

WCR VOL 1
TURRUM-5
WI145

Esso Australia Ltd.

# WELL COMPLETION REPORT TURRUM-5

PETROLEUM DIVISION

BASIC DATA

GIPPSLAND BASIN, VICTORIA

ESSO AUSTRALIA LTD

Compiled by:

G. Clota J. Reeve

### **WELL COMPLETION REPORT**

#### **VOLUME 1: BASIC DATA**

#### **CONTENTS**

- 1. WELL DATA RECORD
- 2. OPERATIONS SUMMARY
- 3. CASING DATA
- 4. CEMENTING DATA
- 5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES
- 6. WIRELINE LOGS AND SURVEYS
- 7. MEASURED WHILE DRILLING LOGS
- 8. SUMMARY OF FORMATION TEST PROGRAMME
- 9. TEMPERATURE RECORD

### **FIGURES**

- 1. LOCALITY MAP
- 2. WELL PROGRESS CURVE
- 3. WELL BORE SCHEMATIC
- 4. HORNER TEMPERATURE PLOT SUITE 2

## **APPENDICES**

- 1. LITHOLOGICAL DESCRIPTIONS
- 2. CORE DESCRIPTIONS
- 3. SIDEWALL CORE DESCRIPTIONS
- 4. MDT RESULTS
- 5. VELOCITY SURVEY REPORT
- 6. SURVEY DATA
- 7. MUD LOG

#### 1. **WELL DATA RECORD**

**LOCATION** Latitude : 38° 14' 55.83" South

Longitude : 148° 12' 03.99" East

X = 605099 mEY= 5765878mN

Map Projection: UTM (proj). AMG Zone 55 Geographical Location: Bass Strait, Victoria Field: Turrum

**PERMIT** Vic/L3

**ELEVATION** 25m

WATER DEPTH 60.3m

**TOTAL DEPTH** 2755m (Driller) 2758m (Logger)

PLUG BACK TYPE Cement Plugs

**REASONS FOR** 

PLUGGING BACK Plug and Abandon

MOVE IN 22/08/95 2000 hours

**SPUDDED** 23/08/95 0745 hours

REACHED TD 11/09/95 1130 hours

**RIG RELEASED** 23/09/95 2030 hours

**OPERATOR** Esso Australia Resources Ltd.

PERMITTEE OR LICENCEE BHP Petroleum (Bass Strait) Pty Ltd and

Esso Australia Resources Ltd

**ESSO INTEREST** 50%

OTHER INTEREST 50% BHP Petroleum (Bass Strait) Ltd

CONTRACTOR Diamond Offshore General Company

**RIG NAME** Ocean Bounty

**EQUIPMENT TYPE** Semi-submersible

**TOTAL RIG DAYS** 34.3

DRILLING AFE NO L61015106

TYPE COMPLETION Plug and abandon

WELL CLASSIFICATION Outpost/Extension Well. Oil discovery well

in L-360 and L-400 reservoirs.

#### 2. OPERATIONS SUMMARY

#### 1. MOVING/MOORING

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

### 2. DRILLING OPERATIONS

#### 36" Hole/30" Casing

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

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

#### 171/2" Hole/13 3/8" Casing

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

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

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

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

#### 121/4" Hole

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

The F2000M Dynadrill tandem mud motor was laid out and a new 121/4" Diamond Boart TD19M was made up to a new BHA and tripped into the hole. Drilling continued from 1452m to 1460m. The bit failed to drill, was tripped for a bit change and at surface was seen to be badly worn due to the abrasive nature of the formation.

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

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

A Reed 12<sup>1</sup>/<sub>4</sub>" EHP51HKLK was made up and tripped into the hole to drill ahead from 2223.5m to 2508.5m, where the rotary assembly was tripped to pick up the coring assembly.

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

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

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

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

# 3. <u>CASING DATA</u>

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

# 4. <u>CEMENTING DATA</u>

		30"	20'' x 13-3/8''	P&A Plugs 1-3	P&A Plugs 4-5	P&A Plug 6	P&A Plug 7	P&A Plug 8	P&A Plug 9
Setting Depth	M-RKB	117	656	2753-2305	2305-1985	1607-1432	1432-1233	701-540	177-107
Lead Slurry									
Volume Pumped	SX		950						
Weight	PPG		12.5						
Additives									
Econolite	GAL/SK		0.45						
Mixwater (FW)	GAL/SK		12.76						
Yield	CUFT/SK		2.18						
Tail Slurry									
Volume Pumped	SX	800	700	1099	814	424	550	402	170
Weight	PPG	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
Additives								10.0	12.0
Halad 322L (Fluid Loss)	GAL/10bbl			20	18	17	17		
SCR-100L (Retarder)	GAL/10bbl			3	1				
CaCl2	%	2					2	2	2
Mixwater	GAL/SK	5	5	5	5	5	5	5	5
Yield	CUFT/SK	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Bump Plug?		N/A	Yes						
Calculated TOC (m)		ML	ML	2305	1985	1432	Tagged @ 1233m	Tagged @ 540m	***************************************

# 5. <u>SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES</u>

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

# 6. WIRELINE LOGS AND SURVEYS

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

# 7. MEASURED WHILE DRILLING (MWD) LOGS

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

# 8. <u>SUMMARY OF WIRELINE FORMATION TEST PROGRAMME</u>

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

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

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

## TABLE 1: TURRUM-5 MDT FLUID SAMPLE SUMMARY

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

## 9. <u>TEMPERATURE RECORD</u>

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

FIGURES

# **FIGURES**

#### PE906493

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

The enclosure PE906493 has the following characteristics:

ITEM\_BARCODE = PE906493

CONTAINER\_BARCODE = PE900857

NAME = Locality Map

BASIN = GIPPSLAND

PERMIT = VIC/L3

TYPE = WELL

SUBTYPE = LOCATION\_MAP

DESCRIPTION = Locality Map (figure 1 from WCR vol.1)

for Turrum-5

REMARKS =

 $DATE\_CREATED = 14/07/95$ 

DATE\_RECEIVED =

W\_NO = W1145

WELL\_NAME = TURRUM-5

CONTRACTOR =

CLIENT\_OP\_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

# PROPOSED TURRUM-5 LOCALITY MAP

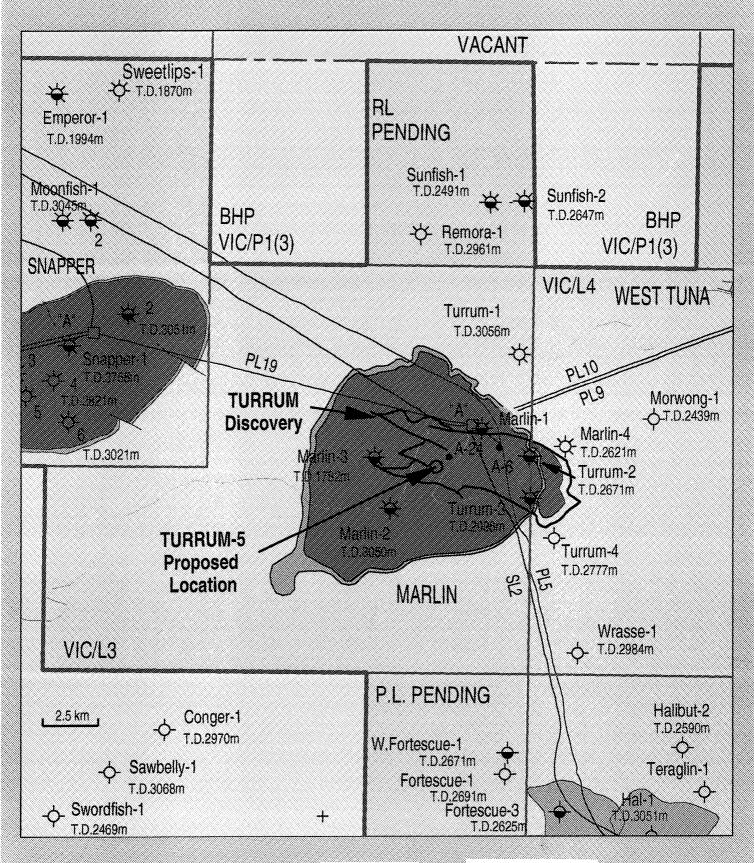


Figure 1





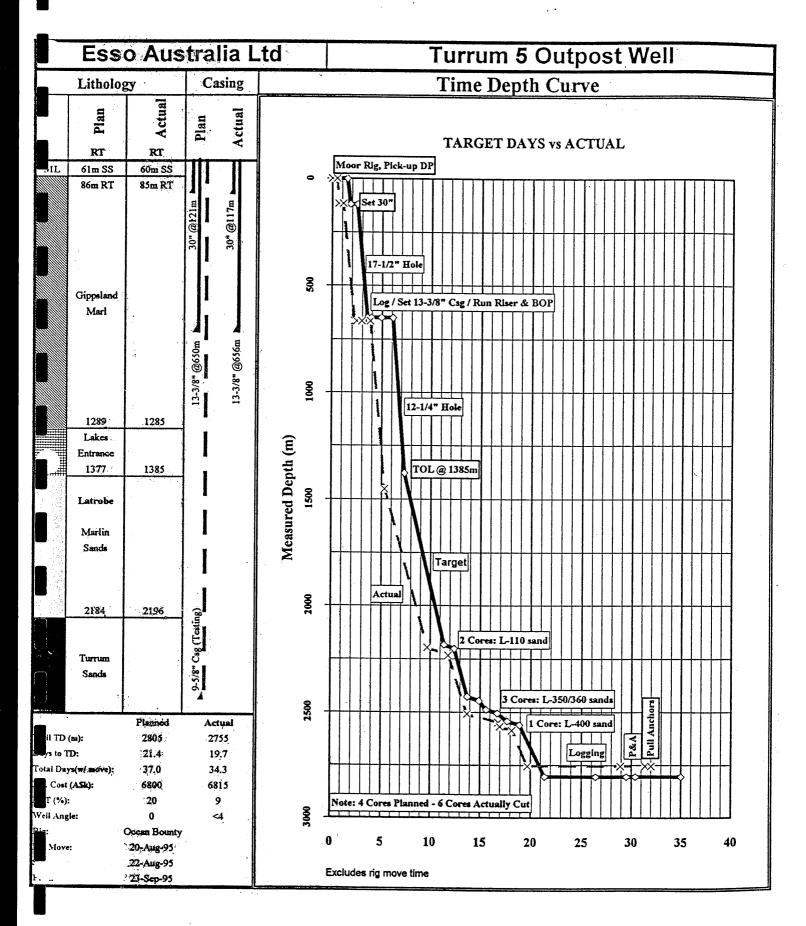


Figure 2

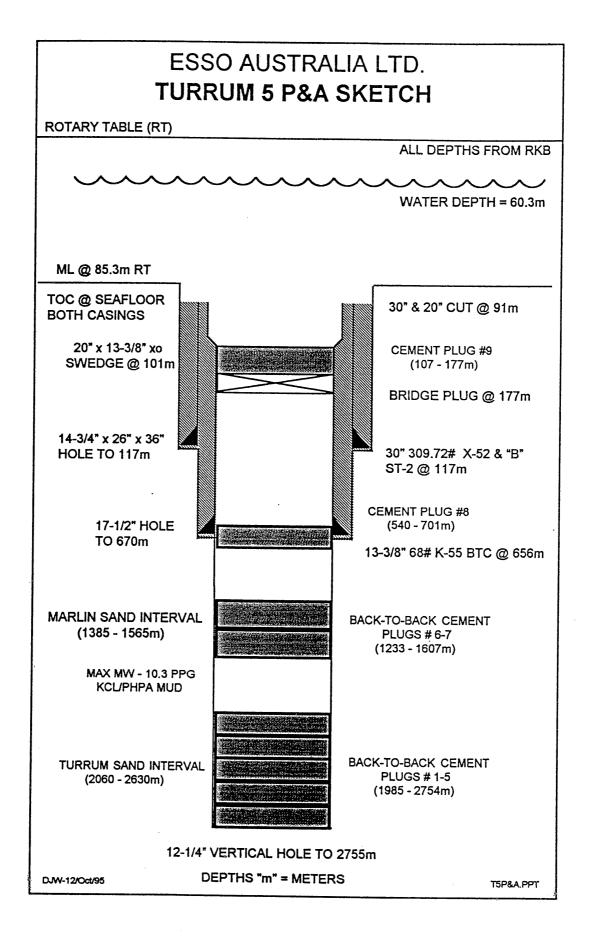


Figure 3

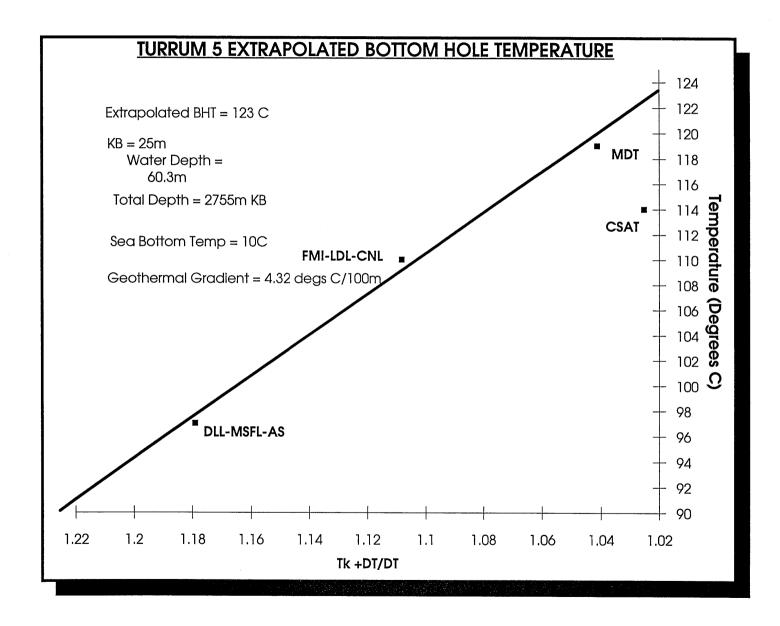


Figure 4

# **APPENDICES**

# APPENDIX 1

# APPENDIX I

LITHOLOGY DESCRIPTIONS

## **LITHOLOGY DESCRIPTIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

	70	SILTSTONE: Light to medium brown, grey brown, moderately argillaceous, trace carbonaceous fragments, micromicaceous, soft to slightly dispersive, massive.
	10	COAL: As above.
1805	30	<u>SANDSTONE</u> : Predominantly as above, abundant argillaceous/silty matrix.
	70 Trace	SILTSTONE: As above.  COAL: As above.
1810	10 90	SANDSTONE: As above.
	Trace	SILTSTONE: As above.  COAL: As above.
1815	40	SANDSTONE: Clear to translucent, frosted, medium, subangular to subrounded, good sorting, common kaolinitic matrix, slightly silty, trace milky quartz grains, loose, good
	60	porosity, no fluorescence. <u>SILTSTONE</u> : Light brown, light grey brown, moderately argillaceous, slightly arenaceous locally grades to silty sandstone, trace biotite, trace carbonaceous & lithic fragments, firm, massive to blocky.
1820	50 10	SANDSTONE: As above.
	40	SILTSTONE: As above.  COAL: As above.
1825	20	<u>SANDSTONE</u> : Predominantly as above, becomes off white, light grey, fine, common kaolinitic matrix, trace siliceous cement, friable, tight, no fluorescence.
	60	SILTSTONE: Predominantly as above, becomes very argillaceous grades to claystone in part.
	20	COAL: As above.
1830	60	<u>SANDSTONE</u> : Predominantly as above, becomes, clear to translucent, fine to medium, angular, moderate to good sorting, fair to good porosity, no fluorescence.
	30	SILTSTONE: As above.
	10	COAL: As above.
1835	60	SANDSTONE: As above.
	30	SILTSTONE: As above.
	10	COAL: As above.
1840	50	SANDSTONE: As above.
<b>-</b> 2.5 €	20	SILTSTONE: As above.
	30	<u>COAL</u> : As above.

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

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

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

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

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

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

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

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

2155	100	<u>SILTSTONE</u> : Medium grey brown, olive grey, moderately to locally very angular, grading to claystone, micromicaceous, slightly arenaceous, trace carbonaceous specks, firm to moderately hard, blocky to sub-fissile.
	Trace	<u>SANDSTONE</u> : Off white, light grey, very fine to fine grained, sub-angular, well sorted, weak siliceous cement, common kaolinitic/silty matrix, trace lithic grains, trace carbonaceous specks and micro-laminations, trace biotite in part, friable - to moderately hard, tight, no shows.
2160	20	<u>SANDSTONE</u> : Predominantly as above, occasionally light brown, becoming very silty in part, grading to silty sandstone, no show.
	70 10	<u>SILTSTONE</u> : As above. <u>COAL</u> : Black, bituminous, vitreous lustre, conchoidal fracture, hard, brittle, blocky.
2165	10	SANDSTONE: As above, trace fluorescence: Dull patchy blue
	85	white flour, very faint cut, no residue. <u>SILTSTONE</u> : As above, locally very argillaceous, grading to
	5	carbonaceous claystone. <u>COAL</u> : As above.
2170	10 90	SANDSTONE: As above. SILTSTONE: As above.
2175	100 Trace	SILTSTONE: As above.  SANDSTONE: As above.
2180	20	SANDSTONE: Off white to light grey, clear to translucent in part, fine grained, sub-angular, well sorted, moderate siliceous cement, locally common kaolinitic matrix, trace coarse milky quartz floating, trace lithic grains, trace nodules pyrite, moderately hard, friable, very poor porosity, no show.
0105	80	SILTSTONE: As above.
2185	100 Trace	<u>SILTSTONE</u> : As above, trace carbonaceous fragments and micro-laminations. <u>SANDSTONE</u> : As above.
2190	10	SANDSTONE: As above, predominantly light grey, very fine
	90	to fine. SILTSTONE: As above.
2195	30 70	<u>SANDSTONE</u> : As above, becoming fine grained. <u>SILTSTONE</u> : As above.

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

# Core #1 - Chip Descriptions

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

2201.85

SANDSTONE with irregular carbonaceous wisps and partings.

SANDSTONE: Light olive grey, friable to poorly friable, very fine to predominantly fine to lower medium, sub-angular, high sphericity, well sorted, poor to trace siliceous cement, abundant off white kaolinitic matrix, 10% altered feldspar grains, common to abundant muscovite flakes, trace carbonaceous/asphaltic fragments and laminations, trace to occasional poor porosity, no show.

2202.85 100 <u>SANDSTONE</u> with carbonised plant debris.

SANDSTONE: Light olive grey, moderately friable to occasionally hard, very fine to medium grained, predominantly fine to medium, angular to sub-angular, moderate to high sphericity, well sorted, weak to occasionally moderate siliceous cement with trace quartz overgrowths, trace to common off white kaolinitic matrix, clean streaks and patches, trace to 5% altered feldspar grains, trace dark grey lithic grains, occasional common white mica flakes, rare orange red quartz grains, fair porosity, (15%), fair permeability, (200mD), no show, moderate petroliferous odour.

2203.85 100 <u>SANDSTONE</u> with carbonaceous laminations and fossil plant fragments.

<u>SANDSTONE</u>: Generally as above, friable to moderate hard, medium to occasionally fine grained in part, well sorted, trace to common kaolinitic matrix in part, commonly clean, trace to 5% altered feldspar grains, trace grey lithic grains and clay clasts, rare carbonaceous detritus, rare green and orange red quartzose grains, fair to good porosity, (15 - 20%), fair permeability, (200 - 500mD) no show, poor petroliferous odour.

2204.70 100 <u>SANDSTONE</u>: As above, light olive grey, friable, occasionally hard, medium grained, well sorted, angular to subangular, moderate sphericity, weak to moderate siliceous cement and quartz overgrowths, trace to locally common off white argillaceous matrix, common mica flakes, <5% altered feldspar grains, trace smoky quartz grains and carbonaceous specks, fair to good porosity, (17-22%), 200 - 500mD permeability, no show.

2205.30 100 <u>SANDSTONE</u> with carbonaceous laminations and fossil plant fragments.

<u>SANDSTONE</u>: Generally as above at 2203.85m, fine to medium grained, common matrix, fair to good porosity, (12 - 17%), fair permeability, (200mD), no show.

## Core #2 Chip Descriptions

2205.5	100	Interlaminated Sandstone and Shale. <u>SANDSTONE</u> : Off white, light grey, fine -predominantly medium, angular - sub-rounded, well sorted, strong siliceous cement, trace kaolinitic matrix, trace carbonaceous flakes, trace chloritic grains, common dark brown shale laminations, hard, very poor porosity, no fluorescence, weak petroliferous
2206.35	100	odour. <u>SANDSTONE</u> : Light grey, medium grained, sub-angular to sub-rounded, well sorted, weak to moderate siliceous cement, trace kaolinitic matrix, trace quartz overgrowths, trace coaly fragments, trace rock fragments, trace smoky quartz, trace argillaceous inclusions, friable to moderate hard, poor to fair porosity, no fluorescence.
2207.35	100	SANDSTONE: Light grey, medium grained, sub-angular to sub-rounded, well sorted, strong siliceous cement, trace kaolinitic matrix, locally common altered feldspar, trace rock fragments, rare chloritic grains, trace muscovite, trace smoky quartz, common carbonaceous laminations, moderate hard, poor to very poor visual porosity, no flourescence, weak petroliferous odour.
2208.35	100	<u>SHALE</u> : Black, dark brown black, micromicaceous, trace coal inclusions, hard, fissile.
2209.35	100	SANDSTONE: Light grey, pale yellow, fine to occasional m grained, sub-angular to sub-rounded, moderately sorted, 60% pyrite cement, strong siliceous cement, trace light brown quartz grained, very hard, tight, no show, (common pyrite lenses).
2210.35	100	<u>SANDSTONE</u> : Dark brown, fine to occasional m grained, subangular to sub-rounded, moderately sorted, strong siliceous cement, common muscovite flakes, trace rock fragments, common carbonaceous and argillaceous micro-laminations, hard, tight, no show.
2211.35	100	SHALE: Very dark brown, brown black, silty laminations in part, trace carbonaceous & coaly fragments, trace carbonaceous fossil leaves and fronds, micromicaceous, hard, sub-fissile to fissile.
2212.35	100	SHALE: As above.
2212.87	100	SHALE: As above.
2213.55	100	SHALE: As above.
h:\ex\tsd\misc\wci	A19 January 1	996 Turrum-5 Well Completion Report Page 49

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

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

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

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

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

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

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

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

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

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

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

## Core 3 Chip Descriptions.

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

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

odour as above, show as above.

2526.25

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

## **Core #4 Chip Descriptions**

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

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

streaming cut, thin to moderately bright ring residue.

fragments, trace altered feldspar, moderately hard, very poor

bright pale yellow to blue/white solid fluorescence, slow

FLUORESCENCE: 80% Moderately bright to

2541.65

<u>SANDSTONE</u>: Off white to light grey, medium to coarse, subangular, moderately sorted, strong siliceous cement, common kaolinitic matrix, trace muscovite, trace altered feldspar, moderately hard, poor to very poor porosity. FLUORESCENCE: 80% Bright blue/white fluorescence, moderately fast streaming cut, moderate ring residue.

2542.65

<u>SANDSTONE</u>: Light grey, grey brown in part, fine, subangular, good sorting, strong siliceous cement, common argillaceous matrix, common light grey argillaceous microlaminations, trace carbonaceous flecks, trace nodular pyrite, trace lithic fragments, hard, tight, no fluorescence.

2543.5

<u>SANDSTONE</u>: Light grey, fine to medium, occasionally coarse, subangular, good sorting, moderate siliceous cement, moderate kaolinitic matrix, trace quartz overgrowths, common disseminated & nodular pyrite, common smoky quartz, moderately hard, friable in part, poor to occasionally fair porosity. FLUORESCENCE: 80% As above.

