**SANDSTONE:** Clear to translucent, light brown grey, fine, subangular to subrounded, good sorting, abundant kaolinitic matrix, trace pyrite cement, locally common coarse smoky quartz, trace nodular pyrite, trace mica, friable, disaggregated in part, poor porosity, no fluorescence.
	30	**SILTSTONE:** As above.
	10	**COAL:** Black, brown black, very argillaceous in part locally grades to carbonaceous claystone, subbituminous, trace disseminated pyrite, dull lustre, earthy texture, brittle, blocky to subfissile.
1860-1865	30	**SANDSTONE:** As above.
	60	**SILTSTONE:** As above.
	10	**COAL:** As above.
1865-1870	20	**SANDSTONE:** Predominantly as above, becomes medium in part.
	80	**SILTSTONE:** Grey brown, dark yellow brown, micromicaceous, trace carbonaceous specks/microlaminae, trace lithic fragments, trace biotite, soft to firm, massive to blocky.

1870-1875	70	**SANDSTONE:** White to light brown grey, very fine to fine, subangular to subrounded, good sorting, abundant kaolinitic matrix, trace mica, trace nodular pyrite, trace carbonaceous specks, friable, tight, no fluorescence.
	25	**SILTSTONE:** As above.
	5	**COAL:** Black, brown black, very argillaceous in part locally grades to carbonaceous claystone, subbituminous, trace disseminated pyrite, dull lustre, earthy texture, brittle, blocky to subfissile.
1875-1880	80	**SANDSTONE:** Clear to translucent, frosted, coarse to very coarse, angular to subangular, moderate sorting, weak calcareous cement, common kaolinitic matrix, common nodular pyrite, trace carbonaceous/coaly laminae, trace glauconite, disaggregated, good porosity, no fluorescence.
	20	**SILTSTONE:** As above.
1880-1885	100	**SANDSTONE:** Predominantly as above, trace kaolinitic matrix.
1885-1890	100	**SANDSTONE:** Predominantly as above, becomes medium to coarse, clean, very good porosity, no fluorescence.
1890-1895	70	**SANDSTONE:** Predominantly as above, medium to coarse, common kaolinitic matrix, good porosity, no fluorescence.
	10	**SILTSTONE:** Light brown grey, light grey in part, very argillaceous, trace lithic fragments, common biotite, micromicaceous, common very fine arenaceous laminae, firm, massive.
	20	**COAL:** Black, brown black, very argillaceous in part locally grades to carbonaceous claystone, subbituminous, trace disseminated pyrite, dull lustre, earthy texture, brittle, blocky to subfissile.
1895-1900	80	**SANDSTONE:** Clear to translucent, frosted, medium to predominantly coarse, angular to subangular, moderate sorting, clean, trace nodular pyrite, disaggregated, good porosity, no fluorescence.
	20	**SILTSTONE:** Grey brown, dark yellow brown, moderate argillaceous, slightly arenaceous, trace carbonaceous specks/microlaminae, micromicaceous, trace biotite, firm, massive.
1900-1905	30	**SANDSTONE:** Predominantly as above, becomes medium to coarse, fine in part, poor sorting, fair to good porosity, no fluorescence.
	60	**SILTSTONE:** Dark brown, moderate brown, very argillaceous grades to silty claystone in part, micromicaceous, trace biotite, trace carbonaceous fragments, trace lithic fragments, soft to firm in part, massive.
	10	**COAL:** Black, brown black, very argillaceous in part locally grades to carbonaceous claystone, subbituminous, trace disseminated pyrite, dull lustre, earthy texture, brittle, blocky to subfissile.
1905-1910	20	**SANDSTONE:** Predominantly as above, becomes fine to medium, trace kaolinitic matrix.
	80	**SILTSTONE:** As above.

1910-1915	10	**SANDSTONE:** Clear to translucent, frosted, medium to predominantly coarse, angular to subangular, moderate sorting, common kaolinitic matrix, trace nodular pyrite, disaggregated, good porosity, no fluorescence
	80	**SILTSTONE:** As above.
	10	**COAL:** Black, brown black, argillaceous in part, subbituminous, trace disseminated pyrite, dull lustre, earthy texture, brittle, blocky to subfissile.
1915-1920	50	**SANDSTONE:** Clear to translucent, light brown grey, fine to medium, subangular to subrounded, moderate sorting, abundant argillaceous matrix, trace mica, trace carbonaceous specks, friable, disaggregated in part, poor porosity, no fluorescence.
	40	**SILTSTONE:** As above.
	10	**COAL:** As above.
1920-1925	50	**SANDSTONE:** As above.
	40	**SILTSTONE:** As above.
	10	**COAL:** As above.
1925-1930	10	**SANDSTONE:** As above.
	70	**SILTSTONE:** As above.
	20	**COAL:** As above.
1930-1935	60	**SANDSTONE:** Clear to translucent, white, medium to coarse, angular to subrounded, poor sorting, common kaolinitic matrix, trace nodular pyrite, common fractured milky quartz, fair to good porosity, no fluorescence.
	30	**SILTSTONE:** Dusky yellow brown, dark brown, moderately to very argillaceous, micromicaceous, slightly arenaceous in part, common carbonaceous/coaly laminae, soft to firm, massive.
	10	**COAL:** As above.
1935-1940	20	**SANDSTONE:** Light brown grey, light grey, fine to medium, occasional coarse, subangular to subrounded, poor sorting, common kaolinitic matrix, trace coarse milky quartz float, trace nodular pyrite, friable, disaggregated in part, fair porosity, no fluorescence.
	50	**SILTSTONE:** As above.
	20	**CLAYSTONE:** Medium dark to dark grey, slightly micromicaceous, trace carbonaceous specks, waxy texture, homogeneous, firm to moderate hard, blocky to subfissile.
	10	**COAL:** As above.
1940-1945	10	**SANDSTONE:** As above.
	70	**SILTSTONE:** As above.
	20	**COAL:** As above.
1945-1950	100	**SILTSTONE:** Grey brown, dusky yellow brown, very argillaceous grades to silty claystone in part, trace carbonaceous specks/laminae, micromicaceous, trace arenaceous laminae/inclusions, trace disseminated pyrite, trace lithic fragments, soft to firm, massive.
1950-1955	100	**SILTSTONE:** As above.
1955-1960	100	**SILTSTONE:** As above.

1960-1965	40	**SANDSTONE:** Clear to translucent, light grey, frosted in part, fine to medium, subangular to subrounded, moderate sorting, common kaolinitic matrix, trace nodular pyrite, trace coarse milky quartz float, trace coal fragments, disaggregated, fair porosity, no fluorescence.
	60	**SILTSTONE:** Predominantly as above, arenaceous in part.
1965-1970	60	**SANDSTONE:** Light grey, clear to translucent, frosted, fine to medium, occasional coarse, subangular to subrounded, poor sorting, locally trace dolocalcareous cement, common kaolinitic matrix, trace biotite, trace carbonaceous fleck, trace nodular pyrite, disaggregated to friable, poor to fair porosity, no fluorescence.
	40	**SILTSTONE:** As above.
	Trace	**COAL:** Black, brown black, argillaceous in part, subbituminous, dull to subvitreous lustre, subconchoidal fracture in part, brittle, blocky to subfissile.
1970-1975	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
1975-1980	30	**SANDSTONE:** Predominantly as above, becomes fine.
	70	**SILTSTONE:** As above.
1980-1985	30	**SANDSTONE:** Predominantly as above, common coarse quartz float.
	70	**SILTSTONE:** As above.
1985-1990	10	**SANDSTONE:** Light grey, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, trace biotite, trace carbonaceous specks, trace disseminated pyrite, friable, tight, no fluorescence.
	80	**SILTSTONE:** Grey black, dusky yellow brown, very argillaceous, micromicaceous, trace biotite, trace lithic fragments, slightly arenaceous, firm to locally moderately hard, massive to blocky.
	10	**COAL:** Black, brown black, argillaceous in part, subbituminous, dull to subvitreous lustre, subconchoidal fracture in part, brittle, blocky to subfissile.
1990-1995	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
1995-2000	100	**SILTSTONE:** Grey brown, dusky brown, very argillaceous grades to silty claystone, micromicaceous, trace biotite, trace carbonaceous/coaly laminae, soft to firm, slightly dispersive in part, massive to blocky.
2000-2005	10	**SANDSTONE:** Light grey, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, trace biotite, trace carbonaceous specks, trace disseminated pyrite, friable, tight, no fluorescence.
	90	**SILTSTONE:** As above.
2005-2010	10	**SANDSTONE:** Light grey, light brown grey, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, trace biotite, trace carbonaceous specks, friable, poor to nil porosity, no fluorescence.
	60	**SILTSTONE:** Brown grey, dusky yellow brown, very argillaceous, micromicaceous, trace carbonaceous specks, trace lithic fragments, trace biotite, mottled texture, soft to firm, massive to blocky.
	30	**COAL:** Black, brown black, argillaceous in part, subbituminous, dull to subvitreous lustre, subconchoidal fracture in part, brittle, blocky to subfissile.

2010-2015	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** Predominantly as above, becomes dusky brown, grey black.
2015-2020	20	**SANDSTONE:** Light grey, light brown grey, fine, subangular, good sorting, abundant kaolinitic matrix, trace biotite, trace carbonaceous specks, friable, poor to nil porosity, no fluorescence.
	80	**SILTSTONE:** Brown grey, dusky yellow brown, very argillaceous, micromicaceous, trace carbonaceous specks, trace lithic fragments, trace biotite, mottled texture, soft to firm, massive to blocky.
2020-2025	100	**SILTSTONE:** Brown black, dusky brown, very argillaceous locally grades to silty claystone, trace carbonaceous microlaminae, trace disseminated pyrite, micromicaceous, trace biotite, soft to firm, dispersive in part, massive to blocky.
2025-2030	10	**SANDSTONE:** Light grey, light brown grey, very fine to fine, subangular, good sorting, abundant argillaceous/silty matrix, trace biotite, trace carbonaceous specks, trace lithic fragments, firm, tight, no fluorescence.
	90	**SILTSTONE:** Brown black to dusky brown, very argillaceous, micromicaceous, slightly arenaceous, trace disseminated pyrite, trace lithic fragments, soft to firm, massive to blocky.
2030-2035	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
2035-2040	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** Dusky yellow brown, brown black, very argillaceous, micromicaceous, trace biotite, arenaceous, trace disseminated pyrite, trace carbonaceous specks, trace lithic fragments, soft to slightly dispersive, massive to blocky,
2040-2045	50	**SANDSTONE:** Clear to translucent, light brown grey, fine to predominantly medium, angular to subrounded, poor sorting, abundant kaolinitic matrix, trace coarse fractured quartz float, trace biotite, trace carbonaceous specks, locally disseminated pyrite, friable to disaggregated, poor porosity, no fluorescence.
	45	**SILTSTONE:** Predominantly as above, locally common very fine grained arenaceous laminae, trace carbonaceous/coaly laminae.
	5	**COAL:** Brown black, black, subbituminous, slightly silty/argillaceous in part, dull to subvitreous lustre, brittle, blocky to subfissile.
2045-2050	70	**SANDSTONE:** Light grey, light brown grey, occasional clear to translucent, fine to medium, occasional coarse, angular to subangular, poor to moderate sorting, locally strong dolocalcareous cement, abundant kaolinitic matrix, trace fractured coarse quartz float, trace coal fragments, tight, no fluorescence.
	30	**SILTSTONE:** As above.

