

Sperry Drilling - HALLIBURTON

Directional Drilling End of Well Report



Australian Drilling Associates Pty Ltd

ADA

Well: Trefoil-2
Rig: Kan Tan IV
Location: Bass Basin, Australia



Sperry Drilling - HALLIBURTON

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SECTION 1

Well Report

Customer : Origin Energy Services

Well : Trefoil-2

Job Objectives:

Vertical appraisal well to evaluate the Intra-EVCM sands (top TL10 to base TF110) in Trefoil - 2 location for the presence of commercial quantities of hydrocarbons.

Summary of Results:

The top hole sections 36" , 17-1/2" and 8-1/2" were drilled with no DD present on board.

36" hole section

The top 36" hole section was drilled to 155m, and a combination 30" x 20" casing was successfully run and cemented.

17-1/2" hole section

17-1/2" hole section was drilled to 935m with averaged ROP of 70m/hr. The hole remained vertical with inclination at TD showing 0.71° on an azimuth of 183.94°. The 13 3/8" casing was run and cemented according to program.

12 -1/4" hole section

The 12-1/4" section was successfully drilled to TD in two runs which was called at 2520m MD. All directional drilling requirements were fulfilled. Forward projections show the target sand will be penetrated well inside the drilling target tolerance at 26.68m from vertical. The average ROP for the run was 21m/hr. The hole was circulated clean and BHA POOH to run 9 5/8" casing

8-1/2" hole section

The 8-1/2" section contained two core sections and was drilled with 4 drilling runs and two coring runs

There was an MWD failure during the drilling to the first core point and a trip was required to change out the MWD but all subsequent drilling and coring runs went without any major incident

Discussion:

BHA #	Bit #	Motor Run #	Hole Size (in)	MD In (m)	MD Out (m)	TVD In (m)	TVD Out (m)	Inc In (deg)	Inc Out (deg)	Azi In (deg)	Azi Out (deg)	Drlg hrs	Circ hrs
3	3	1	12.250	935	2271	935	2271	0.7	0.8	186	89	65	13
4	3rr1	2	12.250	2271	2520	2271	2520	0.8	1.0	89	96	19	8
5	4		8.500	2520	2523	2520	2523	1.0	1.0	96	97	3	3
6	5		8.500	2523	2633	2523	2633	1.0	1.4	97	87	11	7
7	5rr1		8.500	2633	2983	2633	2982	1.4	2.9	87	84	34	4
8	6		8.500	2983	3013	2982	3012	2.9	3.0	84	83	5	1
9	5rr2		8.500	3013	3145	3012	3144	3.0	3.8	83	83	16	6
10	6rr1		8.500	3145	3175	3144	3174	3.8	3.8	83	84	5	1
11	5rr3		8.500	3175	3235	3174	3234	3.8	4.3	84	83	12	4

Table 1 - BHA Summary

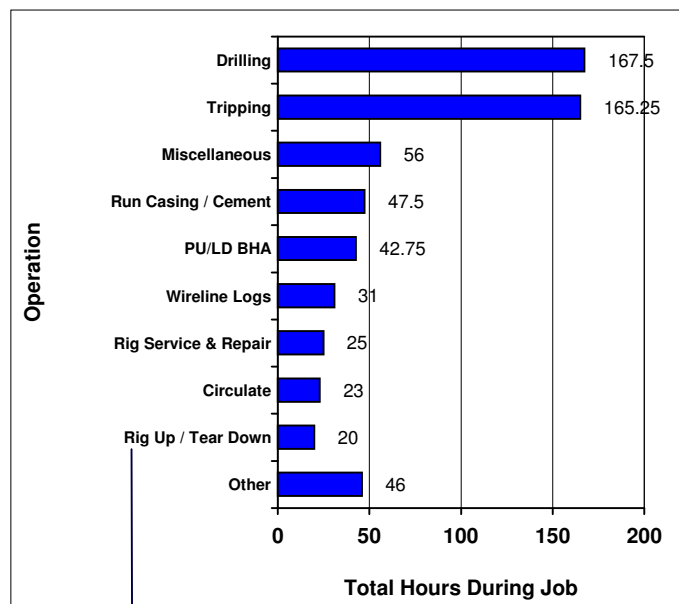
Motor Run #	Manufacturer	Type	Lobe	OD (in)	Gauge (in)	Bend (deg)	Adj	DLS (Ori) ('/100')	ROP (Ori) (m/hr)	ROP (Rot) (m/hr)
1	SSDS	SperryDrill	6/7	9.625	12.125	0.78	Y	2.03	4	21
2	SSDS	SperryDrill	6/7	9.625	12.125	0.78	Y	2.03	0	13

Table 2 - Motor Run Summary

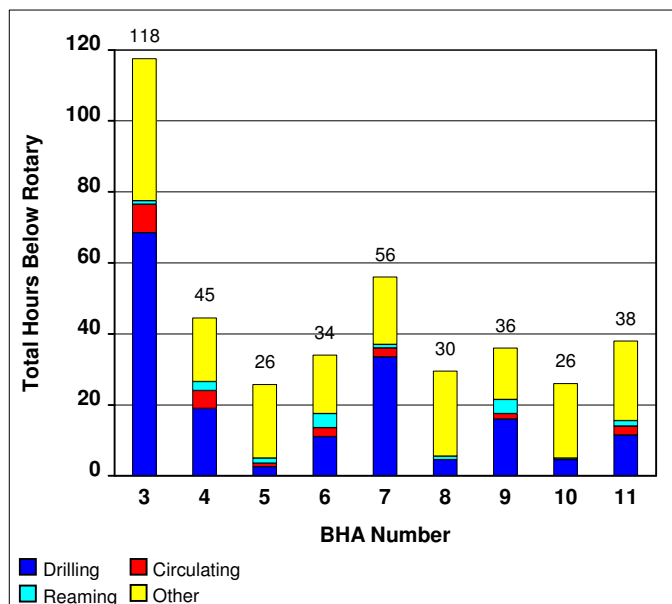
Bit #	Manufacturer	Style	OD (in)	Gge Len (in)	Nozzles (/32's)	TFA (in ²)	Dull Grades I O D L B G O R	Ftge (m)	Drlg hrs	ROP (m/hr)
3	Reed Hycalog	RSR616M-A 2	12.250	4.000	8x13	1.037	1-1-BT-N -X-I-CT-PP	1336	65.00	21
3rr1	Reed Hycalog	RSR616M-A 2	12.250	4.000	8x13	1.037	1-1-CT-A -X-I-PN-TD	249	19.00	13
4	Hughes	GT-1	8.500	4.000	3x22	1.114	1-1-WT-A -1-I-NO-BHA	3	2.50	1
5	Smith	Mi616VBPX	8.500	0.000	6x14	0.902	1-1-WT-A -X-I-NO-DTF	110	11.00	10
5rr1	Smith	Mi616VBPX	8.500	0.000	6x14	0.902	1-2-CT-S -X-I-WT-CP	350	33.50	10
6	Corpro	MCP572	8.500	0.000	1x28	0.601	1-1-NO-FC-X-I-NO-BHA	30	4.50	7
5rr2	Smith	Mi616VBPX	8.500	0.000	6x14	0.902	1-2-CT-S -X-I-NO-CP	132	16.00	8
6rr1	Corpro	MCP572	8.500	0.000	1x28	0.601	1-1-NO-A -X-I-NO-BHA	30	4.50	7
5rr3	Smith	Mi616VBPX	8.500	0.000	6x14	0.902		60	11.50	5