## **Core #5 Chip Descriptions**

2544.8	SANDSTONE: Light to medium grey, fine to medium occasionally coarse, angular to subrounded, moderate sortin moderate to strong siliceous cement, trace to common pyrit cement, trace altered feldspar, trace smoky quartz, hard, ve poor porosity. FLUORESCENCE: 80% Bright yellow gree solid fluorescence, slow streaming cut, thin to moderate residual ring.	ng, tic ery en
2545.55	SANDSTONE: Light brown, off white, medium to coars angular to subangular, moderate sorting, trace siliceo cement, trace quartz overgrowths, trace rock fragments, trace carbonaceous specks, friable, good porosit FLUORESCENCE: 100% Yellow green solid fluorescence instant cut, thick ring residue.	us .ce ty.
2546.55	SANDSTONE: Light brown, off white, medium to coars angular to subangular, moderate sorting, locally mod siliceo cement, trace pyritic cement, trace kaolinitic matrix, trace rofragments, trace muscovite, moderately hard, poor to fa porosity. FLUORESCENCE: 100% As above.	us ck
2547.55	SHALE: Dark brown, brown black, slightly silty, common ve fine light grey arenaceous laminations, common mica, har dense, massive to subfissile.	
2548.55	<u>CARBONACEOUS SHALE</u> : Dark brown to black, slight silty common mica, common vitrified plant/leaf fragment hard, subfissile to fissile.	
2549.05	SHALE: Dark brown to black, micromicaceous, slightly silt micromicaceous, common carbonised fossil fragmer (plants/leaves), hard, subfissile to fissile.	-
2549.8	<u>CARBONACEOUS SHALE</u> : Dark brown black, abunda vitrified plant/leaf fragments, brittle, fissile, locally grades and interceded with subituminous high ash coal.	
	Cuttings descriptions from 2549.8m	
2550	SILTSTONE: Medium brown, dark brown in part, slightly locally very argillaceous, very carbonaceous, micromicaceous	
	trace nodular pyrite, hard, subfissile.  COAL: Black, argillaceous in part, sub-bituminous bituminous, subvitreous lustre, subconchoidal fracture, britt blocky.	

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

#### **Core #6 Chip Descriptions**

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

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

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

#### Cuttings Descriptions from 2586.5m

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

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

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

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

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

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

# APPENDIX 2

## APPENDIX II

**CORE DESCRIPTIONS** 

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

					_								_
nterval			De	_	_			)P			Graphic	Shows	Descriptive Lithology
(m) 2197	20	П	16	—,	m/ 12	hr	)  8		4		0 1		2197m : SHALE with silty laminations.
2.107	ñ	一	Ť	7	٦		۳	Г	П	7	,		SHALE: Very dark brownish grey to brown black, firm, fissile to sub-fissile,
	Н	-	+	7	ᅦ	$\vdash$			H	ᅥ	į		silty texture, extremely micaceous, with abundant carbonaceous specks,
	Н	ᅥ	$\dashv$		╛		-	1-	Н	ᅱ	1		abundant white to cream altered feldspar grained, trace laminations,
	Н	一	+	╫	$\dashv$		$\vdash$	┢╾	H	ᅱ	į		carbonaceous common wispy off white to light grey silt rich laminations
2198	H	-	十	$\forall$	$\dashv$		┢	$\vdash$	Н	ᅥ	i		and streaks.
	Н	$\dashv$	+	₩		-	$\vdash$		Н	ᅱ	!		and streams.
	Н		十	+	$\dashv$	_		H	H	┪	į		2197.85m : SANDSTONE: Light grey to light olive grey, friable to
	Н		+	寸	$\dashv$			Н	H	一	i		hard, fine grained, well sorted, sub-angular to sub-rounded, moderate to
	Н	ᅥ	$\dashv$	7	-	_		Н	$\vdash$	ᅱ	1		high sphericity, weak to moderate siliceous cement, abundant off white to
2199	Н	┪	十	7	-	-	_	Н	H	ᅱ	į		buff kaolinitic matrix, predominantly quartzose, 5% white altered feldspar
2100	Н	$\dashv$	十	+	-	Т	_	Н		ᅱ	-		grains, common white mica flakes, trace red orange and grey lithic grains
	Н	$\dashv$	$\dashv$	+	-	+	-	-	$\vdash$	-	!		trace to poor porosity, no show. Moderately petroliferous odour.
	$\vdash$	$\exists$	$\pm$	$\pm$		+	-	┢	$\vdash$	ᅥ	i		made to pool polosity, no snow. Moderately petrolilerous educit.
	$\vdash \vdash$	+7	干	7	$\exists$			$\vdash$	$\vdash$	$\dashv$	!		2198.85m: SANDSTONE: Light grey to light olive grey, generally as
2200	$\vdash \vdash$	H	+	$\dashv$	-		-	-	Н	$\dashv$	į		above, hard, occasionally friable, very fine to fine grained, occasional
2200	H	┵┤	$\dashv$	$\dashv$		-		$\vdash$	H	$\dashv$	!		
	H		$\dashv$	$\dashv$	-	-	$\vdash$	-	$\vdash$	$\dashv$	į		scattered medium grains, moderately sorted, sub-rounded to sub-angular,
	H	$\dashv$	_+	$\dashv$	4		$\vdash$	├-	$\vdash$	$\dashv$	! !		moderate to high sphericity, weak to moderate siliceous cement with
	H	$\exists$	7	$\dashv$	-	_	-	-	$\vdash$	$\dashv$	!		abundant off white kaolinitic matrix, 1-5% altered feldspar grains, abundant
2201	┝╌┤	$\dashv$	╫	$\dashv$			-	-	$\vdash$	$\dashv$	i		mica flakes and micro-laminations, trace carbonaceous specks, trace
2201	$\vdash$	-	4	+	$\dashv$			-	$\vdash$	$\dashv$	i !		green, red orange and grey opaque grains, trace to occasionally poor
	Н	Н	$\dashv$	4	-		_	_	$\vdash$	ᅱ	ļ		porosity, no show. Moderate to poor petroliferous odour.
	Щ	$\vdash$	+	$\dashv$				-	$\vdash$	$\dashv$	i		CLOS OF CAMPOTONE W OHALEL
	H	7	7+	+	-	_		-	$\vdash \vdash$	-	i		2199.85m : SANDSTONE with wispy SHALE laminations commonly
0000	$\vdash$		#	4	-			<u> </u>	$\vdash \vdash$	4	į		with horizontal polished slikensides.
2202	Н	-	#	-				ļ	$\vdash$	-	I		SANDSTONE: Light grey to olive grey, hard, fine grained, well sorted,
	Н	-	₩	$\dashv$	_	_	_	ļ	$\vdash \vdash$	4	į		sub-angular, moderate to high sphericity, weak siliceous cement,
	Н	-	#	+		_		_	$\vdash \vdash$	4	i		abundant off white argillaceous matrix, 5-10% altered feldspar, common
	Ш	4	7	7	=				11	4	ļ		carbonaceous specks, common mica flakes, trace dark grey and orange
	Ц	4	_	4	4		_		Ш	4	į		red lithic grains, trace porosity, no show.
	$\sqcup$	4	_	4	4	_			Щ	4	;		SHALE: Very dark brown to brown black, hard, mica, carbonaceous,
	$\Box$	-	4	4	-	_				4	!		fissile, dispersive.
		-	4	4	-	_			-	4	i		
	Н	_	_	4	4				$\perp$	4	i i		2200.85m : SANDSTONE with wispy SHALE laminations and partings
	Н	$\dashv$	4	4	4	_	-			4	į		as above, occasional ripple marks.
	4	_	4	4	4	_			4	_	:		
	$\sqcup$	4	4	4	4	$\Box$		_	$\vdash \vdash$	4	!		2201.85m: SANDSTONE with irregular carbonaceous wisps and partings.
		$\dashv$	$\bot$	4	4	_			$\sqcup$	_	i		SANDSTONE: Light olive grey, friable to poorly friable, very fine to
	Ц	_		4	_				$\Box$	4	1		predominantly fine to lower medium, sub-angular, high sphericity, well
	$\sqcup$	_	_	4	4	_		Щ	$\perp$	_	į		sorted, poor to trace siliceous cement, abundant off white kaolinitic matrix,
	$\sqcup$	4	_	4	4					_	1		10% altered feldspar grains, common to abundant muscovite flakes,
	$\sqcup$	$\perp$	$\perp$	_	_	_			$\perp$	$\Box$	1		trace carbonaceous/asphatic fragments and laminations, trace to
	$\sqcup$	_	$\perp$	$\downarrow$	_			Ш		╝	į		occasional poor porosity, no show.
	$\perp$	$\perp$		$\perp$	$\perp$					╝	1		
	$\perp$	$\perp$	$\perp$	$\perp$	_	$\Box$		Ш		$\Box$	į		2202.85m: SANDSTONE with carbonised plant debris.
	$\perp$	4	$\bot$	$\perp$	_	_			$\perp$	╛			SANDSTONE: Light olive grey, moderately friable to occasionally hard,
		$\perp$	$\perp$	_	$\perp$	┙	_			_	Į.		very fine to medium grained, predominantly fine to medium, angular to
										╝	i		sub-angular, moderate to high sphericity, well sorted, weak to occasionally
		$oldsymbol{ol}}}}}}}}}}}}}}}$	$oldsymbol{ol}}}}}}}}}}}}}}}$	$oldsymbol{\mathbb{I}}$	$oldsymbol{\mathbb{I}}$				$\_I$	_]	1		moderate siliceous cement with trace quartz overgrowths, trace to common
		$oldsymbol{\mathbb{J}}$	$\int$	J		J	J		$oldsymbol{oldsymbol{oldsymbol{oldsymbol{I}}}$	]	į		off white kaolinitic matrix, clean streaks and patches, trace to 5% altered
			T	T					$\Box$				feldspar grains, trace dark grey lithic grains, occasional common white
	T	T	1	T	T	╗	╗		П		1		mica flakes, rare orange red quartz grains, fair porosity, (15%), fair
		$\neg$	$\top$	T	T	$\neg$	コ			٦	i		permeability, (200mD), no show, moderate petroliferous odour.
		_	$\top$	$\dashv$	ヿ	┪	$\neg$	$\neg$	$\neg$	┪	1		

TURRUM-5

CORE No.: **WELL:** 1 (continued)

Interval cored: 2197-2205.5 Recovered: 2197-2205.3M, 8.3M, 98%

Cut: 8.5m

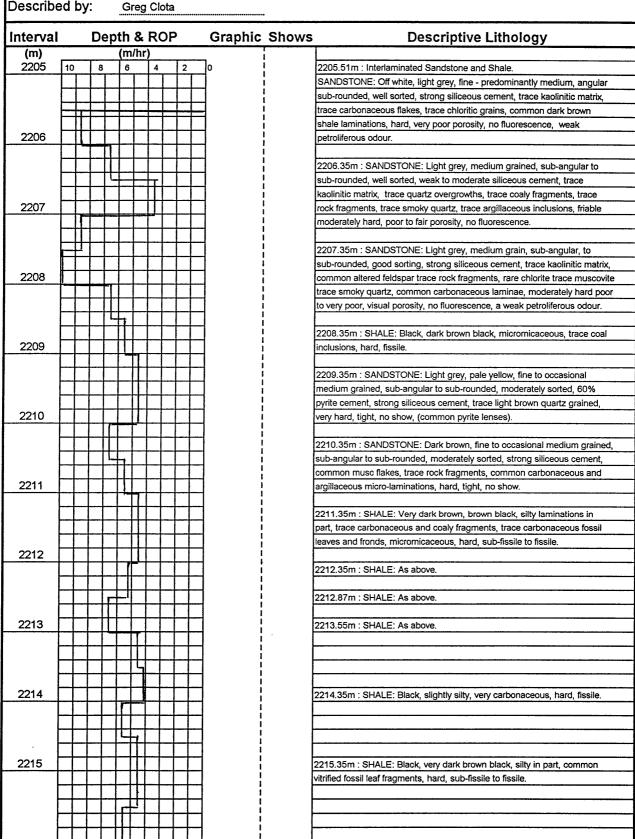
Bit size: 12 1/4" Bit type: DBS CD-93 Date: 2-Sep-95

Described by: J. Reeve

· · · · · · · · · · · · · · · · · · ·												
Interval		D	ер	th		_	OF	<u> </u>		Graphic	Shows	Descriptive Lithology
(m)	<u> </u>	Tao		_	/hr	<del>'</del>		Τ.		أما		2002 05 to CANDOTONIC with perhaps and less in the section of the situation
2203	20	16	<u> </u>	12	1	8	11	4	т-	0		2203.85m : SANDSTONE with carbonaceous laminations and fossil plant
	⊢	+	╀	╀	╀	╄	₩	-	-			fragments.
	┝	4-	↓_	╄	↓_	↓_	Н	<del> </del>	┞			SANDSTONE: Generally as above, friable to moderate hard, medium to
	Ш	4_	L	ــــــــــــــــــــــــــــــــــــــ	╙	┞	1	Ħ	_			occasionally fine grained in part, well sorted, trace to common kaolinitic
	Ш	$\perp$	上	L		_	<u></u>	Ш				matrix in part, commonly clean, trace to 5% altered feldspar grains, trace
2204		L						Ш				grey lithic grains and clay clasts, rare carbonaceous detritus, rare green
			Г				IL	T		i		and orange red quartzose grains, fair to good porosity, (15 - 20%), fair
		Т	Т		П	Г	T	T				permeability, (200 - 500mD) no show, poor petroliferous odour.
		1	Т		1	1	仁	Ι.		i		
		1	Т	1	1	1	T	Ħ				2204.70m : SANDSTONE: As above, light olive grey, friable, occasionally
2205	$\vdash$	1		T	T	T	T	Ħ	П	!		hard, medium grained, well sorted, angular to sub-angular, moderate
	$\vdash$	╅	T	T	1	1	1-	+-		i		sphericity, weak to moderate siliceous cement and quartz overgrowths,
		+-	+	$\vdash$	╁	+-	╁	H	╟┤	ļ		
	$\vdash\vdash$	+-	+	+	$\vdash$	╀	╁	╁	$\parallel$	1		trace to locally common off white argillaceous matrix, common mica flakes,
		Τ-	F	F	F	F	F	F		į		<5% altered feldspar grains, trace smokey quartz grains and carbonaceous
0000	$\vdash \vdash$	+	┼	-	1-	ـ	1	<del> </del>	<b> </b>			specks, fair to good porosity, (17-22%), 200 - 500mD permeability, no show.
2206	$\sqcup \! \! \! \! \! \perp$	4	1_	↓_	<u> </u>	1_	_	<u> </u>	Ш	i		of the first term of the second of the first term of the second of the s
	$\sqcup \! \! \! \! \! \perp$	1	_	_	L	<u> </u>		<u></u>	Ш	I I		2205.30m : SANDSTONE with carbonaceous laminations and fossil plant
	$ldsymbol{ldsymbol{ldsymbol{ldsymbol{ld}}}$		$L^{-}$	L	L	L	L	L		i		fragments.
				Γ				Γ				SANDSTONE: Generally as above at 2203.85m, fine to medium grained,
		T	Г	Π		Γ	Γ		П	i		common matrix, fair to good porosity, (12 - 17%), fair permeability, (200mD),
	$\vdash$	$\top$	1	T	Т	Т	$\vdash$	П	П	1		no show.
		+-	1	$\vdash$	$\vdash$	$\vdash$	$\vdash$	t	Н	i		
	$\vdash$	+	$\vdash$	-	╁	┼	-	-	-	!		
		+	╌	├	$\vdash$	⊢	├	├	Н	i		
		+-	╄	├-	⊢	⊢	⊢	⊢	Н	1		
	$\Box$	╀	L	_	_	<u> </u>	<u> </u>	<u> </u>		i		
			_	L	_	L	<u>L</u>	L		!		
		$\perp$			L	L	L	<u> </u>		i		
										l		
		T	Π	П	Γ	Π	П	П				
		T	Г	1				Г		!		
		T	T	✝	<del>                                     </del>	1	1-	1	П	i		
	-	+	$\vdash$	<del> </del>	一	$\vdash$	<del>                                     </del>	-		!		
	$\vdash$	+	╁╌	┼─	-	┢	╌	<del> </del>	-	i		
	+	╁	⊢	⊢	-	-	├-	⊢	Н	!		
		+-	├	⊢	⊢	-	⊢	⊢	Н	i		
		_	<u> </u>	<u> </u>	_	L	<u> </u>	_	Н	!		
		1_	L	L	L	<u> </u>	L		Ц	i		
			L	_	_				Ш	!		
		$L^{T}$	L		L					! !	[	
İ		Γ	L							į		
İ	$\top$		Г			П	Γ	Π		:		
	$\neg$	T		П		П	_	П	П	į	ſ	
	_	$\vdash$		Г			$\vdash$		$\vdash$	i i		
	+	+	$\vdash$	-			$\vdash$		$\dashv$	į		
	$\dashv$	+	-	-	-	$\vdash$	$\vdash$	H	$\dashv$	ļ.		
	_	$\vdash$	-	$\vdash$	<b>-</b>	-	<u> </u>	$\vdash$	-	i	}	
	-	1	<u> </u>	<u> </u>	Ш	$\vdash$	<u> </u>	Н	4	l I	,	
	$\bot$	$\perp$	<u> </u>	$\sqcup$	Щ	Ш	<u> </u>	Ш	$\dashv$	i		
				L		Ш		Ш		!		
		$oldsymbol{ol}}}}}}}}}}}}}}}$								i	ſ	
		П							$\neg$	į.		
	$\neg$	П		П	П	П			$\neg$	i	ţ	
1	$\dashv$	T	<b>—</b>	П	H	H	П	$\vdash$	$\dashv$	!		
	+	Н	$\vdash$	Н	Н	$\vdash$	-	$\vdash$	ᅱ	ł	}	
}		+	H	$\vdash$	Н	H	-	$\vdash$	$\dashv$	į	}	
		$\vdash$	$\vdash$		$\vdash$	Н	-	$\vdash$	-	1	1	
ļ		$\sqcup$	<u> </u>	Щ	Ш	Ш		Ш	_	i	ļ	
		$\sqcup$	L	Ш	Ш	Ш		Ш		!	L	
			1 -		1				7		T I	

#### ESSO AUSTRALIA LTD

		CORE DE	SCRIPTION	
CORE No.:	2	·······	WELL:	TURRUM-5
Interval cored:	2205.5-2223.5m		Recovered:	17.3m (96%)
Cut:	18m	***************************************	Bit size:	12 1/4"
Bit type:	CD-93		Date:	3-Sep-95
Described by:	Greg Clota	······································		
Interval [	Depth & ROP	Graphic Shows		Descriptive Lithology
(m)	(m/hr)			



CORE No.: WELL: TURRUM-5 2 (continued)

2205.5-2223.5m Interval cored: Recovered: 17.3m (96%) Cut: Bit size: 12 1/4" 18m

CD-93 Bit type: Date: 3-Sep-95

I-4		-	٠.	_	<b>. L</b> -	0	-	<u> </u>	•		Ouanh:-	Charre	Doggrinding Litheless
nterval		L	νе	-	-		R	O F	_		Graphic	Snows	Descriptive Lithology
(m) 2216	10		8	_	(m в	/hr	')   4		2		lo i		2216.35m : SHALE: As above.
2210	110	+	ᡱ	-	16	Т	+	Т	+-	1	l° i		2210.35fff : SHALE: AS above.
	$\vdash$	╁	+	┥	┝	┢	╁	╁	╁	$\vdash$	i		
	H	+	+	-	┝	┢	╁	╁	╁	┢	:		
	$\vdash$	┰	╁	-	-	┝	╁	╁	╫	┢	į		
2217	$\vdash$	+	+	-	-	<del> </del>	+	╁	+	┢			2217.35m : SHALE: Very dark brown, black, slightly silty in part,
2211	$\vdash$	+	+	۲	_	H	╁	╁	+	╁╌	!		micromicaceous, common carbonaceous and coaly fossil leaves and
	$\vdash \vdash$	+	+	Н		⊢	╁	╁	╁	├-	i		fronds, hard, sub-fissile to fissile.
	$\vdash$	+	+	Н		┢	+	╁	╁	╁	1		inorius, riaru, sub-lissile to fissile.
	⊢┼	+	+	-	Ш	╫╴	╫	╁	+	$\vdash$	!		
2218	H	+	+	-	-	╟	╁	╁	╁	╌	i		2218.35m ; SHALE: As above.
2210	$\vdash$	+	+	-	H	┞	╁	╁	╁	-	1		2210,00m , SHALE, AS above.
	H	+	+	-	-	┢╾	╫	╁	╁╴	⊢	i		
	H	+	+	님	_	┢	╫	╁	+-	╁	i		
	$\vdash$	+	+	H	F	F	$\vdash$	+	+	$\vdash$			
2219	⊢┼	+	+	Н	$\vdash$	$\vdash$	+	$\vdash$	+	$\vdash$			2219.35m : SANDSTONE: Medium grey, fine grained, sub-angular, well
2210	H	+	+	4	-	<del> </del>	+	+	+-	-	i		sorted, strong siliceous cement, trace argillaceous matrix, trace coaly
	H	+	+	$\dashv$	_	$\vdash$	╁	+	+-	$\vdash$			fragments, trace muscovite flakes, trace altered feldspar grains, common
	H	$\pm$	$\pm$	,	_	$\vdash$	+	$\vdash$	+	-			rock fragments, hard, tight, no show.
	$\vdash \vdash$	$\dashv$	7	Н	-	$\vdash$	+	$\vdash$	十	$\vdash$			room ragnering raing aging the entern
2220	$\vdash$	十	+	Н	_	-	1-	╁╴	╁╴	┢	ı		2220.35m : SHALE: Very dark brown, black, silty in part, trace vitrified
2220	$\vdash$	+	+	닉		⊢	╁	╁	+-	-	i		fossil leak fragments, slightly micromicaceous, trace muscovite flakes,
	$\vdash$	$\dashv$	+		_	┢	$\vdash$	╁╴	╁	$\vdash$	1		hard, sub-fissile.
	$\vdash \vdash$	╫	$\pm$			-	╫┈	╁	╁╌	$\vdash$	į		riaru, sub-rissile.
	$\vdash$	+	+	$\dashv$	$\dashv$	┢	╁╌	╁╴	$\vdash$	├	i		
2221	$\vdash \vdash$	┰	+	-		-	╁	╁	+-	<del> </del>	:		2221.35m: SANDSTONE: Medium brown, medium grey, medium to coars
<u> </u>	$\vdash$	1	┿	-		┢	╁	╁	╁╴	-	į		grained, angular to sub-rounded, poor to moderatly sorted, strong
	H	$\dashv$	+	ᅥ	-	-	-	╁	╁─	-			siliceous cement, trace silty/ argillaceous matrix, common rock fragments,
	H	-   [	╁	┪	_	┢╾	$\vdash$	╁╴	╁		:		common very coarse to coarse milky quartz floating, rare carbonaceous
	$\vdash$	+	#	7	_	_	H	$\vdash$	$\vdash$		į		fragments, very hard, tight, no show.
2222	H	十	╫	1			╁	╁	$t^-$		ľ		
	H	十	╄	ᅥ	***	h	$\vdash$	┢	十	-	1		2222.35m : SANDSTONE: As above.
	$\vdash$	┪	+	7		H	$\vdash$	1	H		i		
	$\vdash$	十	†	┪		片	Т	T	T				2222.80m : SHALE: Very dark brown, brown black, slightly silty,
	$\vdash$	$\top$	$\dagger$	┪	-				†		!		micromicaceous, trace muscovite, trace coaly fossil leaf and frond
	$\vdash$	+	$\dagger$			Г	<b>†</b>	T	┢		i		fragments, hard, sub-fissile.
	$\sqcap$	$\top$	†		Г	Г	Т	T	T	П	]	ļ	
	$\vdash \uparrow$	+	$\top$	7	П	Т	Π	$\vdash$	T	П	į		
	F	$\mp$	#	4			F	F	-		i		
	$\sqcap$	十	T	7		Т	Г			П	 		
	$\sqcap$	$\top$	†	7		Г	Γ	Γ		П	į		
	$\vdash$	+	T	7	_	Г	Г	T		П	1	ļ	
	$\sqcap$	十	†	7	╗	Г	Γ	1	П		!	ļ	
	$\Box$	$\top$	T	7		_	Γ	Γ	Г	П	į		
	$\top$	$\top$	T	7			Γ	Π	Π	П	!	Ì	
	$\Box$	$\top$	T	T			Г	Π			!		
		$\top$	T	1			Г	Γ		П	į	l	
	$\sqcap$	$\top$	T	7			Γ	Γ	П		!		
	$\top$	$\top$	T	1	$\neg$		Г	Г	П	П	į		
	$\top$	$\top$	T	7			Γ	Г	П	П	;	İ	
		十	T	7			Γ		П	$\neg$			
	$\dashv$	十	T	7				Γ	П	$\dashv$	į		
	$\neg$	T	T	7	$\neg$		Π	Γ	П	$\sqcap$	ì	Ì	
		$\top$	T	7				Γ	П		!	ļ	
	$\dashv$	十	T	7		$\exists$	Г		П		i	ţ	
	$\overline{}$	+	+	+	-	_	<del></del>	<del> </del>	Н	-	ļ	ŀ	**************************************