2050-2055	10	**SANDSTONE:** Light grey, clear to translucent, very fine to predominantly fine to medium, angular to subrounded, moderate to good sorting, trace dolocalcareous cement, abundant kaolinitic matrix, occasional medium to coarse quartz float, trace carbonaceous specks, trace biotite, firm, tight, no fluorescence.
	90	**SILTSTONE:** Dusky yellow brown, brown grey, brown black, very argillaceous, micromicaceous, trace carbonaceous specks, trace lithic fragments, slightly arenaceous in part, slightly dispersive to soft, massive to blocky.
2055-2060	Trace	**SANDSTONE:** Predominantly as above, becomes very fine to fine.
	100	**SILTSTONE:** Dusky yellow brown, brown black, very argillaceous grades to silty claystone, micromicaceous, slightly arenaceous in part, trace biotite, trace lithic fragments, locally mottled texture, soft to firm, massive.
2060-2065	70	**SANDSTONE:** Predominantly as above, trace disseminated pyrite.
	30	**SILTSTONE:** As above.
2065-2070	5	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
	5	**COAL:** Black, brown black, bituminous, subconchoidal fracture, hard to brittle, blocky.
2070-2075	70	**SANDSTONE:** Light grey, light brown grey, very fine to fine, subangular, good sorting, abundant kaolinitic matrix, trace dolocalcareous cement, trace nodular pyrite, common carbonaceous microlaminae, friable, tight, no fluorescence.
	30	**SILTSTONE:** As above.
2075-2080	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** As above.
2080-2085	100	**SILTSTONE:** Dusky brown, brown black, very argillaceous, micromicaceous, trace lithic fragments, trace biotite, trace disseminated pyrite, trace very fine grained arenaceous inclusions, trace carbonaceous specks, soft to firm in part, massive to blocky.
2085-2090	80	**SANDSTONE:** As above.
	15	**SILTSTONE:** As above.
	5	**COAL:** Black, brown black, bituminous, subconchoidal fracture, hard to brittle, blocky.
2090-2095	30	**SANDSTONE:** As above.
	70	**SILTSTONE:** As above.
2095-2100	20	**SANDSTONE:** Very light grey, clear to translucent, very fine to fine grained, moderately to well sorted, subangular to subrounded, trace dolocalcareous cement, abundant kaolinitic matrix, soft to friable aggregates, poor inferred porosity, no fluorescence.
	80	**SILTSTONE:** Dusky brown to dusky yellowish brown, argillaceous, commonly grading to claystone, abundant micromica, common fine carbonaceous material, commonly arenaceous, occasional pyrite nodules, soft to firm, amorphous to predominantly subblocky.

2100-2105	80	**SANDSTONE:** As above, tight to very poor inferred porosity, no fluorescence.
	20	**SILTSTONE:** As above, predominantly soft.
2105-2110	50	**SANDSTONE:** As above, fine to predominantly medium, grained, abundant kaolinitic matrix, poor inferred porosity, no fluorescence.
	50	**SILTSTONE:** As above, dark yellowish brown to dusky yellowish brown, predominantly firm.
2110-2115	20	**SANDSTONE:** As above, very poor visual porosity, no fluorescence.
	80	**SILTSTONE:** As above.
2115-2120	10	**SANDSTONE:** As above, very poor inferred porosity, no fluorescence.
	75	**SILTSTONE:** As above.
	5	**COAL:** Black, brown black, bituminous, subconchoidal fracture, hard to brittle, blocky.
2120-2125	20	**SANDSTONE:** Very light grey, clear to translucent, fine to medium grained, moderately sorted, subangular, weak siliceous cement, occasional dolomitic/calcareous cement, abundant kaolinite matrix, occasional glauconite, predominantly friable aggregates, occasionally moderately hard aggregates, tight to very poor visual porosity, no fluorescence.
	75	**SILTSTONE:** As above, predominantly dark yellowish brown, firm, subblocky to subblocky.
	5	**COAL:** As above

2125-2130	70	**SANDSTONE:** As above, common to abundant kaolinite matrix, firm aggregates, loose grains, very poor inferred porosity, no fluorescence.
	30	**SILTSTONE:** As above.
2130-2135	50	**SANDSTONE:** As above, fine to medium grained, predominantly loose grains, common firm aggregates, very poor inferred and visual porosity, no fluorescence.
	50	**SILTSTONE:** As above, soft to firm.
2135-2140	20	**SANDSTONE:** As above, very fine to fine grained, predominantly firm aggregates, tight visual porosity, no fluorescence.
	80	**SILTSTONE:** Predominantly dark yellowish brown, argillaceous, commonly grading to claystone, non calcareous, micromicaceous, common to abundant fine carbonaceous material, occasionally arenaceous, predominantly firm.
2140-2145	10	**SANDSTONE:** As above, tight to very poor visual porosity, no fluorescence.
	90	**SILTSTONE:** As above.
2145-2150	45	**SANDSTONE:** Very light grey, clear to translucent, very fine to fine grained, moderately sorted, subangular, predominantly weak siliceous cement, occasional dolomitic cement, common kaolinitic matrix, firm aggregates, very poor visual porosity, no fluorescence.
	50	**SILTSTONE:** As above.
	5	**COAL:** As above.
2150-2155	50	**SANDSTONE:** As above, predominantly soft to friable aggregates, very poor to tight visual porosity, no fluorescence.
	50	**SILTSTONE:** As above, predominantly firm aggregates, tight visual porosity, no fluorescence.
2155-2160	10	**SANDSTONE:** As above, tight visual porosity, no fluorescence.
	90	**SILTSTONE:** As above, dark yellowish brown to dusky yellowish brown, firm, subfissile to subblocky.
2160-2165	20	**SANDSTONE:** As above, very fine to fine grained, common to abundant kaolinitic matrix, predominantly soft to firm aggregates, very poor visual porosity, no fluorescence.
	80	**SILTSTONE:** As above.
2165-2170	30	**SANDSTONE:** As above, occasional loose quartz grains, very poor visual porosity, no fluorescence.
	65	**SILTSTONE:** As above.
	5	**COAL:** as above.
2170-2175	20	**SANDSTONE:** As above, very poor visual porosity, no fluorescence.
	80	**SILTSTONE:** as above, yellowish brown, soft to dispersive.

2175-2180	15	**SANDSTONE:** As above, very fine to fine grained, soft to firm aggregates, very poor visual porosity, no fluorescence.
	80	**SILTSTONE:** Dark yellowish brown to commonly dusky yellowish brown, argillaceous, occasionally grading to claystone, non calcareous, common fine carbonaceous material, micromicaceous, soft to predominantly firm, subfissile to subblocky.
	5	**COAL:** As above.
2180-2185	80	**SANDSTONE:** Very light grey, very fine to fine grained, moderately sorted, subangular, predominantly siliceous cement, occasional dolomitic cement, predominantly kaolinite matrix impregnated with loose quartz grains, tight to very poor inferred porosity, no fluorescence.
	20	**SILTSTONE:** As above.
2185-2190	50	**SANDSTONE:** Light grey, clear to translucent, fine to predominantly medium grained, moderately sorted, subangular, weak to moderately strong siliceous cement, minor kaolinitic/argillaceous matrix, predominantly loose quartz grains, occasional friable to moderately hard aggregates, poor inferred porosity, no fluorescence.
	45	**SILTSTONE:** As above.
	5	**COAL:** As above.
2190-2195	40	**SANDSTONE:** As above, fine to medium grained, poor inferred porosity, no fluorescence.
	55	**SILTSTONE:** As above.
	5	**COAL:** As above.
2195-2200	50	**SANDSTONE:** Clear to translucent, fine to predominantly medium grained, moderately sorted, subangular, predominantly weak siliceous cement, minor dolomitic/calcareous cement, minor to locally common argillaceous matrix, predominantly loose quartz grains, poor to fair inferred porosity, no fluorescence.
	50	**SILTSTONE:** As above.
2200-2205	80	**SILTSTONE:** Dark yellowish brown to dusky yellowish brown, argillaceous, commonly arenaceous, non-calcareous, common to abundant carbonaceous matter, firm, subfissile to sub-blocky.
	20	**SANDSTONE:** very light grey, very fine to fine, well sorted, subangular, predominantly siliceous cement, locally common dolo-calcareous cement, common to abundant kaolinitic matrix, soft to firm aggregates, tight to very poor visual porosity, no fluorescence.
2205-2210	90	**SILTSTONE:** As above.
	10	**SANDSTONE:** As above, tight visual porosity, no fluorescence.
2210-2215	70	**SANDSTONE:** Very light grey to light grey, very fine to fine, moderate well sorted, subrounded to subangular, trace siliceous cement, abundant kaolinite matrix, friable, poor inferred porosity, no fluorescence.
	30	**SILTSTONE:** Moderate yellowish brown to dusky yellowish brown, argillaceous, commonly arenaceous, common carbonaceous matter, common micromica, trace disseminated pyrite, soft to firm, sub-fissile to sub-blocky.

2215-2218	30	**COAL:** brownish black, earthy, slightly silty, firm, brittle.
	70	**SILTSTONE:** pale brown, argillaceous, commonly arenaceous, micromicaceous, trace disseminated pyrite, trace lithic fragments.
	Tr	**SANDSTONE:** As above.
2218-2220	60	**SANDSTONE:** Light grey to very light grey, fine to very fine, well sorted, subangular to subrounded, trace dolocalcareous cement, trace pyrite cement, abundant kaolinitic matrix, friable, poor inferred porosity, no fluorescence.
	40	**SILTSTONE:** Pale brown to dusky yellowish brown, argillaceous, commonly arenaceous, micromicaceous, trace lithic fragments, soft to firm, subfissile to sub-blocky.
2220-2225	60	**SANDSTONE:** Clear to translucent, fine to medium, poorly sorted, subangular to subrounded, trace pyrite cement, trace siliceous cement, common to abundant kaolinitic matrix, occasional coarse float, predominantly loose quartz grains, trace Fe-stained quartz, poor inferred porosity, no fluorescence.
	40	**SILTSTONE:** As above.
2225-2230	90	**SANDSTONE:** Clear to translucent, medium grey, fine to very coarse, poorly sorted, angular to subrounded, trace pyrite cement, trace dolo-siliceous cement, common kaolinitic matrix, occasional fractured clasts, predominantly loose grains, poor to fair inferred porosity.
	10	**SILTSTONE:** As above.
2230-2235	90	**SANDSTONE:** As above, poor inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
2235-2240	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** Pale brown to dark yellowish brown, argillaceous, commonly arenaceous, micromicaceous, trace carbonaceous matter, trace disseminated pyrite, trace muscovite, soft, sub-blocky.
2240-2245	80	**SILTSTONE:** Predominantly as above, soft to firm, subfissile to sub-blocky.
	20	**SANDSTONE:** Clear to predominantly translucent, medium to very coarse, poorly sorted, angular to subrounded, trace nodular pyrite, minor dolomite cement, trace siliceous cement, localised kaolinitic matrix, predominantly loose grains, poor inferred porosity, no fluorescence.
2245-2250	80	**SILTSTONE:** As above.
	20	**SANDSTONE:** Very light grey, very fine to fine, moderately sorted, subangular to subrounded, trace dolo-calcareous cement, common to abundant kaolinitic matrix, predominantly loose grains, trace hard aggregates, poor visual porosity, no fluorescence.
2250-2255	80	**SILTSTONE:** Greyish brown to dusky brown, argillaceous in part, commonly arenaceous, common carbonaceous specks, micromicaceous, soft, sub-blocky to amorphous.
	20	**SANDSTONE:** Very light grey, very fine to fine, moderately sorted, subrounded to subangular, trace dolo-calcareous cement, trace nodular pyrite, abundant kaolinitic matrix, trace hard aggregates, friable, poor visual porosity, no fluorescence.

