

Trefoil-2

Date : 10 Nov 2009

Geology Report Number : 28

(associated DDR # 41)

Well Details

Depth MDBRT:	2774.0m	Rig:	Kan Tan IV	Date:	10 Nov 2009
Depth TVDBRT:	2774.0m	Progress:	141.0m	Report Start:	0000
Depth TVDSS:	2748.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	40.38
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	35.67
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. Drilled ahead in 216 mm (8-1/2") hole section.
Forward Plan:	Drill ahead in 216 mm (8-1/2") hole section.

General Comments

00:00 TO 24:00 Hrs ON 10 Nov 2009

Operational Comments	Geoservices: 2 Data engineers, 2 mudloggers, 2 sample catchers on board. Reserval Gas equipment calibrated 5 Nov 09, standard gas equipment calibrated 10 Nov 09. Sperry: 3 MWD engineers on board.
Operational Comments	FEWD sensor distances from bit from 2633 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:	Cl:	41000mg/l	Low Gravity Solids:	Viscosity	46sec/qt
Sample From:	2	MWD Circ Temp:	Hard/Ca:	220mg/l	High Gravity Solids:	PV	10cp
Time:	21:30 hrs	Glycol CP Temp:	MBT:	11	Solids (corrected):	YP	28lb/100ft ²
Weight:	9.40ppg	Glycol:	PM:	0.3	H2O:	Gels 10s	10
ECD TD:		Nitrates:	PF:	0.25	Oil:	Gels 10m	12
ECD Shoe:		Sulphites:	MF:	2.2	Sand:	Fann 003	8
ECD Cuttings:		API FL:	pH:	9	Barite:	Fann 006	10
KCI Equiv:	9%	API Cake:	PHPA Excess:			Fann 100	25
						Fann 200	32
						Fann 300	38
						Fann 600	48

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Fergus Spencer

Available	2103.0bbl	Losses	0.0bbl	Equip.	Descr.	Mesh Size	Hours
Active	685.0bbl	Downhole		Shaker 1	Brandt VSM 300	20 top/50 bottom	
Mixing	0.0bbl	Surf+ Equip	0.0bbl	Shaker 2	Brandt VSM 300	20 top/50 bottom	14
Hole	597.0bbl	Dumped		Shaker 3	Brandt VSM 300	20 top/50 bottom	14
Slug		De-Gasser		Shaker 4	Brandt VSM 300	20 top/50 bottom	
Reserve	821.0bbl	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 Seismic Marker	904.00	878.00	918.00	892.00	-14.00	244.00	GR increase
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	126.00	GR decrease
2973 Seismic Marker	2841.00	2815.00	2827.50	2801.10	13.90	0.00	GR decr, res incr, porosity decr, density decr

