

Trefoil-2

Date : 13 Nov 2009

Geology Report Number : 31

(associated DDR # 44)

Well Details

Depth MDBRT:	3013.0m	Rig:	Kan Tan IV	Date:	13 Nov 2009
Depth TVDBRT:	3013.0m	Progress:	31.2m	Report Start:	0000
Depth TVDSS:	2987.0m	RTE agl:		Report End:	2400
Hole Size:	8.500in	GLE amsl:	0 (m)	Days On Location:	43.38
Hole Size Carbide:		Last Csg Size:	9.625in	Days since Spud:	38.67
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:	Cut Core #1. Pulled out of hole. Laid out core barrel. Picked up 216mm (8 1/2") LWD drilling assembly. Ran in hole.
Forward Plan:	RIH, drill ahead in 216mm (8 1/2") hole section to core point 2.

General Comments

00:00 TO 24:00 Hrs ON 13 Nov 2009

Operational Comments	Geoservices: 2 Data engineers, 2 mudloggers, 2 sample catchers on board. Gas equipment calibrated 12 Nov 09. Sperry: 3 MWD engineers on board.
Operational Comments	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
Operational Comments	Core Barrel Assembly: Outer barrel: OD x ID 7 1/4" x 5 5/8" Corehead: MCP572, 8 1/2" x 4" Inner tube type: Aluminium, OD x ID 5 x 4 1/2"

WBM Data

Mud Type: KCI POLYMER	Flowline Temp:	Cl:	40000mg/l	Low Gravity Solids:	Viscosity	50sec/qt
Sample From: 2	MWD Circ Temp:	Hard/Ca:	250mg/l	High Gravity Solids:	PV	12cp
Time: 20:00 hrs	Glycol CP Temp:	MBT:	11	Solids (corrected):	YP	29lb/100ft ²
Weight: 9.50ppg	Glycol:	PM:	0.25	H2O: 93%	Gels 10s	9
ECD TD:	Nitrates:	PF:	0.2	Oil:	Gels 10m	12
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	25
					Fann 200	35
					Fann 300	41
					Fann 600	53

Shakers, Volumes and Losses Data

Engineer : Mike Lawrance / Fergus Spencer

Available	1948.0bbl	Losses	0.0bbl	Equip.	Descr.	Mesh Size	Hours
Active	661.0bbl	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	
Hole	732.0bbl	Dumped		Shaker 3	Brandt VSM 300	20 top/50 bottom	24
Slug		De-Gasser		Shaker 4	Brandt VSM 300	20 top/50 bottom	
Reserve	555.0bbl	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	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	39.20	GR increase, res increase
TL40 Sand	2971.00	2945.00	2977.00	2950.60	-5.60	0.00	GR decrease

Lithology Summary

Interval MDBRT (m) From To	ROP (m/hr)	Lithology
2988.00 - 3013.00	Min:1 Avg:3 Max:43	From core 1 chips: SANDSTONE interbedded with thin interbeds of CONGLOMERITIC SANDSTONE and SILTSTONE SANDSTONE: white to very light grey, yellowish grey, clear, very fine to very coarse grains, soft to hard, poor to well sorted, subrounded to rounded, subspherical to spherical, 10% silica cement, 5% calcareous cement, trace to 2% mica flakes, trace to 1% green amber, fair to poor inferred visual porosity, no hydrocarbon fluorescence. SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 5-10% mica flakes. CONGLOMERITIC SANDSTONE: very light grey to light grey, clear, fine to granular, firm to hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.

Gas Data

Depth Interval (m)	Gas Type	Total Gas (%)	C1 (%)	C2 (%)	C3 (%)	iC4 (%)	nC4 (%)	C5 (%)	CO2 (%)
2988.00 - 2993.50	Drilled	0.301	0.1630	0.0072	0.0022	0.0009	0.0006	0.0007	0.000