2255-2260	90	**SILTSTONE:** Greyish brown, argillaceous in part, common carbonaceous specks, micromicaceous, soft, sub-blocky to amorphous.
	10	**SANDSTONE:** As above.
2260-2265	70	**SILTSTONE:** Pale brown to greyish brown, argillaceous in part, commonly arenaceous, micromicaceous, soft, sub-blocky.
	20	**COAL:** Brownish black to black, dull to earthy, firm, subfissile.
	10	**SANDSTONE:** Clear to translucent, very fine to fine, moderately sorted, subangular to subrounded, trace dolo-calcareous cement, common to abundant kaolinite matrix, friable, trace hard aggregates, poor visual porosity, no fluorescence.
2265-2270	50	**SANDSTONE:** Clear to translucent, fine to predominantly medium, moderately sorted, subangular to subrounded, trace dolo-calcareous and siliceous cement, trace nodular pyrite, occasional coarse to very coarse quartz float, abundant kaolinite matrix, loose grains, poor inferred porosity, no fluorescence.
	50	**SILTSTONE:** Pale brown to dark yellowish brown, argillaceous in part, commonly arenaceous, micromicaceous, soft, sub-blocky to amorphous.
2270-2275	90	**SILTSTONE:** As above.
	10	**SANDSTONE:** Clear to translucent, light grey, fine to medium, predominantly fine, subangular, good sorting, trace siliceous cement, trace to common kaolinitic matrix, trace medium quartz float, trace mica, friable, poor porosity, no fluorescence.
2275-2280	90	**SANDSTONE:** Clear to translucent, frosted, fine to predominantly medium, subangular to subrounded, moderate sorting, common kaolinitic matrix, trace coarse milky quartz float, trace nodular pyrite, trace coal fragments, disaggregated, good porosity. **FLUORESCENCE:** 20% Dull yellow green patchy fluorescence, weak diffuse cut, trace to nil ring residue.
	10	**SILTSTONE:** As above.
2280-2285	80	**SANDSTONE:** Predominantly as above, becomes medium. **FLUORESCENCE:** 10% Fluorescence as above.
	20	**SILTSTONE:** As above.
2285-2290	90	**SANDSTONE:** Clear to translucent, medium to occasionally coarse grained, moderately sorted, subangular, predominantly weak siliceous cement, minor argillaceous matrix, predominantly clean loose quartz grains, fair inferred porosity. **FLUORESCENCE:** 30% moderately bright, patchy yellowish white fluorescence, no direct cut, moderately fast diffuse crush cut.
	10	**SILTSTONE:** As above.
2290-2295	80	**SANDSTONE:** As above, fine to medium grained, predominantly siliceous dement, occasional dolomitic cement, trace argillaceous/kaolinitic matrix, trace pyrite cement, predominantly loose quartz grains, fair inferred porosity. **FLUORESCENCE:** 5% moderately bright, patchy greenish yellow fluorescence, slow diffuse crush cut only, thin film residue.
	20	**SILTSTONE:** As above.

2295-2300	100	**SILTSTONE:** Dark yellowish brown, non calcareous, argillaceous, common fine carbonaceous material, abundant micromica, firm to occasionally moderately hard, subfissile to subblocky.
2300-2305	5	**SANDSTONE:** Very light grey, very fine to fine grained, moderately to well sorted, subangular, predominantly siliceous cement, abundant kaolinitic matrix, soft to firm aggregates, commonly occurring as masses of kaolinitic matrix impregnated with loose quartz grains, tight visual and inferred porosity, no fluorescence.
	95	**SILTSTONE:** As above.
2305-2310	5	**SANDSTONE:** As above, tight visual and inferred porosity, no fluorescence.
	95	**SILTSTONE:** As above.
2310-2315	10	**SANDSTONE:** Predominantly as above, occasional loose quartz grains, tight to very poor visual and inferred porosity, no fluorescence.
	90	**SILTSTONE:** As above.
2315-2320	10	**SANDSTONE:** As above, no fluorescence.
	85	**SILTSTONE:** As above.
	5	**COAL:** As above.
2320-2325	80	**SANDSTONE:** Clear to translucent, fine to medium grained, occasionally coarse grained, moderately sorted, subangular, weak siliceous cement, minor dolomitic cement, trace argillaceous/kaolinitic matrix, trace pyrite cement, loose quartz grains, fair inferred porosity, no fluorescence.
	20	**SILTSTONE:** As above.
2325-2330	70	**SANDSTONE:** As above, subangular to angular, fair inferred porosity, no fluorescence.
	30	**SILTSTONE:** As above.
2330-2335	20	**SANDSTONE:** Clear to translucent, dark yellowish brown, fine to medium, occasional coarse to very coarse grains, angular to subrounded, poorly sorted, common dolo-calcareous cement, trace siliceous cement, common kaolinitic matrix, trace silty matrix, friable to moderately hard aggregates, tight visual porosity, no fluorescence.
	80	**SILTSTONE:** Dark yellowish brown, argillaceous, locally arenaceous, micromicaceous, trace carbonaceous specks, firm to soft, subfissile to sub-blocky.
2335-2340	Trace	**SANDSTONE:** As above.
	90	**SILTSTONE:** Moderate yellowish brown, to dusky yellowish brown, argillaceous, locally arenaceous, micromicaceous, trace disseminated pyrite, trace carbonaceous matter, moderately hard to soft, fissile to sub-blocky.
	10	**COAL:** Brownish black to black, dull to earthy, firm, fissile, angular fractures.
2340-2345	20	**SANDSTONE:** Clear to translucent, predominantly fine to medium, occasional coarse grains, angular to subrounded, poorly sorted, trace dolo-calcareous cement, trace weak siliceous cement, trace nodular pyrite, abundant kaolinitic matrix, trace silty matrix, friable to moderately hard aggregates, tight visual porosity, no fluorescence.
	60	**SILTSTONE:** As above.

	20	**COAL:** As above, trace disseminated pyrite.
2345-2350	10	**SANDSTONE:** As above.
	90	**SILTSTONE:** Dark yellowish brown, argillaceous, locally arenaceous, micromicaceous, trace muscovite, trace carbonaceous specks, moderately soft to dispersive, sub-blocky to amorphous.
	Trace	**COAL:** As above
2350-2355	60	**SANDSTONE:** Clear to translucent, very light greyish brown, predominantly fine to medium, common coarse to very coarse grains, angular to subrounded, poorly sorted, trace dolo-calcareous cement, trace microglauconite, abundant kaolinitic matrix, common silty matrix, occasional fractured clasts, friable to moderately hard aggregates, tight visual porosity, no fluorescence.
	40	**SILTSTONE:** Light greyish brown to dark yellowish brown, argillaceous, locally arenaceous, micromicaceous, trace carbonaceous specks, trace disseminated pyrite, soft to firm, sub-blocky to subfissile.
	Trace	**COAL:** As above.
2355-2360	30	**SANDSTONE:** Clear to translucent, very light greyish brown, fine to very coarse, angular to subrounded, poorly sorted, trace dolo-calcareous cement, abundant kaolinitic matrix, occasional fractured clasts, friable to moderately hard aggregates, tight visual porosity, no fluorescence.
	70	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2360-2365	100	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2365-2370	100	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2370-2375	100	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2375-2380	70	**COAL:** As above, trace cemented pyrite.
	30	**SILTSTONE:** As above.
2383 (Spot)	65	**SANDSTONE:** Clear to translucent, fine to medium, moderately sorted, subangular, minor silt cement, minor argillaceous matrix, predominantly loose quartz grains, poor to fair inferred porosity. **FLUORESCENCE:** 10% dull, patchy yellowish green fluorescence, weak diffuse crush cut only, trace film residue.
	30	**SILTSTONE:** As above.
	5	**COAL:** As above.
2380-2385	65	**SILTSTONE:** As above.
	30	**SANDSTONE:** As above, fine to coarse, predominantly medium grained, predominantly loose quartz grains, occasional moderately hard aggregate, poor inferred porosity. **FLUORESCENCE:** 10% as above.
	5	**COAL:** As above.

2385-2390	70	**SANDSTONE:** As above, predominantly medium grained, predominantly weak siliceous cement, locally common dolo-calcareous cement, minor to locally common argillaceous/kaolinitic matrix, predominantly loose grained, common moderately hard aggregate, poor to fair inferred and visual porosity. **FLUORESCENCE:** trace, as above.

2390-2395	70	**SILTSTONE:** As above.
	30	**SANDSTONE:** As above, fine to medium grained, trace pyritic cement, common argillaceous matrix, predominantly moderately hard aggregates, poor visual porosity, no fluorescence.
2395-2400	80	**SILTSTONE:** As above.
	20	**SANDSTONE:** As above.
2402 (Spot)	75	**SILTSTONE:** As above.
	20	**COAL:** As above.
	5	**SANDSTONE:** As above.
2400-2405	60	**SILTSTONE:** Dark yellowish brown to predominantly dusky yellowish brown, argillaceous to very argillaceous, non-calcareous, common micro-micaceous, finely carbonaceous, occasionally grading to very carbonaceous siltstone, occasional coal laminations, soft to firm, predominantly subblocky, commonly amorphous.
	40	**COAL:** As above.
2405-2410	80	**SANDSTONE:** Clear to translucent, very fine to fine grained, moderately sorted, subangular, siliceous cement, common kaolinitic matrix, predominantly aggregates, occasional loose quartz grains, abundant kaolinite impregnated with quartz grains, poor inferred porosity. **FLUORESCENCE:** 10% dull, patchy yellowish green fluorescence, weak diffuse crush cut only, trace film residue.
	15	**SILTSTONE:** As above.
	5	**COAL:** As above.
2410-2415	85	**SANDSTONE:** As above, fine to medium grained, loose grains, moderately hard aggregates, poor visual porosity. **FLUORESCENCE:** 10% as above.
	10	**SILTSTONE:** As above.
	5	**COAL:** As above.
2415-2420	50	**SANDSTONE:** As above, poor inferred and visual porosity. **FLUORESCENCE:** 5% as above.
	20	**SILTSTONE:** As above.
	30	**COAL:** As above.
2421 (Spot)	5	**SANDSTONE:** As above.
	15	**SILTSTONE:** As above.
	80	**COAL:** Black to brownish black, earthy to subvitreous lustre, friable to brittle, angular to subangular, commonly subconchoidal fracture.
2420-2425	25	**SANDSTONE:** As above, fine to coarse grained, poorly sorted, common kaolinitic matrix, predominantly loose grains, common firm aggregates, poor inferred porosity. **FLUORESCENCE:** 5% as above.
	70	**SILTSTONE:** As above.
	5	**COAL:** As above.
2425-2430	15	**SANDSTONE:** As above, poor inferred porosity. **FLUORESCENCE:** trace as above.
	80	**SILTSTONE:** As above.
	5	**COAL:** As above.