Table 3 - Bit Run Summary

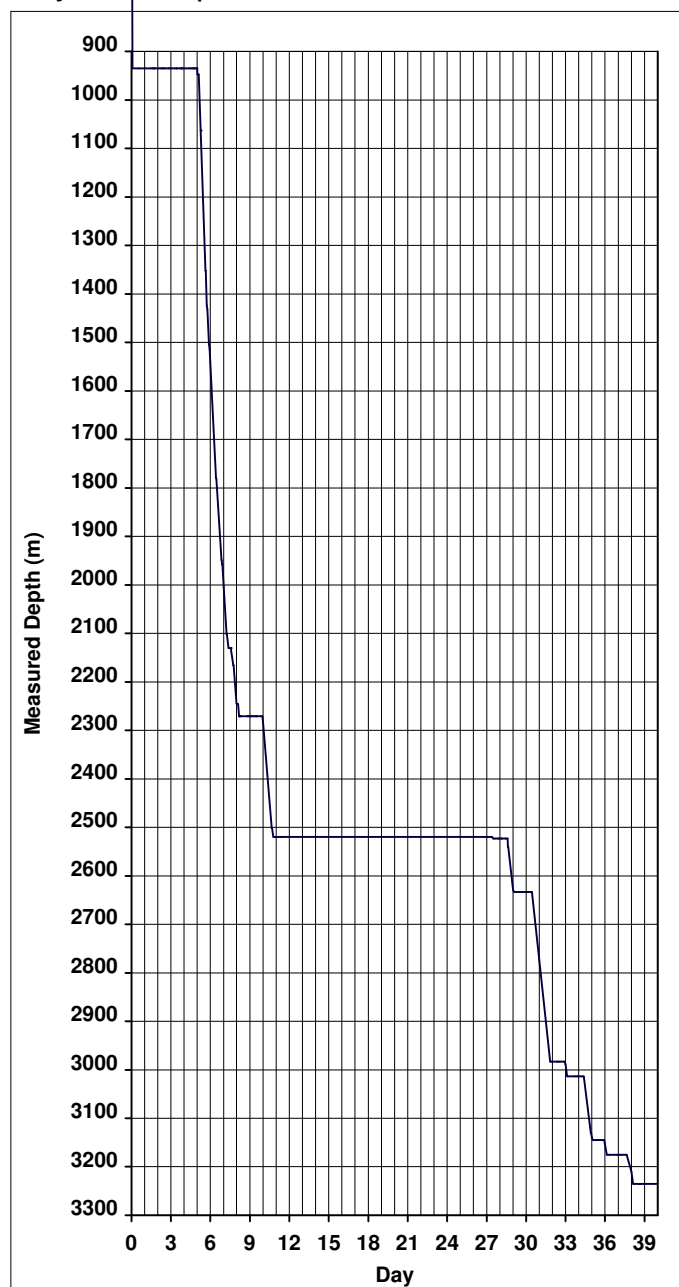
Hours by Operation Summary



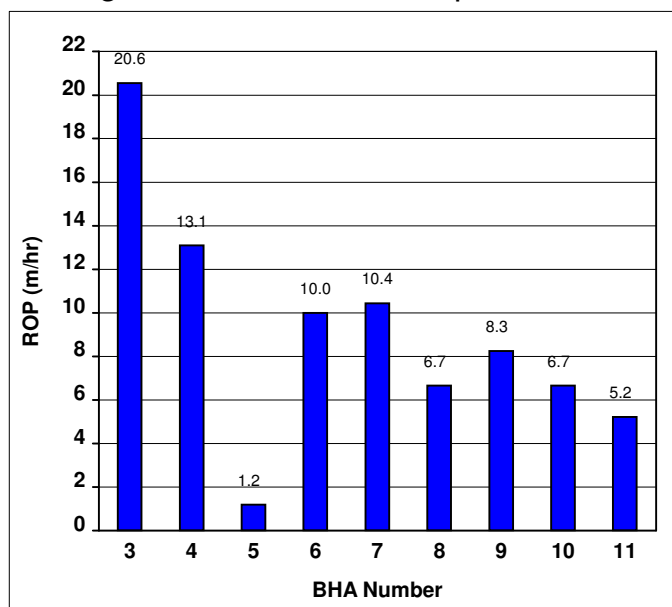
Hours per BHA Breakdown



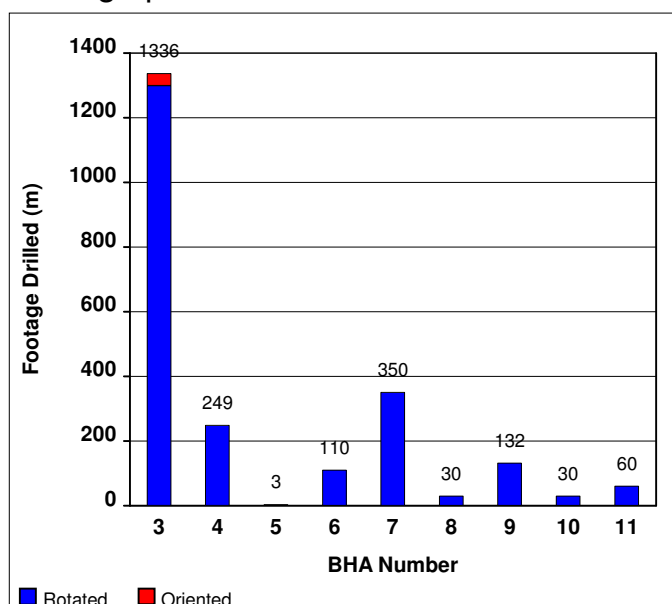
Days vs. Depth



Average Rate of Penetration per BHA



Footage per BHA



SECTION 2

Drilling Parameters

MD (m)	Formation Name MD/TVD	Inclination — DLS —	Bit Data	Drilling Parameters	Motor	BHA Stabilizers	Comments	BHA ID
90		0 1 1 2 2 3 3 4 4 5						@ 95
290								
490								
690	AMP anomaly 650 / 650		RSR616M-A2 8x13 /32's 1.12 ft/min 65.00 hrs	WOB 11944 lbs RPM 103 FLO 997 gpm SPP 2539 psi	9-5/8" SperryDrill 6/7 L 0.78° ABH	12.125 in @ 1.16 m 12.250 in @ 10.25 m 8.625 in @ 14.44 m 12.250 in @ 24.17 m	Rig Floor Offset - 49.4 deg Motor below RT 05:00 on 14-10-2009 Motor Above RT 02:00 on 19-10-2009 Bit to survey - 19.76m Bit to Gamma - 12.34m Bit to EWR - 14.81m	#3 @ 935
890	L. Miocene Seis mark 918 / 918							
1090	Upper Angahook 1162 / 1162							
1290	Angahook Volcanics 1331 / 1331							
1490	Undiff Oligocene 1569 / 1569		RSR616M-A2 8x13 /32's 0.72 ft/min 19.00 hrs	WOB 12550 lbs RPM 108 FLO 953 gpm SPP 2955 psi	9-5/8" SperryDrill 6/7 L 0.78° ABH	12.125 in @ 1.16 m 12.250 in @ 10.25 m 8.625 in @ 14.44 m 12.125 in @ 24.17 m	BHA below RT on 11.00 hrs -20-10-09 BHA Above RT on 09:00 hrs -22-10-09 Circulating hrs = Drilling hrs = Rig Floor Offset = 311.11deg	#4 @ 2271
1690			GT-1 3x22 /32's 0.07 ft/min 2.50 hrs	WOB lbs RPM FLO gpm SPP psi				#5 @ 2520
1890	Demons Bluff 1850 / 1850		Mi616VBPX 6x14 /32's 0.55 ft/min 11.00 hrs	WOB lbs RPM FLO gpm SPP psi		8.375 in @ 1.03 m Stab @ 1.95 m 8.250 in @ 16.20 m 8.375 in @ 32.75 m		#6 @ 2523
2090	Eastern view coal 2105 / 2105		Mi616VBPX 6x14 /32's 0.57 ft/min 33.50 hrs	WOB lbs RPM FLO gpm SPP psi		8.375 in @ 1.03 m Stab @ 1.95 m 8.250 in @ 16.16 m 8.375 in @ 33.46 m		#7 @ 2633
2290			MCP572 1x28 /32's 0.36 ft/min 4.50 hrs	WOB lbs RPM FLO gpm SPP psi		8.440 in @ 0.68 m 8.440 in @ 6.77 m 8.440 in @ 12.86 m 8.440 in @ 18.95 m 8.440 in @ 25.04 m 8.440 in @ 31.13 m		#8 @ 2983
2490								
2690			Mi616VBPX 6x14 /32's 0.45 ft/min 16.00 hrs	WOB lbs RPM FLO gpm SPP psi		8.375 in @ 1.03 m Stab @ 1.95 m 8.250 in @ 16.16 m 8.375 in @ 33.46 m		#9 @ 3013
2890			MCP572 1x28 /32's 0.36 ft/min 4.50 hrs	WOB lbs RPM FLO gpm SPP psi		8.440 in @ 0.68 m 8.440 in @ 6.77 m 8.440 in @ 12.86 m 8.440 in @ 18.95 m 8.440 in @ 25.04 m 8.440 in @ 31.13 m		#10 @ 3145
3090			Mi616VBPX 6x14 /32's 0.29 ft/min 11.50 hrs	WOB lbs RPM FLO gpm SPP psi		8.375 in @ 1.03 m Stab @ 1.95 m 8.250 in @ 16.16 m 8.375 in @ 33.46 m		#11 @ 3175
3290		0 .2 .4 .6 .8 1.1.20.40.60.80						

SECTION 3

Definitive Survey Report

Origin Energy Resources LTD

Trefoil

Trefoil-2

Trefoil-2 - Trefoil-2

Trefoil-2

Design: Trefoil-2 Definitive Survey

Sperry Drilling Services Combo Report

09 December, 2009

Well Coordinates: 5,583,676.59 N, 360,690.39 E (39° 53' 07.93" S, 145° 22' 14.62" E)

Water Depth: 69.00 m

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well Trefoil-2 - Slot Trefoil-2

Rotary Table @ 26.00m (Above MSL)

