

## ESSO Australia Pty Ltd

Date:	31/01/05	Last Casing:	9? " (244mm) @ 2527m
Report Number:	21	LOT:	16.6 ppg EMW (1.99 sg) at 9 5/8" casing
Report Period:	24hrs to 24:00 30/01/05	Current hole size:	8½" (216mm) from 2532m
Depth @ 2400 Hrs:	2768m MDRT	Mud Weight:	10.2 ppg (1.21 sg)
Last Depth:	2688m MDRT	ECD:	11.2 ppg (1.34 sg)
Progress:	80m	Mud Type:	KCl/PHPA/Glycol
TD Lithology:	Sandstone/Claystone	Mud Chlorides:	39,000
Water Depth:	52m	Mud Fluid Loss:	4.3
RT Elevation:	39.24m aMSL	Bit Type:	8½" HC insert MX3ODX

### OPERATIONS SUMMARY

**24 HOUR SUMMARY**      *Repaired top drive. RIH to 2761m and reamed and washed to bottom. Drilled ahead to 2768m MDRT.*  
**00:00 - 24:00 hrs**

**05:00 hrs update (31/01/05)**      *Drilling 8½" hole at 2786mMDRT (2666.3m TVDRT)*

**NEXT 24 HOURS:**      *Drill ahead 8 1/2" hole.*

### GEOLOGICAL SUMMARY

#### ▪ LITHOLOGIC DESCRIPTION:

INTERVAL m MDRT (m TVRT)	LITHOLOGY
2688 - 2715m (2578 - 2602.3)  ROP: 3-17 m/hr (av. 4.5 m/hr).	<p><b>QUARTZ SANDSTONES WITH LESSER INTERBEDS OF VARIABLY ARGILLACEOUS SANDSTONE AND VARIABLY CARBONACEOUS CLAYSTONES. THIN DOLOMITE INTERBEDS AT BASE OF INTERVAL.</b></p> <p><b>SANDSTONES (10 - 50%):</b> very light grey to light olive grey, mostly clear/opaque quartz, fine to coarse grained, predominantly medium, moderately well sorted, subangular to subrounded, varying disaggregated with lesser hard/very hard aggregates, aggregates mostly siliceous cemented, common bit fractured grains and some 'rock flour', trace argillaceous matrix (kaolin), trace carbonaceous and coaly fragments, trace pyrite, inferred fair to good intergranular porosity, poor visual porosity in aggregates. <b>NO SHOWS</b> other than minor mineral fluorescence.</p> <p><b>CLAYSTONE / CARBONACEOUS CLAYSTONE (30-70%):</b> mostly brownish grey to medium tending dark brown, varying soft/dispersive to hard, mostly soft to tending firm and sub-blocky, minor subfissile, minor to common carbonaceous and coaly laminae, trace mica, rare very fine quartz sand, non calcareous.</p> <p><b>VARIABLY ARGILLACEOUS SANDSTONE (10-20%):</b> very light grey to light olive grey with minor amounts medium greyish brown, very fine to medium grained, dominantly very fine to fine grained, well sorted, dominantly subangular, varying soft/friable to very hard, mostly firm to hard aggregates, trace to 10% disseminated carbonaceous material and laminae, 20-40% clay minerals as matrix and laminae/microlaminae in places, trace of kaolin and micromicas, nil to rarely very poor visual porosity. <b>NO SHOWS.</b></p> <p><b>DOLOMITE (10% in 2710m sample):</b> calcimetry on bulk cuttings from this depth gave 4% dolomite, medium to dark yellowish brown, with carbonaceous flecks, hard to very hard, blocky to conchoidal in part.</p>