2432 (Spot)	Trace	**SANDSTONE:** As above, poor inferred porosity. **FLUORESCENCE:** trace as above.
	15	**SILTSTONE:** As above.
	85	**COAL:** As above.
2430-2435	15	**SANDSTONE:** Clear to translucent, light grey, very fine to fine grained, moderately to well sorted, subangular, predominantly siliceous cement, abundant kaolinitic matrix, occasional pyrite cement, common carbonaceous detritus, occasionally micaceous, predominantly friable to moderately hard aggregates, very poor visual porosity. **FLUORESCENCE:** trace as above.
	80	**SILTSTONE:** Moderate yellowish brown to dark yellowish brown, argillaceous to very argillaceous, non calcareous, micromicaceous, common fine carbonaceous material, occasional coal laminations, soft to firm, subblocky.
	5	**COAL:** As above.
2435-2440	80	**SANDSTONE:** As above, loose grains, friable aggregates, poor visual porosity. **FLUORESCENCE:** trace as above.
	15	**SILTSTONE:** As above.
	5	**COAL:** As above.
2443 (Spot)	85	**SANDSTONE:** As above, fine to medium grained, occasionally coarse grained, predominantly loose grains, occasional friable to moderately hard aggregates, poor to fair inferred porosity. **FLUORESCENCE:** trace as above.
	10	**SILTSTONE:** As above.
	5	**COAL:** As above.
2440-2445	75	**SANDSTONE:** as above, predominantly medium grained, occasionally medium to coarse grained, loose grains, occasionally moderately hard aggregates, fair inferred porosity, no fluorescence.
	20	**SILTSTONE:** as above.
	5	**COAL:** as above.
2445-2450	10	**SANDSTONE:** Light grey, clear to translucent, fine, medium in part, angular to subrounded, moderate to good sorting, common kaolinitic matrix, trace coal fragments/laminae, friable, disaggregated in part, poor to fair porosity, no fluorescence.
	90	**SILTSTONE:** Brown grey, dark yellow brown, very argillaceous grades to silty to claystone, trace carbonaceous/coaly laminae, micromicaceous, soft to plastic in part, massive to blocky.
2450-2455	30	**SANDSTONE:** Predominantly as above, trace nodular pyrite.
	70	**SILTSTONE:** As above.
2457 (Spot)	70	**SANDSTONE:** Light grey, clear to translucent, fine to medium, subangular, good sorting, common dolocalcareous cement, trace to locally common kaolinitic matrix, trace biotite, trace carbonaceous/coaly specks, friable, moderate hard in part, poor porosity, common bright pale yellow mineral fluorescence. **FLUORESCENCE:** 10% Dull to moderate bright blue white patchy fluorescence, weak diffuse crush cut, thin faint ring residue.

30 **SILTSTONE:** As above.

2455-2460	90	**SANDSTONE:** Clear to translucent, frosted, light grey, fine to predominantly medium, subangular, good sorting, abundant dolocalcareous cement, common kaolinitic matrix, trace nodular pyrite, trace muscovite, trace coal fragments, hard, poor to nil porosity, abundant pale yellow orange mineral fluorescence. **FLUORESCENCE:** 10% Fluorescence as above.
	10	**SILTSTONE:** As above.
2462 (Spot)	80	**SANDSTONE:** As above. **FLUORESCENCE:** 20% Fluorescence as above.
	20	**SILTSTONE:** As above.
	Trace	**COAL:** Black to brown black, bituminous, trace disseminated pyrite, subconchoidal fracture in part, subvitreous to vitreous lustre, brittle to hard, blocky.
2460-2465	10	**SANDSTONE:** As above, no fluorescence.
	50	**SILTSTONE:** As above
	40	**COAL:** Black to brown black, bituminous, trace disseminated pyrite, subconchoidal fracture in part, subvitreous to vitreous lustre, brittle to hard, blocky.
2465-2470	10	**SANDSTONE:** Clear to translucent, frosted, light grey, medium, subangular, good sorting, abundant kaolinitic matrix, trace nodular pyrite, trace muscovite, trace coal fragments, friable, poor porosity, no fluorescence.
	30	**SILTSTONE:** Dusky yellow brown to dark brown in part, locally very argillaceous, common carbonaceous specks/coaly laminae, arenaceous in part, micromicaceous, trace lithic fragments, mottled texture in part, soft to firm, massive to blocky in part.
	60	**COAL:** As above.
2470-2475	30	**SANDSTONE:** Light grey, clear to translucent, fine to medium, subangular to subrounded, moderate sorting, trace siliceous cement, common kaolinitic matrix, trace nodular pyrite, trace coarse quartz float, trace carbonaceous laminae, friable to hard in part, poor to nil porosity, no fluorescence.
	65	**SILTSTONE:** Dark yellowish brown, brown grey, very argillaceous grades to silty claystone in part, micromicaceous, trace carbonaceous specks/laminae, trace lithic fragments, soft to firm, massive to blocky.
	5	**COAL:** Black to brown black, bituminous, trace disseminated pyrite, subconchoidal fracture in part, subvitreous to vitreous lustre, brittle to hard, blocky.
2475-2480	60	**SANDSTONE:** Clear to translucent, frosted, fine to medium, subangular to subrounded, moderate sorting, abundant kaolinitic matrix, trace coaly fragments, trace nodular pyrite, friable to disaggregated, fair to good porosity, no fluorescence.
	40	**SILTSTONE:** As above.
2480-2485	80	**SANDSTONE:** Clear to translucent, light grey, fine to medium, subangular to subrounded, moderate sorting, abundant kaolinitic matrix, trace pyrite cement, trace chlorite, trace coaly fragments, trace coarse milky quartz float, friable to disaggregated, fair to good porosity, no fluorescence.
	20	**SILTSTONE:** As above.

2485-2490	90	**SANDSTONE:** Predominantly as above, becomes medium to coarse, locally common dolocalcareous cement, hard, tight.
	10	**SILTSTONE:** As above.
2490-2495	60	**SANDSTONE:** Predominantly as above, becomes medium grained.
	40	**SILTSTONE:** Dark yellow brown, brown grey, very argillaceous grades to silty claystone in part, micromicaceous, slightly arenaceous in part, trace carbonaceous/coaly laminae, soft to plastic, massive to amorphous.
2496 (Spot)	10	**SANDSTONE:** Predominantly as above, becomes very fine to fine, abundant kaolinitic matrix, friable, poor to nil porosity, no fluorescence.
	40	**SILTSTONE:** As above.
	50	**COAL:** Black, locally brown black, bituminous, slightly argillaceous in part, subconchoidal fracture in part, subvitreous to vitreous lustre, brittle to hard, blocky.
2495-2500	20	**SILTSTONE:** As above.
	80	**COAL:** As above.
2500-2505	30	**SANDSTONE:** As above, no fluorescence.
	70	**SILTSTONE:** As above.
2505-2510	50	**SANDSTONE:** clear to translucent (loose grains), very light grey (aggregates), very fine to fine grained, moderately sorted, subangular, predominantly siliceous cement, common to abundant kaolinitic matrix, predominantly loose quartz grains, common moderately hard aggregates, common kaolinite masses impregnated with loose quartz grains, poor inferred porosity. **FLUORESCENCE:** 5% dim, patchy yellow fluorescence, weak diffuse crush cut only,
	50	**SILTSTONE:** Predominantly brownish grey, argillaceous to very argillaceous, occasionally grading to claystone, non calcareous, occasionally arenaceous, common fine carbonaceous material, abundant micromica, soft to firm, amorphous to subblocky.
2510-2515	20	**SANDSTONE:** As above, predominantly loose quartz grains, occasional dolomitic cement, poor inferred porosity. **FLUORESCENCE:** 5% as above.
	80	**SILTSTONE:** As above.
2515-2520	20	**SANDSTONE:** Clear to translucent, very fine to fine aggregates, fine to occasionally coarse loose grains, moderately sorted, sub-angular, siliceous and dolo-calcareous cement, abundant kaolinitic matrix, common moderately hard aggregates of quartz, common kaolinitic matrix impregnated with fine quartz grains, poor inferred and visible porosity. **FLUORESCENCE:** 5% as above and moderately abundant mineral fluorescence.
	80	**SILTSTONE:** As above.
2520-2525	15	**SANDSTONE:** As above, siliceous cement, fine to coarse grained, locally common dolomite cement, loose quartz grains common moderately hard aggregates of quartz, poor inferred porosity.
	85	**SILTSTONE:** As above. **FLUORESCENCE:** 5% as above.

2525-2530	Trace	**SANDSTONE:** As above.
	100	**SILTSTONE:** Pale yellowish brown to greyish brown, argillaceous to very argillaceous, grading to arenaceous in parts, fine carbonaceous specks, abundant micromica, kaolinitic in parts, soft to firm, sub-blocky to amorphous.
2530-2535	Trace	**SANDSTONE:** As above, poor visual porosity, no fluorescence.
	100	**SILTSTONE:** As above, soft to firm, commonly dispersive, subblocky to commonly amorphous.
2535-2540	30	**SILTSTONE:** As above.
	70	**COAL:** Brownish black to black, dull to subvitreous lustre, brittle to moderately hard, common subconchoidal fracture.
2542 (Spot)	10	**SILTSTONE:** As above.
	90	**COAL:** As above.
2540-2545	10	**SANDSTONE:** As above, poor inferred porosity, no fluorescence.
	90	**COAL:** As above.
2545-2550	70	**SANDSTONE:** Clear to translucent, fine to predominantly medium grained, moderately sorted, predominantly siliceous cement, minor to locally common kaolinitic matrix, predominantly loose quartz grains, poor inferred porosity, no fluorescence.
	30	**SILTSTONE:** As above.
2550-2555	70	**SANDSTONE:** as above, occasional dolomitic cement, poor inferred porosity. **FLUORESCENCE:** 5% as above.
	30	**SILTSTONE:** As above.
2555-2560	35	**SANDSTONE:** As above, poor inferred porosity. **FLUORESCENCE:** Trace as above.
	60	**SILTSTONE:** As above.
	5	**COAL:** As above.
2561 (Spot)	20	**SANDSTONE:** As above, no fluorescence.
	70	**SILTSTONE:** As above, greyish orange to dark yellowish brown, occasionally arenaceous, predominantly dispersive and amorphous.
	10	**COAL:** As above, trace pyrite.
2560-2565	30	**SANDSTONE:** As above, poor inferred porosity, no fluorescence.
	70	**SILTSTONE:** As above.
2565-2570	20	**SANDSTONE:** Clear to translucent, light grey, fine, subangular to subrounded, good sorting, common kaolinitic matrix, trace nodular pyrite, trace coal fragments, friable to disaggregated in part, poor to nil porosity, no fluorescence.
	80	**SILTSTONE:** Brown grey, dark yellow brown, very argillaceous, locally common carbonaceous specks, micromicaceous, trace lithic fragments, soft to firm, massive to blocky.
2570-2575	20	**SANDSTONE:** As above.
	80	**SILTSTONE:** As above.
2575-2580	40	**SANDSTONE:** Predominantly as above, becomes very fine to fine, abundant kaolinitic matrix.