N

Grid

Modified SI

Version: 2003.21 Build: 43

HALLIBURTON

Design Report for Trefoil-2 - Trefoil-2 Definitive Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System (m)	Vertical Depth (m)	Local Coordinates		Map Coordinates		Dogleg Rate (°/30m)	Vertical Section (m)	Comments
					Northing (m)	Easting (m)	Northing (m)	Easting (m)			
0.00	0.00	0.00	-26.00	0.00	0.00 N	0.00 E	5,583,676.59	360,690.39	0.000	0.00	
95.00	0.00	0.00	69.00	95.00	0.00 N	0.00 E	5,583,676.59	360,690.39	0.000	0.00	
204.92	0.58	282.17	178.92	204.92	0.12 N	0.54 W	5,583,676.71	360,689.85	0.158	-0.52	
289.50	0.55	277.88	263.49	289.49	0.26 N	1.36 W	5,583,676.85	360,689.02	0.018	-1.28	
376.49	0.32	238.01	350.48	376.48	0.19 N	1.98 W	5,583,676.78	360,688.40	0.127	-1.76	
435.08	0.35	232.40	409.07	435.07	0.00 S	2.26 W	5,583,676.58	360,688.12	0.023	-1.89	
521.95	0.72	199.02	495.94	521.94	0.68 S	2.65 W	5,583,675.91	360,687.74	0.162	-1.83	
547.83	0.73	193.58	521.81	547.81	1.00 S	2.74 W	5,583,675.59	360,687.64	0.081	-1.74	
579.00	0.69	195.91	552.98	578.98	1.37 S	2.84 W	5,583,675.22	360,687.55	0.047	-1.61	
665.44	0.36	203.20	639.42	665.42	2.12 S	3.09 W	5,583,674.47	360,687.30	0.117	-1.41	
782.28	0.67	192.10	756.25	782.25	3.12 S	3.38 W	5,583,673.46	360,687.01	0.083	-1.09	
812.12	0.66	196.82	786.09	812.09	3.46 S	3.47 W	5,583,673.13	360,686.92	0.056	-0.98	
868.19	0.30	224.95	842.16	868.16	3.87 S	3.66 W	5,583,672.71	360,686.73	0.225	-0.92	
896.77	1.03	195.99	870.74	896.74	4.17 S	3.79 W	5,583,672.42	360,686.60	0.820	-0.85	
925.97	0.71	183.94	899.93	925.93	4.61 S	3.87 W	5,583,671.98	360,686.52	0.377	-0.68	
952.44	0.80	188.49	926.40	952.40	4.95 S	3.91 W	5,583,671.64	360,686.48	0.122	-0.53	
981.35	0.74	192.99	955.31	981.31	5.33 S	3.98 W	5,583,671.25	360,686.41	0.088	-0.37	
1,010.20	0.83	198.72	984.16	1,010.16	5.71 S	4.09 W	5,583,670.87	360,686.30	0.124	-0.26	
1,067.21	0.87	190.96	1,041.16	1,067.16	6.53 S	4.31 W	5,583,670.06	360,686.08	0.064	0.02	
1,095.87	0.84	194.49	1,069.82	1,095.82	6.95 S	4.40 W	5,583,669.64	360,685.99	0.063	0.17	
1,153.51	1.11	191.81	1,127.45	1,153.45	7.90 S	4.62 W	5,583,668.69	360,685.77	0.142	0.51	
1,182.36	1.27	187.06	1,156.29	1,182.29	8.49 S	4.72 W	5,583,668.10	360,685.67	0.195	0.76	
1,211.30	0.97	182.63	1,185.23	1,211.23	9.06 S	4.77 W	5,583,667.53	360,685.62	0.323	1.03	
1,240.32	1.00	184.76	1,214.24	1,240.24	9.55 S	4.80 W	5,583,667.03	360,685.59	0.049	1.27	
1,269.44	0.96	179.68	1,243.36	1,269.36	10.05 S	4.82 W	5,583,666.54	360,685.57	0.098	1.53	
1,298.71	1.13	178.12	1,272.62	1,298.62	10.58 S	4.81 W	5,583,666.00	360,685.58	0.177	1.84	
1,327.95	1.27	184.82	1,301.86	1,327.86	11.20 S	4.83 W	5,583,665.39	360,685.56	0.203	2.16	
1,357.12	1.31	184.97	1,331.02	1,357.02	11.85 S	4.88 W	5,583,664.74	360,685.51	0.041	2.47	
1,385.95	1.43	187.08	1,359.84	1,385.84	12.53 S	4.95 W	5,583,664.05	360,685.43	0.135	2.79	
1,414.80	1.33	186.15	1,388.68	1,414.68	13.22 S	5.03 W	5,583,663.36	360,685.35	0.107	3.11	
1,443.26	1.42	189.23	1,417.14	1,443.14	13.90 S	5.13 W	5,583,662.69	360,685.26	0.123	3.40	
1,471.76	1.41	188.55	1,445.63	1,471.63	14.60 S	5.24 W	5,583,661.99	360,685.15	0.021	3.70	
1,500.56	1.44	186.77	1,474.42	1,500.42	15.31 S	5.33 W	5,583,661.28	360,685.06	0.056	4.01	
1,529.74	1.02	177.87	1,503.59	1,529.59	15.93 S	5.36 W	5,583,660.66	360,685.02	0.473	4.32	
1,559.00	1.11	183.32	1,532.85	1,558.85	16.47 S	5.37 W	5,583,660.11	360,685.02	0.139	4.62	
1,588.15	1.05	181.86	1,561.99	1,587.99	17.02 S	5.40 W	5,583,659.57	360,684.99	0.068	4.90	
1,617.27	1.14	175.03	1,591.11	1,617.11	17.58 S	5.38 W	5,583,659.01	360,685.01	0.163	5.22	
1,646.32	1.17	184.16	1,620.15	1,646.15	18.16 S	5.38 W	5,583,658.43	360,685.01	0.192	5.55	
1,675.15	1.31	182.99	1,648.97	1,674.97	18.78 S	5.41 W	5,583,657.80	360,684.97	0.148	5.86	

Design Report for Trefoil-2 - Trefoil-2 Definitive Survey