 CORE No.:
 3
 WELL:
 TURRUM-5

 Interval cored:
 2508.5-2526.8m
 Recovered:
 18.3m (100%)

 Cut:
 18.3m
 Bit size:
 12 1/4"

 Bit type:
 CD-93
 Date:
 6-Sep-95

Interval		De	pth	&	R	ЭF	•	Graphic	Shows	Descriptive Lithology				
(m)				ı/hı					I 					
2508	10	8	6		4		2	<u> </u>	İ	2508.53m: SHALE with carbonaceous and coaly laminations and lenses.				
				$\mathbb{L}$					İ	Brown black, dark brown streaks, hard, fissile, micromicaceous, abundant				
			$\perp$	L		L	Н		! ! !	carbonaceous detritus and plant debris, scattered trace pyrite nodules.				
2509	H		1	Ī			Н	]	]   	2509.35m : SHALE as above with abundant fossil leaves and frond				
2000	╁┼┼	++	╁	+	1	۲	H	1	] 	fragments with locally abundant pyrite nodules.				
								-  -  -		, , , , , , , , , , , , , , , , , , , ,				
2510	┝╌├╴	++	+	+	╁╴	Н	$\vdash$	-		2510.35m : SHALE Very dark brown to brown black, hard, fissile to				
	$\vdash$	+ +	╁	╁╌	-	Н		-		sub-fissile, micromicaceous, trace carbonaceous specks, trace casts of				
			土	士						leaves and winged seeds, trace micro pyrite aggregates.				
	$\vdash$	+	-	╀	╄	_		4						
2511	$\vdash$	++	+	+	+	$\vdash$	$\parallel +$	-		2511.35m : SILTY SHALE Brown black to olive black, hard, silty,				
	$\vdash$	11	$\top$	T		T	<del> </del>	7		sub-fissile, micromicaceous, carbonaceous specks, occasional laminations				
				Γ						of quartz silt occasionally with very fine grained quartz.				
			$\pm$	E		$\Box$	$\Box$							
		Ш		1_				_	]					
2512		111	_	↓_	$oxed{oxed}$	_	$\sqcup$	_		2512.35m : SHALE as above at 2510.35m, with abundant fossil leaves				
		+++	+	+	$\vdash$	_	$\vdash$	-		and frond fragments with locally abundant pyrite nodules.				
	$\vdash \vdash$	+	$\pm$	$\perp$	$oxed{oxed}$		╁┼	-						
	$\vdash \vdash$	$+ \mp$	$\mp$	F	H	$\exists$	-	-{						
2513	+	++	+	╁	$\vdash$	Н	$\vdash \vdash$	-		2513.35m : SHALE Generally as above, very dark brown to brown black,				
	$\vdash$	++	$\top$	+-	H	Н		<b>-</b>	1	fissile, slightly to moderate micromicaceous, trace micro-pyritic aggregates				
	$\Box$	11	十	T	$\sqcap$		H	7		trace casts of leaf and frond fragments.				
							Ш	] :						
				$oxed{oxed}$	$\Box$		Ш	]						
2514		$\perp \perp$	_	_	Ш	_	Щ	-		2514.35m : SHALE As above but only with carbonaceous specks, no				
		$\bot \bot$	_	┺	Ш	1	Ш	<b>-</b>		casts of plant fragments.				
		++	4-	╂-	$\vdash$	+		4						
		┼┼	+	+	$\vdash$	F	$\vdash \vdash$	-						
2515	$\dashv$	++	+	╁	+		$\vdash \vdash$	-{		2515.35m : COAL Black to brown black, dull with vitreous streaks, hard,				
20,0	$\dashv$	++	+	t	$\vdash$	-		- !		brittle, bituminous, flakey, abundant pyrite replacement of plant fragments,				
	$\top$	++	$\top$	T	-		$  \cdot   \cdot  $	7 :		30% pyrite.				
	$oldsymbol{ol}}}}}}}}}}}}}}$		I											
2516		$\prod$	L	L			Ш	_	ļ	2516.35m : SHALE with carbonaceous and coaly laminations and lenses.				
	$\bot$	$\sqcup$	1	L	Ш	$\perp$	$\sqcup$		1	Brown black, hard, fissile, brittle, moderately micromicaceous, trace				
		++	+		$\sqcup$	$\mathbb{H}$	$oldsymbol{\perp}$	-  i	ì	disseminated pyrite, abundant fossil leaves and fronds, grading to shale				
}		++	╁┈	┼-	$\vdash \vdash$	-	#	-		Coal in part.				
2517	+	++	+	$\vdash$	$\vdash \vdash$	-	╫			2516.95m : SHALE with occasional carbonized plant fragments as above,				
2017	$\dashv$	++	+	╁	$\vdash$	-	+	┤ :	1	and syndepositional dewatering slump and sole markings.				
	$\dashv$	++	+	$\vdash$	$\vdash$		$\parallel$	<b>†</b> !	ł	,				
	$\top$		$\top$	T	П		7	1 i		2517.65m : SHALE with abundant plant debris as above. Dark brown to				
Ì								] !	[	brown black,hard, fissile.				
2518			L		П		$\prod$	_	[					
7		$\coprod$	_	_	Ш		Щ	-		2518.65m : COAL Black, dull with vitreous streaks, firm to hard, brittle,				
1				4						fiscile to sub-fiscile. sub-conchoidal, bituminous				

fissile to sub-fissile, sub-conchoidal, bituminous.

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

Described by:			_	_	_								
Interval		I	Dе	•	_	-	R	OF	>		Graphic	Shows	Descriptive Lithology
(m) 2519	10	Te		_	( <u>m</u> 6	/hr	14		2		lo		2519.65m : SHALE with abundant carbonized plant debris and occasional
2519	10	+	, T	_	۳	Т	懵	П	╬	Г	ľ		coaly lenses as above.
	$\vdash$	+	-	_	-	┢	╁	H	╁╴	┢	i		coaly lenses as above.
	$\vdash$	+	$\dashv$		┝	┢	-	H	$\vdash$	┢	<b>¦</b>		
	$\vdash$	+	+	-	┝	┝	╁	⊩	╁	⊢	i		
2520	⊢⊢	+	$\dashv$	_	├	-	⊢	╫	┢	-			2520 65m : SII TV SUALE Dark brown block, bard to your bard, sub-fiscile
2520	$\vdash \vdash$	+	+	_	├	┢	⊢	#-	┢	-			2520.65m : SILTY SHALE Dark brown black, hard to very hard, sub-fissile,
	$\vdash \vdash$	+	+		<u> </u>	├-	╀	╫	╌	⊢			very silty, abundant carbonaceous specks, trace pyrite nodules.
	$\vdash$	+	-	_	-	├-	⊢	╫╴	⊢	⊢	1	,	
	H	+	+	_	<u> </u>	-	┝		11	⊢	i		
0504	$\vdash$	+	+	_	-	⊢	⊢	⊢	₩	├			OCCAL CALL CALIFORNIE with a series of series of the first series of
2521	$\vdash \vdash$	+	4		<u> </u>	<del> </del>	├	├-	#-	⊢	į į		2521.61m : SANDSTONE with occasional carbonized leaf fragments.
	⊬	+	4	-	<u> </u>	⊢	├-	┢	#-	⊢	i		Light olive grey to pale brown, friable to hard, medium to coarse grained,
		+	4	_	<u> </u>	$\vdash$	-	-	╫	-			well sorted, angular to sub-angular, poor to moderate sphericity, moderate
	-	4	4	_	<u> </u>	├-	-	-	₩	-			siliceous cement with common quartz overgrowths, trace to abundant
2500	$\vdash$	+	4	-	ļ	$\vdash$	+	-	╫	-			patchy tan kaolinitic matrix, <%5 altered feldspar grains, 5% dark grey clay
2522	-	4	-	_	_	<u> </u>	┞-	├-	₩	$\vdash$	!		clasts, trace muscovite flakes, rare coal fragments, patchy trace to good
	$\vdash \vdash$	+	4		$\vdash$	1	-	_	╀	_	i		porosity, generally fair, nil to good permeability, strong petroliferous odour,
	-	4	4	_	_	<u> </u>	$\vdash$	1	#	<u> </u>	!		no visual fluorescence, very slow milky cut leaving angular dull yellowish
	$\vdash \vdash$	4	4	_	_	<u> </u>		F	<b>Ľ</b>	_			white residue, colourless in natural light.
	$\sqcup$	1	4			_	_	<u> </u>	_		i		
2523	Ш	1	_		L	<u> </u>		<u> </u>	L	L	!		2522.65m : SANDSTONE: As above, friable, fine to medium grained,
	Щ	_						<u></u>		_	i		moderate sorted, moderate siliceous cement with quartz overgrowths,
	Ш	1	_			_							common to abundant kaolinitic matrix, poor to fair porosity, (10-15%), poor
	Щ	$\perp$	_	_		L	<u> </u>	ļ			i		to fair permeability, moderate petroliferous odour as above, show as above.
	Ш	$\perp$	_			Ш	<u> </u>	L.		_			
2524	LJ.					Щ	L	_	$\perp$		1		2523.65m : SANDSTONE: As above, friable to hard, coarse to very
		1	4			Щ	上	L	_		i		coarse, well sorted, angular, with quartz overgrowths, moderate siliceous
	Ш	1	$\perp$			Щ	<u> </u>	_	_		1		cement, cleaner than above with less matrix, good to excellent porosity
	Ш	$\pm$	#			Ë	<u> </u>	_					(20%), good permeability, (200-500mD), moderate petroliferous odour as
	Ш	$\perp$	1				L	_		$oxed{oxed}$	i		above, show as above.
2525	Ш	$\perp$	$\perp$			Ш	<u> </u>	<u></u>	L	L	1		
	Щ	$\perp$	$\perp$			Ш	L	<u> </u>			į	i	2524.65m: SANDSTONE: As above, friable to hard, coarse grained, well
	Ш	1	$\perp$				<u></u>	_	L				sorted, angular, moderate siliceous cement, quartz overgrowths, trace to
	LL'	#	#				_		Ш		!		common matrix, good to excellent porosity, (20%), good permeability as
		$\perp$	$\perp$	_		Ш	L	_	Ш	Ш	į		above, moderate petroliferous odour as above, show as above.
2526	$\sqcup \!\!\! \perp$	$\perp$	4			Ц	_	_	Ш	Ш			
	$\sqcup \!\!\!\! \perp$	1	4	_		Ц	L	L		Щ	İ		2525.65m : SANDSTONE: As above, friable to very hard, coarse-very
	$\sqcup \!\!\!\! \perp$	4	4	_		Ц	_	_	Ш	Ц	i		coarse, moderately sorted, angular, moderate siliceous cernent with quartz
	$\sqcup$	1	4	_		L.			$\Box$	Ш			overgrowths, common kaolinitic matrix as above, clay clasts and
	$\sqcup$	$\perp$	┙				_	L	Ш		į		carbonaceous fragments as above, trace muscovite flakes, trace altered
		$\perp$	_[	_]			lacksquare	L	Ш	Ш			feldspar, fair to good porosity, (15%), poor to fair permeability, (50-200mD),
	$\sqcup \bot$	1	┙	_		L	_	L	Ш		l t	ļ	moderate petroliferous odour as above, show as above.
	$\sqcup$	1	$\perp$	╝		L	L	_	Ш	Ш	i		
	Ш					L		L	Ш	Ш	1		2526.25m : SANDSTONE with carbonaceous and micaceous micro cross
	$\coprod$		$\perp$		]			L		Ш	į		laminations. Light olive grey with dark grey streaks and laminations, hard,
	Ш	$\perp$				L	L	L	Ш	Ш		1	very fine to fine grained, well sorted, sub-rounded, moderate sphericity,
		$\perp$	$\perp$	_[		L	L	L	Ш		1		moderate siliceous cement, abundant off white kaolinitic matrix, trace
	$\coprod$	$\perp$		_		L		L	Ш	Ш	į	ļ	muscovite, trace red lithic grains, trace green chloritic grains, no visual
	Ш	$oldsymbol{\mathbb{L}}$	$\perp$					L	Ш		1		porosity, speckled dull orange mineral fluorescence.
	$\Box \Box$	$\perp$	$oldsymbol{ol}}}}}}}}}}}}}}}$					L	$oxed{oxed}$		!		
	$\Box \Box$	$oldsymbol{\mathbb{L}}$	$oldsymbol{\mathbb{I}}$					Ĺ	$\Box$		i		
	$\Box \Box$	$oldsymbol{\mathbb{L}}$	$oldsymbol{\mathbb{I}}$	$\Box$				Ĺ			1	[	
		T	T	$\Box$							i	[	
		T	T	$\Box$									
		T	T	ヿ				Π			į	ſ	
	$\vdash$	╅	$^{+}$	-1	-						!	i	

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

Interval		D	eр	th	&	R	OP	•	Graphic	Shows	Descriptive Lithology
(m)			<u>.</u>	_	/hr	_				1	
2526	10	8		6		4		2	<b></b>	į	2526.8m : SANDSTONE: Light to medium grey, medium, subangular,
	П	T	Г				Г	П		i	moderate to good sorting, strong siliceous cement, trace pyritic cement,
		Т	Г	П	Г		Т			1	trace kaolinitic matrix, trace carbonaceous specks, trace altered feldspar,
										į	trace muscovite, hard, tight, no fluorescence.
0507	$\bot$	_	Ļ	_	Ļ	L	Ļ	Ц	_		
2527		4	<u> </u>	1	Н	╀	┞-	$\vdash$	_	i	2527.65m : SANDSTONE: Medium grey, grey brown in part, medium to
		_	-	╙	Ш	╄	L	Ш	_	1	predominantly coarse, subangular, good sorting, strong siliceous cement,
	$\vdash \vdash$	╄	<u> </u>	┞	۲	1	1	$\sqcup$		į	patchy dolomitic cement, trace coal fragments, trace altered feldspar,
	$\sqcup$	$\bot$	<u> </u>	┞-	Ļ	<del> </del>	Ш	$\sqcup$		! 	trace biotite, hard, tight, yellow-orange mineral fluorescence along
2520	├-	+	-	-	┡	$\vdash$	Ц	$\vdash \vdash$	-	! !	fracture planes.
2528	$\vdash$	+	$\vdash$	-	├-	-	Н	$\vdash$	-	! !	2528.65m : SANDSTONE: Medium grey, coarse to very coarse, angular
	$\vdash$	+	H	╁	-	┼			-	İ	
	$\vdash \vdash$	+	$\vdash$	╁╌	+-	├-	-	H	-	i 	to subangular, moderate sorting, 30-40% pyritic cement, strong siliceous
	├┼	+-	$\vdash$	$\vdash$	-	$\vdash$	$\vdash$	┨┤	-	!	cement, common smoky quartz, trace quartz overgrowths, trace altered
2529	$\vdash \vdash$	+	$\vdash$	$\vdash$	-	$\vdash$	-	┞╾╁	$\dashv$	į	feldspar, hard, very poor to nil porosity, trace dull orange mineral fluorescence.
2023	- -	+-	$\vdash$	$\vdash$	$\vdash$	$\vdash$	-		-	i 	indorescente.
	一十	+	╁	+-		1		Ħ	-	! !	2529.65m : SANDSTONE: Light to medium grey, fine to occasionally
	$\vdash \vdash$	+-	-	$\vdash$	П	$\vdash$	<del> </del>	-	7	!	medium, angular to subangular, moderate to good sorting, strong
	$\vdash \vdash$	+	1	<u> </u>		$\vdash$	_	-		i	siliceous cement, trace pyritic cement, trace patchy dolomitic cement,
2530	$\vdash$	+-	┢	1	Н	-	Н	$\vdash$	-	!	trace biotite, trace rock fragments, rare chlorite, trace coaly fragments,
	$\vdash$	+	-	$\vdash$	-	╁	Н	$\vdash$	-	i	hard, tight, dull orange mineral fluorescence only.
	$\vdash$	╅	┢	$\vdash$	H	┢	H	$\vdash$	┪ :	i I	riald, light, dan drange minoral nadroscoride only.
	$\vdash$	$\dagger$	$\vdash$		-	<u> </u>	Н	$\vdash$	-	!	2530.60m : SANDSTONE: Light grey, light brown grey, fine to medium,
	$\vdash$	+	┢	<del>                                     </del>	-	-	Н	$\vdash$		 	subangular, good sorting, moderate siliceous cement, common dolomitic
2531	$\vdash\vdash$	$\dagger$	H	-	-	╁╌	H	h		[ 	cement, trace to common kaolinitic matrix, common altered feldspar,
2001		╁	-	-	-	-		H +		į	trace carbonaceous/argillaceous laminae with common disseminated
	$\vdash\vdash$	+_				二	上	#	;	 	pyrite, trace black mafic minerals, hard, tight, dull orange mineral
	$\vdash$	╫	<del> </del>	╁	-	1		$\vdash$	-	!	fluorescence only.
	$\vdash$	╫	$\vdash$	┢	<u> </u>		-	$\vdash$	-		indicace incomy.
2532	<del></del>	+-	$\vdash$	┢	H	1					2531.65m : SANDSTONE: Predominantly as above, common pyritic/
			П		<u> </u>			$\Box$	<b>-</b> 1	] 	carbonaceous microlaminations, dull orange mineral fluorescence only.
	H		Н	5	-		-	$\Box$	1		,
				П					┦ ;		2532.65m : SANDSTONE: Predominantly as above, trace pyritic/dolomitic
		T						$\Box$	٦ :		cement, hard, very poor porosity, mineral fluorescence only.
2533				-				$\Box$	7 :		
		Т				П			7 :		2533.65m : SANDSTONE: Light grey, off white, fine to medium,
	$\Box$	П		П		П	П	$\sqcap$	7 !		subangular to subrounded, moderate sorting, moderate siliceous cement,
		Т		П	Г				7		trace kaolinitic matrix, trace chlorite, trace fine grained nodular pyrite, trace
							П		7 :		rock fragments, moderately hard, very poor to poor porosity, no fluorescence
2534							П		] :		
									] !		2534.65m : SANDSTONE: Light grey, off white, fine to medium subangular
						[F	•		]		good sorting, common kaolinitic matrix, trace nodular pyrite, trace altered
						Ш			] i		feldspar, trace muscovite, trace carbonaceous/pyritic microlaminae with
									] ;		dolomitic cement, moderately hard to hard, very poor porosity.
2535		П		П				$\top$	] :		FLUORESCENCE: Trace pin-point blue/white moderately bright
									] !		fluorescence, very weak milky cut, trace ring residue.
									] :		2535.65m : SANDSTONE: Light grey, fine to predominantly medium to
								$\perp$	_] !		coarse, angular to subrounded, poor to moderate sorting, trace
									;		siliceous cement, common silty/kaolinitic matrix, trace altered feldspar,
									_		trace smoky quartz, trace chlorite, trace carbonaceous
								$oxed{oxed}$			laminations, moderately hard to hard, poor porosity, no fluorescence.
									_		
•											

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

Describe	d b	y:			G	reg	CI	ota					
Interval			De	p	th	&	R	OF	)		Graphic	Shows	Descriptive Lithology
(m)					(m	/hr	)						
2536	10		8		6		4		2		0	] 	
	Ц	Ц	_		L	L	_	<u> </u>	$\sqcup$				2536.65m : ARGILLACEOUS SANDSTONE: Dark grey, grey black,
	口		4		L	L	L	┞		_			coarse, angular, moderate sorting, abundant black argillaceous matrix,
	Ш	4	_		L	L	L	$\perp$	Ш			i	matrix supported, common coaly laminations, common biotite, common
	Ц		_		L	L	<u> </u>	_	Ш	_			white calcite crystals, trace dolomitic crystals, hard, tight, mineral
2537	Ш	_	_#		닏	<u> </u>	<u> </u>	<u> </u>		_			fluorescence only.
	Ц	4	-#		L	_	<u> </u>	ــــــــــــــــــــــــــــــــــــــ					
		#			<u> </u>	L	<u> </u>	╙			i		2537.65m: SANDSTONE: Off white to light grey, medium to predominantly
	Ш	$\perp$			<u> </u>	<u> </u>	<u> </u>	1_	Ш				coarse, angular to subangular, moderate sorting, moderate siliceous
	Ц		_		ļ.,	L	<u> </u>	_	L				cement, trace quartz overgrowths, trace to moderate kaolinitic matrix,
2538	Ц	4	_	_	Щ	L	<u> </u>	1_	Ш		i		trace nodular pyrite, moderately hard, poor to fair porosity, no
	Ц	_	_	_	Щ	L	L	1_	Ш			) 	fluorescence.
	口	#	$\Rightarrow$		<u> </u>	L	<u> </u>	╙	Ш				
	$\parallel \perp$	4	_		<u> </u>	1	1	┞-					2538.65m : SANDSTONE: Light grey, medium, subangular, good sorting,
	Щ				<u> </u>	1	_	1	Ш				moderate siliceous cement, common kaolinitic matrix, common argillaceous
2539	$\sqcup$	_	$\coprod$		_	L	<u> </u>	┞	Ш				microlaminations, trace altered feldspar, common carbonaceous fragments/
	$\sqcup$	_	$\coprod$		<u> </u>	$\vdash$	<u> </u>	┞	Ш				microlaminations, common muscovite, common disseminated pyrite,
	Щ	4	4		Ħ	1	<u> </u>	<u> </u>	Ш				moderately hard, poor porosity, no fluorescence.
	$\sqcup$	_	_		Ш	_	1	$\vdash$	$\sqcup$				
	Н	4	_	_	Ш		1_	ļ	L.,				2539.65m : SANDSTONE: Off white to light grey, medium to coarse,
2540	$\sqcup$	4	_		_	L	<u> </u>	ļ			!	]	angular to subangular, moderate sorting, moderate to strong siliceous
	$\sqcup$	4	_			L	┞	<u> </u>	Ш		i	i	cement, common quartz overgrowths, trace kaolinitic inclusions, common
	$\sqcup$	4	_		Ħ.	-	┞_	_	$\sqcup$		1	] 	smoky quartz, trace disseminated pyrite, moderately hard, fair to poor
	$\sqcup$	4	_		Щ	<u> </u>	<u> </u>	┞	$\sqcup$				porosity.
	Ш	4	_		Щ	L	L	<u> </u>					FLUORESCENCE: Trace pin-point moderately bright blue white
2541	Ш	4	_		1_	<u> </u>	<u> </u>	_	Ш		1		fluorescence, faint milky cut, no residue.
	$\sqcup$	4	4		<u> </u>	L	_	_	Ш		i		
	Щ	4	_		二	1-	L	┡	Ш		1		2540.65m : SANDSTONE: Light grey, pale brown, coarse to very coarse,
	$\sqcup$	4			L_	₩-	ļ.	<u> </u>	Ш		!		angular, moderate sorting, strong siliceous cement, trace quartz
07.10	$\sqcup$	4			-	μ_	ļ.,	┞		_	i		overgrowths, trace smoky quartz, trace carbonaceous fragments, trace
2542	Н	4		_	Н	⊢	-	⊢	Н				altered feldspar, moderately hard, very poor porosity.
		4	-1		╀	L	$\vdash$	⊢	Н	_	¦		FLUORESCENCE: 80% Moderately bright to bright pale yellow to blue/
	$\vdash \vdash$	4	$\dashv$		<u> </u>		<u> </u>	⊢	Н	_	į		white solid fluorescence, slow streaming cut, thin to moderately bright ring
	$\vdash \vdash$	4	-			Н	┡	-	Н				residue.
07.40	$\vdash$	4	4	_	<u> </u>	7	₩	1	Н		I		
2543	$\vdash \vdash$	4	4		<u> </u>	#	<del> -</del>	-	$\vdash$				2541.65m : SANDSTONE: Off white to light grey, medium to coarse,
	$\vdash \vdash$	4	4	_	<u> </u>	#	1	1	$\sqcup$		i		subangular, moderately sorted, strong siliceous cement, common kaolinitic
	$\vdash \downarrow$	4	4		<u> </u>	۲	Ħ	1	$\square$	_	i		matrix, trace muscovite, trace altered feldspar, moderately hard, poor
	$\vdash \vdash$	4	4		<u> </u>	_	$\sqcup$	┞-	$\vdash \vdash$	_			to very poor porosity.
0511	${oldsymbol{arphi}}$	4	4	_	_	<u> </u>	H	├-	$\vdash \vdash$	_	!		FLUORESCENCE: 80% Bright blue/white fluorescence, moderately fast
2544	$\vdash$	4	4	_	<u> </u>	<u> </u>	1	_			į		streaming cut, moderate ring residue.
	$\vdash \vdash$	$\dashv$	_	_	<u> </u>	$\vdash$	$\Vdash$	-	$\vdash \vdash$	_			25.0.25
	$\vdash$	$\dashv$	4	_	<u> </u>	L	#-	-	$\vdash \vdash$	_	į		2542.65m : SANDSTONE: Light grey, grey brown in part, fine, subangular,
	$\vdash$	$\perp$	4	_	<u> </u>	_	╙	-	Н	_	i i		good sorting, strong siliceous cement, common argillaceous matrix,
	$\vdash$	4	4		L	_	1	<u> </u>		_	. 1		common light grey argillaceous microlaminations, trace carbonaceous
	$\vdash \vdash$	$\dashv$	4	_	H	-	_	├-	$\vdash \vdash$		į		flecks, trace nodular pyrite, trace lithic fragments, hard, tight, no
	$\vdash \vdash$	4	4	_	L.	$\vdash$	<u> </u>	<u> </u>	$\sqcup$		ı		fluorescence.
	$\vdash \downarrow$	4	4	_	L	<u> </u>	1		$\sqcup$				
	$\vdash \vdash$	4	4	_	L	<del> </del>	<u> </u>	<del> </del>	$\vdash \vdash$		į		2543.53m : SANDSTONE: Light grey, fine to medium, occasionally coarse,
	$\vdash \vdash$	4	4	_	<u> </u>	<del> </del>	-	<del> </del>	$\vdash \vdash$	_	1		subangular, good sorting, moderate siliceous cement, moderate kaolinitic
	$\vdash$	4	4		<u> </u>	<u> </u>	<b>—</b>	<u> </u>	$\sqcup$	_	į		matrix, trace quartz overgrowths, common disseminated and nodular pyrite,
	$\vdash \vdash$	4	_	_	Ц	<u> </u>	_	<b>!</b>	$\sqcup$	_	1		common smoky quartz, moderately hard, friable in part, poor to occasionally
	$\vdash$	4	_		Н	<u> </u>	_	<u> </u>	$\sqcup$	_	1		fair porosity.
	$\sqcup$	4	4	_	Щ	<u> </u>	_	<u></u>	Щ		į		FLUORESCENCE; 80% As above.
	$\sqcup$	4	4	_	_	L	L		Щ		 		
			- [	- 1		l	1		ıl		i		