	60	**SILTSTONE:** As above.
2580-2585	70	**SANDSTONE:** Clear to translucent, frosted, light grey, fine to medium in part, subangular to subrounded, moderate to good sorting, locally common dolocalcareous cement, common kaolinitic matrix, trace nodular pyrite, friable, hard aggregates in part, poor to nil porosity, dull yellow orange mineral fluorescence only.
	30	**SILTSTONE:** As above.
2585-2590	90	**SANDSTONE:** Clear to translucent, frosted, fine, medium in part, subangular, moderate to good sorting, trace siliceous cement, trace dolocalcareous cement, common kaolinitic matrix, trace nodular pyrite, trace coal fragments, friable, hard aggregates in part, poor porosity, trace dull yellow orange mineral fluorescence only.
	10	**SILTSTONE:** As above.
2592 (Spot)	20	**SANDSTONE:** Clear to translucent, frosted, light grey, very fine to fine, good sorting, common kaolinitic matrix, trace nodular pyrite, friable, poor porosity, no fluorescence.
	40	**SILTSTONE:** As above.
	40	**COAL:** Black to brown black, bituminous, slightly argillaceous, dull to subvitreous lustre, subconchoidal fracture in part, brittle to hard, blocky.
2590-2595	100	**COAL:** As above.
2595-2600	30	**SILTSTONE:** Grey brown to brown grey, very argillaceous locally grades to silty claystone, trace carbonaceous specks, micromicaceous, trace arenaceous inclusions, trace lithic fragments, soft to dispersive, massive to amorphous.
	70	**COAL:** Predominantly as above, becomes very argillaceous grades to Carbonaceous Shale.
2602 (Spot)	10	**SILTSTONE:** As above.
	90	**COAL:** As above.
2600-2605	70	**SILTSTONE:** As above.
	30	**COAL:** As above.
2608 (Spot)	60	**SILTSTONE:** Predominantly as above, slightly arenaceous in part.
	40	**COAL:** Black to brown black, bituminous, locally very argillaceous grades to Carbonaceous Shale, dull to subvitreous lustre, subconchoidal fracture in part, brittle to hard, blocky.
2609 (Spot)	20	**SANDSTONE:** Clear to translucent, frosted, very fine to fine, good sorting, clean, trace medium milky quartz float, trace coaly fragments, common yellow translucent quartz (citrine?), disaggregated, fair porosity, no fluorescence.
	60	**SILTSTONE:** As above.
	20	**COAL:** As above.
2609-2636		Cut Core 1 from 2609-2636m. See core description.

2638 (Spot)	10	**SANDSTONE:** Clear to translucent, pale yellowish orange, very fine to fine grained, moderately sorted, subangular to subrounded, siliceous cement, common kaolinitic matrix, predominantly loose quartz grains, common friable aggregates, poor visual and inferred porosity. **FLUORESCENCE:** trace, dim, patchy yellow fluorescence, instant diffuse crush cut, thick ring residue.
	20	**SILTSTONE:** Very pale orange to predominantly moderate yellowish brown, argillaceous, occasionally arenaceous, occasional pyrite, common fine carbonaceous material, predominantly dispersive, subfissile to predominantly amorphous.
	70	**COAL:** Black, occasionally brownish black, vitreous to predominantly subvitreous lustre, firm to moderately hard, subblocky to blocky, uneven to angular fracture.
2636-2640	30	**SANDSTONE:** As above, fine to medium grained, predominantly loose grains, common soft to friable aggregates with abundant kaolinitic matrix, poor visual and inferred porosity. **FLUORESCENCE:** Trace as above.
	65	**SILTSTONE:** As above.
	5	**COAL:** As above.
2640-2645	35	**SANDSTONE:** Clear to translucent, pale yellowish orange, fine grained, moderately sorted, subangular to subrounded, predominantly siliceous cement, occasional pyritic cement, argillaceous matrix, common kaolinitic matrix, predominantly loose quartz grains, poor inferred porosity. **FLUORESCENCE:** trace, as above.
	65	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2645-2650	25	**SANDSTONE:** As above, predominantly quartz grains in kaolinitic matrix, poor inferred porosity. **FLUORESCENCE:** trace, as above.
	65	**SILTSTONE:** As above with micromicrite.
	10	**COAL:** As above.
2650-2655	40	**SANDSTONE:** As above, predominantly loose quartz grains, common friable aggregates, poor inferred porosity. **FLUORESCENCE:** Trace as above.
	60	**SILTSTONE:** As above.
2655-2660	30	**SANDSTONE:** clear to translucent, very light grey (aggregates), fine to medium grained, moderately sorted, subangular to subrounded, predominantly siliceous cement, occasional pyrite cement, predominantly argillaceous matrix, common kaolinitic matrix, occasional quartz overgrowths, predominantly loose quartz grains, common firm aggregates, poor inferred porosity. **FLUORESCENCE:** Trace as above.
	60	**SILTSTONE:** As above.
	10	**COAL:** As above.
2660-2665	50	**SANDSTONE:** As above, common pyrite cement, poor inferred porosity. **FLUORESCENCE:** Trace as above.
	40	**SILTSTONE:** As above.
	10	**COAL:** As above.

2667 (Spot)	10	**SANDSTONE:** As above, poor inferred porosity, no fluorescence.
	5	**SILTSTONE:** As above.
	85	**COAL:** greyish black to black, subvitreous to vitreous lustre, brittle, subfissile to subblocky, angular to subconchoidal fracture.
2665-2670	40	**SANDSTONE:** As above, medium to coarse grained, predominantly medium grained, minor argillaceous matrix, common carbonaceous detritus, predominantly loose grains, poor to fair inferred porosity, no fluorescence.
	30	**SILTSTONE:** Predominantly dusky yellowish brown, argillaceous, micromicaceous, common fine carbonaceous material, firm to soft, subfissile to subblocky.
	30	**COAL:** As above.
2670-2675	85	**SANDSTONE:** As above, medium to coarse grained, subangular to angular, common dolomitic cement, minor argillaceous matrix, predominantly loose quartz grains, fair to good inferred porosity.
	10	**SILTSTONE:** As above.
	5	**COAL:** As above.
2675-2680	95	**SANDSTONE:** Clear to translucent, pale orangish yellow, fine to very coarse, predominantly coarse, subangular to angular, poorly sorted, common siliceous cement, occasional ferruginous cement, trace nodular pyrite, trace argillaceous matrix, predominantly loose grains, fair to good inferred porosity, no fluorescence.
	5	**COAL:** Greyish black to black, subvitreous to vitreous lustre, brittle, subfissile to subblocky, angular to subconchoidal fracture.
2680-2685	70	**SANDSTONE:** Clear to translucent, very light grey to light greenish grey, predominantly fine to medium, occasional coarse to very coarse, subangular to angular, poorly sorted, common siliceous cement, common argillaceous matrix with trace glauconite, predominantly loose grains, friable, poor inferred porosity, no fluorescence.
	10	**SILTSTONE:** Predominantly pale yellowish brown, very argillaceous, micromicaceous, trace coal fragments, soft to dispersive, subblocky to amorphous.
	20	**COAL:** As above.
2685-2689	90	**SANDSTONE**: Predominantly as above, common glauconite in parts, fair to poor porosity. **FLUORESCENCE:** 10% dull to very dull yellowish green patchy fluorescence, weak faint diffuse crush cut, thin ring residue.
	10	**SILTSTONE:** As above.
2689-2690	60	**SANDSTONE:** Clear to translucent, fine to predominantly medium, common coarse to very coarse grains, angular to subangular, poorly sorted, trace siliceous cement, trace dolomitic cement, common to abundant argillaceous matrix, occasional glauconite, trace biotite, predominantly disaggregated, occasional friable aggregates, poor inferred porosity, no fluorescence.
	40	**SILTSTONE:** Pale yellowish brown to dark yellowish brown, argillaceous, slightly arenaceous in parts, micromicaceous, common coal fragments, firm to soft, subfissile to blocky.

2690-2695	90	**SANDSTONE:** Clear to translucent, light grey, very fine to coarse, occasional very coarse grains, angular to subrounded, poorly sorted, common strong siliceous cement, trace nodular pyrite, trace dolomitic cement, common argillaceous matrix, trace glauconite, trace muscovite, disaggregated, occasional friable aggregates, poor inferred and visual porosity, no fluorescence.
	10	**SILTSTONE:** Moderate yellowish brown to dusky yellowish brown, argillaceous, micromicaceous, common coal fragments, trace disseminated pyrite, soft to firm, blocky to subfissile.
2695-2700	100	**SANDSTONE:** Predominantly as above, fine to coarse, predominantly medium, occasional very coarse grains, occasional argillaceous matrix, poor to fair inferred and visual porosity, no fluorescence.
	Trace	**SILTSTONE:** As above.
2700-2705	85	**SANDSTONE:** Clear to translucent, frosted, medium to coarse, angular to subangular, poor to moderate sorting, strong siliceous cement, trace pyrite cement, locally common kaolinitic matrix/inclusions, rare glauconite, common very coarse quartz float, trace quartz overgrowths, disaggregated, good porosity, no fluorescence.
	10	**SILTSTONE:** Predominantly pale yellowish brown to dark yellowish orange, very argillaceous, micromicaceous, occasional coal fragments, soft to dispersive, blocky to amorphous.
	5	**COAL:** Greyish black to black, subvitreous to vitreous lustre, brittle, subfissile to subblocky, angular to subconchoidal fracture.
2705-2710	60	**SANDSTONE:** Clear to translucent, very light grey to very pale brown, fine to predominantly coarse, common quartz overgrowths, strong siliceous cement, trace pyrite cement, common argillaceous matrix, trace muscovite, trace glauconite, disaggregated, occasional friable aggregates, moderate visual porosity, no fluorescence.
	40	**SILTSTONE:** Pale yellowish brown to dark yellowish brown, very argillaceous, micromicaceous, trace carbonaceous material, soft to dispersive, blocky to amorphous.
2710-2715	80	**SANDSTONE:** Predominantly as above, becoming medium to very coarse, poorly sorted, locally moderate brown dolomitic cement, good porosity, no fluorescence.
	20	**SILTSTONE:** As above.
2715-2720	100	**SANDSTONE:** As above, predominantly medium to coarse, poorly sorted, trace dolomitic cement, good porosity, no fluorescence.
	Trace	**SILTSTONE:** As above.