Measured			TVD below	Vertical	Local Coordinates		Map Coordinates		Dogleg	Vertical	
Depth	Inclination	Azimuth	System	Depth	Northing	Easting	Northing	Easting	Rate	Section	Comments
(m)	(°)	(°)	(m)	(m)	(m)	(m)	(m)	(m)	(°/30m)	(m)	
1,703.61	1.02	183.90	1,677.43	1,703.43	19.36 S	5.45 W	5,583,657.23	360,684.94	0.306	6.15	
1,731.98	1.12	176.27	1,705.79	1,731.79	19.89 S	5.45 W	5,583,656.70	360,684.94	0.184	6.44	
1,760.71	1.20	179.48	1,734.52	1,760.52	20.47 S	5.43 W	5,583,656.12	360,684.96	0.108	6.78	
1,790.08	1.13	181.99	1,763.88	1,789.88	21.07 S	5.43 W	5,583,655.52	360,684.95	0.088	7.10	
1,819.45	1.17	182.73	1,793.24	1,819.24	21.66 S	5.46 W	5,583,654.93	360,684.93	0.044	7.41	
1,848.52	1.17	190.32	1,822.31	1,848.31	22.25 S	5.53 W	5,583,654.34	360,684.86	0.160	7.68	
1,877.80	1.13	190.92	1,851.58	1,877.58	22.82 S	5.63 W	5,583,653.77	360,684.75	0.043	7.91	
1,906.65	1.23	192.98	1,880.43	1,906.43	23.40 S	5.76 W	5,583,653.18	360,684.63	0.113	8.12	
1,934.67	1.08	194.42	1,908.44	1,934.44	23.95 S	5.89 W	5,583,652.64	360,684.50	0.164	8.32	
1,963.22	0.48	64.50	1,936.99	1,962.99	24.16 S	5.85 W	5,583,652.43	360,684.54	1.509	8.47	
1,992.33	0.56	59.70	1,966.10	1,992.10	24.04 S	5.62 W	5,583,652.55	360,684.77	0.094	8.59	
2,021.46	0.59	61.98	1,995.23	2,021.23	23.90 S	5.36 W	5,583,652.69	360,685.03	0.039	8.73	
2,050.74	0.64	78.76	2,024.50	2,050.50	23.79 S	5.07 W	5,583,652.80	360,685.32	0.191	8.91	
2,080.19	0.61	81.26	2,053.95	2,079.95	23.74 S	4.75 W	5,583,652.85	360,685.64	0.041	9.15	
2,102.20	0.68	80.27	2,075.96	2,101.96	23.70 S	4.51 W	5,583,652.89	360,685.88	0.097	9.33	
2,138.04	0.69	75.36	2,111.80	2,137.80	23.61 S	4.09 W	5,583,652.98	360,686.30	0.050	9.63	
2,195.19	0.63	82.85	2,168.94	2,194.94	23.48 S	3.44 W	5,583,653.11	360,686.94	0.055	10.09	
2,253.19	0.62	89.29	2,226.94	2,252.94	23.44 S	2.81 W	5,583,653.15	360,687.57	0.037	10.60	
2,281.35	0.84	88.95	2,255.10	2,281.10	23.43 S	2.46 W	5,583,653.16	360,687.93	0.234	10.89	
2,310.29	0.91	90.74	2,284.04	2,310.04	23.43 S	2.01 W	5,583,653.16	360,688.38	0.078	11.26	
2,339.67	0.80	84.68	2,313.41	2,339.41	23.41 S	1.58 W	5,583,653.17	360,688.81	0.145	11.62	
2,398.22	0.81	98.78	2,371.96	2,397.96	23.44 S	0.76 W	5,583,653.15	360,689.63	0.101	12.31	
2,426.57	1.08	93.16	2,400.30	2,426.30	23.48 S	0.30 W	5,583,653.10	360,690.09	0.302	12.72	
2,454.95	0.96	91.77	2,428.68	2,454.68	23.51 S	0.21 E	5,583,653.08	360,690.60	0.130	13.16	
2,484.55	1.06	89.94	2,458.27	2,484.27	23.51 S	0.73 E	5,583,653.07	360,691.12	0.106	13.59	
2,524.75	1.00	97.22	2,498.47	2,524.47	23.56 S	1.45 E	5,583,653.03	360,691.84	0.107	14.22	
2,557.55	1.13	91.00	2,531.26	2,557.26	23.60 S	2.06 E	5,583,652.99	360,692.45	0.159	14.75	
2,588.20	1.30	90.35	2,561.90	2,587.90	23.61 S	2.71 E	5,583,652.98	360,693.10	0.167	15.29	
2,646.63	1.43	86.39	2,620.32	2,646.32	23.56 S	4.10 E	5,583,653.02	360,694.49	0.082	16.43	
2,674.00	1.51	91.33	2,647.68	2,673.68	23.55 S	4.80 E	5,583,653.04	360,695.19	0.164	17.01	
2,702.98	1.62	88.34	2,676.65	2,702.65	23.55 S	5.59 E	5,583,653.04	360,695.98	0.142	17.67	
2,732.91	1.69	88.47	2,706.57	2,732.57	23.52 S	6.45 E	5,583,653.06	360,696.84	0.070	18.37	
2,762.56	1.85	89.89	2,736.20	2,762.20	23.51 S	7.37 E	5,583,653.08	360,697.76	0.168	19.13	
2,791.49	1.82	85.29	2,765.12	2,791.12	23.47 S	8.30 E	5,583,653.11	360,698.68	0.156	19.88	
2,819.89	1.94	85.21	2,793.50	2,819.50	23.40 S	9.22 E	5,583,653.19	360,699.61	0.127	20.61	
2,847.72	2.06	83.71	2,821.31	2,847.31	23.30 S	10.19 E	5,583,653.29	360,700.58	0.141	21.36	
2,876.19	2.24	81.90	2,849.76	2,875.76	23.17 S	11.25 E	5,583,653.42	360,701.64	0.203	22.17	
2,905.64	2.46	85.79	2,879.19	2,905.19	23.04 S	12.45 E	5,583,653.55	360,702.84	0.277	23.10	
2,935.67	2.58	82.74	2,909.19	2,935.19	22.91 S	13.76 E	5,583,653.68	360,704.15	0.180	24.12	