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

nterval			De	pt	h a	8.	R	)P	)		Graphic	Shows	Descriptive Lithology
(m)	_			-	m/	_	_						
2544	5	Т	4	$\rightarrow$	3	_	2		1		10		2544.8m : SANDSTONE: Light to medium grey, fine to medium, occasiona
		П	Т	$\dashv$	Т		-	Г		Г	1 :		coarse, angular to subrounded, moderate sorting, moderate to strong
	H	H	1	1	7			┪			i i		siliceous cement, trace to common pyritic cement, trace altered feldspar,
	<u> </u>	H	寸	十	1		-	r		$\vdash$			trace smoky quartz, hard, very poor porosity.
	$\vdash$	$\vdash$		+	7	_			-	-	1 !		FLUORESCENCE: 80% Bright yellow green solid fluorescence, slow
2545	Н		+	+	+	-	-	7	Н	┝	† :		streaming cut, thin to moderate residual ring.
		$\vdash$	$\dashv$	$\dashv$	十	-		Н		$\vdash$	<b>{</b>		atteaning out, thin to moderate residual fing.
	Н		+	+	$\dashv$	-		H			i i		25.45.55m : SANDSTONE: Light brown off white medium to come
	Н	$\dashv$	$\dashv$	+	-+		-		Н	⊢	1 !		2545.55m : SANDSTONE: Light brown, off white, medium to coarse,
	Н	$\dashv$	-+	+	+	_		├-	Н	-	į		angular to subangular, moderate sorting, trace siliceous cement, trace
05.40	Н	-	-+	+	+	-	_	<del> </del>	ш	_			quartz overgrowths, trace rock fragments, trace carbonaceous specks,
2546	Ш	$\dashv$	$\dashv$	+	-	_		Щ.	Ш	_	ļ i		friable, good porosity.
	Ш	$\perp$	_	_	_			Щ		_			FLUORESCENCE: 100% Yellow green solid fluorescence, instant cut,
	Ш		_	$\perp$	$\perp$	П		ᆫ	Ш		į		thick ring residue.
	Ш		$\perp$			Ц		L	Ш		1 1		
					$\perp$	Ш		L	Ш		į		2546.55m : SANDSTONE: Light brown, off white, medium to coarse,
2547			$ \mathbb{J} $	$\int$	$\prod$						]		angular to subangular, moderate sorting, locally moderate siliceous cement
	П		T	Т	[T]	╗					] !		trace pyritic cement, trace kaolinitic matrix, trace rock fragments, trace
	П	$\neg$	$\exists$	r	П	$\neg$							muscovite, moderately hard, poor to fair porosity.
	П	$\dashv$	$\top$	1	7				П		!		FLUORESCENCE: 100% As above.
	Н	_	寸	7	$\top$	7	_		$\vdash$				
2548	Н	$\dashv$	$\dashv$	╬	-	-	-	7		-	!		2547.55m : SHALE: Dark brown, brown black, slightly silty, common very
	Н	十	$\dashv$	$\dashv$	+	1	-	+		_	;		
	Н	$\dashv$	+	+	+	-	-	+	$\vdash$		!		fine light grey arenaceous laminations, common mica, hard, dense,
	$\vdash$	+	+	+	+	-	$\Box$		$\vdash$		i		massive to subfissile.
	$\vdash$	-+	+	+	+	-	Н		$\vdash$	_	!		
05.40	Н	-	+	+	+				_	_	i		2548.55m : CARBONACEOUS SHALE: Dark brown to black, slightly
2549	$\sqcup$	4	4	_	4	4	_		$\sqcup$		!		silty common mica, common vitrified plant/leaf fragments, hard, subfissile
		_	4	4	4	4	_		Ш	_	i		to fissile.
		_	┙	_	$\perp$	_			7	_			
			ᆚ	$\perp$	$\perp$	_	$\perp$	Ш		_	į		2549.05m : SHALE: Dark brown to black, micromicaceous, slightly silty,
								П					micromicaceous, common carbonised fossil fragments (plants/leaves),
2550											!		hard, subfissile to fissile.
			_								i		
											!		2549.81m : CARBONACEOUS SHALE: Dark brown black, abundant
		T	Т	Т	Т	T	T				i		vitrified plant/leaf fragments, brittle, fissile, locally grades to and
		$\top$			1	T				_	ļ.		interbedded with subituminous high ash coal.
į	$\dashv$	T	$\top$	T	$\top$	7	ヿ		_	_	i		
	1	十	T	T	T	7	7		一十	ᅱ	!		
	$\dashv$	$\dashv$	+	十	+	$\dashv$	7	$\dashv$	1	ᅱ	į	ŀ	
	+	十	十	+	+	+	+	$\dashv$	$\dashv$	$\dashv$	1	-	
}	+	+	+	+	十	+	$\dashv$	ᅱ	$\dashv$	$\dashv$	į	ł	
-	$\dashv$	+	+	+	+	+	+	$\dashv$	$\dashv$	$\dashv$	ŀ	}	
	-+	+	+	+	+	$\dashv$	$\dashv$	-	+	$\dashv$	!	}	
- 1	$\dashv$	+	+	+	+	+	+	-	-	$\dashv$	i	}	
1	-	+	+	+	+	+	+	4	+	-	!		
ļ		4	+	+	+	4	4	4	-	4	1	ļ	
	_	_	4	4	4	4	4	4	_	_	!	ļ	
	_	$\bot$	4	$\perp$	1	4	4	_	_	_	i	ļ	
1	$\perp$	$\perp$	$\perp$	$\perp$	$\perp$	$\perp$	$\perp$	$\bot$	_	╝	1	L	
				L	$\perp$				$\perp$	╝	i		
Γ	$\Box$	$oldsymbol{\mathbb{T}}$	$\int$	$\int$	$\int$	J			$\Box$		!	ſ	
ľ	T	Т	T	T	T	T	T	$\neg$	$\top$	$\neg$	i	Ī	
ļ	_	十	T	T	十	$\top$	寸	7	寸	$\dashv$	i	ľ	
	$\neg$	十	T	T	T	$\top$	$\dashv$	7	十	$\dashv$	į	ļ	
t	$\dashv$	十	+	T	$\dagger$	十	$\forall$	$\dashv$	$\dashv$	ᅱ	!	ŀ	
ŀ	$\dashv$	+	+	+	+	+	+	+	$\dashv$	ᅱ	i	}	
L	_	-	┸-	4	1	4		_			1		·
			ı.			,	- 1					Г	

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

Described by: Greg Clota										
nterval		Dep	oth	&	R	DΡ		Graphic	Shows	Descriptive Lithology
(m)			(m	/hr	)				1	
2568	20	16	12		8		4	_ 0	J I	2568m : SANDSTONE: Light grey, grey brown, medium to coarse,
									į	angular to subrounded, moderate to good sorting, moderate siliceous
		П							! !	cement, common argillaceous matrix, trace to common disseminated pyrite
		$\top$		F		$\Box$	П		į	and cement, common smoky quartz, trace muscovite, trace dark grey
			T	Г					i 1	argillaceous inclusions, friable to moderately hard, poor porosity.
2569		TT	1	T					!	FLUORESCENCE: 70%Moderately bright yellow green patchy
		++	$\top$	7	$\vdash$				i !	fluorescence, moderate instant cut, moderate ring residue. Moderate
		++	+	H				1	!	petroliferous odour.
		++	╅	Н	<del>                                     </del>					
		++		H	<del>                                     </del>	Н	$\vdash$	-	!	2568.85m : SANDSTONE: Light grey, light brown, coarse, angular,
2570	$\vdash$	╁┼	+	Н	Н	Н		-	i	moderate to good sorting, trace siliceous cement, trace quartz overgrowths,
2370		╁┰┼╾	+	μ	-	-	$\vdash$	-	!	
	$\vdash$	₩		-		$\vdash$	-	4	i	trace argillaceous matrix, trace rock fragments, trace muscovite, trace
		Ш-		<u> </u>	_	$\vdash$	Н-	4	!	nodular pyrite and rare pyritic cement, trace smoky quartz, friable, fair to
	$\vdash \vdash$	+++	-	-	<u> </u>	Н	$\vdash$	4	į	good porosity.
	$oxed{oldsymbol{oldsymbol{oldsymbol{eta}}}$	+	1	L	_	Ш	ot	4	! !	FLUORESCENCE: 100% Bright solid pale yellow fluorescence, good
2571	ot	$\downarrow \downarrow \downarrow \downarrow$	1	L	L	Ш	$\perp \perp$	4	į	instant cut, moderate ring residue. Moderate petroliferous odour.
		$\perp T$	$\Box$	L		Ш		_	; 	
			$\perp$	L					ļ	2569.85m : SANDSTONE: Light brown, coarse, angular, moderate to good
	$\Box \Box$	$\perp \perp$	1	Ы				J	ī Ī	sorting, trace to moderate siliceous cement, trace argillaceous/silty matrix,
				П					!	trace quartz overgrowths, trace rock fragments, trace smoky quartz, trace
2572			T	П				7	! 	to common carbonaceous/coaly fragments, friable to moderately hard,
				Γ,	П			7	!	fair porosity.
		$\Box$		Г	Ħ			1	i	FLUORESCENCE: 80% Bright solid pale yellow fluorescence, moderate
	$\vdash$	11	1	_	1			1	!	instant cut, moderate ring residue. Moderate petroliferous odour.
		+	+-	-	Н		$\top$	1	i	
2573	$\vdash$	++	+	-	Н			1	!	2570.85m : SHALE: Black, slightly siliceous, abundant vitrified plant
2010	$\vdash$	++	╁	┢╾	Н		+	-	i	fragments, common coaly interlaminations, slightly micromicaceous, hard,
		╁┼	+-	-	Н		+	-	! !	subfissile to fissile.
		++		⊢	H	-			į	Subilissile to lissile.
		++	+-	⊢	-	H	+	-	: 	0574 05 CUALT. Dadebase block block eith in not common
0574		₩-		H	-	Н	+	4	!	2571.85m : SHALE: Dark brown black, black, silty in part, common
2574		-	4	<u> </u>	-	₽	+	-	<u> </u>	muscovite along bedding planes, trace vitrified plant remains, trace
		++	_	<u> </u>	Н	_		4	!	disseminated pyrite, hard, dense, subfissile to massive.
		$\bot\bot$	4-	<u> </u>	Н			4	i	
		$\perp \perp$		<u> </u>	Ľ		$\perp$	_	!	2572.85m : SHALE: Predominantly as above, with common off white
		$oldsymbol{\perp}$		L		Ш	$\perp$		i	to light grey, very fine grained arenaceous lenses, no fluorescence.
2575						Ш		_	! !	
						$\square$		_	į	2573.85m : SHALE: Predominantly as above, becomes silty grades
		П						ŀ	:	to silty shale, trace disseminated pyrite and common muscovite.
		$\sqcap$	,					7	į	
								7	! 	2574.85m : SHALE: Predominantly as above, very fine grained arenaceous
2576		$\sqcap$		Г		П			!	microlaminations.
				Г				1	•	
				┢	Г		$\neg$	1	! !	2575.85m : SHALE: Black to brown black, trace muscovite, slightly
	+	++		Н		Н	$\dashv$	1	i	siliceous, trace carbonaceous/coaly fragments, homogeneous, hard,
	-	++	+	$\vdash$		H	$\vdash$	1	] 	dense, subfissile to fissile.
2577	+	++	1	1	$\vdash$	H	$\dashv$	1	į į	
2011	+	++	-	$\vdash$	-	H	-	┪	] 	2576.75m : SANDSTONE: Light grey, pale brown, medium to coarse,
		+	+	-	$\vdash$	$\vdash\vdash$		┥	!	subangular to subrounded, moderate to good sorting, weak siliceous
	-	++	+	-	$\vdash$	Н	$\dashv$	4	! 	
		<del>     </del>	+-	$\vdash$	<del> </del>	Н	-	-{	!	cement, trace kaolinitic matrix, trace quartz overgrowths, common coaly
	$\dashv$	++	-	$\vdash$	<u> </u>	Ш	4	4		fragments laminations, common rock fragments, trace smoky
		$\bot \bot$	$\perp$	<u> </u>		Ш		4	!	quartz, moderately hard, fair to poor porosity.
	$\perp$	+	4	<u> </u>	$ldsymbol{\sqcup}$	Ш	_	4	i	FLUORESCENCE: Trace dull patchy pale yellow fluorescence, slow
		$oldsymbol{ol}}}}}}}}}}}}}}}}}}$	$\perp$	_	Щ	Ш	ot	_	!	weak streaming cut, trace patchy ring residue.
				L			$oldsymbol{ol}}}}}}}}}}}}}}}}}$	_	i	
		$\prod$							!	
		T							<u>'</u>	

CORE No.: 6 (continued)

WELL: TURRUM-5

Bit size:

Date:

Interval cored:

2568-2586.5M

Recovered: 18.5m (100%)

Cut:

18.5m

12 1/4"

Bit type:

arc-425

9-Sep-95

Describe	d by	<b>/</b> :		Gre	∍g	Clo	ta		***************************************	•	
Interval		De	<u>.                                    </u>				P		Graphic	Shows	Descriptive Lithology
(m)		1 .		(m/	_	_			٦.	İ	2577.85m : SANDSTONE: Light grey, fine to coarse, angular to
2577	20	16		12	_	8	-	4	- <b> </b> ⁰	į	subrounded, poor sorting, moderate siliceous cement, trace silty/
	⊢⊢	+	ᅱ	Н		$\vdash$	$\dashv$	$\dashv$	4	; !	argillaceous matrix, trace quartz overgrowths, trace altered feldspar,
	₩	+		Н	_	$\vdash$	-	+	4	!	trace carbonaceous fragments, moderately hard, fair porosity.
	├-	+	_	Ħ		7	-		4	i	
	$\vdash \vdash$	+	_	$\dashv$	_	Ш			_	!	FLUORESCENCE: 60-70% Moderately bright to patchy bright pale yellow
2578	$\vdash$	+	$\dashv$	-	_	-	-	+	-	į	fluorescence, slow weak streaming cut, moderate to thin ring residue.
	┝┼	┼┤	-	$\dashv$		╢	-		1	: !	2578.85m : SILTSTONE: Dark grey, grey black, very argillaceous,
	┝╌┝╌	+		Н	_		$\neg$	-	-	i	common off white very fine grained arenaceous laminations, common
	$\vdash$	+		Н	-	Н	-1			1	muscovite, moderately to very carbonaceous, hard, dense, subfissile to
2579	$\vdash \vdash$	+	$\dashv$	$\vdash$	-1	Н	-	+	=	į	massive.
23/3	╁┼	+	-	$\vdash$	$\dashv$	Н	$\dashv$	$\dashv$		<u> </u>	
	$\vdash \vdash$	+	-	$\vdash$		Н	-	$\dashv$		!	2579.85m : SHALE: Dark brown black, grey black, very silty grades to
	$\vdash$	+	-	H	$\dashv$	$\vdash$		-		i	silty shale, common muscovite, common arenaceous inclusions and
	⊢	+	-	Н	=	$\vdash$	-	-	-	1	laminations, dense, hard, massive.
2500	$\vdash$	+	Н	$\vdash$	_	├╌┤	-	+	-	į	
2580	╁┼┼	+	Н	Н	_	┢┰┤	-	$\vdash$	-	1	2580.85m : SILTSTONE: Dark grey, grey black, very argillaceous,
	<del></del>	+		Н		Н		$\vdash$		į	common arenaceous microlaminations and inclusions, trace muscovite,
	Н-	- $+$	Н	Ы	_	Н	_		-	1	trace carbonaceous fragments, trace disseminated pyrite, hard, dense,
l	$\vdash \vdash$		Ш	Н		F		$\vdash$		1	
	$\vdash$	$\perp$	_	Н	_	$\parallel \perp \mid$			4	i	massive to subfissile.
2581	$\vdash$	$\perp$	_		_			$\vdash$	4	1	OFFILES OF TOTOLS As above
	$\perp$				_	Ш		$\vdash$	_	į	2581.85m : SILTSTONE: As above.
i	Ш	$\perp$			L			$\sqcup$	4	1	
	$\perp$	1	L	Ш		Ш		$\vdash \vdash$			2582.85m : SHALE: Brown black, black, slightly silty, trace to common
	$\sqcup$							$\vdash \downarrow$	_	ί	muscovite, common vitrified plant fragments, trace disseminated pyrite,
2582				Ш	Ц		_	$\sqcup$		] 	hard, dense, subfissile to massive.
	Ш		L	Ш				Ш	-4	į	
				Ш	_	L		$\sqcup$	_	¦	2583.85m : SHALE: Predominantly as above, common very fine grained
	$\sqcup$		_					$\sqcup \!\! \perp$	_	!	arenaceous laminations, trace muscovite.
	$\sqcup$	لــــــــــــــــــــــــــــــــــــــ				Ш			_	į	
2583	$\perp \perp$					Щ		$\sqcup$	4	i I	2584.85m : SHALE: As above.
	Ш					Ш	L	$\sqcup \bot$		!	
	$\sqcup$	$\perp$		L	L	Ш	L	Ш		i	2585.85m : SHALE: Predominantly as above, common arenaceous
	Ш			L			]	Ш		l	microlaminations, common disseminated pyrite, abunant muscovite, slightly
			L		L	Ш		Ш		į	silty grades to silty shale.
2584	$\sqcup \bot$			<u> </u>	L	Ш		Ш	_	1	
			L	Щ			_	Ц	_	1	2586.58m : SHALE: Predominantly as above, with common off white to
	Ш		L	Ш	L	Ш	L	$\sqcup$	_	į	light brown arenaceous laminations.
	Ш		L	Ш	L	Ш	L	Ш	_	1	
1	$\Box$			Ш	Ĺ	$\square$		Ш	_	į	
2585	Ш			Ш	L	$\sqcup$		Ш	_	i	
1	$\Box$		Ĺ					Ш	_	1	
								П	_		
		$oldsymbol{ol}}}}}}}}}}}}}}}}$	Ĺ						_	1	
										İ	
2586		$\mathbb{T}$								i	
		T								1	
		$\prod$	$L^-$							į	
	F	Ŧ	E	$\vdash$	E		E	oxdot	_	I	
	$\Box$	Т	Γ		Γ			$\Box$		!	
2587		1	Γ	Π				$\Box$		1	
	$\sqcap$	$\top$	Г	Π	Γ			П	7	1	
1	$\sqcap$	$\top$	Γ	Π	Γ	T		П		i	
			4	4						1	

APPENDIX III

## APPENDIX III

SIDEWALL CORE DESCRIPTIONS

#### SIDEWALL CORE DESCRIPTIONS

WELL NAME: Turrum-5

GEOLOGIST: Greg Clota

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

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

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

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

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

# APPENDIX 4

# APPENDIX IV

**MDT RESULTS** 

Well				TURRUM-5			Page			1 of 8				
Date				13-Sep-95			Geologist-Engineer			Mike Scott				
Tool Typ		, RFT)		Schlumberger MD	ſ		KB (metres):	25						
Gauge Ty				CQG			Probe type	Long nose						
Pressure				PSIA			Temperature units (	degČ						
3	Run-Seat Depth			Initial	Time	Minimum	Formation	Temp	Time	Final		Delta	Comments	
Num	ber	m MDRKB	m TVDSS	Hydrostatic	Set	Flowing	Pressure		Retract	Hydrosta	atic	Time	Including Test Quality	
	P=Pretest			Pressure	(HH:MM)	Pressure			(HH:MM)	Pressu	re	(MM:SS)	and Fluid Type.	
L	S=Sample			PPg			PPg	1			PPg		,	
												<del></del>	20cc pretests set	
1/1		1406.5	1381.5	2482	4:14	410.1	2040.0	72.7	4:19	2481		05:00	•	
	P			10.4			8.5				10.4		MD/CP=12.8	
											\	<del></del>		
1/2		1429.1	1404.1	2521	4:29	2040.8	2044.6	73.0	4:32	2521		03:00		
	P			10.4			8.4	1			10.4		MD/CP=1494.5	
										1				
1/3		1438.6	1413.6	2537	4:37	2023.1	2046.1	73.4	4:41	2536		04:00		
	P			10.3			8.3	1			10.3		MD/CP=175.8	
1/4		1444.1	1419.1	2547	4:45	2040.5	2047.7	73.5	4:48	2546		03:00		
	P			10.4			8.3	]			10.3		MD/CP=520.2	
											<del></del>			
1/5		1463.4	1438.4	2580	4:53	2036.6	2051.7	73.8	4:57	2580		04:00		
	P			10.3			8.2	1			10.3		MD/CP=425.2	
										1				
1/6		1484.6	1459.6	2617	5:04	2051.2	2055.6	74.4	5:09	2617		05:00		
	P			10.3			8.1	]			10.3	1	MD/CP=569.7	
											·		Slow buildup but	
1/7		1490.0	1465.0	2627	5:13	2052.8	2063.7	74.9	5:21	2626		08:00	apparently good pt.	
	P			10.3	• -		8.1	1			10.3	1	MD/CP=149.6	
										i				
1/8		1497.5	1472.5	2640	5:25	2054.6	2056.9	75.3	5:30	2640		05:00		
	P			10.3			8.1	1		1	10.3		MD/CP=795.6	
				1	·					<u> </u>		<del> </del>		
1/9		1502.1	1477.1	2648	5:34	2055.4	2055.6	75.7	5:37	2648		03:00		
	P			10.3			8.0	1	- · <del>-</del> ·		10.3	1	MD/CP=37067.3	
	•						0.0				10.5	<del> </del>	11115/01/5/1001.5	
1/10		1522.6	1497.6	2685	5:48	2067.0	2067.3	76.2	5:51	2684		03:00		
	P			10.3			8.0	'	2.51	2004	10.3	1 05.00	MD/CP=25031.0	
L	<del></del>	<del></del>	<u> </u>			L.,	1 0.0	L		<u> </u>	10.3	<u> </u>	NID/CF-23031.0	