2720-2725	95	**SANDSTONE:** Clear to predominantly translucent, coarse to very coarse grained, predominantly coarse grained, common fractured very coarse clasts, moderately sorted, subangular to angular, predominantly weak siliceous cement, minor argillaceous matrix, common coal fragments and carbonaceous detritus, minor glauconite, minor pyrite cement, predominantly loose quartz grains, minor friable aggregates, fair inferred porosity, no fluorescence.
	5	**COAL:** Greyish black to black, subvitreous to vitreous lustre, brittle, subfissile to subblocky, angular to subconchoidal fracture.
2725-2730	100	**SANDSTONE:** As above, translucent, medium to coarse grained, occasional smoky Quartz, fair inferred porosity, no fluorescence.
2730-2735	70	**SANDSTONE:** As above, fine to coarse grained, predominantly medium to coarse grained, common fractured very coarse clasts, common moderately hard aggregates, fair inferred porosity, no fluorescence.
	30	**SILTSTONE:** Medium grey to medium dark grey, very argillaceous, grading to claystone, common micromica, minor fine carbonaceous material, soft to dispersive, predominantly amorphous.
2735-2740	80	**SANDSTONE:** Clear to predominantly translucent, fine to coarse grained, predominantly medium to coarse grained, poorly sorted, angular to subangular, predominantly weak siliceous cement, occasional argillaceous/kaolinitic matrix, predominantly loose quartz grains, minor friable aggregates, fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
	10	**COAL:** Brownish black to black, dull to subvitreous lustre, brittle, subblocky to angular, common subconchoidal fracture.
2740-2745	90	**SANDSTONE:** As above, medium to coarse grained, predominantly subangular, occasional glauconite, predominantly loose quartz grains, occasional friable to moderately hard aggregates, poor to fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
2745-2750	100	**SANDSTONE:** As above, fine to very coarse grained, predominantly coarse grained, common fractured very coarse clasts, fair inferred porosity, no fluorescence.
2750-2755	100	**SANDSTONE:** As above, medium to very coarse grained, predominantly medium to coarse grained, fair inferred porosity, no fluorescence.
	Trace	**SILTSTONE:** As above.
2755-2760	90	**SANDSTONE:** As above, medium to very coarse grained, predominantly coarse grained, common fractured clasts, predominantly siliceous cement, minor pyrite cement, fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.

2760-2765	95	**SANDSTONE:** Clear to predominantly translucent, medium to very coarse grained, predominantly coarse grained, moderately sorted, subangular to angular, predominantly siliceous cement, minor dolomitic cement, minor argillaceous matrix, rare kaolinitic matrix, rare glauconite, fair inferred porosity, no fluorescence.
	5	**SILTSTONE:** As above.
2765-2770	100	**SANDSTONE:** Predominantly translucent, medium to very coarse grained, predominantly coarse grained, moderately sorted, subangular to angular, common fractured clasts, predominantly siliceous cement, trace dolomitic cement, rare pyrite cement, minor argillaceous/kaolinitic matrix, loose grains, fair inferred porosity, no fluorescence.
	Trace	**SILTSTONE:** As above.
2770-2775	90	**SANDSTONE:** As above, fine to very coarse grained, predominantly coarse grained, loose grains, occasional friable to moderately hard aggregates, fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
2775-2780	90	**SANDSTONE:** As above, fine to very coarse grained, predominantly coarse grained, fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
2780-2785	90	**SANDSTONE:** As above, fine to very coarse grained, predominantly coarse to very coarse grained, fair inferred porosity, no fluorescence.
	10	**SILTSTONE:** As above.
2786 (Spot)	10	**SANDSTONE:** As above, coarse to very coarse grained, poor to fair inferred porosity, no fluorescence.
	40	**SILTSTONE:** Dark yellowish brown to dusky yellowish brown, occasionally medium grey, argillaceous, abundant micromica, occasional to locally common fine carbonaceous material, occasionally very carbonaceous, soft to firm, subfissile to amorphous.
	50	**COAL:** Black to brownish black, dull to subvitreous lustre, micromicaceous, occasional pyrite, firm to moderately hard, commonly brittle, fissile to subblocky, predominantly uneven fracture, rare amber inclusions.
2789 (Spot)	10	**SANDSTONE:** As above, common pyrite cement, poor inferred porosity, trace mineral fluorescence.
	40	**SILTSTONE:** As above, commonly medium grey,
	50	**COAL:** As above.
2785-2790	80	**SANDSTONE:** Predominantly translucent, medium to very coarse grained, predominantly coarse grained, moderately sorted, subangular to angular, common fractured clasts, predominantly siliceous cement, minor argillaceous matrix, rare pyrite cement, rare chlorite, predominantly loose quartz grains, fair to good inferred porosity, trace mineral fluorescence.
	10	**SILTSTONE:** As above.
	10	**COAL:** As above.

2790-2795	55	**SANDSTONE:** Clear to translucent, frosted, light grey in parts, very fine to very coarse, predominantly coarse, angular to subrounded, poorly sorted, common strong siliceous cement, trace pyrite cement, minor argillaceous matrix, trace carbonaceous material, trace glauconite, disaggregated, fair inferred and visual porosity, trace mineral fluorescence.
	40	**SILTSTONE:** Pale yellowish brown to dusky yellowish brown, argillaceous, common micromica, common carbonaceous material grading to coal in parts, dispersive to hard, amorphous to fissile.
	5	**COAL:** Dusky yellowish brown to brownish black, dull lustre, argillaceous in part, brittle, fissile, uneven fracture.
2795-2800	30	**SANDSTONE:** Predominantly as above, predominantly medium, common argillaceous matrix, poor to fair inferred and visual porosity.
	70	**SILTSTONE:** As above.
	Trace	**COAL:** As above.
2800-2805	30	**SANDSTONE:** Predominantly as above, very fine to predominantly medium, occasional coarse to very coarse quartz grains, poor to moderate sorting, poor inferred porosity.
	70	**SILTSTONE:** Predominantly brownish grey to dark yellowish brown, very argillaceous, micromicaceous, common carbonaceous matter, trace lithics, soft to dispersive, blocky to amorphous.
2805-2810	30	**SANDSTONE:** Clear to translucent, very fine to predominantly medium, occasional coarse to very coarse quartz grains, moderate sorting, common siliceous cement, common pale yellow calcareous cement, common to abundant argillaceous matrix, trace carbonaceous matter, disaggregated, poor inferred porosity, trace orange mineral fluorescence.
	65	**SILTSTONE:** As above.
	5	**COAL:** As above.
2810-2815	20	**SANDSTONE:** As above.
	75	**SILTSTONE:** As above.
	5	**COAL:** As above.
2815-2820	20	**SANDSTONE:** As above.
	80	**SILTSTONE:** As above.
2820-2825	30	**SANDSTONE:** Clear to translucent, light grey, fine to predominantly medium, occasional coarse to very coarse quartz float, angular to subrounded, poorly sorted, common calcareous cement, trace siliceous cement, common to abundant argillaceous matrix, trace carbonaceous matter, dis-aggregated, friable, very poor porosity, trace mineral fluorescence.
	70	**SILTSTONE:** Brownish grey to dusky yellowish brown, very argillaceous, micromicaceous, common carbonaceous matter locally grading to coal, soft to firm, blocky to fissile.

2825-2830	10	**SANDSTONE:** Clear to translucent, light grey, very fine to fine, subangular to subrounded, well sorted, occasional calcareous cement, trace siliceous cement, abundant argillaceous matrix, trace carbonaceous matter, dis-aggregated to friable, poor porosity, trace mineral fluorescence.
	60	**SILTSTONE:** As above.
	30	**COAL:** Dusky yellowish brown to brownish black, dull lustre, argillaceous in part, brittle, fissile, uneven fracture.
		Reached Total Depth of 2830mMDRT/2828.5mTVDRT at 13:15 hours 13/091999.

Appendix 4

APPENDIX 4

TURRUM 7

MDT Results

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	1 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
Gauge Type	CQG	Probe type	Long nose
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number (Pe/Pretest/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	2230.0	2204.0	4010 10.6	23:34	3121.4	3138.9 8.4	84.4	23:39	4016 10.6	05:00	Good Perm 20cc vert ptest MD/CP= 285.4 (20cc DD)
1/2 P	2239.0	2213.0	4041 10.6	23:47	2916.5	3151.5 8.4	86.0	23:51	4013 10.5	04:00	Good Perm MD/CP= 24.1 (20cc DD)
1/3 P	2266.3	2240.3	4085 10.6	0:00	3223.3	3233.9 8.5	88.2	0:05	4077 10.6	05:00	Good perm MD/CP= 317.4 (20cc DD)
1/4 P	2268.0	2242.0	4081 10.6	0:14	3228.0	3232.4 8.5		0:18	4078 10.6	04:00	Good perm MD/CP= 1174.7 (20cc DD)
1/5 P	2272.0	2246.0	4085 10.6	0:26	3231.5	3233.9 8.4	90.0	0:31	4084 10.5	05:00	Good perm MD/CP= 3025.7 (20cc DD)
1/3A P	2266.1	2240.1	4074 10.6	0:41	3221.0	3232.0 8.5	90.5	0:46	4074 10.6	05:00	Good Perm MD/CP= 534.3 (20cc DD)
1/6 P	2283.0	2257.0	4105 10.6	0:57	3205.6	3259.1 8.5	90.7	1:00	4104 10.6	03:00	Good Perm MD/CP= 121.8 (20cc DD)
1/7 P	2292.5	2266.5	4122 10.6	1:10	3270.9	3272.2 8.5	91.0	1:15	4121 10.5	05:00	Good Perm MD/CP= 4952.5 (20cc DD)
1/8 P	2325.0	2299.0	4179 10.5	1:24	3288.2	3305.9 8.4	91.7	1:30	4179 10.5	06:00	Good Perm MD/CP= 326.8 (20cc DD)
1/9 P	2329.5	2303.5	4187 10.5	1:37	3303.5	3312.1 8.4	92.3	1:42	4187 10.5	05:00	Good Perm MD/CP= 21.7 (20cc DD)