<p><b>2715 - 2725</b> (2602.3 - 2611.3)</p> <p>ROP: 2-5 m/hr (av. 3 m/hr).</p>	<p><b>VOLCANICS....."Remora Volcanics".....</b></p> <p><b>'FRESHER' ACIDIC VOLCANICS (90-100%):</b> medium olive grey to olive grey, pale greyish green, white, mostly hard to very hard, quartz rich with significant feldspar (fresh to partial alteration), and subordinate micas, greenish mineral (?olivine), well defined medium grained crystal structure with transparent 'needle' crystals, trace weathered feldspar altering to clay minerals, minor green clays (chlorite), trace secondary replacement calcite as cementation .</p> <p><b>DARKER BASALTIC VOLCANICS (Traces-10%):</b> dark grey to steel grey and darker bluish grey, very hard to hard, blocky, dark groundmass with black crystals.</p>
<p><b>2725 - 2755</b> (2611.3 - 2638.3)</p> <p>ROP: 2-11 m/hr (av. 3.5 m/hr).</p>	<p><b>MOSTLY CLAYSTONE / CARBONACEOUS CLAYSTONE GRADING TO LESSER AND THIN INTERBEDS OF ARGILLACEOUS VERY FINE GRAINED SANDSTONE AND FINE GRAINED, CLEANER QUARTZ SANDSTONE IN PLACES.</b></p> <p><b>CLAYSTONE/ CARBONACEOUS CLAYSTONE (50 - 80%):</b> mostly shades of medium to sometimes darker brown, minor tending brownish black to blackish and medium to dark yellowish brown, varying soft/dispersive to hard, mostly soft to tending firm and sub-blocky, minor subfissile, minor to sometimes common disseminated carbonaceous matrix and laminae, trace mica, rare very fine quartz sand, non calcareous.</p> <p><b>ARGILLACEOUS SANDSTONE (10 - 40%):</b> shades of medium to dark yellowish brown and brown, very fine grained, very well sorted, dominantly subangular, mostly moderately hard to hard aggregates, trace to 10% disseminated carbonaceous material and laminae, 20-40% clay minerals as matrix and laminae/microlaminae in places, trace of kaolin and micromicas, partly siliceous cemented, nil visual porosity. Minor gradational to cleaner but fine grained sandstone. <b>NO SHOWS.</b></p> <p><b>FINE GRAINED SANDSTONE (0 - 10%):</b> medium olive grey to olive grey, quartz rich, generally as above but very fine to medium grained, dominantly fine grained, well sorted, dominantly subangular, trace to 10% clay minerals, trace to good trace carbonaceous debris, firm to very hard, mostly firm to tending hard aggregates, siliceous cemented, nil to minor very poor visual porosity. <b>NO SHOWS.</b></p>
<p><b>2755 - 2768</b> (2638.3 - 2649.8)</p> <p>ROP: 2.8-22 m/hr (av. 19 m/hr).</p>	<p><b>CLEAN, COARSER GRAINED QUARTZ SANDSTONE BED GRADING TO ARGILLACEOUS SANDSTONE AND CLAYSTONE / CARBONACEOUS CLAYSTONE.</b></p> <p><b>SANDSTONE (60 - 80%):</b> occurs between 2755-2764m, light medium grey to medium olive grey, appears to be mostly clear quartz grains with extremely rare reddish jasper, very fine to very coarse grained, appears to dominantly medium grained upper part and dominantly medium to coarse grained lower part, moderately well sorted, angular to subrounded, dominantly subangular, few accessories discernible - trace coaly fragments, rare pyrite, very rare greenish flecks, trace to sometimes good trace of kaolin clay matrix, appears as loose disaggregated grains with white quartz 'rock flour', rare weakly to moderately cemented aggregates discernible, inferred fair to good porosity. <b>NO SHOWS.</b></p> <p><b>ARGILLACEOUS SANDSTONE (10 - 20%):</b> shades of medium to dark yellowish brown and brown, sometimes olive grey, very fine grained, very well sorted, dominantly subangular, mostly moderately hard to hard aggregates, trace to 10% disseminated carbonaceous material as debris and microlaminae, 20-40% clay minerals as matrix and laminae/microlaminae in places, trace of kaolin and micromicas, partly siliceous cemented, nil visual porosity. Gradational to silty/sandy claystone in places. <b>NO SHOWS.</b></p> <p><b>CLAYSTONE/ CARBONACEOUS CLAYSTONE (10 - 20%):</b> mostly shades of medium to sometimes darker brown, minor tending brownish black to blackish and medium to dark yellowish brown, varying soft/dispersive to hard, mostly soft to tending firm and sub-blocky, minor subfissile, minor to sometimes common disseminated carbonaceous matrix and laminae, trace mica, rare very fine quartz sand, non calcareous.</p>

▪ **HYDROCARBON FLUORESCENCE:**

INTERVAL (m MDRT)	HYDROCARBON FLUORESCENCE
2688 - 2715	<b>NO SHOWS</b> - minor dull yellowish and dull orangish mineral fluorescence in places.
2715 - 2725	<b>NO SHOWS</b> - very minor subdued yellowish background mineral fluorescence.
2725 - 2755	<b>NO SHOWS.</b>
2755 - 2768	<b>NO SHOWS</b> from cleaner, coarser grained sandstone bed