Well				TURRUM-5	5			Page 2 of										
Date			· · · · · · · · · · · · · · · · · · ·	13-Sep-95				Geologist-Engineer			2 of 8 Mike Scott							
Tool Typ	e (MDT	, RFT)		Schlumberg	er MD	r		KB (metres):			25							
Gauge Ty				CQG				Probe type	Long nose									
Pressure		sia, psig)		PSIA		<del></del>		Temperature units (degF, degC) degC										
Run-	Seat	De	pth	Initial Time Min			Minimum	Formation	Temp	Time								
Num	Number m MDRKB m TVDSS		m TVDSS	Hydrostatic		Set	Flowing	Pressure	Temp	Retract			1	Comments				
	P=Pretest					Pressure				(HH:MM)	Pressure	11035410		(HH:MM)	Hydrost			Including Test Quality
	S=Sample				PPg	()	11035410	PPg	1	(ПП:ММ)	Pressu		(MM:SS)	and Fluid Type.				
								PPg	<del> </del>		[	PPg						
1/11		1530.0	1505.0	2697		5:54	2077.5	2077.7	76.4	5.57	2.05							
	P			] -05.	10.3	3.54	2077.5	· · · · · · · · · · · · · · · · · · ·	76.4	5:57	2697		03:00					
					10.5			8.0				10.3		MD/CP=40138.5				
1/12		1536.0	1511.0	2707		6:01	2084.3	2006.1										
	P		1511.0	Σ,ο,	10.3	0.01	2084.3	2086.1	76.6	6:05	2707		04:00					
					10.3			8.0				10.3		MD/CP=4406.3				
1/13		1560.5	1535.5	2751		6:11	2067.6	01164										
	Р		1000.5		10.3	0.11	2067.6	2116.4	76.9	6:14	2751		03:00					
	<u> — і</u>				10.3			8.0				10.3		MD/CP=143.7				
1/14		1562.6	1537.6	2754	İ	6:17	2110.0											
	P		1557.0	2734 Γ	10.3	0.17	2118.9	2119.3	77.1	6:20	2754		03:00					
	<u> </u>			1	10.3			8.0				10.3		MD/CP=36390.6				
1/15	İ	1573.0	1548.0	2773	- 1	6:24	41.4.2							Aborted - tight coal bed				
	P	1275.0	15 10.0	2773 F	10.3	0.24	414.3	-	77.2	6:27	2773		03:00					
<u> </u>				<u>.</u>	10.3							10.3		MD/CP=0				
1/16	i	1596.1	1571.1	2812	}	6.22	2121.0											
"	P	1370.1	13/1.1	Z012 <b>Г</b>	10.3	6:33	2121.8	2136.0	77.7	6:36	2812		03:00					
				L	10.3			7.9				10.3		MD/CP=497.3				
1/17		1636.3	1611.3	2883	1	6.40	22160											
""	P	1030.3	1011.5	2083 <b>Г</b>		6:42	2216.9	2217.7	78.6	6:45	2883		03:00					
<b> </b>	-				10.3			8.0				10.3		MD/CP=7281.5				
1/18		2196.0	2171.0	20.50	1	7.24								Aborted - tight				
""	P	2170.0	21/1.0	3859 <b>г</b>		7:34	384.0	-	91.4	7:37	3859		03:00					
<b> </b>	P				10.3							10.3		MD/CP=0				
1/19	j	2201.0	2176.0	•										10cc pretests set				
1/13		2201.0	2176.0	3868		7:42	2866.6	3227.0	92.6	7:47	3868		05:00	•				
<b> </b>	P				10.3			8.6			[	10.3		MD/CP=11.9				
1/20	1	2206.0	2101.0			ļ					·			20cc pretests set				
1/20 r		2206.0	2181.0	3877		7:50	3215.5	3227.6	93.0	7:53	3877	l	03:00	1				
	P				10.3	1		8.6	- 1		Γ	10.3		MD/CP=582.0				

Well				TURRUM-5			Page 3 of 9								
Date				13-Sep-95			Geologist-Engineer			3 of 8					
Tool Typ		, RFT)		Schlumberger MD	т		KB (metres):			Mike Scott					
Gauge T				CQG			Probe type	25							
Pressure		sia, psig)		PSIA		······································	Edig nose								
Run-		De	pth	Initial	Time	Minimum	Formation (			degC					
Num	iber	m MDRKB	m TVDSS	Hydrostatic	Set	Flowing	Pressure	Temp	D .	Final			Comments		
	P=Precest			Pressure	(HH:MM)	Pressure	Pressure		Retract	Hydrosta		Time	Including Test Quality		
	S=Sample			PPg	(111.11111)	Fressure		4	(HH:MM)	Pressu	re	(MM:SS)	and Fluid Type.		
				118			PPg				PPg				
1/21		2209.6	2184.6	3883	7:57	3182.0	2000 5								
	P			10.3	1 '.5'	3182.0	3228.5	93.2	8:00	3883		03:00			
				10.3			8.6				10.3		MD/CP=165.5		
1/22	l	2221.6	2196.6	3904	8:06	202.2	٧,						Aborted - tight		
	P		2170.0	10.3	8:00	293.3	-	92.9	8:09	3904		03:00			
				10.3			-				10.3		MD/CP=0		
1/23		2236.3	2211.3	3930	0.15	211.0							Aborted - tight		
1 1	P		2211.5	10.3	8:15	311.2	-	93.2	8:18	3929		03:00	Ŭ		
				10.3			-			Ţ	10.3		MD/CP=0		
1/24	l	2258.5	2233.5	3969	0.06								10cc pretests set		
	P	2230.3	2233.3		8:26	3231.6	3259.0	94.2	8:30	3969		04:00			
				10.3			8.5			Γ	10.3		MD/CP=255.7		
1/25	- 1	2290.9	2265.9	4025	0.26								Aborted - tight		
ſ	P	2250.5	2203.9		8:36	441.1	-	95.2	8:46	4025	į	10:00	- Jane		
1	<del></del>			10.3						ſ	10.3		MD/CP=0		
1/26		2292.2	2267.2	4000						· · · · · · · · · · · · · · · · · · ·					
l ""2" r	P	2292.2	2207.2	4028	8:50	3273.5	3368.8	95.3	8:53	4028	l	03:00			
	<del></del> -			10.3			8.6		j	Γ	10.3		MD/CP=65.4		
1/27	i	2294.1	22601							<u></u>			Lost seat		
l ''2' г		2294.1	2269.1	4032	8:57	2576.1	-	95.4	9:01	4032		04:00	Lost scat		
ļl	P			10.3			-		1	ī	10.3	1	MD/CP=n/a		
1/28	l	22243									10.5		IVID/CP-IVA		
1/28 г		2294.1	2269.1	4031	9:00	2688.0	3370.6	95.6	9:08	4031	1	08:00			
<u> </u> 1	P			10.3			8.6		1.00	¬031	10.3		MO (OD o )		
1.00	1		l							L	10.3		MD/CP=9.1		
1/29		2299.6	2274.6	4041	9:14	273.1	_	95.9	9:18	4041	I	04:00	Aborted - tight		
	P			10.3	ŀ	i	_	,,,,	7.10	4041		1			
								<del></del>		L	10.3		MD/CP=0		
1/30		2332.0	2307.0	4091	9:27	307.7	_	95.6	9:32	4001	- 1		Aborted - tight		
	P			10.3				93.0	9.34	4091		05:00			
						·					10.3	1	MD/CP=0		

Well				TURRUM-	5			Page	4 of 8					
Date				13-Sep-95				Geologist-Engineer	Mike Scott					
Tool Typ		, RFT)		Schlumberg	er MD	r		KB (metres):	25					
Gauge T				CQG				Probe type	Long nose					
Pressure				PSIA				Temperature units (	degC					
2	Run-Seat Depth			Initia		Time	Minimum	Formation	Temp	Time	Final		Delta	Comments
Num	ber	m MDRKB	m TVDSS	Hydrosta	atic	Set	Flowing	Pressure		Retract	Hydrost		ł	Including Test Quality
	P=Pretest			Pressu	re	(HH:MM)	Pressure		į	(HH:MM)	Pressu		(VVVV:66)	and Fluid Type.
	S=Sample				PPg	,		PPg	1	(121.1.11)	1 10354	PPg	(101101.55)	and ridid Type.
						-		- 5	<del> </del>			FFE		Aborted - tight
1/31		2333.6	2308.6	4101		9:36	381.1	-	95.9	9:40	4101		04:00	Aborted - tight
L	P				10.3				'	2.40	4101	10.3	04.00	l much a
									-			10.3		MD/CP=0
1/32		2358.6	2333.6	4144	- 1	9:47	3418.5	3423.4	96.9	9:50	4144		03:00	·
	Р				10.3			8.5	30.5	7.50	4144	10.3	03.00	
								1 0.3				10.3		MD/CP=939.2
1/33		2363.3	2338.3	4153		9:54	3415.7	3424.9	97.3	9:58	4153		04:00	
	P			l	10.3	·		8.5	77.3	7.36	4133			
								7 8.3				10.3		MD/CP=162
1/34		2379.4	2354.4	4181		10:03	1736.7	3466.5	98.0	10:16	4181		12.00	Tight sand but
	P			ĺ	10.3			8.5	20.0	10.10	4101	10.3		apparently good pt.
								0.5				10.3		MD/CP=0.5
1/35		2380.8	2355.8	4184	1	10:20	1423.5	3472.5	98.5	10:34	4184		14:00	Tight sand -
	P			ſ	10.3	·	2 1210	8.6	70.5	10.54	4104	10.3	14:00	potential seal leak
								8.0				10.3		MD/CP=0.5
1/36		2388.2	2363.2	4197		10:41	3190.3	3466.1	99.0	10:46	4197		05.00	
	P	ļ		Ī	10.3		0170.0	8.5	77.0	10.40	4197		05:00	
				<del></del>				1 0.3				10.3		MD/CP=18.5
1/37		2390.6	2365.6	4202		10:54	3100.4	3466.9	99.4	10:57	4202		02.00	
	P			Γ	10.3	10.51	3100.4	8.5	39.4	10.57	4202		03:00	
												10.3		MD/CP=14.4
1/38		2392.3	2367.3	4205		11:01	3464.1	3467.2	99.7	11:05	,			Final hydrostatic not
	P	1		ΙΓ	10.3	11.01	3404.1		99.7	11:05	n/a			observed-operator error
				l				8.5				######		MD/CP=n/a
1/39	1	2392.3	2367.3	4205		11:10	3464.7	3467.2	99.8	11.14		1		Point 1/38 re-done
	P			.205	10.3	11.10	2404.7	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	99.8	11:14	4205		04:00	
					10.5			8.5				10.3		MD/CP=1491.3
1/40		2406.9	2381.9	4230	1	11:20	3347.4	2401.7	00.0	11.00				
	P			-1230	10.3	11.20	3347.4	3491.7	99.8	11:23	4230		03:00	
		<u>l</u>			10.3		1	8.5	l			10.3		MD/CP=51.2

Well				TURRUM-5				Page	DIXIIXIO	5 of 8					
Date				13-Sep-95				Geologist-Engineer			Mike Scott		0		
Tool Typ		, RFT)		Schlumberg	er MD	Γ		KB (metres):			25				
Gauge Ty	•			CQG				Probe type	Long nose						
Pressure		sia, psig)		PSIA				Temperature units (	degC						
Run-	Seat		pth	Initial		Time	Minimum			Final Delta		Delta	Comments		
Num	ber	m MDRKB	m TVDSS	Hydrosta	itic	Set	Flowing	Pressure	1	Retract	Hydrosta		1	Including Test Quality	
1 .	P=Pretest			Pressur	re i	(HH:MM)	Pressure			(HH:MM)	Pressu		8	and Fluid Type.	
	S=Sample				PPg			PPg		(======		PPg	(11211.00)	una i iuiu i ype.	
								1 - 5				118			
1/41		2414.3	2389.3	4242		11:28	3441.5	3495.1	100.1	11:33	4243		05:00		
	P				10.3			8.5			1	10.3	05.00	MD/CP=96.7	
												10.5		IVID/CF = 90, 1	
1/42		2418.6	2393.6	4251	1	11:38	3492.0	3495.4	100.6	11:42	4251		04:00		
	P				10.3			8.5	700.0		1231	10.3	04.00	MD/CP=1235.2	
						<del></del>						10.3		IVID/CP=1233.2	
1/43		2411.7	2386.7	4239		11:46	3485.4	3493.4	100.7	11:49	4239		03:00		
	P			ľ	10.3			8.5	100.7	11.45	7237	10.3	03.00	MD/CP=516.4	
			*****					0.3		<del></del>		10.3		MD/CP=316.4	
1/44		2526.1	2501.1	4438		12:17	3584.6	3708.9	103.9	12:21	4437		04:00		
	P				10.3			8.6	100.5	. 2.21		10.3	04.00	MD/CP=37.4	
											<del> </del>	10.3		IVID/CF=37,4	
1/45		2527.6	2502.6	4440		12:25	3654.9	3709.6	104.1	12:29	4439		04:00		
	P				10.3			8.6	10	12.27	1137	10.3		MD/CP=87.3	
							·	1 0.0				10.3		Aborted - supercharged	
1/46		2534.1	2509.1	4451		12:32	1932.7	_	105.0	12:40	4451		08:00	Aborted - supercharged	
	P			ſ	10.3			_	100.0	12.10	4-131	10.3		MD/CP=0.3	
												10.5		Aborted - tight	
1/47		2538.5	2513.5	4458		12:44	1717.8	-	104.8	12:50	4458		06:00	Aborted - tight	
	P			[	10.3			_	10.00	.2.50	1150	10.3		MD/CP=2.5	
												10.5		MD/CP=2.5	
1/48		2541.7	2516.7	4464		12:54	3462.8	3725.5	106.1	12:58	4464		04:00	İ	
	P			Ī	10.3			8.6	100.1	12.50		10.3		) 4D/OD-06 0	
								1 0.0		<del></del>		10.3		MD/CP=26.2	
1/49		2548.1	2523.1	4476		13:02	3694.4	3724.9	106.8	13:06	4476		04:00	}	
	P			I	10.3			8.6	.00.0	15.00	7470	10.3		MD/CP=123.1	
			***					1 0.0				10.3		Aborted - tight	
1/50		2568.3	2543.3	4511		13:12	1754.3	_	107.1	13:16	4511		04:00	Aboned - tight	
	Р			1	10.3	,			107.1	15.10	4211	10.3		) (ID/CID-52 A	
		ــــــــــــــــــــــــــــــــــــــ							<u> </u>			10.3		MD/CP=53.0	

Well				TURRUM-5				Page 6 05 0							
Date				13-Sep-95	··	<del></del>		0 01 8							
Tool Typ	e (MD)	, RFT)		Schlumberger	MD	r		KB (metres):			Mike Scott				
Gauge T				CQG											
Pressure		sia, psig)		PSIA			····		Long nose						
Run-	Seat	De	pth	Initial		Time	Minimum				degC				
Nun	iber	m MDRKB	m TVDSS	Hydrostati	.	Set	Flowing	Formation	Temp	Time	Final		Delta	Comments	
	P=Pretest			Pressure	<b>`</b>	(HH:MM)	Pressure	Pressure		Retract	Hydrosta			Including Test Quality	
	S=Sample				PPg	(1111.171171)	Fressure	ļ	┦	(HH:MM)	Pressu	re	(MM:SS)	and Fluid Type.	
					rrg			PPg				PPg			
1/51		2570.6	2545.6	4515	- [	12.24	2702 5		l						
Ì	P		23 13.0	<del>,</del>		13:24	3702.5	3738.6	108.5	13:28	4515		04:00		
	<u> </u>			<u> </u>	10.3		-	8.5	<u> </u>			10.3		MD/CP=127.6	
1/52		2568.8	2543.8	4510										127.0	
	Р	2500.0	2343.8	4512		13:31	3663.8	3737.1	109.0	13:34	4512		03:00		
	<u> </u>				10.3			8.5			l	10.3		MD/CP=21.5	
1/53		2580.1	25551									10.5		MD/CF-21.3	
1755		2380.1	2555.1	4532		13:41	3610.9	3748.7	109.7	13:44	4532		03:00		
	P			1	0.3			8.5			.552	10.3		) TO (CD. Ac. a	
1/54		2500 5									L	10.3		MD/CP=38.5	
1/34		2599.7	2574.7	4566		13:51	2358.8	3712.3	111.0	13:57	4566		06:00		
	P			1	0.3			8.4		13.57	4300 1	10.3			
1 /55	- 1				T							10.3		MD/CP=3.2	
1/55		2601.6	2576.6	4569		14:01	3679.1	3710.4	111.7	14:04	4569	į	02.00		
	P			1	0.3			8.4		14.04	4369 <b>Г</b>		03:00		
	l							1 0.4			<u>-</u>	10.3		MD/CP=214.9	
1/56		2604.0	2579.0	4574		14:09	3562.9	3712.7	112.4	14:14	4554	l			
	P			ī	0.3			8.4	112.4	14:14	4574		05:00		
				······································				8.4				10.3	`	MD/CP=33.9	
1/57		2607.1	2582.1	4579		14:18	3598.8	3715.4				- 1			
	P	l	ŀ		0.3	11.10	3338.8		113.0	14:22	4579_		04:00		
					<del>"-</del> +			8.4				10.3		MD/CP=40.5	
1/58	l	2608.6	2583.6	4582		14:26	2470 4	00.1-					i		
Γ	P		2502.0	-	-	14.20	3478.4	3716.5	113.6	14:31	4582		05:00		
					0.3			8.4			Γ	10.3		MD/CP=22.3	
1/59	-	2613.8	2588.8	4591	- 1	1465									
Г	P	2013.0	2300.0	-		14:36	3503.0	3721.9	113.9	14:40	4591	I	04:00		
L	<del></del>				0.3			8.4	- 1		Γ	10.3		MD/CP=18.7	
1/60	1	2610.1	0500 :	_		T								VIL./CF-10./	
1,00		2618.1	2593.1	4599		14:45	3295.7	3725.5	114.5	14:50	4598	- 1	05:00	ļ	
	P	L		10	).3			8.4	ł			10.3		FD/CT 11.6	
								·		<u></u>	L	10.3	I	/ID/CP=14.6	

# ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well				TURRUM-5	2000 110	OTTUXLIA	LID - PRESS	OKE	DATAFO				
Date				13-Sep-95			Page			7	of	8	
Tool Typ	e (MD)	, RFT)		Schlumberger MD	T		Geologist-Engineer			Mike Scott			
Gauge T				CQG	1		KB (metres):		·	25			
Pressure	units (p	sia, psig)		PSIA		<del></del>	Probe type			Long nose			
Run-			pth	Initial	Time	1 16: :	Temperature units (			degC			
Num	ber	m MDRKB		Hydrostatic	1	Minimum	Formation	Temp	Time	Final		Delta	Comments
	P=Pretest			Pressure	Set	Flowing	Pressure		Retract	Hydrosta	atic		Including Test Quality
	S=Sample			· ·	(HH:MM)	Pressure		J	(HH:MM)	Pressu	re		and Fluid Type.
	3.00.00			PPg			PPg				PPg	(	1 1 Jpo.
1/61		2620.8	2595.8	4604									
	P	2020.0	2393.8	4604	14:54	3548.9	3727.9	115.0	14:57	4604		03:00	
				10.3			8.3			1 1	10.3		MD/CP=38.2
1/62		2622.5	2597.5	4.60							10.5		IVID/CF-36.2
1702	Р	2022.5	2397.3	4607	15:02	3395.3	3730.0	115.3	15:05	4607		03:00	
	<del></del>			10.3			8.3	1			10.3	05.00	MD/CP=14.6
1/63	į	2628.6	2602.6							<u>-</u>	10.5		IVID/CP=14.6
1703		2028.0	2603.6	4619	15:10	2434.6	3743.6	115.6	15:14	4619		04:00	
	P			10.3			8.4	1		1	10.3	04.00	) (D) (D) 2 4
1/64	- 1	2627.1	2612.								10.3		MD/CP=3.4
1704		2637.1	2612.1	4633	15:21	3707.3	3753.4	116.0	15:24	4633		03:00	
	P			10.3			8.4			1035	10.3	03.00	) (T) (C)
1/65	1	2651.0					······································			L	10.3		MD/CP=91.7
1/05		2651.0	2626.0	4658	15:33	3634.0	3772.6	116.6	15:36	4658	I	03:00	
L	P			10.3		j	8.4		13.50	1056 <b>1</b>	10.3	i	
1166	į		İ							<u>i</u>	10.3		MD/CP=36.6
1/66 r		2672.5	2647.5	4695	15:44	3508.6	3800.8	117.2	15:48	4695		04.00	
	Р			10.3			8.3	117.2	13.46	4093 <b>Г</b>		04:00	
	-						0.5				10.3		MD/CP=20.1
1/67		2711.1	2686.1	4762	15:56	1317.1	_	118.6	16:01	47/0	ŀ		Aborted - tight
	P			10.3	Ì			110.0	10.01	4762 F		05:00	
											10.3		MD/CP=0
1/68		2438.3	2413.3	4284	18:31	2937.7	3574.2	102.1	19.27	400:	İ		20cc pretests set
	P			10.3		2237.7	8.6	102.1	18:37	4284		06:00	
	T						8.6				10.3		MD/CP=11.2
1/69		2475.1	2450.1	4348	18:46	1276.1		10,5					Aborted - supercharged
	P			10.3	10.10	12/0.1		104.2	18:54	4347		08:00	-
				10.5							10.3		MD/CP=1.0
1/70	1	2545.1	2520.1	4469	18:58	761.9	1						Aborted - tight
Γ	P	}		10.3	10.56	761.8	-	106.5	19:07	4469_		09:00	Ĭ
				10.3							10.3	l <sub>1</sub>	MD/CP=0

# ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well				TURRUM-5			Page		<i>57</i> <b>17</b> 17 <b>1</b> 10	lo lo	-6		
Date				13-Sep-95			Geologist-Engineer			Mike Scott	of	8	
Tool Type	e (MDT	, RFT)		Schlumberger MD	Γ		KB (metres):	·		25			
Gauge Ty				CQG			Probe type						
Pressure		sia, psig)		PSIA		······································	Temperature units (c	legF. de	gC)	Long nose degC			
Run-S			pth	Initial	Time	Minimum	Formation	Temp		Final		Delta	Comments
Num	ber	m MDRKB	m TVDSS	Hydrostatic	Set	Flowing	Pressure		Retract	Hydrosta	ıtic	i .	Including Test Quality
	P≂Pretest			Pressure	(HH:MM)	Pressure			(HH:MM)	Pressur			and Fluid Type.
	S=Sample			PPg			PPg		,		PPg	()	Tala Typo.
1/71		2547.4	2522.4	4473	19:11	3619.9	3724.0	107.9	19:15	4473		04:00	10cc pretests set
	P			10.3			8.6				10.3		MD/CP=63.5

## ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well				TURRUM-5				Page				of		
Date				13-Sep-95				Geologist-Engineer			Mike Scott			
Tool Type	e (MDT	, RFT)		Schlumberge	r MDI	<u>'</u>		KB (metres):			25			
Gauge Ty				CQG				Probe type			Long nose			
Pressure	units (ps	sia, psig)		PSIA				Temperature units (	degF, de	gC)	degC		····	
Run-		Dep		Initial		Time	Minimum	Formation	Temp	Time	Final		Delta	Comments
Num	ber	m MDRKB	m TVDSS	Hydrostat	ic	Set	Flowing	Pressure		Retract	Hydrosta	atic		Including Test Quality
	P≕Pretest			Pressure	,	(HH:MM:SS)	Pressure		ŀ	(HH:MM:SS)	Pressu	re	(MM:SS)	and Fluid Type.
	S=Sample				PPg			PPg				PPg	,	
1/1			-25.0	[;	<i>44444</i>			#####	ŧ			######		

