

## Trefoil-2

Date : 14 Nov 2009

Geology Report Number : 32

( associated DDR # 45 )

### Well Details

Depth MDBRT:	3139.0m	Rig:	Kan Tan IV	Date:	14 Nov 2009
Depth TVDBRT:	3139.0m	Progress:	132.0m	Report Start:	0000
Depth TVDSS:	3113.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	44.38
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	39.67
Water Depth (MSL)	69.0m	Last Csg Shoe:	2520.0m		
RT-ASL(MSL)	26.0m	F.I.T. / L.O.T.:	11.00ppg /		

### Operations Summary

24hr Summary:	Ran in hole. LWD wiped from 2960 mMDRT over cored interval. Drilled ahead in 216 mm (8-1/2") hole section to core point 2.
Forward Plan:	POOH, pick up core barrel, RIH, commence cutting core #2.

### General Comments

00:00 TO 24:00 Hrs ON 14 Nov 2009

<b>Operational Comments</b>	Geoservices: 2 Data engineers, 2 mudloggers, 2 sample catchers on board. Gas equipment calibrated 12 Nov 09. Sperry: 3 MWD engineers on board.
<b>Operational Comments</b>	FEWD sensor distances from bit from 3013 mMDRT: Vibration 0.00 m Gamma (DGR) 2.83 m Resistivity (EWR-P4) 5.17 m Directional (PCD) 10.07 m Density (ALD) 15.56 m Porosity (CTN) 19.43 m Sonic (BAT) 24.20 m Caliper (ACAL) 31.02 m

### WBM Data

Mud Type: KCI POLYMER	Flowline Temp:	CI: 40000mg/l	Low Gravity Solids:	Viscosity	50sec/qt
Sample From: 2	MWD Circ Temp:	Hard/Ca: 400mg/l	High Gravity Solids:	PV	14cp
Time: 22:00 hrs	Glycol CP Temp:	MBT: 11	Solids (corrected):	YP	30lb/100ft²
Weight: 9.50ppg	Glycol:	PM: 0.3	H2O: 93%	Gels 10s	9
ECD TD:	Nitrates:	PF: 0.15	Oil:	Gels 10m	13
ECD Shoe:	Sulphites:	MF: 2.2	Sand: .25 %	Fann 003	9
ECD Cuttings:	API FL: 5.0cc/30min	pH: 9	Barite:	Fann 006	11
KCI Equiv: 8%	API Cake: 1/32nd"	PHPA Excess:		Fann 100	28
				Fann 200	37
				Fann 300	44
				Fann 600	58

### Shakers, Volumes and Losses Data

Engineer : Jay Wan / Fergus Spencer

Available	1743.0bbl	Losses	0.0bbl	Equip.	Descr.	Mesh Size	Hours
Active	640.0bbl	Downhole		Shaker 1	Brandt VSM 300	20 top/50 bottom	18
Mixing	0.0bbl	Surf+ Equip	0.0bbl	Shaker 2	Brandt VSM 300	20 top/50 bottom	18
Hole	669.0bbl	Dumped		Shaker 3	Brandt VSM 300	20 top/50 bottom	24
Slug		De-Gasser		Shaker 4	Brandt VSM 300	20 top/50 bottom	
Reserve	434.0bbl	De-Sander					
Kill		De-Silter					
		Centrifuge					

Comment

### Formation Tops

Formation	Prognosed		Actual		Diff.	Thickness MD (m)	Pick Criteria
	MDBRT (m)	TVDSS (m)	MDBRT (m)	TVDSS (m)	+ / - TVD (m)		
Torquay Group	95.00	69.00	95.00	69.00	0.00	823.00	Sea floor
Lower Miocene	904.00	878.00	918.00	892.00	-14.00	244.00	GR increase
Seismic Marker							
Upper Angahook	1168.00	1142.00	1162.00	1136.00	6.00	169.00	GR decrease, res increase
Angahook Volcanics Equiv	1323.00	1297.00	1331.00	1305.00	-8.00	238.00	GR decrease, res increase
Lower Angahook	1564.00	1538.00	1569.00	1543.00	-5.00	281.00	GR decrease, res increase
Demons Bluff	1839.00	1813.00	1850.00	1824.00	-11.00	255.00	Res increase
Eastern View Coal Measures	2092.00	2066.00	2105.00	2079.00	-13.00	596.50	Res decrease
Eocene Unconformity	2691.00	2665.00	2701.50	2675.10	-10.10	157.30	GR decrease
2973 Seismic Marker	2841.00	2815.00	2858.80	2832.40	-17.40	79.00	GR decrease, res decrease
Base Low A1 Zone	2922.00	2896.00	2937.80	2911.40	-15.40	38.70	GR increase, res increase
TL40 Sand	2971.00	2945.00	2976.50	2950.00	-5.00	8.50	GR decrease
TL50 Sand	2981.00	2955.00	2985.00	2958.40	-3.40	9.50	GR decrease
TL60 Sand	2992.00	2966.00	2994.50	2967.90	-1.90	73.50	GR decrease
Cretaceous	3056.00	3030.00	3068.00	3041.40	-11.40	0.00	GR decrease