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	2 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
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.
1/10 P	2327.0	2301.0	4183	10.5	1:52	3292.5	3308.6	8.4	92.8	1:56	4182	10.5	04:00	Good Perm MD/CP= 418.1 (20cc DD)
1/11 P	2348.0	2322.0	4220	10.5	2:07	3367.5	3372.8	8.5	92.1	2:10	4220	10.5	03:00	Good Perm MD/CP= 1168.3
1/12 P	2350.0	2324.0	4224	10.5	2:18	3359.5	3373.5	8.5	93.1	2:23	4223	10.5	05:00	Good Perm MD/CP= 720.3 (20cc DD)
1/13 P	2355.0	2329.0	4232	10.5	2:40	3366.3	3368.6	8.5	93.6	2:45	4232	10.5	05:00	Good Perm MD/CP= 2975.4 (20cc DD)
1/14 P	2356.5	2330.5	4235	10.5	2:54	3269.7	3369.9	8.5	93.7	2:58	4235	10.5	04:00	Mod perm MD/CP= 57.3 (20cc DD)
1/15 P	2358.5	2332.5	4239	10.5	3:05	1861.6	(1967.03)	-	93.8	3:12	4238	10.5	07:00	Low perm. Test curtailed MD/CP= 17.0 (20cc DD)
1/16 P	2354.0	2328.0	4230	10.5	3:18	3352.6	3368.2	8.5	93.8	3:24	4230	10.5	06:00	Good Perm MD/CP= 3677 (20cc DD)
1/15A P	2358.0	2332.0	4238	10.5	3:25	3364.0	3370.6	8.5	93.8	3:29	4237	10.5	04:00	Good Perm MD/CP= 73.8 (20cc DD)
1/17 P	2384.5	2358.5	4283	10.5	4:16	1914.4	(1976.19)	-	93.4	4:22	4283	10.5	06:00	Low perm. Test curtailed MD/CP= 67.1 (20cc DD)
1/18 P	2390.0	2364.0	4293	10.5	4:29	1688.4	(1947.49)	-	93.7	4:36	4293	10.5	07:00	Low perm. Test curtailed MD/CP= 3.1 (20cc DD)

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ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	3 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
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.
1/19 P	2394.1	2368.1	4300 10.5	4:45	1391.1	(1561.22) -	94.4	4:52	4300 10.5	07:00	Command to limit DD to 10cc not accepted by computer. Test not charged. Low perm. TEST curtailed
1/19A P	2394.1	2368.1	4300 10.5	4:54	2030.9	(2162.68) -	94.7	5:00	4300 10.5	06:00	Low perm Test curtailed MD/CP= ? (10cc DD)
1/20 P	2410.0	2384.0	4328 10.5	5:09	3405.4	3462.9 8.5	95.1	5:17	4328 10.5	08:00	Low perm Pressure stabilised MD/CP= 4.7 (20cc DD)
1/21 P	2419.5	2393.5	4345 10.5	5:24	2408.9	3474.3 8.5	95.3	5:30	4345 10.5	06:00	Low perm Pressure stabilised MD/CP= 4.7 (20cc DD)
1/22 P	2414.5	2388.5	4337 10.5	5:40		-	95.8	5:45	4337 10.5	05:00	Test accidentally aborted by Engineer. Not charged MD/CP=
1/22A P	2414.5	2388.5	4337 10.5	5:45	2876.7	3467.7 8.5	95.8	5:54		09:00	Mod perm MD/CP= 8.2 (20cc DD)
1/23 P	2444.7	2418.7	4390 10.5	6:05	1121.7	1130.0 -	95.7	6:10	4390 10.5	05:00	Tight abort test. MD/CP=
1/23a P	2444.8	2418.8	4391 10.5	6:17	3481.9	3501.8 8.5	96.5	6:22	4390 10.5	05:00	Good test MD/CP= 255.1
1/24 P	2446.5	2420.5	4394 10.5	6:29	3472.4	3503.8 8.5	96.6	6:32	4394 10.5	03:00	Good test MD/CP= 165.4

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ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	4 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
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.
1/25 P	2448.5	2422.5	4397	10.5	6:36	3372.8	3506.5	8.5	96.7	6:40	4397	10.5	04:00	Good test MD/CP= 38.1
1/20a P	2409.7	2383.7	4328	10.5	6:48	3261.1	3462.3	8.5	96.4	6:54	4328	10.5	06:00	Good test MD/CP= 27.8
1/26 P	2460.5	2434.5	4418	10.5	7:04	1002.9	3532.3	8.5	96.2	7:22	4419	10.5	18:00	Low perm. MD/CP= 0.2
1/27 P	2464.8	2438.8	4426	10.5	7:32	3493.7	3530.0	8.5	96.9	7:35	4426	10.5	03:00	Good test. MD/CP= 135.6
1/28 P	2447.8	2421.8	4396	10.5	7:43	3448.3	3505.7	8.5	97.2	7:47	4396	10.5	04:00	Good test. MD/CP= 96.2
1/29 P	2484.5	2458.5	4461	10.5	7:55	3482.9	3562.8	8.5	97.0	7:58	4462	10.5	03:00	Good test. MD/CP= 62.1
1/30 P	2488.5	2462.5	4469	10.5	8:05	3548.7	3568.7	8.5	97.4	8:08	4469	10.5	03:00	Good test. MD/CP= 283.4
1/31 P	2496.5	2470.5	4483	10.5	8:13	2526.3	3580.2	8.5	97.8	8:17	4483	10.5	04:00	Good test. MD/CP= 5.8
1/32 P	2588.5	2562.5	4648	10.5	8:25	3047.0	3723.0	8.5	98.0	8:35	4648	10.5	10:00	Lost seat; re-seat
1/32a P	2588.5	2562.5	4648	10.5	8:36	2858.9	3706.3	8.5	99.0	8:37	4648	10.5	01:00	Good test. MD/CP= 6.7

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ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	5 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
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.
1/33 P	2594.0	2568.0	4657	10.5	8:40	3574.2	3713.3	8.5	100.0	8:47	4657	10.5	07:00	Good test. MD/CP= 37.4
1/34 P	2591.3	2565.3	4653	10.5	8:53	3554.4	3709.7	8.5	101.0	8:56	4652	10.5	03:00	Good test. MD/CP= 33.5
1/35 P	2614.8	2588.8	4695	10.5	9:05	-	-	-	101.0	9:10	4695	10.5	05:00	No seat; 2 attempts.
1/35a P	2614.7	2588.7	4694	10.5	9:15	-	-	-	101.0	9:17	4694	10.5	02:00	No seat.
1/35b P	2614.5	2588.5	4694	10.5	9:23	-	-	-	102.0	9:25	4694	10.5	02:00	Lost seat.
1/36 P	2624.8	2598.8	4712	10.5	9:31	912.0	1025.0	2.3	102.0	9:36	4713	10.5	05:00	Tight; abort
1/36a P	2624.5	2598.5	4712	10.5	9:38	892.0	1195.0	2.7	102.0	9:40	4712	10.5	02:00	Tight; abort.
1/36b P	2625.0	2599.0	4713	10.5	9:45	875.0	907.0	2.0	102.0	9:50	4716	10.5	05:00	Tight; abort.
1/37 P	2630.0	2604.0	4722	10.5	9:55	854.0	1115.0	2.5	102.0	9:58	4722	10.5	03:00	Tight; abort.
1/37a P	2629.9	2603.9	4721	10.5	10:04	2019.8	3847+		102.0	10:25	4721	10.5	21:00	5cc Pretest Supercharged; abort.

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ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM-7	Page	6 of 7
Date	14-15/9/99	Geologist-Engineer	Greg Clota/Martin Turner
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
Gauge Type	CQG	Probe type	Long nose (Run 1), Martineaux (Run 2)
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.
1/38 P	2632.5	2606.5	4726	10.5	10:30	2140.0	2159+		102.0	10:32	4728	10.5	02:00	5cc Pretest; Tight; abort.
1/38a P	2632.0	2606.0	4725	10.5	10:35	1972.0	2008+		102.0	10:40	4726	10.5	05:00	5cc Pretest; Tight; abort.
1/38b P	2632.0	2606.0	4725	10.5	10:55	1956.0	1993+		102.0	10:57	4725	10.5	02:00	5cc Pretest; Tight; abort.
1/37b P	2629.4	2603.4	4720	10.5	11:01	2180.4	3843+		102.0	11:11	4721	10.5	10:00	5cc Pretest; Tight; abort.
1/39 P	2677.0	2651.0	4806	10.5	11:15	3776.0	3777.3	8.4	103.0	11:21	4806	10.5	06:00	15cc Pretest, good test. MD/CP= 4263.4
1/40 P	2686.0	2660.0	4822	10.5	11:28	3784.0	3789.9	8.4	103.6	11:32	4822	10.5	04:00	20cc Pretest, good test. MD/CP=408.6
1/41 P	2730.0	2704.0	4901	10.5	11:38	3830.3	3853.0	8.4	104.0	11:42	4901	10.5	04:00	20cc Pretest, good test. MD/CP=47.2
2/42 P	2444.8	2418.8	4391	10.5	16:15	584.0	(780)			16:20		0.0	05:00	Low perm Test Curtailed
2/42A S	2444.9	2418.9	4391	10.5	16:20	2704.6	3503.0	8.5	90.6	16:50		0.0	30:00	Pump 0.75gal into bore Chamber Rw=0.03 Filtrate pump only pumping in one direction abort sample attempt

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ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	TURRUM 7	Page	7 of 7
Date	14-15/9/99	Geologist-Engineer	M Turner/G Clota
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	26
Gauge Type	CQG	Probe type	Martineaux
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.
2/42B S	2446.5	2420.5	4393	10.5	16:55	3444.0	3504.2	8.5	97.8	17:40	4393	10.5	45:00	Pump 2.2gal to bore, fill 6gal chmbr 4.0 gal to bore Tot =12.2 gal OFA showing water Rw=0.04. Abandon due to time constraints
2/43 P	2614.5	2588.5	4693	10.5	18:05	2050.6	(3771)			18:12	4693	10.5	07:00	Supercharged Test curtailed
2/43A P	2614.3	2588.3	4693	10.5	18:17	1857.0	(2350)		103.0	18:22	4693	10.5	05:00	Low perm test curtailed
2/43B P	2614.1	2588.1	4692	10.5	18:25	1624.0	(1687)		103.0	18:29	4692	10.5	04:00	Low perm Test Curtailed
2/43C P	2614.8	2588.8	4693	10.5	18:33									No seal
2/44 P	2620.5	2594.5	4709	10.5	18:39	1629.1	(1690.2)		103.9	18:42	4703	10.5	03:00	Low perm test curtailed
2/45 P	2621.0	2595.0	4705	10.5	18:50	1608.6	(1680.5)		104.8	18:52	4705	10.5	02:00	Low perm test curtailed
2/46 P	2624.0	2598.0	4710	10.5	18:57	1841.0	(1879.7)		104.8	18:59	4710	10.5	02:00	Low perm test curtailed
2/47 P	2624.6	2598.6	4711		19:07	1697.3	(1690.17)		105.0	19:08	4711		01:00	Low perm test curtailed
2/48 P	2624.9	2598.9	4712	10.5	19:14	1636.1	(1704.66)		104.9	19:17	4712	10.5	03:00	Low perm test curtailed

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Appendix 5

APPENDIX 5

TURRUM 7

Velocity Survey Report

Schlumberger

Anadrill

SURVEY CALCULATION SHEET

DLS & Depths are, 1=°/100Ft, 2=°/30Mts, 3=°/10Mts: 2

Spud Date : 24-Aug-99

COMPANY	:	Esso Australia Ltd.	Inclin' :	0.00	Cal Method:	MIN. CURV	DOR : Straight Hole	N/S	E/W
Well Name	:	Turrum - 7	Azimuth :	0.00 °	KOP :	n/a		Wellhead Corod	
Field/lease	:	Turrum	Bearing :		Max Inc:	4.03°	Incl/Azim End T/D : .03° / 308.5°	0.00	0.00
Location	:	Bass Strait	Mag. Dec :	13.16° East	End Drop:	n/a	Displ : 41.06 m	T.D. Coord	
RT to MSL Elev	:	26 mts	Grid + Mag. Dec :	14.13° East	End Hold :	n/a	T.D. : 2753 m	10.42 N	39.71 W
Water Depth	:	62 mts	Type of Survey :	Anadrill M-10 MWD, Tie into Totco.					