		Well: Turrum-5		
				1/2
Run/seat number		#/#	1/1	2206.0
Sample depth		m mdrkb	2206.0 20cc	20cc
Pretest volume		CC	450cc	450cc
Chamber size		cc/litre/gallon	(1) AA485	(2) AA 487
Chamber serial number		#	LONG NOSE	LONG NOSE
Probe type			4 x 20/1000 ths	4 x 20/1000 ths
Choke size		B. Sampling History	4 X 20/1000 tile	
		dd/mm/yy	13/9/95	13/9/95
Date		psia	3879.0	
nitial hydrostatic		hh:mm	17:53	
Fool Set		hh:mm	17:55	
Pretest start		psia	3228.0	
nitial formation pressure (	pretest)	hh:mm	17:56	
Pretest end		hh;mm	0:01	
Pretest duration		hh:mm	0.07	
Pumpout start		hh:mm		
Pumpout end Pumpout duration		hh:mm		
Pumpout duration Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at pro	hhe	ohm-m		
Maximum resisitivity at pro Chamber open		hh;mm	17:57	18:03
Minimum sampling pressu	ire	psia	2949.4	2937.7
Final formation pressure		psia	3228.0	3227.8
Seal chamber		hh:mm	18:02	18:08
Chamber fill time		hh:mm	0:05	0:05
Tool retract		hh:mm		18:11
Final hydrostatic		psia		3879.0
Total time		hh:mm		0:18
, etal timo	C. Sample Do	ownhole Temperature And	Resistivity	
At sample depth (AMS)		degC	94.6	95.9
Rm@sample depth (AMS	<u> </u>	ohm-m	0.04	0.04
, , , , , , , , , , , , , , , , , , ,		Sample Recovery At Surfac	e	
Surface opening pressure		psig	800	0
Volume gas		cuft	TSTM	0
Volume oil/condensate		litres		-
Volumo water/filtrate		litres	250cc	450cc
Volume waterminate	F. Samo	ole Properties Measured O	n-Site	
Gas via chromatograph	C1	ppm		
Gas via critornatograpii	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Candanada	API @ degC	degrees	@	@
Oil/Condensate	Colour	acgrees		
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.102 @ 18	0.102 @ 17
A A OTCIVI IIII OTC	K+ ion calculated from KC		23500	23800
	Chlorides titrated	ppm	38000	36000
	Tritium	DPM	Not used	Not used
	pH		7.5	6.35
	Туре		Filtrate	Filtrate
ang ang kanggalang ng paggalang da kanggalang ng kanggalang ng paggalang da kanggalang ng kanggalang ng kangga	[ ] I	F: Mud Filtrate Properties		
	a um motorono tanto recento 1944 dictribito. 1944	ohm-m@degC	0.096 @ 21	0.096 @ 21
Rmud @ degC K+ ion calculated from K0	7106	ppm	26400	26400
Chlorides titrated	<u> </u>	lppm l	35500	35500
pH			9	9
pn Tritium		DPM	Not used	Not used
	grafija, Nysika kari ja kata ka ka dagaan ka dagaan ka dagaan ka ka ka ka ka ka ka ka ka ka ka ka ka	G. General Calibration		
			10.3	10.3
		ppg	3872	3872
Reported mud weight		psia		1 3372
Reported mud weight Calculated hydrostatic				
		I. Remarks and Comments		ongoific
Calculated hydrostatic	General rable. One 450cc used as d			specific   Sample?

	odruja je ili jegi in 1 dan dastava se seconomica i	Well: Turrum-5		
Run/seat number		A. Sample Identification		
Sample depth		#/#	1/3	1/4
Pretest volume		m mdrkb	2548.0	2548.2
Chamber size		CC	20cc	20cc
Chamber serial number		cc/litre/gallon #	450cc	450cc
Probe type		#	Not used	Not used
Choke size			LONG NOSE	LONG NOSE
	8 (100 100 400 100 100 100 100 100 100 100	D 6	4 x 20/1000 ths	4 x 20/1000 th
Date		B. Sampling History		
		dd/mm/yy	13/9/95	13/9/96
nitial hydrostatic		psia	4474.0	4475.0
Tool Set		hh:mm	19:19	19:36
Pretest start		hh:mm	19:23	19:37
nitial formation pressur	e (pretest)	psia		
Pretest end		hh:mm		
Pretest duration		hh:mm		
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		hh:mm	0:00	0:00
Pumpout volume		litres		
OFA indication		colour		
nterpreted fluid at OFA				
Maximum resisitivity at p	robe	ohm-m		
Chamber open		hh:mm		
Minimum sampling pres		psia		<del></del>
inal formation pressure		psia		
Seal chamber		hh:mm		
Chamber fill time		hh:mm	0:00	0:00
ool retract	· · · · · · · · · · · · · · · · · · ·	hh:mm	V.00	0.00
inal hydrostatic		psia		
otal time		hh:mm		
	C. Sample I	Downhole Temperature And		
t sample depth (AMS)		degC	108.9	
Rm@sample depth (AM	S)	ohm-m	0.04	110.8 0.04
		Sample Recovery At Surfa	0.04	0.04
Surface opening pressur	• • • • • • • • • • • • • • • • • • •	Sample Recovery At Suria		in diament
olume gas		psig		
olume gas olume oil/condensate		cuft		
olume water/filtrate		litres		
	To the last the second of the	litres		
`aa ula ahaa	E. San	ple Properties Measured O	n-Site	
Sas via chromatograph	[C1	ppm		
	C2	ppm		
	C3	ррт		
	C4	ppm		
	C5	ppm		<del></del>
	C6+	ppm		
	CO2	%		
	H2S	ppm		
il/Condensate	API @ degC	degrees	@	@
	Colour	"		
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point			
/ater/Filtrate	Rmud @ degC	degC		
	K+ ion calculated from K	ohm-m@degC		@
	Chlorides titrated			
		ppm		
	Tritium	DPM		
	pH			
	Туре			
		F. Mud Filtrate Properties		
nud @ degC	-M	ohm-m@degC	0.096 @ 21	0.096 @ 21
ion calculated from KC	CL%	ppm	26400	26400
nlorides titrated		ppm	35500	35500
			9	9
tium		DPM	Not used	Not used
ported mud weight	s or a consumption of TEST		10.3	40.3
Iculated hydrostatic		ppg		10.3
		psia	4472	4472
		. Remarks and Comments		
	General		Sample sp	ecific
	th correlation often 4/2			
mp out inoperable. Dep	in correlation after 1/3.		Probe set	Probe set

and the second second second		Well: Turrum-5		
Run/seat number	A			
Sample depth		#/#	1/5	1/6
Pretest volume		m mdrkb	2547.4	2547.4
Chamber size		CC	20cc	20cc
Chamber serial number		cc/litre/gallon #	450cc	450cc
Probe type		#	(5) AA479	(6) AA478
Choke size		<del></del>	LONG NOSE	LONG NOSE
			4 x 20/1000 ths	4 x 20/1000 th
Date		B. Sampling History		
Initial hydrostatic	<del></del>	dd/mm/yy	13/09/95	13/09/95
Tool Set		psia	4473.0	
Pretest start	<del></del>	hh:mm	19:43	
		hh:mm	19:44	
Initial formation pressure	(pretest)	psia	3723.6	
Pretest end		hh:mm	19:46	
Pretest duration		hh:mm	0:02	0:00
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		hh:mm	0:00	0:00
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at p	robe	ohm-m		
Chamber open		hh:mm	19:47	19:53
Minimum sampling press	ure	psia	2003.2	3421.6
inal formation pressure		psia	3722.8	3723.1
Seal chamber		hh:mm	19:52	
Chamber fill time		hh:mm	0:05	19:55 <i>0:02</i>
Fool retract		hh:mm	0.03	
Final hydrostatic		psia		19:56
Total time		hh:mm		4473.0
	C. Sample Dowi	The least of the l		0:13
At sample depth (AMS)	C. Sample Down			
Rm@sample depth (AMS	1	degC	111.0	111.3
		ohm-m	0.05	0.05
11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	D. Sam			
Surface opening pressure	1	psig	25	0
/olume gas		cuft	0	0
/olume oil/condensate		litres	0	0
olume water/filtrate	····	litres	450cc	
	E. Sample	Properties Measured On-	Site	
ias via chromatograph	C1	ppm	T	
	C2	ppm		<del></del>
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+			
	CO2	ppm .		
<del></del>	H2S	%		
il/Condensate		ppm		
m condensate	API @ degC	degrees	@	@
	Colour			
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		
·	Pour point	degC		
'ater/Filtrate	Rmud @ degC	ohm-m@degC	0.099@19	ര
ater/Filtrate	Rmud @ degC	ohm-m@degC ppm	0.099@19 24700	
ater/Filtrate		ppm	24700	@
/ater/Filtrate	Rmud @ degC  K + ion calculated from KCL%	ppm ppm	24700 37000	@
'ater/Filtrate	Rmud @ degC K + ion calculated from KCL% Chlorides titrated	ppm	24700 37000 Not used	<u>@</u>
ater/Filtrate	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH	ppm ppm	24700 37000 Not used 7.4	@
	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	ppm ppm DPM	24700 37000 Not used	@
	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	ppm ppm DPM DrM dritrate Properties	24700 37000 Not used 7.4 Filtrate	
nud @ degC	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Me	ppm ppm DPM  driltrate Properties ohm-m@degC	24700 37000 Not used 7.4 Filtrate	0.096 @ 21
nud @ degC + ion calculated from KC	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Me	ppm ppm DPM  defiltrate Properties ohm-m@degC ppm	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400	
nud @ degC + ion calculated from KC slorides titrated	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Me	ppm ppm DPM  driltrate Properties ohm-m@degC	24700 37000 Not used 7.4 Filtrate	0.096 @ 21
nud @ degC + ion calculated from KC slorides titrated	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Me	ppm ppm DPM  driltrate Properties ohm-m@degC ppm ppm	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400	0.096 @ 21 26400
nud @ degC + ion calculated from KC alorides titrated I	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm DPM  diffiltrate Properties ohm-m@degC ppm ppm	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used	0.096 @ 21 26400 35500
nud @ degC + ion calculated from KC lorides titrated   	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm DPM  driltrate Properties ohm-m@degC ppm ppm	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used	0.096 @ 21 26400 35500 9
nud @ degC + ion calculated from KC slorides titrated I itium	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm DPM  did Filtrate Properties ohm-m@degC ppm ppm DPM  General Calibration	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used	0.096 @ 21 26400 35500 9 Not used
nud @ degC + ion calculated from KC slorides titrated I itium ported mud weight lculated hydrostatic	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm  DPM  General Calibration ppg psia	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used	0.096 @ 21 26400 35500 9 Not used
nud @ degC + ion calculated from KC lorides titrated tium ported mud weight lculated hydrostatic	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm  DPM  General Calibration ppg psia	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used 10.3 4471	0.096 @ 21 26400 35500 9 Not used
nud @ degC + ion calculated from KC lorides titrated tium ported mud weight lculated hydrostatic	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm  DPM  General Calibration ppg psia	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used 10.3 4471	0.096 @ 21 26400 35500 9 Not used 10.3 4471
nud @ degC + ion calculated from KC slorides titrated I itium ported mud weight lculated hydrostatic	Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mo	ppm ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm  DPM  General Calibration ppg psia	24700 37000 Not used 7.4 Filtrate 0.096 @ 21 26400 35500 9 Not used 10.3 4471	0.096 @ 21 26400 35500 9 Not used 10.3 4471

Fulfiel His Tringle	H. Rem	arks and Comments		그 많은 이 등 등 그는 점심하
aroulated Hydrostatic		psia	4512	4512
eported mud weight alculated hydrostatic		ppg	10.3	10.3
	G, G	eneral Calibration		
tium		DPM	Not used	Not used
liondes titrated		ppm	35500 9	35500 9
<ul> <li>ion calculated from halferides titrated</li> </ul>	CL%	ppm	26400	26400
nud @ degC	(OL 0)	ohm-m@degC	0.096 @ 21	0.096 @ 21
		d Filtrate Properties		
	Туре			
	pH			
	Tritium	DPM		
	Chlorides titrated	ppm		
acon intate	K+ ion calculated from KCL%	ohm-m@degC	@	@
/ater/Filtrate	Pour point Rmud @ degC	degC		
······	GOR or CGR	cuft/bbl or mmscf/bbl		
	Fluorescence			
	Colour			
il/Condensate	API @ degC	degrees	@	@
	H2S	ppm	0	
	CO2	%	4%	
	C6+	ppm	N/A	
	C5	ppm	4767	
	C4	ppm	28461	
	C3	ppm	53533	
== omomatograph	C2	ppm ppm	68798	
as via chromatograph			181891	
olarite Watermittate	F Sample D	roperties Measured O		U
olume water/filtrate		litres	Not recorded	0
olume oil/condensate		litres	101101	0
olume gas		cuft	TSTM	0
urface opening pressi	ure	psig psig	1500	0
<u> </u>	D. Samp			
m@sample depth (Air		ohm-m	0.03	0.03
t sample depth (AMS)	)	degC	112.0	112.0
	C. Sample Downl		Resistivity	
otal time		hh:mm		Hot recorded
inal hydrostatic		psia		Not recorded
ool retract		hh:mm		Not recorded
Chamber fill time		hh:mm	0;01	0:01
Seal chamber		hh:mm	20:07	20:09
inal formation pressur	e	psia	3738.2	3788.2
Minimum sampling pre	ssure	psia	3240.6	3734.5
Chamber open		hh:mm	20:06	20:08
Maximum resisitivity at		ohm-m		
nterpreted fluid at OF				
OFA indication		colour		
oumpout volume		litres		
Pumpout duration		hh:mm	0:00	0:00
Pumpout end		hh:mm		
Pumpout start		hh:mm		0.00
Pretest duration		hh:mm	0:02	0:00
Pretest end	M	hh:mm	20:05	
Initial formation pressu	re (pretest)	psia	3738.5	
Pretest start		hh:mm	20:02	
Tool Set		hh:mm	20:02	
Initial hydrostatic		psia	13/09/95 4516.0	13/09/95
Date		dd/mm/yy	13/00/05	42/00/05
	P	. Sampling History		4 X 20/1000 th
Choke size			LONG NOSE 4 x 20/1000 ths	LONG NOSE 4 x 20/1000 ths
Probe type	31	#	(3) AA477	(4) AA482
Chamber serial number	ar .	cc/litre/gallon #	450cc	450cc
Chamber size		CC	20cc	20cc
Pretest volume		m mdrkb	2570.5	2570.5
Sample deput				
Run/seat number Sample depth		#/#	1/7	1/8

	riudidens ver er i bydraudreup grede gaste kalendal.	A Cample Ide att		·
		#/#		
Sample depth		m mdrkb	2/1	2/2
Pretest volume		CC	2206.0	2392.2
Chamber size		cc/litre/gallon	20cc	20cc
Chamber serial nu	mber	#	450cc (2) AA162	450cc
Probe type			MARTINEAU	(3) AA19:
Choke size	100		4 x 20/1000 ths	MARTINEA
5		B. Sampling History	1 20/1000 this	4 x 20/1000
Date		dd/mm/yy	14/09/95	14/00/05
Initial hydrostatic Tool Set		psia	3888.0	14/09/95 4211.0
Pretest start		hh:mm	2:44	3:19
Initial formation pre	200120 (2014)	hh:mm	2:46	3:20
Pretest end	essure (pretest)	psia	3229.0	3469.0
Pretest duration		hh:mm	2:47	3:21
Pumpout start		hh:mm	0:01	0:01
Pumpout end		hh:mm	2:48	3:22
Pumpout duration		hh:mm	3:00	3:25
Pumpout volume		hh:mm	0:12	0:03
OFA indication		litres	8.2	2.9
Interpreted fluid at	OFA	colour	RED	GREEN/PURPI
Maximum resisitivit	y at probe	ohm-m	GAS	OIL+FILTRA
Chamber open		hh:mm	22	22
Minimum sampling p	pressure	psia	3:01	3:26
Final formation pres	sure	psia	3211.7	3464.2
Seal chamber		hh:mm	3227.8	3468.1
Chamber fill time		hh:mm	3:04 0:03	3:28
Tool retract		hh:mm	3:06	0:02
Final hydrostatic		psia	3886.0	3:29
Total time		hh:mm		4211.0
	C. Sample	Downhole Temperature And	Resistivity	0:10
		degC	97.3	
Rm@sample depth (	AMS) D.	ohm-m		101.4 0.04
'olume gas 'olume oil/condensa 'olume water/filtrate		cuft litres		
		ple Properties Measured On-	Site	and display as a little of
ias via chromatograj		ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
I/Condensate	H2S	ppm		
Jonathate	API @ degC Colour	degrees	@	@
	Fluorescence			
	GOR or CGR			
	Pour point	cuft/bbl or mmscf/bbl		
ater/Filtrate	Rmud @ degC	degC		
	K + ion calculated from KCL	ohm-m	@	@
	Chlorides titrated			
	Tritium	DPM DPM		
	pH	UFIVI		
	Туре			
		. Mud Filtrate Properties	moderation continues	
ud @ degC		ohm-m	0.000	
ion calculated from	KCL%	ppm	0.096 @ 21	0.096 @ 21
orides titrated		ppm	26400	26400
			35500 9	35500
ium		DPM	Not used	9
		G. General Calibration	itot useu	Not used
orted mud weight		ppg	10.3	
culated hydrostatic		psia	3872	10.3
more than the section was	H. I	Remarks and Comments	3872	4199
th correlation prior t	General		Sample spe	atti-
TO COTTE STOR PRIOR +	0 7/1		sampie špe	GHIC
lo (1) did === :	on for 2/1 - bottle (2) used.		Sample preserved	Sample preserved

		A. Sample Identification	1	\$100 BOX 100 PF
run/seat number		#/#	2/3	2/4
Sample depth		m mdrkb	2418.5	2527.5
Pretest volume		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial num	ber	#	Not used	(5) AA160
Probe type			MARTINEAU	MARTINEAU
Choke size			4 x 20/1000 ths	4 x 20/1000 th
		B. Sampling History		1 A 2.5, 1000 (II)
Date		dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic		psia	4257.0	4447.0
Tool Set		hh:mm	3:43	4:01
Pretest start		hh:mm	3:45	4:03
nitial formation press	sure (pretest)	psia	3497.0	3711.0
Pretest end		hh:mm	3:47	
Pretest duration		hh:mm	0:02	4:04
Pumpout start		hh:mm	· · · · · · · · · · · · · · · · · · ·	0:01
oumpout end		hh:mm	3:48	4:04
Sumpout duration		. hh:mm	3:52	4:08
Pumpout volume		litres	0:04	0:04
OFA indication	<u> </u>	colour	2.3	4.1
nterpreted fluid at OF	Α	Colour	GREEN/BLUE	GREEN/PURPL
Maximum resisitivity a			OIL+FILTRATE	OIL+FILTRATE
Chamber open	p. 000	ohm-m	22	22
Minimum sampling pr	PSSIIFA	hh:mm	•	4:10
inal formation pressu	Iro	psia	•	3709.0
seal chamber	41 C	psia	_	3709.7
Chamber fill time		hh:mm	_	4:14
ool retract		hh:mm	<u>.</u>	0:04
inal hydrostatic		hh:mm	3:52	4:15
otal time		psia	4257.0	4445.0
		hh:mm	0:09	0:14
t	C. Sample	Downhole Temperature And	l Resistivity	
t sample depth (AMS	5)	degC	100.6	106.7
m@sample depth (A		ohm-m	0.04	0.04
	D.	Sample Recovery At Surfa	ce	
arrade opermig press	sure	psia		T
olume gas		cuft		
olume oil/condensate		litres		
olume water/filtrate		litres		<del></del>
	E. San	nple Properties Measured C	n-Site	Name of the term of the survey
as via chromatograpi	n C1	ppm	The second secon	2000 AND AND AND AND AND AND AND AND AND AND
	C2	ppm		<del> </del>
	C3	ppm	·	+
	C4	ppm		<del> </del>
	C5	ppm		
· · · · · · · · · · · · · · · · · · ·	C6+			
	CO2	ppm o/		
	H2S	%		
I/Condensate		ppm		
, CONCENSALE	API @ degC	degrees	@	@
· · · · · · · · · · · · · · · · · · ·	Colour			
	Fluorescence			
	. GOR or CGR	cuft/bbl or mmscf/bbl		
-t	Pour point	degC		
ater/Filtrate	Rmud @ degC	ohm-m	@	@
	K+ ion calculated from K	CL% ppm	——————————————————————————————————————	
	Chlorides titrated	ppm		
	Tritium	DPM		<del></del>
	pН			
	Туре			
		F. Mud Filtrate Properties		k Kangaja papar terbahan perakana
ud @ degC		ohm-m	0.096 @ 21	0.096 @ 21
ion calculated from I	CL%	ppm	26400	26400
orides titrated		ppm	35500	
			9	35500
um		DPM		9
			Not used	Not used
orted mud weight	out the section of th			
culated hydrostatic		ppg	10.3	10.3
		psia	4245	4436
agamani,	Н	Remarks and Comments		
	General		Sample :	specific
	2/3			
th correlation prior to	n for 2/4 - bottle (5) used.	ı	Tool plugged	Sample preserved

		Well: Turrum-5		
Run/seat number		A. Sample Identification	n Page 19	
Sample depth		#/#	2/5	2/6
Pretest volume		m mdrkb	2541.6	2547.4
		cc	20cc	20cc
Chamber size		cc/litre/gallon	450cc	450cc
Chamber serial number	<u>∍r</u>	#	Not used	(6) AA193
Probe type			MARTJNEAU	MARTINEA
Choke size			4 x 20/1000 ths	4 x 20/1000 t
		B. Sampling History		1 4 x 20/1000 (
Date		dd/mm/yy	14/09/95	14/09/95
nitial hydrostatic		psia	4471.0	4480.0
Tool Set		hh:mm	4:20	4:35
Pretest start		hh:mm	4:22	4:36
nitial formation pressu	re (pretest)	psia	3727.0	
Pretest end		hh:mm	4:23	3724.0
Pretest duration		hh:mm	0:01	4:38
umpout start		hh:mm		0:02
umpout end		hh:mm	4:23	4:38
Pumpout duration		hh:mm	4:29	4:45
umpout volume			0:06	0:07
PFA indication		litres	2.9	4.7
terpreted fluid at OFA		colour	BLUE	BLUE
laximum resisitivity at	probe		FILTRATE	FILTRATE
hamber open	PIONE	ohm-m	0.03	0.03
finimum sampling pres		hh:mm		4:45
inal formation pressure	sure	psia		3048.3
end oberete e	3	psia	•	3722.0
eal chamber		hh:mm	-	4:52
hamber fill time		hh:mm		0:07
ool retract		hh:mm	4:30	
inal hydrostatic		psia	4470.0	4:53
otal time		hh:mm	0.40	4480.0
	C Sample	Downhole Temperature And	0:10	0:18
t sample depth (AMS)	o, campic	de la common de la		
m@sample depth (AM	IS)	degC	110.0	112.0
		Johm-m	0.03	0.03
urface opening pressu	D.	Sample Recovery At Surfa	ice	Salah da da da da da da da da da da da da da
olume gas	e	Pola		Chamber empt
olume gas		cuft		
olume oil/condensate		litres		
olume water/filtrate		litres		
	E. San	nple Properties Measured C	n-Site	
as via chromatograph	C1	ppm		
	C2	ppm		<del> </del>
	C3	ppm		<del> </del>
	C4			ļ
	C5	ppm		
	C6+	ppm		
	CO2	ppm		
		%		
Condonasta	H2S	ppm		
/Condensate	API @ degC	degrees	@	@
	Colour			<del> </del>
	Fluorescence			<del> </del>
	GOR or CGR	cuft/bbl or mmscf/bbl		
	Pour point	degC		
ter/Filtrate	Rmud @ degC	ohm-m		
	K+ ion calculated from K			@
	Chlorides titrated			
		ppm		
	Tritium	DPM		
	pH			
	Туре			
ga. Maraya jarah da kabupatèn da kabupatèn da kabupatèn da kabupatèn da kabupatèn da kabupatèn da kabupatèn da		F. Mud Filtrate Properties		
		ohm-m	0.96 @ 21	0.96 @ 21
ud @ degC				0.96 @ 21 26400
on calculated from KC	L%	ppm	26400	
on calculated from KC	L%	ppm	<u>26400</u>	
on calculated from KC prides titrated	L%	ppm ppm	35500	35500
on calculated from KC prides titrated	L%	ppm	35500 9	35500 9
on calculated from KC orides titrated um		ppm DPM	35500 9 Not used	35500
ud @ degC ion calculated from KC orides titrated um orted mud weight	L%	DPM G. General Calibration	35500 9 Not used	35500 9 Not used
ion calculated from KC orides titrated um orted mud weight		DPM G. General Calibration	35500 9 Not used	35500 9
on calculated from KC orides titrated um orted mud weight sulated hydrostatic		DPM G. General Calibration ppg psia	35500 9 Not used	35500 9 Not used
on calculated from KC prides titrated  um  orted mud weight ulated hydrostatic		DPM G. General Calibration	35500 9 Not used	35500 9 Not used 10.3 4471
on calculated from KC orides titrated um orted mud weight		DPM G. General Calibration ppg psia	35500 9 Not used 10.3 4461	35500 9 Not used 10.3 4471
on calculated from KC orides titrated um orted mud weight sulated hydrostatic	H.	DPM G. General Calibration  ppg psia	35500 9 Not used	35500 9 Not used 10.3 4471