### Lithology Summary

Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3013.00 - 3068.00	Min:4 Avg:34 Max:45	Interbedded SILTSTONE and SANDSTONE, minor thin CLAYSTONES SILTSTONE (5-95%): olive black, olive grey, soft to firm, subblocky to subfissile, trace mica flakes, trace lithic fragments, trace carbonaceous material. SANDSTONE (5-75%): very light grey, greyish black, when loose, clear and opaque, quartzose, 20% very fine to 60% fine grained aggregates, 20% coarse grained loose, soft to friable aggregates, angular and shattered in loose fraction, subangular to subrounded, overall poorly sorted, subspherical to subelongate, aggregates have 10% white clay matrix, 10% silt and weak siliceous cement with trace mica flakes and carbonaceous specks, loose fraction has white clay matrix adhering to grains, overall fair visual porosity, no hydrocarbon fluorescence. CLAYSTONE (0-30%): olive black, firm, subblocky, traces mica flakes and micromicas.
Interval MDBRT (m) From To	ROP (m/hr)	Lithology
3068.00 - 3145.00	Min:3 Avg:19 Max:31	Interbedded SANDSTONE, ARGILLACEOUS SANDSTONE and SILTSTONE, minor thin CLAYSTONES beds SANDSTONE (10-90%): very light grey, greyish black, when loose, clear and opaque, medium dark grey to brownish grey, trace greyish orange pink, quartzose, 20% very fine, 60% fine grained aggregates, 20% coarse grained loose, some white (kaolinitic) clay matrix, soft to friable aggregates grading to firm disaggregated grains, overall poorly to moderately sorted, angular and shattered in loose fraction, subangular to rounded to subrounded, subspherical to subelongate, aggregates have 10% white clay matrix, 10% silt and weak siliceous cement with trace mica flakes and carbonaceous specks, trace calcareous cement, loose fraction has white clay matrix adhering to grains, trace nodular pyrite, trace lithic fragments, trace coal, fair to good inferred visual porosity, no hydrocarbon fluorescence, grading to ARGILLACEOUS SANDSTONE in part. ARGILLACEOUS SANDSTONE (5-70%): white to very light grey, clear, yellowish grey, trace light greenish grey, medium dark grey to brownish grey, 40% very fine, 30% fine, 15% medium, 10% coarse, 5% very coarse, 20% clay, soft to moderately hard, poorly sorted, subrounded to rounded to angular, subspherical to spherical to subelongate, trace carbonaceous material, trace lithic fragments, trace micromica, poor inferred visual porosity, no hydrocarbon fluorescence. SILTSTONE (10-75%): olive black, olive grey, light grey to medium light grey, medium dark grey, brownish grey, soft to firm, subblocky to blocky to subfissile, common carbonaceous laminae, trace mica flakes, trace micromica, trace lithic fragments, trace carbonaceous material, grading to ARGILLACEOUS SILTSTONE in part. CLAYSTONE (10-80%): light brownish grey to brownish grey, medium grey to olive grey, soft to firm, subblocky to blocky, trace micromicas, trace carbonaceous material as fine laminae.

### Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
3013.00 - 3068.00	Drilled	0.219	0.0906	0.0065	0.0029	0.0012	0.0007	0.0012	0.000
3013.00 -	Trip	0.422	0.3512	0.1730	0.0058	0.0015	0.0011	0.0009	0.000
3053.00 -	Peak	0.367	0.1780	0.0089	0.0034	0.0014	0.0008	0.0007	0.000
3068.00 - 3145.00	Drilled	0.388	0.1836	0.0105	0.0048	0.0021	0.0012	0.0011	0.000
3077.00 -	Peak	0.781	0.4182	0.0214	0.0095	0.0031	0.0017	0.0012	0.000
3133.00 -	Peak	1.091	0.5154	0.0362	0.0161	0.0079	0.0047	0.0041	0.000

Survey								
MDBRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2992.32	2.9	83.6	2991.77	27.4	0.1			MWD
3021.53	3.0	83.2	3020.94	28.4	0.1			MWD
3051.62	3.1	82.2	3050.99	29.5	0.1			MWD
3080.66	3.2	81.3	3079.99	30.5	0.2			MWD
3101.98	3.5	82.5	3101.27	31.3	0.4			MWD
3130.21	3.8	81.6	3129.44	32.4	0.3			MWD

06:00 Hrs Update	
Time:	06:00 Hrs on 15 Nov 2009
Depth:	3145 mMDRT/3144.2 mTVDBRT
Progress Since Midnight (m):	6
Status @ 0600hrs:	Cont/ to POOH.
Formation:	Eastern View Coal Measures
Lithology:	Interbedded SANDSTONE, ARGILLACEOUS SANDSTONE and SILTSTONE, minor thin CLAYSTONE beds
ROP:	Average ROP: 8.4 m/hr (1.5 - 18.5 m/hr)
Gas:	Average background gas - 0.3071%, C1: 0.1622%, C2: 0.0096%, C3: 0.0037%, iC4: 0.0022%, nC4: 0.0013%, C5: 0.0013%, CO2: 0.0000%.

Wellsite Geologist(s)	
(Days) - Dennis Archer	(Nights) - Larissa Hansen