Design Report for Trefoil-2 - Trefoil-2 Definitive Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	TVD below System (m)	Vertical Depth (m)	Local Coordinates Northing (m)	Local Coordinates Easting (m)	Map Coordinates Northing (m)	Map Coordinates Easting (m)	Dogleg Rate (°/30m)	Vertical Section (m)	Comments
2,963.22	2.93	85.15	2,936.71	2,962.71	22.77 S	15.08 E	5,583,653.82	360,705.47	0.401	25.15	
2,992.32	2.88	83.61	2,965.77	2,991.77	22.63 S	16.55 E	5,583,653.96	360,706.94	0.096	26.29	
3,021.53	3.01	83.20	2,994.94	3,020.94	22.45 S	18.04 E	5,583,654.14	360,708.43	0.135	27.44	
3,051.62	3.07	82.21	3,024.99	3,050.99	22.25 S	19.62 E	5,583,654.34	360,710.01	0.079	28.64	
3,080.66	3.23	81.34	3,053.99	3,079.99	22.02 S	21.20 E	5,583,654.57	360,711.59	0.173	29.84	
3,101.98	3.47	82.50	3,075.27	3,101.27	21.85 S	22.43 E	5,583,654.74	360,712.82	0.351	30.77	
3,130.21	3.75	81.59	3,103.44	3,129.44	21.60 S	24.19 E	5,583,654.99	360,714.58	0.304	32.10	
3,167.65	3.79	84.07	3,140.80	3,166.80	21.29 S	26.64 E	5,583,655.29	360,717.02	0.135	33.96	
3,194.79	3.87	83.32	3,167.88	3,193.88	21.09 S	28.44 E	5,583,655.49	360,718.83	0.104	35.36	
3,223.60	4.33	83.41	3,196.62	3,222.62	20.86 S	30.48 E	5,583,655.73	360,720.87	0.479	36.93	
3,235.00	4.33	83.41	3,207.99	3,233.99	20.76 S	31.34 E	5,583,655.83	360,721.73	0.000	37.59	Projected to TD

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3,235.00	3,233.99	-20.76	31.34	Projected to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (m)	Origin +E/-W (m)	Start TVD (m)
User	No Target (Freehand)	123.52	Slot	0.00	0.00	0.00

Survey tool program

From (m)	To (m)	Survey/Plan	Survey Tool
95.00	925.97	Trefoil-2 - 17 1/2" MWD Survey	MWD+SAG+SC
952.44	2,484.55	Trefoil-2 - 12 1/4" MWD Survey	MWD+SAG+SC
2,524.75	3,235.00	Trefoil-2 - 8 1/2" MWD Survey	MWD+SAG+SC

Design Report for Trefoil-2 - Trefoil-2 Definitive Survey

Casing Details

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
153.00	153.00	30" Conductor	30.000	36.000
930.00	929.96	13 3/8" Casing	13.375	17.500
2,520.00	2,519.72	9 5/8" Casing	9.625	12.250

North Reference Sheet for Trefoil-2 - Trefoil-2 - Trefoil-2

All data is in Meters unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to Rotary Table @ 26.00m (Above MSL). Northing and Easting are relative to Trefoil-2 - Slot Trefoil-2

Coordinate System is Universal Transverse Mercator, Zone 55S (144 E to 150 E) using datum GDA94, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 147° 0' 0.0000 E°, Longitude Origin:0° 0' 0.0000 E°, Latitude Origin:0° 0' 0.0000 N°

False Easting: 500,000.00m, False Northing: 10,000,000.00m, Scale Reduction: 0.99983896

Grid Coordinates of Well: 5,583,676.59 m N, 360,690.39 m E

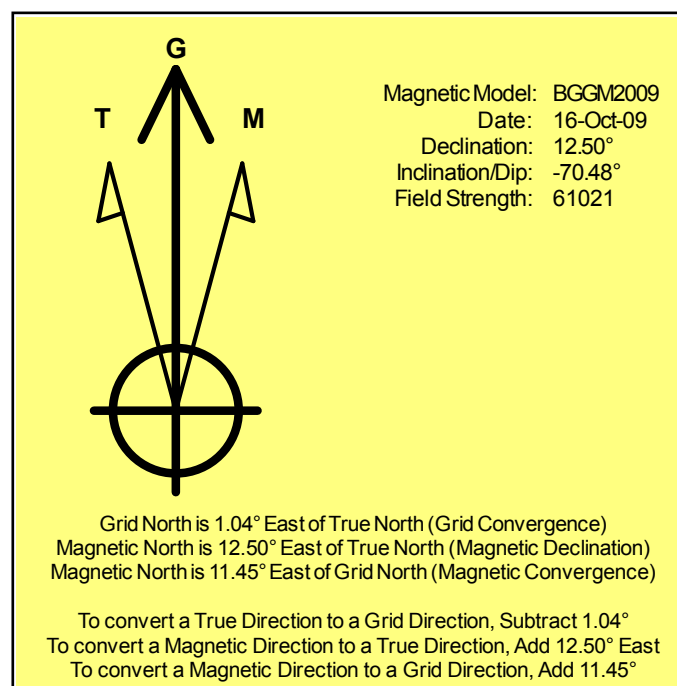
Geographical Coordinates of Well: 39° 53' 07.93" S, 145° 22' 14.62" E

Grid Convergence at Surface is: 1.04°

Based upon Minimum Curvature type calculations, at a Measured Depth of 3,235.00m

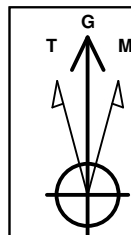
the Bottom Hole Displacement is 37.59m in the Direction of 123.52° (Grid).