1.54 (1.54), 1.74		Well: Turrum-5		
Run/seat number	A			
		#/#	2/7	2/8
Sample depth Pretest volume		m mdrkb	2570.5	2601.5
Chamber size		СС	20cc	20cc
Chamber serial number		cc/litre/gallon	1 Gallon	6 Gallon
		#	MRSC-BB90	MRSC-BB2
Probe type Choke size			MARTINEAU	MARTINEAL
			4 x 20/1000 ths	4 x 20/1000 tl
		B. Sampling History		
Date		dd/mm/yy	14/09/95	14/09/95
Initial hydrostatic		psia	4520.0	4573.0
Tool Set		hh:mm	4:59	5:23
Pretest start		hh:mm	5:01	5:23
Initial formation pressur	e (pretest)	psia	3738.6	3710.4
Pretest end		hh:mm	5:02	5:26
Pretest duration		hh:mm	0:01	0:03
Pumpout start		hh:mm	5:02	5:26
Pumpout end		hh:mm	5:11	5:30
Pumpout duration		hh:mm	0:09	
Pumpout volume		litres	9.4	0:04
OFA indication		colour		4.1
nterpreted fluid at OFA		Coloui	BLUE	RED
Maximum resisitivity at p	orobe		FILTRATE	GAS
Chamber open	1000	ohm-m	0.03	22
	OLIFO.	hh:mm	5:13	5:30
Minimum sampling pres		psia	514.8	677.9
inal formation pressure		psia	3738.0	3708.6
Seal chamber		hh:mm	5:16	5:38
Chamber fill time		hh:mm	0:03	0:08
ool retract		hh:mm	5:18	5;40
inal hydrostatic		psia	4520.0	4575.0
otal time		hh:mm	0.10	0.17
	C. Sample Down	hole Temperature An	d Recictivity	0.77
t sample depth (AMS)		degC	1440	
Rm@sample depth (AM	S)	ohm-m	114.0	116.0
	D. Sam		0.03	0.03
urface opening pressur	D. Saiii			
olume gas	е	psig	1475	1925
olume gas olume oil/condensate		cuft	0.7	121.4
olume water/filtrate		litres	100cc (oil)	250cc (cond)
		litres	3	3.75
		Properties Measured (	On-Site	
as via chromatograph	C1	ppm	TSTM	188817
	C2	ppm		61923
	C3	ppm		32654
	C4	ppm		
	C5	ppm		12115
	C6+			1720
<del></del>	CO2	ppm		
		%		10%
il/Condensate	H2S	ppm		0
ir Condensate	API @ degC	degrees	0.81g/cc @ 25	49.15 @ 60deg F
	Colour		LT BRN	CLR-LT BRN
	Fluorescence		YELLOW/STRAW	BLWHITE
	GOR or CGR	cuft/bbl or mmscf/bbl	1113	3.05
	Pour point	degC	22.2	>0
ater/Filtrate	Rmud @ degC	ohm-m@degC	0.111@19	0.110@16
	K+ ion calculated from KCL%	ppm	17500	16900
	Chlorides titrated	ppm	36000	35500
	Tritium	DPM	Not used	
	pH	J. IVI		Not used
	Туре	<del>                                     </del>	6.45	6
		d File-A- Div.	Filtrate	Filtrate
nud @ degC	F. Mu	d Filtrate Properties		
	1.0/	ohm-m@degC	0.096 @ 21	0.096 @ 21
ion calculated from KC	L%	ppm	26400	26400
lorides titrated		ppm	35500	35500
			9	9
tium		DPM	Not used	Not used
	al. G. G. G	eneral Calibration	Na su	
ported mud weight				
culated hydrostatic		ppg	10.3	10.3
		psia	4512	4566
		arks and Comments		
	General		Sample s	
				Incomplete sample

		Well: Turrum-5		
Dun/one		A. Sample Identification	i king sakah jinggan jawa upimalikan ji piyakaan	
		#/#	2/9	1
Sample depth Pretest volume		m mdrkb	2620.7	
Chamber size		cc	20cc	
Chamber serial number		cc/litre/gallon	2-3/4 Gallon	
Probe type		#	MRSC-DB68	
Choke size			MARTINEAU	
			4 x 20/1000 ths	
Date		B. Sampling History		
Initial hydrostatic		dd/mm/yy	14/09/95	
Tool Set		psia hh:mm	4610.0	
Pretest start		hh:mm	5:46	
Initial formation pressu	re (pretest)	psia	5:47	
Pretest end		hh:mm	5:55	
Pretest duration		hh:mm	<del> </del>	
Pumpout start		hh:mm	<del> </del>	
Pumpout end		hh:mm		
Pumpout duration		hh:mm	0:00	
Pumpout volume		litres	1	
OFA indication		colour		
Interpreted fluid at OFA		-		
Maximum resisitivity at Chamber open	probe	ohm-m		
Chamber open Minimum sampling press		hh:mm		
iviinimum sampling press Final formation pressure	sure	psia		
Seal chamber		psia		
Chamber fill time		hh:mm		
Tool retract		hh:mm	0:00	
inal hydrostatic		hh:mm		
Total time		psia		
ili. 1 ford de personalisación		hh:mm		
At sample depth (AMS)	C. Sample Do	winhole Temperature And	Resistivity	
Rm@sample depth (AMS)		ldegC		
C Campio doptii (Alvie		ohm-m		
Surface opening pressure	D. Sa	ample Recovery At Surface	:e	
		psig		
/olume das				
		cuft		
/olume oil/condensate /olume water/filtrate		litres		
/olume oil/condensate /olume water/filtrate	F 62	litres		
/olume oil/condensate /olume water/filtrate	E. Sampl	litres litres e Properties Measured Or	n-Site	
/olume oil/condensate /olume water/filtrate	E. Sampl	litres litres e Properties Measured Or ppm	n-Site	
folume oil/condensate folume water/filtrate as via chromatograph	C2	litres litres e Properties Measured Or ppm ppm	n-Site	
/olume oil/condensate /olume water/filtrate	C2 C3	litres litres e Properties Measured Or ppm ppm ppm ppm	n-Site	
/olume oil/condensate /olume water/filtrate das via chromatograph	C2 C3 C4	litres litres e Properties Measured Or ppm ppm ppm ppm ppm	n-Site	
/olume oil/condensate /olume water/filtrate das via chromatograph	C2 C3 C4 C5	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm	n-Site	
/olume oil/condensate /olume water/filtrate Gas via chromatograph	C2 C3 C4 C5 C6+	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	n-Site	
/olume oil/condensate /olume water/filtrate das via chromatograph	C2 C3 C4 C5 C6+ C02	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	n-Site	
/olume oil/condensate /olume water/filtrate Gas via chromatograph	C2 C3 C4 C5 C6+ C02 H2S	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp		
/olume oil/condensate /olume water/filtrate Gas via chromatograph	C2 C3 C4 C5 C6+ C02 H2S API @ degC	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	n-Site	
/olume oil/condensate /olume water/filtrate ias via chromatograph	C2 C3 C4 C5 C6+ C02 H2S API @ degC	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp		
/olume oil/condensate /olume water/filtrate ias via chromatograph	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp		
/olume oil/condensate /olume water/filtrate ias via chromatograph	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp		
/olume oil/condensate /olume water/filtrate Gas via chromatograph il/Condensate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	@	
/olume oil/condensate /olume water/filtrate Gas via chromatograph il/Condensate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL%	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC		
/olume oil/condensate /olume water/filtrate Gas via chromatograph il/Condensate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL%	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	@	
•	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm degrees  cutt/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ppm	@	
/olume oil/condensate /olume water/filtrate Gas via chromatograph il/Condensate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm ppm pp	@	
/olume oil/condensate /olume water/filtrate Sas via chromatograph il/Condensate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm degrees  cutt/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ppm	@	
/olume oil/condensate /olume water/filtrate  ass via chromatograph   iil/Condensate  ater/Filtrate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ppm	@	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM DPM	@	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC  ion calculated from KC	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees  cutt/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ppm	@ @ 0.096 @ 21	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC  ion calculated from KC lorides titrated	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ohm ppm ppm ppm pm	@ O.096 @ 21 26400	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC  ion calculated from KC lorides titrated	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees  cutt/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ppm	@ O.096 @ 21 26400 35500	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC  ion calculated from KC lorides titrated	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. M	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm ohm ppm ppm ppm pm	©  0.096 @ 21  26400  35500  9	
/olume oil/condensate /olume water/filtrate  Sas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC  ion calculated from KC lorides titrated	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F: N	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  full Filtrate Properties ohm-m@degC ppm ppm DPM  JOHN DPM  DPM DPM DPM DPM DPM DPM DPM DPM DP	@ O.096 @ 21 26400 35500	
/olume oil/condensate /olume water/filtrate Cas via chromatograph  iil/Condensate  ater/Filtrate  aud @ degC - ion calculated from KC lorides titrated  tium  corted mud weight	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F: N	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM Ohm-m@degC ppm ppm DPM DPM DPM DPM General Calibration	@ O.096 @ 21 26400 35500 9 Not used	
/olume oil/condensate /olume water/filtrate Gas via chromatograph il/Condensate  fater/Filtrate  rater/Filtrate  rater/Filtrate  condensat	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. M	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm DPM DPM long ppm ppm DPM DPM DPM DPM DPM DPM DPM DPM DPM DPM	@ O.096 @ 21 26400 35500 9 Not used 10.3	
/olume oil/condensate /olume water/filtrate Gas via chromatograph iil/Condensate fater/Filtrate  fater/Filtrate  for calculated from KC lorides titrated  tium  corted mud weight	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. M	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm degrees  cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  filtrate Properties ohm-m@degC ppm ppm ppm DPM  DPM  General Calibration ppg ppg ppsia	@ O.096 @ 21 26400 35500 9 Not used 10.3 4600	
Jolume oil/condensate Jolume water/filtrate Joseph Water/filtrate  iil/Condensate  Jordens	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. M	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm degrees cuft/bbl or mmscf/bbl degC ohm-m@degC ppm DPM DPM long ppm ppm DPM DPM DPM DPM DPM DPM DPM DPM DPM DPM	@	
/olume oil/condensate /olume water/filtrate  ilisas via chromatograph  iil/Condensate  ater/Filtrate  ater/Filtrate  condess titrated  tium  corted mud weight culated hydrostatic	C2 C3 C4 C5 C6+ C02 H2S API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. M	litres litres e Properties Measured Or ppm ppm ppm ppm ppm ppm ppm ppm degrees  cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  filtrate Properties ohm-m@degC ppm ppm ppm DPM  DPM  General Calibration ppg ppg ppsia	@ O.096 @ 21 26400 35500 9 Not used 10.3 4600	

The training to the	<b>V</b>	Well: Turrum-5		
Pun/coat number	A.	Sample Identification		lojit di disabili sadi
Transcour Hamber		#/#	3/1	
Sample depth		m mdrkb	2548.1	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	6 Gallon	
Chamber serial nui	mber	#	Not used	**************************************
Probe type			MARTINEAU	
Choke size			4 x 20/1000 ths	
	E	3. Sampling History		ru Brach pu Bhacushi, du 195
Date		dd/mm/yy	14/09/95	
Initial hydrostatic		psia	4489.0	
Tool Set		hh:mm	11:08	<del></del>
Pretest start		hh:mm		
nitial formation pre-	ssure (pretest)	psia	11:10	
Pretest end	(F. 3.3.7)	hh:mm	14.10	<del></del>
Pretest duration	· · · · · · · · · · · · · · · · · · ·		11:12	
Pumpout start		hh:mm	0:02	
Pumpout end	· · · · · · · · · · · · · · · · · · ·	hh:mm		
Pumpout duration		hh:mm		
Pumpout auration		hh:mm	0:00	
		litres		
OFA indication		colour		
nterpreted fluid at C		-		
Maximum resisitivity	at probe	ohm-m		
hamber open		hh:mm	11:12	
/linimum sampling	pressure	psia		
inal formation pres	sure	psia		
Seal chamber		hh:mm		
hamber fill time		hh:mm		
ool retract		hh:mm		
inal hydrostatic		psia		
otal time		hh:mm		
		inn.mm	l	
t sample depth (AN	C. Sample Downt	iole Temperature An	d Resistivity	
c sample deput (All	/15)	degC		
m@sample depth	(AMS) D. Samp	ohm-m		· · · · · · · · · · · · · · · · · · ·
urface opening pre olume gas olume oil/condensa	ite	psig cuft litres		
olume water/filtrate		litres		
e distribute feduci		roperties Measured (	n-Site	Maria de la compansión
as via chromatogra		ppm	SH-ORE CO. C. C. C. C. C. C. C. C. C. C. C. C. C.	
	C2	ppm		
	C3	ppm		
	C4			
	C5	ppm		
	C6+	ppm		
<del></del>		ppm		
	CO2	%		
	H2S	ppm		
1/0		Thbut i		
l/Condensate	API @ degC	degrees	@	
//Condensate	API @ degC Colour		@	
I/Condensate	API @ degC		@	
I/Condensate	API @ degC Colour	degrees	@	
l/Condensate	API @ degC Colour Fluorescence GOR or CGR	degrees cuft/bbl or mmscf/bbl	@	
	API @ degC Colour Fluorescence GOR or CGR Pour point	cuft/bbl or mmscf/bbl degC		
	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC	cuft/bbl or mmscf/bbl degC ohm-m@degC	@	
	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL%	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm		
l/Condensate ater/Filtrate	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm		
	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm		
	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm		
	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM	@	
ater/Filtrate	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM	@	
ater/Filtrate	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM	@	
ater/Filtrate ater/Filtrate ud @ degC ion calculated from	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC	0.096 @ 21	
ater/Filtrate aud @ degC ion calculated from	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm	©.0.096 @ 21 26400	
ater/Filtrate  nud @ degC ion calculated from	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC	©.0.096 @ 21 26400 35500	
ater/Filtrate  aud @ degC ion calculated from	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm	©.0.096 @ 21 26400 35500 9	
ater/Filtrate  aud @ degC ion calculated from lorides titrated	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DDPM	©.0096 @ 21 26400 35500 9 Not used	
ater/Filtrate  aud @ degC ion calculated from lorides titrated	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  DPM  DPM  DPM  DPM  DPM	©.0.096 @ 21 26400 35500 9 Not used	
ater/Filtrate  aud @ degC ion calculated from orides titrated ium  ported mud weight	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  Popm DPM  DPM  DPM  DPM  DPM  DPM  DPM  DPM	© 0.096 @ 21 26400 35500 9 Not used 10.3	
ater/Filtrate  aud @ degC ion calculated from lorides titrated ium  ported mud weight culated hydrostatic	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  Popm DPM  DPM  DPM  DPM  DPM  DPM  DPM  DPM	©.0.096 @ 21 26400 35500 9 Not used	
ater/Filtrate  aud @ degC ion calculated from orides titrated ium  ported mud weight	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  Popm DPM  DPM  DPM  DPM  DPM  DPM  DPM  DPM	© 0.096 @ 21 26400 35500 9 Not used 10.3	
ater/Filtrate  aud @ degC ion calculated from orides titrated ium  ported mud weight	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  Popm DPM  DPM  DPM  DPM  DPM  DPM  DPM  DPM	©  0.096 @ 21 26400 35500 9 Not used  10.3 4472	
ater/Filtrate  ud @ degC ion calculated from orides titrated ium  ported mud weight culated hydrostatic	API @ degC Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  Filtrate Properties ohm-m@degC ppm ppm DPM  Popm DPM  Companies DPM  Compan	© 0.096 @ 21 26400 35500 9 Not used 10.3	

, a Company II.		Vell: Turrum-5			
Run/seat number	A. S	Sample Identification			
Sample depth		#/#	4/1	4/2	
Pretest volume		m mdrkb	2548.0 20cc	2548.0	
Chamber size		cc/litre/gallon		20cc 2 3/4 Gallon	
Chamber serial number		#	6 Gallon		
Probe type (Long nose,	MARTINEALI		Not reported MARTINEAU	Not reported	
Choke size	νι ((γικελο)		4x20/1000 ths	MARTINEAU 4x20/1000 ths	
	В	. Sampling History		4,20/1000 (11	
Date		dd/mm/yy	14/09/95	14/09/95	
Initial hydrostatic		psia	4487.0	14/09/93	
Tool Set		hh:mm	13:42		
Pretest start		hh:mm	13:43		
Initial formation pressure	(pretest)	psia	3727.0		
Pretest end		hh:mm	13:44		
Pretest duration		hh:mm	0:01	0:00	
Pumpout start		hh:mm			
Pumpout end		hh:mm			
Pumpout duration		hh:mm			
Pumpout volume		litres		<del></del>	
OFA indication		colour			
nterpreted fluid at OFA					
Maximum resisitivity at pr	obe	ohm-m			
Chamber open		hh:mm	13:48	14:18	
Minimum sampling press	ure	psia	1008.0	194.0	
inal formation pressure		psia	Not reported	3035.0	
Seal chamber		hh:mm	14:18	14:47	
Chamber fill time		hh:mm	0:30	0:29	
Fool retract		hh:mm			
inal hydrostatic		psia			
Total time		hh:mm		0:00	
	C. Sample Downh	ole Temperature And	Resistivity		
At sample depth (AMS)		degC	108.0	108.0	
Rm@sample depth (AMS		ohm-m	0.04	0.04	
	D. Samp	le Recovery At Surfa	ce		
Surface opening pressure	)	psig	425	145	
/olume gas		cuft	-	-	
olume oil/condensate		litres	-	-	
olume water/filtrate		litres	19	9.6	
	E. Sample Pr	roperties Measured O	n-Site		
Sas via chromatograph	C1	ppm			
	C2	ppm			
	C3	ppm			
	C4	ppm			
	C5	ppm			
	C6+	ppm			
	CO2	%			
	H2S	ppm			
il/Condensate	API @ degC	degrees	@	@	
	Colour	*			
	Fluorescence			***************************************	
	GOR or CGR	cuft/bbl or mmscf/bbl			
	Pour point	degC			
/ater/Filtrate	Rmud @ degC	ohm-m@degC	0.110 @ 21	0.108 @ 22	
	K+ ion calculated from KCL%	ppm	17,200	17,800	
	Chlorides titrated	ppm	37,000	37,000	
	Tritium	DPM	Not used	Not used	
	pH		6,4	6.35	
	Туре		Filtrate	Filtrate	
		Filtrate Properties			
mud @ degC		ohm-m@degC	0.096 @ 21	0.096 @ 21	
ion calculated from KC	L%	ppm	26400	26400	
nlorides titrated		ppm	35500	35500	
1			9	9	
itium		DPM	Not used	Not used	
	G. G	eneral Calibration	Selection of the selection of the selection of		
		ppg	10.3	10.3	
eported mud weight		psia	4472	4472	
eported mud weight alculated hydrostatic					
lculated hydrostatic	Dom				
	H. Rem		Sample sp		

	ESSU AUSTRALIA L	/ell: Turrum-5	D OAMI EL ONEL	
	A. S		• January Barangara (1997)	- 10.000 10.000 - 10.000 - 10.000
Run/seat number		#/#	4/3	
Sample depth		m mdrkb	2548.0	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	Not reported	<del>                                     </del>
Chamber serial number		#	Not reported	
Probe type			MARTINEAU	
Choke size			4 x 20/1000 ths	
	B.	Sampling History		
Date		dd/mm/yy	14/09/95	
Initial hydrostatic		psia		
Tool Set		hh:mm		
Pretest start		hh:mm		
Initial formation pressure	(pretest)	psia		
Pretest end	м	hh:mm		
Pretest duration		hh:mm	0:00	
Pumpout start		hh:mm		
Pumpout end		hh:mm		
Pumpout duration		hh:mm	0:00	
Pumpout volume		litres		
OFA indication		colour		
Interpreted fluid at OFA		•		
Maximum resisitivity at pr	obe	ohm-m		
Chamber open		hh:mm	14:50	
Minimum sampling press	ure	psia	1130.0	
Final formation pressure		psia	3720.0	
Seal chamber		hh:mm	14:51	
Chamber fill time		hh:mm	0:01	
Tool retract		hh:mm	14:57	
Final hydrostatic		psia	4481.0	
Total time		hh:mm		
Beriologi, beer eight the second	C. Sample Downh	nole Temperature Ar	nd Resistivity	
At sample depth (AMS)		degC	108.0	
Rm@sample depth (AMS		ohm-m	0.04	
	D. Samp	le Recovery At Sur	face	
Surface opening pressure		psig	125	
Volume gas		cuft		
Volume oil/condensate		litres		
Volume water/filtrate		litres		
	E. Sample P	roperties Measured	On-Site	
Gas via chromatograph	C1	ppm		`
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	
	Colour	<b>T</b>		
	Fluorescence			
	GOR or CGR	cuft/bbl or mmscf/bbl		· · · · · · · · · · · · · · · · · · ·
	Pour point	degC		
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	
	K+ ion calculated from KCL%	ppm	*	
	Chlorides titrated	ppm		
	Tritium	DPM		
	pH			
	Туре			
		d Filtrate Properties	s and the same of	
Rmud @ degC		ohm-m@degC	0.096 @ 21	
K+ ion calculated from KC	L%	ppm	26400	
Chlorides titrated		ppm	35500	
рН		1	9	
Tritium		DPM	Not used	
	G. 0	Seneral Calibration		
Reported mud weight		ppg	10.3	
Calculated hydrostatic		psia	4472	
	H. Ren		S	
	General		Sample	specific
	- J.101 WI		, cample.	
Chamber 4/3 plunned - no	recovery		Final flowing pressure	
Chamber 4/3 plugged - no	recovery		Final flowing pressure =3091 psia	