Core Run					
Core Number	1	Start Depth (MD)	2983.0 (m)	Amount Recovered	31.2
Formation	Eastern View Coal Measures	End Depth (MD)	3013.0 (m)	Sleeve Type	Aluminium
Contractor	CorePro	Core Diameter	102000.0 (mm)	Encapsulation Type	Nil
Equipment	5x6 m barrels	Barrel Length	30.0 (m)		
Shipping		Comments			
Core Detail					
Core Chip Depth (m)	Description				
2983.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to very coarse grained, loose to moderately hard, poorly sorted, rounded to subangular, subspherical to spherical, common argillaceous cement, trace lithic fragments, common carbonaceous material, common mica flakes, good inferred visual porosity, no hydrocarbon fluorescence.				
2984.00	SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 7% mica flakes, quartzose bands throughout.				
2985.00	SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 20% mica flakes.				
2986.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to fine grained, soft to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, common silica cement, some argillaceous cement, 3% mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
2987.00	SANDSTONE: white to very light grey, yellowish grey, clear, trace light greenish grey, very fine to fine grained, soft to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, common silica cement, some argillaceous cement, 5% mica flakes, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.				
2988.00	SANDSTONE: white to very light grey, yellowish grey, clear, trace pinkish grey, very fine to fine grained, soft to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, common silica cement, some argillaceous cement, 1% mica flakes, 2% green amber, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.				
2989.00	SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 20% mica flakes.				
2990.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to medium grained, trace granular quartz grains, firm to hard, moderately sorted, subrounded to angular, subspherical to spherical, 7-10% silica cement, 1% mica flakes, trace green amber, fair inferred visual porosity, no hydrocarbon fluorescence.				
2991.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to medium grained, trace granular quartz grains, firm to hard, moderately sorted, subrounded to angular, subspherical to spherical, 5-10% calcareous cement, trace mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
2992.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to very coarse grained, firm to hard, poorly sorted, subrounded to angular, subspherical to spherical, 7-10% silica cement, 1% mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
2993.00	SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 15-25% mica flakes.				
2994.00	SILTSTONE: medium grey to medium dark grey, dark grey, moderately hard to hard, blocky to subfissile, 5-10% mica flakes.				
2995.00	CONGLOMERITIC SANDSTONE: very light grey to light grey, clear, fine to granular, firm to hard, poorly sorted, subrounded to angular, subspherical to spherical, 5-10% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.				
2996.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to medium grained, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 10% silica cement, trace mica flakes, trace green amber, fair inferred visual porosity, no hydrocarbon fluorescence.				
2997.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to medium grained, trace very coarse grains, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 15% calcareous cement, trace mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
2998.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to medium grained, trace very coarse grains, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 15% calcareous cement, trace mica flakes, trace coal, trace green amber, fair inferred visual porosity, no hydrocarbon fluorescence.				
2999.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to medium grained, trace very coarse grains, firm to moderately hard, poorly to moderately sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
3000.00	CONGLOMERITIC SANDSTONE: very light grey to light grey, clear, fine to granular, firm to hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace lithic fragments, good inferred visual porosity, no hydrocarbon fluorescence.				
3001.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to coarse grains, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
3002.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to coarse grains, trace granular grains, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica flakes, fair inferred visual porosity, no hydrocarbon fluorescence.				
3003.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to very coarse grains, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica flakes, trace green amber, fair inferred visual porosity, no hydrocarbon fluorescence.				

Core Run	
3004.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to medium grains, soft to firm, moderately to well sorted, subrounded to rounded, subspherical to spherical, 10% silica cement, 2% mica flakes, trace coal, poor inferred visual porosity, no hydrocarbon fluorescence.
3005.00	SANDSTONE: white to very light grey, yellowish grey, clear, very fine to medium grains, soft to firm, moderately to well sorted, subrounded to rounded, subspherical to spherical, 10% silica cement, trace mica flakes, 1% green amber, poor inferred visual porosity, no hydrocarbon fluorescence.
3006.00	SANDSTONE: white to very light grey, yellowish grey, pinkish grey, clear, very fine to medium grains, soft to firm, moderately to well sorted, subrounded to rounded, subspherical to spherical, 10% silica cement, trace mica flakes, poor inferred visual porosity, no hydrocarbon fluorescence.
3007.00	SANDSTONE: white to very light grey, medium light grey to yellowish grey, clear, very fine to fine grained, firm to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, 15% silica cement, trace coal, 1% mica flakes, poor inferred porosity, no hydrocarbon fluorescence.
3008.00	SANDSTONE: white to very light grey, medium light grey to yellowish grey, clear, fine to granular grained, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica flakes, fair inferred porosity, no hydrocarbon fluorescence.
3009.00	CONGLOMERITIC SANDSTONE: very light grey to light grey, clear, fine to granular, firm to hard, very poorly sorted, subrounded to angular, subspherical to spherical, 15% silica cement, trace lithic fragments, fair inferred visual porosity, no hydrocarbon fluorescence.
3010.00	SANDSTONE: white to very light grey, yellowish grey, clear, fine to medium grained, firm to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, 10% silica cement, 1% mica flakes, good inferred porosity, no hydrocarbon fluorescence.
3011.00	SANDSTONE: white to very light grey, yellowish grey to light greenish grey, clear, fine to medium grained, firm to moderately hard, moderately to well sorted, subrounded to rounded, subspherical to spherical, 5% silica cement, 1% mica flakes, 1% green amber, good inferred porosity, no hydrocarbon fluorescence.
3012.00	SANDSTONE: white to very light grey, yellowish grey to light greenish grey, clear, fine to very coarse grained, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 5% silica cement, trace mica, fair inferred porosity, no hydrocarbon fluorescence.
3013.00	SANDSTONE: white to very light grey, yellowish grey to light greenish grey, clear, fine to very coarse grained, firm to moderately hard, poorly sorted, subrounded to angular, subspherical to spherical, 10% silica cement, trace mica, fair inferred porosity, no hydrocarbon fluorescence.

06:00 Hrs Update

Time:	06:00 Hrs on 14 Nov 2009
Depth:	3013 mMDRT/3013 mTVDR
Progress Since Midnight (m):	0
Status @ 0600hrs:	Reaming & ReLogging with MWD F 2960m - 3013m.
Formation:	Eastern View Coal Measures
Lithology:	From core 1 chips: SANDSTONE with occasional thin SILTSTONE interbeds
ROP:	No drilling
Gas:	No drilling

Wellsite Geologist(s)

(Days) - Dennis Archer

(Nights) - Larissa Hansen