Magnetic Convergence at surface is: -11.45° (16 October 2009, , BGGM2009)



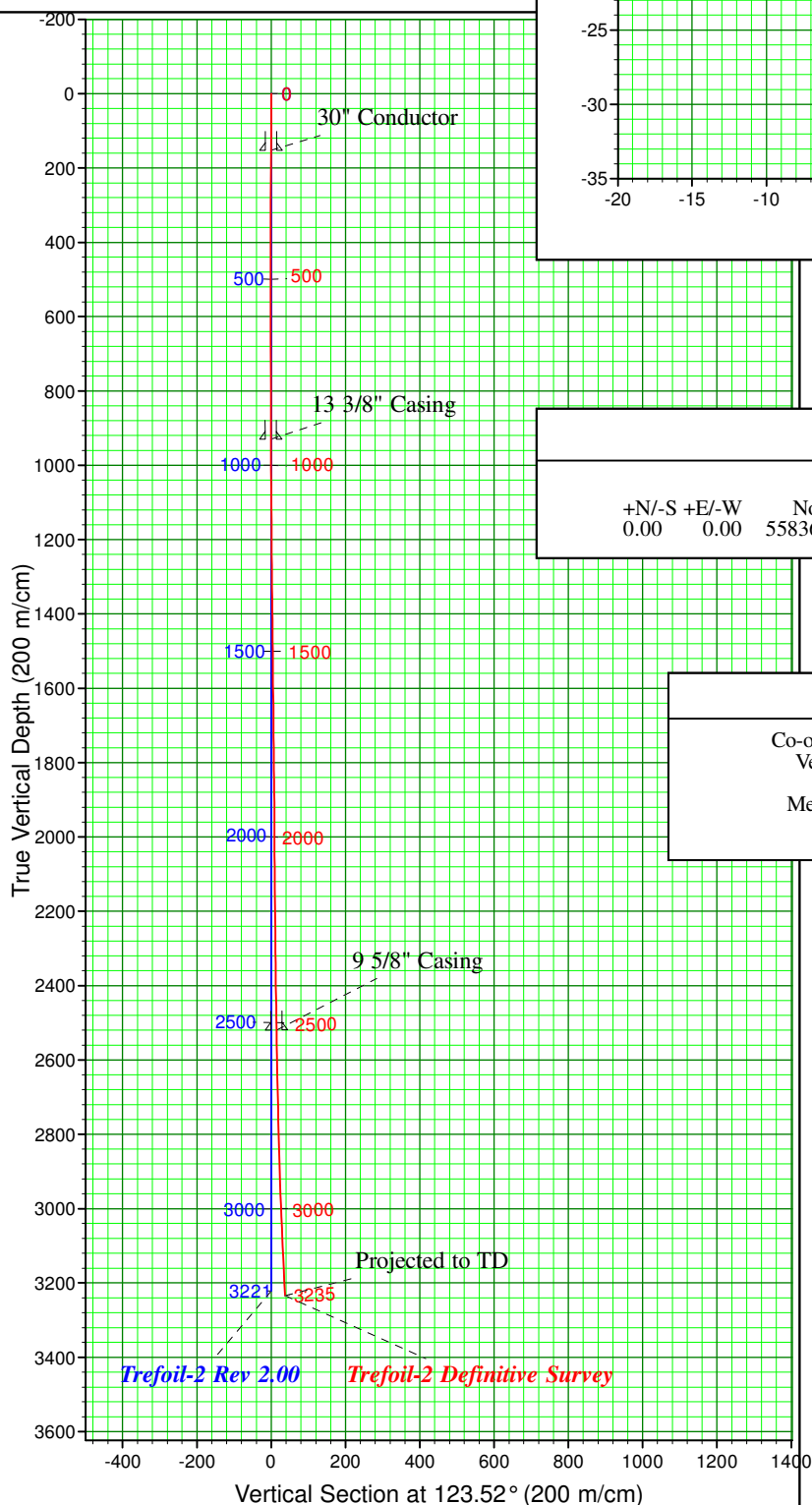
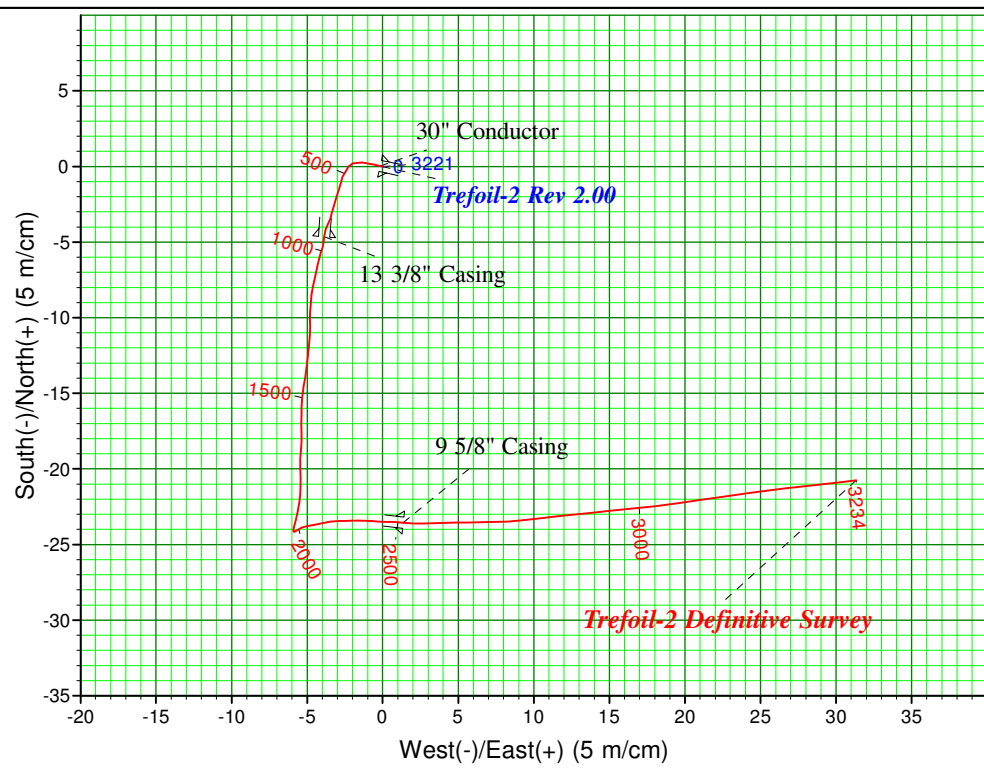
SECTION 4