At 1		Vell: Turrum-5		
	<b>A.</b>			
Run/seat number Sample depth		#/#	5/1	5/2
Pretest volume		m mdrkb	2548.0	2570.5
Chamber size		CC	20cc	20cc
Chamber serial number		cc/litre/gallon	12 Gallon	2 3/4 Gallon
Probe type (Long nose,			Not reported MARTINEAU	Not used MARTINEAU
Choke size	WARTINEAU)		4 x 20/1000 ths	4 x 20/1000 ths
	E	Sampling History		1 4 X 20/1000 ths
Date		dd/mm/yy	15/09/95	15/09/95
Initial hydrostatic		psia	4481.0	10/03/30
Tool Set		hh:mm	15:36	
Pretest start		hh:mm	15:36	
Initial formation pressure	e (pretest)	psia	3737.0	
Pretest end		hh:mm	15:37	<del></del>
Pretest duration		hh:mm	0:01	0:00
Pumpout start		hh:mm		
umpout end		hh:mm		
Pumpout duration		hh:mm	0:00	0:00
umpout volume		litres		
DFA indication		colour		
nterpreted fluid at OFA		<u> -</u>	<u> </u>	
Maximum resisitivity at p	prope	ohm-m		
Chamber open	OUTO	hh:mm	15:42	
Minimum sampling pres- inal formation pressure		psia	164.0	
Seal chamber	· · · · · · · · · · · · · · · · · · ·	psia	3097.0	
Chamber fill time		hh:mm	18:50	0.00
Fool retract		hh:mm hh:mm	3:08	0:00
inal hydrostatic		psia		
Total time		hh:mm		0:00
	C. Sample Down	hole Temperature A	nd Resistivity	
At sample depth (AMS)	of outriple bown	degC	110.0	Ng integration of the control of the
Rm@sample depth (AM	S)	ohm-m	0.04	<del></del>
	D, Sam	ole Recovery At Sur	face	
Surface opening pressur	e	psig	500	
/olume gas	***************************************	cuft		
/olume oil/condensate		litres	Trace oily scum	· · · · · · · · · · · · · · · · · · ·
/olume water/filtrate		litres	36	
	E. Sample P	roperties Measured	On-Site	
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Dil/Condensate	API @ degC	degrees	@	@
	Colour		BROWN	
	Fluorescence		BLUE/WHITE	
	GOR or CGR	cuft/bbl or mmscf/bbl		
//F9kt	Pour point	degC		
/ater/Filtrate	Rmud @ degC	ohm-m@degC	0.114 @ 22	
	K+ ion calculated from KCL%	ppm	18,300	
	Chlorides titrated	ppm	37,000	
	Tritium	DPM	- 61	
	pH Type		6.1 Filtrate	
		d Filtrato Brondette		and the contact of the second second
mud @ degC	······································	d Filtrate Properties	<del></del>	0.000 @ 04
+ ion calculated from K(	21 %	ohm-m@degC	0.096 @ 21 26400	0.096 @ 21 26400
Chlorides titrated		ppm	35500	35500
or includes titrated		ppm	9	35500
ritium		DPM	Not used	Not used
	G. 0		Not used	NOT USEU
eported mud weight		ppg	10.3	10,3
alculated hydrostatic		psia	10.3	0
alculated Hydrostatic			- 1	•
	H Dan	narks and Comment	<ul> <li>Control Officials and the control of t</li></ul>	pagaga ang pagagagan ang pagagan ang pagagan ang pagagan ang pagagan ang pagagan ang pagagan ang pagagan ang p
	H. Ren	narks and Comment		
	H. Ren General ng telemetry. Lost seat when sealin		Sample  Lost seat when sealing	

		ell: Turrum-5		
	A. S	ample Identification		
Run/seat number		#/#	6/1	6/2
Sample depth		m mdrkb	2570.5	2570.5
Pretest volume Chamber size		CC	20cc	20cc
Chamber size Chamber serial number		cc/litre/gallon	1 Gallon	1 Gallon
	(Antinony)	#	Not reported MARTINEAU	Not reported MARTINEAU
Probe type (Long nose, I Choke size	vartineau)		4 x 20/1000 ths	4 x 20/1000 ths
Choke Size	P	Sampling History		4 X 20/1000 tils
Date	).	dd/mm/yy	16/09/95	16/09/95
Initial hydrostatic		psia	4514.0	10/03/30
Tool Set		hh:mm	15:45	
Pretest start		hh:mm	15:46	
Initial formation pressure	(pretest)	psia	3739.0	
Pretest end	<u> </u>	hh:mm	15:48	
Pretest duration		hh:mm	0:02	0:00
Pumpout start		hh:mm	15:49	
Pumpout end	· · · · · · · · · · · · · · · · · · ·	hh:mm	16:54	
Pumpout duration		hh:mm	1:05	0:00
Pumpout volume		litres	60	
OFA indication		colour	NOT REPORTED	
Interpreted fluid at OFA		-	NOT REPORTED	
Maximum resisitivity at pr	obe	ohm-m	NOT REPORTED	
Chamber open		hh:mm	16:55	17:08
Minimum sampling press	ure	psia	1949.0	2182.0
Final formation pressure		psia	3733.0	3734.0
Seal chamber		hh:mm	17:07	17:19
Chamber fill time		hh:mm	0:12	0:11
Tool retract		hh:mm		17:21
Final hydrostatic		psia		4514.0
Total time		hh:mm		1:36
	C. Sample Downh	ole Temperature An	nd Resistivity	
At sample depth (AMS)		degC	88.0	94.0
Rm@sample depth (AMS		ohm-m	0.05	0.05
	D. Samp	le Recovery At Surf		
Surface opening pressure	<u> </u>	psig	1725	Seal failed
Volume gas		cuft	10.1	Not available
Volume oil/condensate		litres	1.25	1.5
Volume water/filtrate		litres	1.25	1.5
	E. Sample Pr			
Gas via chromatograph	C1	ppm	62006	
	C2	ppm	31474	
	C3	ppm	15907	
	C4	ppm	1974	
	C5	ppm	129	ļ
	C6+ CO2	ppm	-	
		%	10%	
Oil/Condensate	H2S	ppm	0	•
Oll/Condensate		1	44.7.0.45.5	44.7.6.45.5
o iii o o i i a o i i a o i i a o i i a o i a o i a o i a o i a o i a o i a o i a o i a o i a o i a o i a o i a	API @ degC	degrees	41.7 @ 15.5	41.7 @ 15.5
	Colour	degrees	GRN/BRN	GRN/BRN
	Colour Fluorescence		GRN/BRN PALE YELLOW	41.7 @ 15.5 GRN/BRN PALE YELLOW
	Colour Fluorescence GOR or CGR	cuft/bbl or mmscf/bbl	GRN/BRN PALE YELLOW 1248.7	GRN/BRN
	Colour Fluorescence GOR or CGR Pour point	cuft/bbl or mmscf/bbl degC	GRN/BRN PALE YELLOW 1248.7 21	GRN/BRN PALE YELLOW
Water/Filtrate	Colour Fluorescence GOR or CGR Pour point Rmud @ degC	cuft/bbl or mmscf/bbl degC ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17	GRN/BRN PALE YELLOW 0.127 @ 17
	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL%	cuft/bbl or mmscf/bbl degC ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900	GRN/BRN PALE YELLOW 0.127 @ 17 16900
	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000	GRN/BRN PALE YELLOW 0.127 @ 17 16900 34000
	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium	cuft/bbl or mmscf/bbl degC ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used	GRN/BRN PALE YELLOW 0.127 @ 17 16900 34000 Not used
	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000	GRN/BRN PALE YELLOW 0.127 @ 17 16900 34000
Water/Filtrate	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0
Water/Filtrate	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM DPM	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate
Water/Filtrate  Rmud @ degC	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mu	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate
Water/Filtrate	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mu	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mu	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19
Water/Filtrate  Rmud @ degC K+ ion calculated from KC	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mu	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Mu	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm DPM	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium  Reported mud weight	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm DPM DPM  DPM ppm	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium  Reported mud weight Calculated hydrostatic	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm DPM  DPM  DPM  eneral Calibration ppg psia	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium  Reported mud weight Calculated hydrostatic	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm DPM  DPM  DPM  eneral Calibration ppg psia	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used
Water/Filtrate  Rmud @ degC K+ ion calculated from KC Chlorides titrated pH Tritium  Reported mud weight Calculated hydrostatic	Colour Fluorescence GOR or CGR Pour point Rmud @ degC K+ ion calculated from KCL% Chlorides titrated Tritium pH Type F. Muc	cuft/bbl or mmscf/bbl degC ohm-m@degC ppm ppm DPM  d Filtrate Properties ohm-m@degC ppm ppm DPM  DPM  DPM  eneral Calibration ppg psia	GRN/BRN PALE YELLOW 1248.7 21 0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used	GRN/BRN PALE YELLOW  0.127 @ 17 16900 34000 Not used 6.0 Filtrate  0.109 @ 19 21480 34500 9.1 Not used 10.3 4512  specific

		ell: Turrum-5			
	A. Sa				
Run/seat number		#/#	6/3	6/4	
Sample depth		m mdrkb	2548.6	2548.6	
Pretest volume		cc	20cc	20cc	
Chamber size		cc/litre/gallon	12 Gallon	2 - 3/4 Gallon	
Chamber serial number		#	Not reported	Not reported MARTINEAU	
Probe type (Long nose, M	lartineau)		MARTINEAU	4 x 20/1000 ths	
Choke size			4 x 20/1000 ths	4 X 20/1000 ths	
	В.	Sampling History		17/09/95	
Date		dd/mm/yy	16/09/95 4468.0	17/09/93	
Initial hydrostatic		psia	17:38		
Tool Set		hh:mm	17:38		
Pretest start	/	hh:mm	3722.0		
Initial formation pressure	(pretest)	psia hh:mm	17:40		
Pretest end		hh:mm	0:02	0:00	
Pretest duration		hh:mm	0.02	0:22	
Pumpout start Pumpout end		hh:mm		0:44	
Pumpout duration		hh:mm	0:00	0:22	
Pumpout volume		litres	0.00	3.57	
OFA indication		colour	<del> </del>	Not reported	
Interpreted fluid at OFA		-		Not reported	
Maximum resisitivity at pr	nhe	ohm-m		Not reported	
Chamber open		hh:mm	17:40	0:45	
Minimum sampling press	Ire	psia	175.0	278.0	
Final formation pressure	u. U	psia	3399.0	3248.0	
Seal chamber		hh:mm	0:21	3:25	
Chamber fill time		hh:mm	V.E.	2:40	
Tool retract		hh:mm			
Final hydrostatic		psia			
Total time		hh:mm		0:00	
	C. Sample Downh		d Resistivity		
At sample depth (AMS)		degC	95.0	103.0	
Rm@sample depth (AMS	3)	ohm-m	0.04	0.04	
	D, Samp		ace		
Surface opening pressure		psig	825	1525	
Volume gas		cuft	2.5	11.9	
Volume oil/condensate		litres	Trace oil scum	3.75	
Volume water/filtrate		litres	38	4.5	
	E. Sample Pr	operties Measured	On-Site		
Gas via chromatograph	IC1	ppm	37167	20577	
Cao via orirornatograpii	C2	ppm	6706	2020	
	C3	ppm	2071	783	
	C4	ppm	444	200	
	C5	ppm	3	15	
	C6+	ppm	-	-	
	CO2	%	20%	12%	
	H2S	ppm	0	•	
Oil/Condensate	API @ degC	degrees	TSTM	40.9 @ 15.5	
	Colour	<u> </u>	GRN/BRN	GRN/BRN	
	Fluorescence		PALE YELLOW	PALE YELLOW	
	GOR or CGR	cuft/bbl or mmscf/bbl	TSTM	504.6	
	Pour point	degC	TSTM	24	
Water/Filtrate	Rmud @ degC	ohm-m@degC	0.131 @ 20	0.126 @ 20	
	K+ ion calculated from KCL%	ppm	18100	17500	
	Chlorides titrated	ppm	33540	34000	
	Tritium	DPM	-		
	pH		6.3	6.1	
	Туре		Filtrate	Filtrate	
		d Filtrate Properties			
Rmud @ degC		ohm-m@degC	0.109 @ 19	0.109 @ 19	
K+ ion calculated from KC	CL%	ppm	21480	21480	
Chlorides titrated		ppm	34500	34500	
Н		1	9.1	9.1	
Tritium	***************************************	DPM	Not used	Not used	
	G. G	eneral Calibration			
Reported mud weight		ppg	10.3	10.3	
Calculated hydrostatic		psia	4473	4473	
	H Rem	arks and Comment			
The state of the s	grand, and the control of the properties of the PACH.				
			Cample	specific	
	General		Sample		
Final pressure for 6/3 & 6	General		Sample Final sample pressure =2680 psia	specific Final sample pressure = 2722 psia	

		Well: Turrum-5		
ver planted in 1880 with		A. Sample Identification		
Run/seat number		#/#	6/5	1
Sample depth		m mdrkb	2548.6	
Pretest volume		cc	20cc	
Chamber size		cc/litre/gallon	2 - 3/4 Gallon	
Chamber serial number		#	DA -16	
Probe type (Long nose,	Martineau)		MARTINEAU	
Choke size			4 x 20/1000 ths	
CHOKE CIZE		B. Sampling History		
Date		dd/mm/yy	17/09/95	
Initial hydrostatic		psia	7770000	
Tool Set		hh:mm		
		hh:mm		
Pretest start	nitial formation pressure (pretest)			
			-	
Pretest end		hh:mm	0:00	0:00
Pretest duration		hh:mm		0.00
Pumpout start		hh:mm hh:mm	3:25	
	umpout end		3:28	0.00
Pumpout duration		hh:mm	0:03	0:00
Pumpout volume		litres	0.5	
OFA indication		colour	Not reported	
Interpreted fluid at OFA		-	Not reported	
Maximum resisitivity at p	probe	ohm-m	Not reported	
Chamber open		hh:mm	3:28	
Minimum sampling pres	sure	psia	681.0	
Final formation pressure		psia	3708.0	
Seal chamber	<del> </del>	hh:mm	4:45	
Chamber fill time		hh:mm	1:17	0:00
		hh:mm	4:45	0.00
Tool retract				
Final hydrostatic		psia	Not reported	0:00
Total time		hh:mm	11:07	0.00
	C. Sample Do	ownhole Temperature And	d Resistivity	
At sample depth (AMS)		degC	10.3	
Rm@sample depth (AM	IS)	ohm-m	0.04	
	D. S	ample Recovery At Surfa	ice	
Surface opening pressu		psig		
Volume gas		cuft		
Volume oil/condensate		litres	<del></del>	
Volume water/filtrate		litres	<u> </u>	
			On Site	
	E. Samp		JII-Site	n an englis and hybridis and all the
Gas via chromatograph	C1	ppm		
	C2	ppm		
	C3	ppm		
	C4	ppm		
	C5	ppm		<u> </u>
	C6+	ppm		
	CO2	%		
	H2S	ppm		
Oil/Condensate	API @ degC	degrees	@	@
	Colour		<del></del>	
	Fluorescence			
	GOR or CGR	au Albhian		
		cuft/bbl or mmscf/bbl degC		
\\/_b_=/[: b==b=	Pour point			@
Water/Filtrate	Rmud @ degC	ohm-m@degC	@	<u> </u>
L	K+ ion calculated from KC			
	Chlorides titrated	ppm		
	Tritium	DPM		
	pН			
	Туре			
		. Mud Filtrate Properties		
Rmud @ degC		ohm-m@degC	0.109 @ 19	@
minua w ucyo	C1 %	ppm	21480	
			34500	<del></del>
K+ ion calculated from k		lppm		
K+ ion calculated from K Chlorides titrated				
K+ ion calculated from K Chlorides titrated pH			9.1	
K+ ion calculated from k Chlorides titrated pH Tritium		DPM	Not used	
K+ ion calculated from K Chlorides titrated pH			Not used	
K+ ion calculated from K Chlorides titrated pH Tritium		DPM	Not used	
K+ ion calculated from K Chlorides titrated pH Tritium Reported mud weight		DPM G. General Calibration	Not used	0
K+ ion calculated from K Chlorides titrated pH Tritium Reported mud weight Calculated hydrostatic		DPM G. General Calibration ppg psia	10.3 4473	0
K+ ion calculated from k Chlorides titrated pH Tritium Reported mud weight	H.	DPM G. General Calibration ppg	Not used  10.3 4473	0
K+ ion calculated from K Chlorides titrated pH Tritium Reported mud weight Calculated hydrostatic		DPM G. General Calibration ppg psia	Not used  10.3 4473  Sample St	0
K+ ion calculated from K Chlorides titrated pH Tritium Reported mud weight Calculated hydrostatic	H.	DPM G. General Calibration ppg psia	Not used  10.3 4473	0

# APPENDIX 5

# APPENDIX V

#### **VELOCITY SURVEY REPORT**

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

# APPENDIX 6

# APPENDIX VI

SURVEY DATA

#### Halliburton

#### Survey Report

Page 1 Job No: 0041-95-0019 Date: 11/9/95

Time: 4:57 pm Wellpath ID: Turrum #5

Date Created: 28/8/95 Last Revision: 11/9/95

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

Survey Reference: STRUCTURE ORIGIN

Reference World Coordinates: Lat. 38.14.56 S - Long. 148.12.04 E

Reference GRID System: Australian (UTM) Zone: 55, Cent. Merid: 147.00.00 E

Reference GRID Coordinates: (m): 5765872.00 N 605093.00 E

North Aligned To: TRUE NORTH

Offset, Reference To WellHead: (m): 6.22 N 6.22 E 0.00 TVD

Vertical Section Reference: STRUCTURE ORIGIN

Closure Reference: STRUCTURE ORIGIN TVD Reference: STRUCTURE ORIGIN

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

Measured	Incl	Drift	Course	TVD	ТОТ		Closure Dist. Dir.	DLS	Cum. Dogleg
Depth		Dir.	Length		Rectangular			/ L /2/2 \	
(m)	(deg.)	(deg.)	(m)	(m)	(m)	(m)	(m) (deg.)	(dg/30m)	(deg)
0.00	0.00	0.00	0.00	0.00	6.22 N	6.22 E	8.80@ 45.00	0.00	0.0
Tie-in at mu	dline								
83.50	0.00	0.00	83.50	83.50	6.22 N	6.22 E	8.80@ 45.00	0.00	0.0
24/08/95-SS	Surveys								
403.00	0.00	0.00	319.50	403.00	6.22 N	6.22 E	8.80@ 45.00	0.00	0.0
665.00	0.25	133.00	262.00	665.00	5.83 N	6.64 E	8,83@ 48.71	0.03	0.3
27/08/95-Bh	a #3- HE	S MWD							
699.30	0.80	75.40	34.30	699.30	5.84 N	6.92 E	9.06@ 49.86	0.61	0.9
728.40	0.30	80.80	29.10	728.40	5.90 N	7.20 E	9.31@ 50.64	0.52	1.5
757.20	0.20	48.60	28.80	757.20	5.95N	7.31 E	9.42@ 50.86	0.18	1.6
786.50	0.20	50.90	29.30	786.50	6.01 N	7.39 E	9.53@ 50.85	0.01	1.6
815.80	0.30	44.50	29.30	815.80	6.10N	7.48 E	9.65@ 50.80		1.7
845.00	0.20	41.40	29.20	844.99	6.19N	7.57 E	9.78@, 50.70	0.10	1.8
874,40	0.30	42.80	29.40	874.39	6.29N	7.65 E	9.91@ 50.59	0.10	1.9
903.10	0.30	37.60	28.70	903.09	6.40 N	7.75 E	10.05@ 50.44	0.03	2.0
933.10	0.40	44.40	30.00	933.09	6.54N	7.87 E	10.23@ 50.28	0.11	2.1
960.00	0.30	39.50	26.90	959.99	6.66N	7.98 E	10.40@ 50.15	0.12	2.2
989.10	0.40	35.80	29.10	989.09	6.80 N	8.09 E	10.57@ 49.94	0.11	2.3
1019.00	0.40	24.70	29.90	1018.99	6.98N	8.19 E	10.77@, 49.57	0.08	2.4
1047.30	0.40	42.40	28.30	1047.29	7.15N	8.30 E	10.95@ 49.28	0.13	2.5
1076.50	0.40	34.20	29.20	1076.49	7.30N	8.43 E	11.15@ 49.08		2.5
1105.90	0.40	26.10	29.40	1105.89	7.48N	8.53 E	11.35@ 48.75	0.06	2.6
1134.00	0.30	11.80	28.10	1133.99	7.64N	8.59 E	11.50@ 48.34		2.7
1162.80	0.40	17.90	28.80	1162.79	7.81 N	8.64 E	11.64@ 47.87		2.8
1193.00	0.40	20.60	30.20	1192.99	8.01 N	8.71 E	11.83@, 47.38	0.02	2.8
1220.70	0.40	4.10	27.70	1220.69	8.20 N	8.75 E	11.99@ 46.85		3.0
1249.60	0.30	2.20	28.90	1249.59	8.37N	8.76 E	12.12@ 46.28		3.1

#### Halliburton

Page 2

Date: 11/9/95 Wellpath ID: Turrum #5 Survey Report TVD TOTAL DLS Cum. Closure Incl Drift Course Measured Dist. Dir. Dogleg Dir. Length Rectangular Offsets Depth (m) (deg.) (dg/30m)(deg) (m) (dcg.) (dcg.) (m) (m) (m) (m) 6.90 29.70 1279.29 8.55N 8.77 E 12.25(a) 45.72 0.113.2 0.40 1279.30 0.20 3.4 29.70 8.75N 8.75 E 12.37@ 44.98 1309,00 0.40 338.40 1308,99 8.67 E 12.46@ 44.12 0.02 3.4 1338.40 0.40 341.00 29.40 1338.38 8.95N 28/08/95-BHA #4 1431.98 9.49N 8.34 E 12.64@ 41.32 0.05 3.5 0.40 316.60 93.60 1432.00 29/08/95-BHA #5 3.6 26.50 12.65@ 40.48 0.02 1458,50 0.40 313.70 1458.48 9.62 N 8.21 E 3.7 1487.90 0.30 305.20 29.40 1487.88 9.74N 8.08 E 12.65(a) 39.67 0.113.9 0.30 268.50 29,20 1517.08 9.78N 7.94 E 12.60@ 39.06 0.19 1517.10 9.79N 7.73 E 12.47@ 38.32 4.1 29.20 1546.28 0.21 1546.30 272.80 0.50 12.39@ 37.60 0.344.4 1575.70 0.20 299.40 29.40 1575.68 9.82 N 7.56 E 4.8 1604.40 0.50 338.70 28.70 1604.38 9.96N 7.47 E 12.45(à) 36.88 0.38 0.38 5.2 29.40 1633.78 10.23 N 7.29 E 12.56@ 35.47 1633.80 0.80 318.10 7.09 E 0.28 5.4 28.70 1662.47 10.51N 12.68@ 33.98 1662,50 0.60 332.70 30/08/95 6.97 E 12.75@ 33.15 0.45 5.9 0.20 304.10 29.10 1691.57 10.68N 1691.60 10.74N 6.97 E 12.80@ 33.00 0.346.2 1720.30 0.20 52.80 28.70 1720.27 7.07 E 12.98@ 33.02 0.34 6.5 1749.50 27.50 29.20 1749.47 10.88N 0.50 13.18(ã) 32.96 0.21 6.7 0.30 31.30 29.10 1778,57 11.06N 7.17 E 1778.60 7.24 E 13.33@ 32.91 0.03 6.7 1807.30 0.30 25.60 28.70 1807.27 11.19N 18.80 1826.07 11.29N 7.32 E 13.46@ 32.98 ().407.0 1826.10 0.50 48.20 31/08/95-BHA #6 7.34 E 0.69 7.8 0.90 339.60 37,30 1863.37 11.67N 13.79@ 32.18 1863.40 7.40 E 14.09@ 31.69 1.00 8,8 1892.10 0.70 52.10 28.70 1892.07 11.99N 1980.00 1.00 55.40 87.90 1979.96 12.75N 8.46 E 15.30@ 33.55 0.10 9.1 01/9/95 2067.40 0.04 9.2 0.90 50.40 87.40 2067.35 13.63 N 9.61 E 16.68@ 35.21 18.01@ 35.74 0.90 34.40 86.60 2153.93 14.62 N 10.52 E 0.09 9.5 2154.00 03/09/95-BHA #9 2240.96 0.60 18.70 86.96 2240.89 15.62 N 11.05 E 19.13(a) 35.30 0.129.8 04/09/95 0.90 266.40 87.24 2328.12 16.00N 10.52 E 19.15@ 33.31 0.43 11.1 2328,20 86.50 17.61@ 26.92 0.56 12.7 2414.70 2.50 262.00 2414.58 15.70N 7.97 E 05/09/95 3.00 269.80 29.20 2443.75 15.61 N 6.58 E 16.94@ 22.85 0.64 13.3 2443,90 2477,90 3.40 258.50 34.00 2477,70 15.40N 4.70 E 16.10@, 16.96 0.66 14.1 08/09/95

2502.70

2531.70

2560,60

2755.00

09/09/95-Bha #15

3.50 266.80

3.00 273.70

3.00 279.10

3.63 310.70

24,80

29.00

28.90

194.40

2502.45

2531.40

2560.26

2754.35

15.22N

15.21N

15.38N

20.20N

3.22 E

1.58 E

0.08E

9.61W

15.55@ 11.96

15.30@ 5.93

15.38@ 0.30

22.37@334.56

0.62

0.66

0.29

0.29

14.6

15.2

15.5

17.4

**APPENDIX VII** 

# APPENDIX VII

**MUD LOG** 

#### PE600666

This is an enclosure indicator page.

The enclosure PE600666 is enclosed within the container PE900857 at this location in this document.

The enclosure PE600666 has the following characteristics:

ITEM\_BARCODE = PE600666
CONTAINER\_BARCODE = PE900857

NAME = Formation Evaluation Log

BASIN = GIPPSLAND

PERMIT = VIC/L3

TYPE = WELL

SUBTYPE = MUD\_LOG

DESCRIPTION = Formation Evaluation Log/ Mud Log

DATE\_CREATED = 11/09/95

DATE\_RECEIVED = 7/03/96

W\_NO = W1145

WELL\_NAME = Turrum-5

CONTRACTOR = Halliburton

CLIENT\_OP\_CO = Esso Australia Pty Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)