Lithology Summary

Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2633.00 - 2684.50	Min:2 Avg:12 Max:33	Interbedded SILTSTONE and SANDSTONE, minor thin CLAYSTONES SILTSTONE (10-90%): brownish black, olive black, soft to firm, blocky to subblocky, in part argillaceous, traces carbonaceous material, lithic fragments and micromicas. SANDSTONE (10-80%): clear, opaque, very light grey, loose quartz grains, medium grained, 20% fine, 20% coarse, angular (shattered) to subangular to subrounded, poor to moderately sorted, subspherical to subrounded, trace poor silica cement, traces white and brown mica flakes, fair visual porosity inferred, no hydrocarbon indications. CLAYSTONE (0-10%): olive black, firm, subblocky, trace micromicas, trace carbonaceous specks.
2684.50 - 2701.50	Min:2 Avg:17 Max:40	Interbedded CALCAREOUS SANDSTONE and CALCILUTITE with minor SANDSTONE, SILTSTONE and CLAYSTONE CALCAREOUS SANDSTONE (10-95%): very light grey, light grey, friable to moderately hard, fine grained, 40% very fine, subangular to subrounded, moderately sorted, subspherical, well calcareous cemented, traces altered lithic fragments, traces carbonaceous material, fair visual porosity, no hydrocarbon indications. CALCILUTITE (50-85%): light gray to medium light gray to medium gray, trace yellowish gray, very soft to firm, subblocky to blocky, grading to claystone in part, trace carbonaceous material. SANDSTONE (0-60%): very light grey, clear and opaque, predominantly loose to friable, quartzose, fine grained, 10% very fine grained, 40% medium, subangular to subrounded, subspherical to subelongate, poor siliceous cement when aggregates, traces pyrite cement, 5% clay matrix, traces brown mica flakes, fair visual porosity inferred, no hydrocarbon indications. SILTSTONE (5-40%): brownish black, olive black, olive grey, soft to firm, subblocky to blocky, grading to claystone in part, traces carbonaceous material, lithic fragments, micromicas. CLAYSTONE (0-35%): medium grey to medium dark grey to olive grey, soft to firm, subblocky to blocky, trace carbonaceous material, trace micromica.
2701.50 - 2711.00	Min:5 Avg:13 Max:37	Interbedded SANDSTONE and SILTSTONE and CLAYSTONE, with minor DOLOMITE SANDSTONE (20-25%): very light grey, light grey, 40% very fine, 60% fine, friable to moderately hard, moderately to well sorted, subrounded to rounded, subspherical, trace pyrite cement, trace lithic fragments, trace carbonaceous material, trace nodular pyrite, fair inferred visual porosity, no hydrocarbon indications. SILTSTONE (33-40%): brownish black, olive black, olive grey, soft to firm, subblocky to blocky, grading to claystone in part, traces carbonaceous material, lithic fragments, micromicas. CLAYSTONE (0-40%): medium grey to medium dark grey to olive grey, soft to firm, subblocky to blocky, trace carbonaceous material, trace micromica. DOLOMITE (0-2%): Brownish grey to moderate brown to pale brown, soft to firm, subblocky to blocky.
2711.00 - 2774.00	Min:4 Avg:23 Max:36	CLAYSTONE interbedded with SANDSTONE, SILTSTONE and ARGILLACEOUS SILTSTONE CLAYSTONE (30-95%): medium grey to medium dark grey, olive grey to light olive grey, very soft to soft to firm, amorphous to subblocky to blocky, trace carbonaceous material, trace micromica, trace nodular pyrite. ARGILLACEOUS SILTSTONE (5-50%): brownish black, olive black, olive grey to brownish grey, soft to firm, subblocky to blocky, trace carbonaceous material, trace lithic fragments, trace pyrite. SILTSTONE (5-40%): brownish black, olive black, olive grey, soft to firm, subblocky to blocky, grading to claystone in part, traces carbonaceous material, lithic fragments, micromicas. SANDSTONE (0-30%): white to very light grey to clear and opaque, trace yellowish grey, 10% very fine, 70% fine, 20% medium grains, loose to firm, moderately to well sorted, subrounded to rounded, subspherical to spherical, trace silica cement, trace micromica, good inferred visual porosity, no hydrocarbon indications.

Gas Data									
Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2633.00 -	Trip	0.204	0.0428	0.0401	0.0396	0.0375	0.0135	0.0114	0.000
2633.00 - 2774.00	Drilled	0.318	0.1534	0.0200	0.0130	0.0037	0.0021	0.0016	0.000

Survey								
MDVRT (m)	Incl. (deg)	Corr. Az (deg)	TVDBRT (m)	'V' Sect (deg)	Dogleg (deg/30m)	N/S (m)	E/W (m)	Tool Type
2646.63	1.4	86.4	2646.32		23.4			MWD
2674.00	1.5	91.3	2673.68		23.7			MWD
2702.98	1.6	88.3	2702.65		24.0			MWD
2732.91	1.7	88.5	2732.57		24.3			MWD
2762.56	1.9	89.9	2762.20		24.6			MWD

06:00 Hrs Update	
Time:	06:00 Hrs on 11 Nov 2009
Depth:	2858 mMDRT/ 2858 mTVDBRT
Progress Since Midnight (m):	84
Status @ 0600hrs:	Drilling ahead new 8 1/2 hole 2881m.
Formation:	Eastern View Coal Measures
Lithology:	CLAYSTONE interbedded with SILTSTONE and SANDSTONE
ROP:	Average ROP: 23.3 m/hr (8.47 - 30.9 m/hr)
Gas:	Average background gas - 0.2676%, C1: 0.0923%, C2: 0.0168%, C3: 0.0139%, iC4: 0.0036%, nC4: 0.0024%, C5: 0.0017%, CO2: 0.0000%. Peak at 2830 mMDRT: TG 2.2761%, C1 1.2091%, C2 0.1739%, C3 0.1596%, iC4 0.0442%, nC4 0.0427%, C5 0.0280%, CO2 0.0000%

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