A4 Plot



Azimuths to Grid North
True North: -1.04°
Magnetic North: 11.45°

Magnetic Field
Strength: 61021.2snT
Dip Angle: -70.48°
Date: 16/10/2009
Model: BGGM2009



WELL DETAILS: Trefoil-2

+N/-S	+E/-W	Northing	Water Depth:	69.00	Longitude	Slot
0.00	0.00	5583676.59	Easting	360690.3939° 53'	7.9334 S 45° 22' 14.6152 E	Trefoil-2
			Latitude			

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Trefoil-2 - Slot Trefoil-2, Grid North
Vertical (TVD) Reference: Rotary Table @ 26.00m (Above MSL)
Section (VS) Reference: Slot - Trefoil-2(0.00N, 0.00E)
Measured Depth Reference: Rotary Table @ 26.00m (Above MSL)
Calculation Method: Minimum Curvature

CASING DETAILS

TVD	MD	Name	Size
153.00	153.00	30" Conductor	30.000
929.96	930.00	13 3/8" Casing	13.375
2519.72	2520.00	9 5/8" Casing	9.625

PROJECT DETAILS: Trefoil

Geodetic System: Universal Transverse Mercator
Datum: GDA94
Ellipsoid: GRS 1980
Zone: Zone 55S (144 E to 150 E)

System Datum: Mean Sea Level

SECTION 5

Drilling Surveys

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S E/W (m) (m)		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	WOB (lbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From To (m) (m)		Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00										Tieon
95.00	0.00	0.00	95.0	0.0	0.0	0.0	0.00	0.00	0.00										
204.92	0.58	282.17	204.9	-0.5	0.1	-0.5	0.16	0.16	0.00										
289.50	0.55	277.88	289.5	-1.3	0.3	-1.4	0.02	-0.01	0.00										
376.49	0.32	238.01	376.5	-1.8	0.2	-2.0	0.13	-0.08	0.00										
435.08	0.35	232.40	435.1	-1.9	0.0	-2.3	0.02	0.02	0.00										
521.95	0.72	199.02	521.9	-1.8	-0.7	-2.7	0.16	0.13	0.00										
547.83	0.73	193.58	547.8	-1.7	-1.0	-2.7	0.08	0.01	0.00										
579.00	0.69	195.91	579.0	-1.6	-1.4	-2.8	0.05	-0.04	0.00										
665.44	0.36	203.20	665.4	-1.4	-2.1	-3.1	0.12	-0.12	0.00										
782.28	0.67	192.10	782.3	-1.1	-3.1	-3.4	0.08	0.08	0.00										
812.12	0.66	196.82	812.1	-1.0	-3.5	-3.5	0.06	-0.01	0.00										
868.19	0.30	224.95	868.2	-0.9	-3.9	-3.7	0.23	-0.20	0.00										
896.77	1.03	195.99	896.7	-0.9	-4.2	-3.8	0.83	0.78	0.00										
925.97	0.71	183.94	925.9	-0.7	-4.6	-3.9	0.38	-0.33	0.00										
952.44	0.80	188.49	952.4	-0.5	-5.0	-3.9	0.12	0.10	0.00	10000	80	1000	1850				55	3	
981.35	0.74	192.99	981.3	-0.4	-5.3	-4.0	0.09	-0.06	0.00	8000	100	956	1825				50	3	
1010.20	0.83	198.72	1010.2	-0.3	-5.7	-4.1	0.13	0.10	0.00	8000	100	956	1895				70	3	
1067.21	0.87	190.96	1067.2	0.0	-6.5	-4.3	0.07	0.02	0.00	5000	100	956	1860				80	3	
1095.87	0.84	194.49	1095.8	0.2	-6.9	-4.4	0.06	-0.03	0.00	6000	100	1000	2240				120	3	
1153.51	1.11	191.81	1153.4	0.5	-7.9	-4.6	0.14	0.14	0.00	7000	100	1000	2345				145	3	
1182.36	1.27	187.06	1182.3	0.8	-8.5	-4.7	0.20	0.17	-5.02	8000	100	1000	2375				150	3	
1211.30	0.97	182.63	1211.2	1.0	-9.1	-4.8	0.33	-0.32	0.00	10000	100	1000	2358				120	3	
1240.32	1.00	184.76	1240.2	1.3	-9.6	-4.8	0.05	0.03	0.00	8000	100	1000	2450				95	3	
1269.44	0.96	179.68	1269.4	1.5	-10.1	-4.8	0.10	-0.04	0.00	2000	100	1000	2280				55	3	
1298.71	1.13	178.12	1298.6	1.8	-10.6	-4.8	0.18	0.18	0.00	5000	110	1000	2230				50	3	
1327.95	1.27	184.82	1327.9	2.2	-11.2	-4.8	0.21	0.15	6.98	2000	110	1000	2201				55	3	
1357.12	1.31	184.97	1357.0	2.5	-11.8	-4.9	0.04	0.04	0.16	2000	110	1000	2320				80	3	
1385.95	1.43	187.08	1385.8	2.8	-12.5	-5.0	0.14	0.13	2.23	8000	100	1000	2520				80	3	
1414.80	1.33	186.15	1414.7	3.1	-13.2	-5.0	0.11	-0.11	-0.98	4000	100	1000	2450				70	3	