STATION N°	Date	SURVEY Type	Depth	INC. deg	AZIMUTH deg	N/S	Bearing Quad't	E/W	COURSE Interval	TVD Meters	SECTION Meters	NORTH'G Meters	EAST'G Meters	TENDENCY °/30mts DLS	B/D	L/R
TIP From Drill Floor			0.00	0.00	0.00					0.00		0.00	0.00			
1		Totco	88.00	0.00	0.00				88	88.00	0.00	0.00	0.00	0.00	0.00	0.00
2		Totco	439.00	0.75	195.00	S	15.0	W	351	438.99	-2.22	-2.22	-0.59	0.06	0.06	-14.10
3		Totco	670.00	0.50	195.00	S	15.0	W	231	669.98	-4.65	-4.65	-1.25	0.03	-0.03	0.00
4		MWD	683.82	1.45	195.80	S	15.8	W	14	683.79	-4.88	-4.88	-1.31	2.06	2.06	1.74
5		MWD	712.79	1.89	190.80	S	10.8	W	29	712.75	-5.70	-5.70	-1.50	0.48	0.46	-5.18
6		MWD	741.31	2.18	194.10	S	14.1	W	29	741.25	-6.69	-6.69	-1.72	0.33	0.31	3.47
7		MWD	769.34	2.55	195.80	S	15.8	W	28	769.26	-7.81	-7.81	-2.02	0.40	0.40	1.82
8		MWD	778.91	2.59	197.80	S	17.8	W	10	778.82	-8.22	-8.22	-2.14	0.31	0.13	6.27
9		MWD	789.10	2.63	197.00	S	17.0	W	10	789.00	-8.66	-8.66	-2.28	0.16	0.12	-2.36
10		MWD	798.90	2.47	192.50	S	12.5	W	10	798.79	-9.08	-9.08	-2.39	0.78	-0.49	-13.78
11		MWD	808.51	2.35	189.30	S	9.3	W	10	808.39	-9.48	-9.48	-2.47	0.56	-0.37	-9.99
12		MWD	826.50	2.10	192.90	S	12.9	W	18	826.37	-10.16	-10.16	-2.60	0.48	-0.42	6.00
13		MWD	856.16	1.94	186.50	S	6.5	W	30	856.01	-11.19	-11.19	-2.78	0.28	-0.16	-6.47
14		MWD	884.82	2.02	185.00	S	5.0	W	29	884.65	-12.18	-12.18	-2.88	0.10	0.08	-1.57
15		MWD	910.30	1.91	190.60	S	10.6	W	25	910.12	-13.04	-13.04	-3.00	0.26	-0.13	6.59
16		MWD	938.33	1.63	189.40	S	9.4	W	28	938.13	-13.89	-13.89	-3.15	0.30	-0.30	-1.28
17		MWD	968.83	1.47	191.80	S	11.8	W	31	968.62	-14.70	-14.70	-3.30	0.17	-0.16	2.36
18		MWD	998.82	1.28	199.00	S	19.0	W	30	998.60	-15.40	-15.40	-3.49	0.26	-0.19	7.20
19		MWD	1028.14	1.13	202.70	S	22.7	W	29	1,027.92	-15.97	-15.97	-3.71	0.17	-0.15	3.79
20		MWD	1056.30	1.15	197.60	S	17.6	W	28	1,056.07	-16.50	-16.50	-3.90	0.11	0.02	-5.43
21		MWD	1085.30	1.07	207.20	S	27.2	W	29	1,085.07	-17.02	-17.02	-4.11	0.21	-0.08	9.93
22		MWD	1113.84	0.86	211.40	S	31.4	W	29	1,113.60	-17.44	-17.44	-4.34	0.23	-0.22	4.41
23		MWD	1169.16	0.73	232.30	S	52.3	W	55	1,168.92	-18.01	-18.01	-4.84	0.17	-0.07	11.33
24		MWD	1229.36	0.76	236.00	S	56.0	W	60	1,229.11	-18.47	-18.47	-5.47	0.03	0.01	1.84
25		MWD	1288.95	0.73	243.50	S	63.5	W	60	1,288.70	-18.86	-18.86	-6.14	0.05	-0.02	3.78
26		MWD	1318.69	0.77	249.40	S	69.4	W	30	1,318.43	-19.01	-19.01	-6.50	0.09	0.04	5.95
27		MWD	1404.46	0.73	249.60	S	69.6	W	86	1,404.20	-19.40	-19.40	-7.55	0.01	-0.01	0.07
28		MWD	1490.81	0.53	243.70	S	63.7	W	86	1,490.54	-19.77	-19.77	-8.42	0.07	-0.07	-2.05
29		MWD	1548.03	0.59	251.40	S	71.4	W	57	1,547.76	-19.98	-19.98	-8.94	0.05	0.03	4.04

907504 078

Schlumberger

Anadrill

SURVEY CALCULATION SHEET

DLS & Depths are, 1=°/100Ft, 2=°/30Mts, 3=°/10Mts: 2

Spud Date : 24-Aug-99

COMPANY	:	Esso Australia Ltd.	Inclin' :	0.00	Cal Method:	MIN. CURV	DOR : Straight Hole	N/S	E/W
Well Name	:	Turrum - 7	Azimuth :	0.00 °	KOP :	n/a		Wellhead Corod	
Field/lease	:	Turrum	Bearing :		Max Inc:	4.03°	Incl/Azim End T/D : .03° / 308.5°	0.00	0.00
Location	:	Bass Strait	Mag. Dec :	13.16° East	End Drop:	n/a	Displ : 41.06 m	T. D. Coord	
RT to MSL Elev	:	26 mts	Grid + Mag. Dec :	14.13° East	End Hold :	n/a	T.D. : 2753 m	10.42 N	39.71 W
Water Depth	:	62 mts	Type of Survey :	Anadrill M-10 MWD, Tie into Totco.					

STATION		SURVEY		INC.	AZIMUTH	N	Bearing	E	COURSE	TVD	SECTION	NORTH'G	EAST'G	TENDENCY °/30mts			
N°	Date	Type	Depth	deg	deg	S	Quad't	W	Interval	Meters	Meters	Meters	Meters	DLS	B/D	L/R	
30		MWD	1636.04	1.00	274.10	N	85.9	W	88	1,635.76	-20.07	-20.07	-10.13	0.17	0.14	7.74	
31		MWD	1665.58	1.05	281.60	N	78.4	W	30	1,665.30	-20.00	-20.00	-10.66	0.15	0.05	7.62	
32		MWD	1751.77	1.49	305.40	N	54.6	W	86	1,751.47	-19.19	-19.19	-12.34	0.24	0.15	8.28	
33		MWD	1782.05	1.22	310.10	N	49.9	W	30	1,781.74	-18.76	-18.76	-12.91	0.29	-0.27	4.66	
34		MWD	1810.44	1.29	305.70	N	54.3	W	28	1,810.12	-18.38	-18.38	-13.40	0.13	0.07	-4.65	
35		MWD	1838.04	1.27	308.00	N	52.0	W	28	1,837.71	-18.01	-18.01	-13.89	0.06	-0.02	2.50	
36		MWD	1924.28	1.46	318.50	N	41.5	W	86	1,923.93	-16.60	-16.60	-15.38	0.11	0.07	3.65	
37		MWD	2013.44	1.72	320.30	N	39.7	W	89	2,013.05	-14.71	-14.71	-16.98	0.09	0.09	0.61	
38		MWD	2098.89	2.00	323.10	N	36.9	W	85	2,098.46	-12.54	-12.54	-18.70	0.10	0.10	0.98	
39		MWD	2186.73	2.27	324.30	N	35.7	W	88	2,186.24	-9.90	-9.90	-20.63	0.09	0.09	0.41	
40		MWD	2274.20	2.19	328.20	N	31.8	W	87	2,273.64	-7.07	-7.07	-22.52	0.06	-0.03	1.34	
41		MWD	2302.79	2.47	328.40	N	31.6	W	29	2,302.21	-6.08	-6.08	-23.14	0.29	0.29	0.21	
42		MWD	2379.52	2.35	322.70	N	37.3	W	77	2,378.87	-3.42	-3.42	-24.95	0.10	-0.05	-2.23	
43		MWD	2472.24	2.72	316.00	N	44.0	W	93	2,471.50	-0.33	-0.33	-27.64	0.15	0.12	-2.17	
44		MWD	2555.19	2.75	316.80	N	43.2	W	83	2,554.36	2.54	2.54	-30.36	0.02	0.01	0.29	
45		MWD	2584.87	2.90	309.50	N	50.5	W	30	2,584.00	3.54	3.54	-31.43	0.39	0.15	-7.38	
46		MWD	2641.13	3.81	309.30	N	50.7	W	56	2,640.16	5.63	5.63	-33.98	0.49	0.49	-0.11	
47		MWD	2699.08	3.75	311.00	N	49.0	W	58	2,697.99	8.09	8.09	-36.90	0.07	-0.03	0.88	
48		MWD	2753.00	4.03	308.50	N	51.5	W	54	2,751.78	10.42	10.42	-39.71	0.18	0.16	-1.39	

Enclosures.

907504 [redacted]
081

ENCLOSURES

TURRUM 7

PE602967

This is an enclosure indicator page.
The enclosure PE602967 is enclosed within the container PE907504 at this location in this document.

The enclosure PE602967 has the following characteristics:

ITEM_BARCODE	= PE602967
CONTAINER_BARCODE	= PE907504
NAME	= Encl.1 Turrum-7 Mud Log
BASIN	= GIPPSLAND
ONSHORE?	= N
DATA_TYPE	= WELL
DATA_SUB_TYPE	= MUD_LOG
DESCRIPTION	= Encl.1 Turrum-7 Masterlog Mud Log, Scale: 1:500, by Esso Australia Ltd, W1300, VIC/L4. Enclosure 1 contained within "Well Completion Report" [PE907504].
REMARKS	=
DATE_WRITTEN	=
DATE_PROCESSED	=
DATE_RECEIVED	= 06-APR-2000
RECEIVED_FROM	= Esso Australia Ltd
WELL_NAME	= Turrum-7
CONTRACTOR	= Geoservices
AUTHOR	=
ORIGINATOR	= Esso Australia Ltd
TOP_DEPTH	= 650
BOTTOM_DEPTH	= 2900
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)