▪ **GAS SUMMARY:**

INTERVAL (m MDRT)	GAS TYPE	TOTAL GAS % Min - max (average)	C1 ppm Min - max (average)	C2 ppm min - max (average)	C3 ppm min - max (average)	iC4 ppm min - max (average)	nC4 ppm min - max (average)	C5 ppm min - max (average)
2688 - 2715	BKGD	0.06-0.45 (0.2)	386-3481 (1613)	33-198 (95)	16-61 (35)	5-12 (8)	5-12 (8)	4-9 (6)
2706.5 (thin coal)	DGP	0.45	3481	198	61	12	12	9
2715 - 2725	BKGD	0.02-0.40 (0.08)	122-3420 (531)	25-99 (9)	7-22 (12)	3-6 (4)	3-5 (4)	3-7 (4)
2725 - 2755	BKGD	0.04-0.64 (0.2)	307-5029 (1500)	45-320 (15)	15-105 (45)	5-25 (16)	4-20 (11)	3-15 (5)
2727.5 (carb.clst)	DGP	0.40	3420	99	22	5	3	3
2735 (carb.clst)	DGP	0.65	5029	320	105	25	20	15
2755 - 2768	BKGD	0.08-1.02 (0.74)	501-7696 (5458)	40-455 (309)	28-200 (152)	14-61 (57)	9-43 (37)	3-24 (18)
2755.5 (sandstone)	DGP	0.6	4253	233	136	62	36	41
2763 (sandstone)	DGP	1.0	7696	455	206	61	43	36
Gas types as follows:- BKGD = background gas, DGP = drilling gas peak, WTG = Wiper Trip gas, and CG = connection gas								

▪ **SURVEYS:**

m MDRT	Inclination	Azimuth	m TVDRT	m TVSS		
2679.64	25.96	176.64	2570.47	2531.23		
2709.01	25.79	176.94	2596.90	2557.70		
2738.14	25.73	177.20	2623.1	2583.90		

▪ **PRELIMINARY FORMATION TOPS:**

FORMATIONS	PROGNOSED DEPTHS (m)			ACTUAL DEPTHS (m)				
	MDRT	TVDSS	THICKNESS TV	MDRT	TVDSS	THICKNESS TV	HIGH/LOW to prognosis	DIFF m

Gippsland Limestone	91.2	52	748	<b>91.2</b>	<b>52</b>			
Lakes Entrance Fm	839.2	800	727	Indeterminate				
Latrobe Group	1566.2	1527		<b>1579.0</b>	<b>1539.7</b>		<b>low</b>	<b>12.7</b>
Top "L8" Reservoir	1956.9	1909						
Top Moonfish Volcanics	2023.3	1966	22	<b>2046</b>	<b>1985.8</b>	24	<b>low</b>	<b>19.8</b>
Base Moonfish Volcanics	2049.1	1988		<b>2073</b>	<b>2008.4</b>		<b>low</b>	<b>20.4</b>
Top sub-Moonfish Volcanics Reservoir	2068.9	2005		<b>2085</b>	<b>2018.4</b>		<b>low</b>	<b>13.4</b>
Top Remora Volcanics	2675.2	2523	60	2715	2563	8	low	39
Base Remora Volcanics	2745.4	2583		2724	2571		high	12
Total Depth	3362.2	3110						

**Note: depths in bold type confirmed by E-Logs. Water depth = 52m (MSL to seabed), and RTE = 39.24m above MSL.**

• **REMARKS / COMMENTS:**

1. POOH at 2688m for bit change and minor changes to BHA. MWD sensor offsets for 'real-time' MWD data from start of second bit run from 2688m MDRT in the 8½" hole section are as follows: -

Gamma - 12.67m  
 Resistivity - bit - 6.08m  
 Resistivity - ring - 13.03m  
 Resistivity - deep button - 13.20m  
 Directional - 19.12m  
 UltraSonic - 26.13m  
 Density - 26.51m  
 Porosity - 27.61m

2. Top and base of the "Remora" Volcanics well defined from cutting samples and LWD log traces. Top well defined at around 2715m MDRT by downhole resistivity and density increase and appearance of fresh acidic volcanics in the 2715m MDRT cuttings sample. Base tentatively picked at 2724m MDRT where a gamma increase and resistivity decrease occurs. Significant carbonaceous claystone appears in the 2725m MDRT cuttings sample. Base of the "Remora" Volcanics but may be as high as 2722m MDRT where a minor washout appears on the calliper - this washout may be the varying soft to hard baked/ carbonised claystone which was noted in the 2725m MDRT cuttings sample. Medium grained texture and lighter colour of the main volcanic type, together with possible upper and lower baked contacts of underlying and overlying carbonaceous claystones may indicate a thinner igneous intrusive which is in a lithostratigraphic position ?slightly different/older to nearest offset well, eg Snapper-1.

3. Comment re Abnormal Pressure for the interval **2688 - 2768m** MDRT - no connection gases observed, normal gradually increasing downhole corrected Dxc trend, no abnormal ROP changes (all changes determined to be lithological), no abnormal cuttings (well sorted 0.25-0.5cm insert bit cuttings or 'grinds' in sandstone), no significant changes in background total gas trends other than minor gas peaks from very thin coal seams and/or carbonaceous claystone intervals and cleaner, coarser grained sandstone bed.

▪ **AIPC WELLSITE GEOSTAFF:**

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