WELLBORE SURVEY										DRILLING PARAMETERS									Comment
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates		DLS (%'100')	Build Rate (%'100')	Turn Rate (%'100')	WOB (lbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation		Tool Face (deg)	ROP (m/hr)	BHA No. (#)	
1443.26	1.42	189.23	1443.1	3.4	-13.9	-5.1	0.12	0.10	3.30	3000	100	1000	2471	1419	1428	20R	80	3	
1471.76	1.41	188.55	1471.6	3.7	-14.6	-5.2	0.00	-0.01	-0.73	8000	110	1000	2422				70	3	
1500.56	1.44	186.77	1500.4	4.0	-15.3	-5.3	0.06	0.03	-1.88	5000	100	1000	2490				75	3	
1529.74	1.02	177.87	1529.6	4.3	-15.9	-5.4	0.48	-0.44	-9.30	6000	100	1000	2690	1504	1514	40R	60	3	
1559.00	1.11	183.32	1558.8	4.6	-16.5	-5.4	0.14	0.09	5.68	10000	100	1000	2690				65	3	
1588.15	1.05	181.86	1588.0	4.9	-17.0	-5.4	0.07	-0.06	-1.53	10000	100	1000	2600				55	3	
1617.27	1.14	175.03	1617.1	5.2	-17.6	-5.4	0.17	0.09	-7.15	10000	100	1000	2600				55	3	
1646.32	1.17	184.16	1646.1	5.5	-18.2	-5.4	0.20	0.03	9.58	10000	110	1000	2600				50	3	
1675.15	1.31	182.99	1675.0	5.9	-18.8	-5.4	0.15	0.15	-1.24	10000	110	1000	2620				45	3	
1703.61	1.02	183.90	1703.4	6.1	-19.4	-5.4	0.31	-0.31	0.97	10000	110	1000	2750				35	3	
1731.98	1.12	176.27	1731.8	6.4	-19.9	-5.4	0.19	0.11	-8.20	14000	110	1000	2740				30	3	
1760.71	1.20	179.48	1760.5	6.8	-20.5	-5.4	0.11	0.08	3.41	25000	110	1000	2790				35	3	
1790.08	1.13	181.99	1789.9	7.1	-21.1	-5.4	0.09	-0.07	2.60	22000	110	1000	2660				35	3	
1819.45	1.17	182.73	1819.2	7.4	-21.7	-5.5	0.04	0.04	0.77	28000	110	1000	2575				43	3	
1848.52	1.17	190.32	1848.3	7.7	-22.2	-5.5	0.16	0.00	7.96	25000	110	1000	2670				35	3	
1877.80	1.13	190.92	1877.6	7.9	-22.8	-5.6	0.04	-0.04	0.62	25000	110	1000	2743				38	3	
1906.65	1.23	192.98	1906.4	8.1	-23.4	-5.8	0.11	0.11	2.18	25000	110	1000	2690				35	3	
1934.67	1.08	194.42	1934.4	8.3	-24.0	-5.9	0.17	-0.16	1.57	25000	110	1000	2890				35	3	
1963.22	0.48	64.50	1963.0	8.5	-24.2	-5.9	1.53	-0.64	0.00	25000	110	1000	2875	1937 1951	1948 1958	15R 15R	35	3	
1992.33	0.56	59.70	1992.1	8.6	-24.0	-5.6	0.10	0.08	0.00	25000	100	1000	2580				30	3	
2021.46	0.59	61.98	2021.2	8.7	-23.9	-5.4	0.04	0.03	0.00	20000	100	1000	2905				25	3	
2050.74	0.64	78.76	2050.5	8.9	-23.8	-5.1	0.19	0.05	0.00	25000	100	1000	2870				25	3	
2080.19	0.61	81.26	2080.0	9.1	-23.7	-4.8	0.04	-0.03	0.00	23000	100	1000	2780				32	3	
2102.20	0.68	80.27	2102.0	9.3	-23.7	-4.5	0.10	0.10	0.00	23000	100	1000	2780				32	3	
2138.04	0.69	75.36	2137.8	9.6	-23.6	-4.1	0.05	0.01	0.00	10000	110	1000	3060				45	3	
2195.19	0.63	82.85	2194.9	10.1	-23.5	-3.4	0.06	-0.03	0.00	15000	100	1000	3120				30	3	
2253.19	0.62	89.29	2252.9	10.6	-23.4	-2.8	0.04	-0.01	0.00	10000	100	1000	3150				12	3	
2281.35	0.84	88.95	2281.1	10.9	-23.4	-2.5	0.24	0.24	0.00	20000	110	950	2910				15	4	
2310.29	0.91	90.74	2310.0	11.3	-23.4	-2.0	0.08	0.07	0.00	12000	100	975	2885				18	4	
2339.67	0.80	84.68	2339.4	11.6	-23.4	-1.6	0.15	-0.11	0.00	20000	110	950	2825				30	4	

Field : Australia
Slot : Bass Basin
Job # : AU-DD-0006714148

VS Dir : 0.00° (from Wellhead)

WELLBORE SURVEY										DRILLING PARAMETERS									
Measured Depth (m)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (m)	Vertical Section (m)	Coordinates N/S E/W (m)		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	WOB (lbs)	RPM	Flow Rate (gpm)	Stand Pipe (psi)	Orientation From (m) To (m)		Tool Face (deg)	ROP (m/hr)	BHA No. (#)	Comment
2398.22	0.81	98.78	2398.0	12.3	-23.4	-0.8	0.10	0.01	0.00	10000	100	950	2903				18	4	
2426.57	1.08	93.16	2426.3	12.7	-23.5	-0.3	0.31	0.29	0.00	10000	110	950	3050				20	4	
2454.95	0.96	91.77	2454.7	13.2	-23.5	0.2	0.13	-0.13	0.00	10000	110	950	3045				20	4	
2484.55	1.06	89.94	2484.3	13.6	-23.5	0.7	0.11	0.10	0.00	10000	110	950	3050				25	4	
2524.75	1.00	97.22	2524.5	14.2	-23.6	1.5	0.11	-0.05	0.00									6	
2557.55	1.13	91.00	2557.3	14.7	-23.6	2.1	0.16	0.12	0.00									6	
2588.20	1.30	90.35	2587.9	15.3	-23.6	2.7	0.17	0.17	-0.65									6	
2646.63	1.43	86.39	2646.3	16.4	-23.6	4.1	0.08	0.07	-2.07									7	
2674.00	1.51	91.33	2673.7	17.0	-23.6	4.8	0.17	0.09	5.50									7	
2702.98	1.62	88.34	2702.6	17.7	-23.5	5.6	0.14	0.12	-3.14									7	
2732.91	1.69	88.47	2732.6	18.4	-23.5	6.5	0.07	0.07	0.13									7	
2762.56	1.85	89.89	2762.2	19.1	-23.5	7.4	0.17	0.16	1.46									7	
2791.49	1.82	85.29	2791.1	19.9	-23.5	8.3	0.16	-0.03	-4.85									7	
2819.89	1.94	85.21	2819.5	20.6	-23.4	9.2	0.13	0.13	-0.09									7	
2847.72	2.06	83.71	2847.3	21.4	-23.3	10.2	0.14	0.13	-1.64									7	
2876.19	2.24	81.90	2875.8	22.2	-23.2	11.2	0.21	0.19	-1.94									7	
2905.64	2.46	85.79	2905.2	23.1	-23.0	12.4	0.28	0.23	4.03									7	
2935.67	2.58	82.74	2935.2	24.1	-22.9	13.8	0.18	0.12	-3.10									7	
2963.22	2.93	85.15	2962.7	25.1	-22.8	15.1	0.41	0.39	2.67									7	
2992.32	2.88	83.61	2991.8	26.3	-22.6	16.5	0.10	-0.05	-1.61									8	
3021.53	3.01	83.20	3020.9	27.4	-22.5	18.0	0.14	0.14	-0.43									9	
3051.62	3.07	82.21	3051.0	28.6	-22.3	19.6	0.08	0.06	-1.00									9	
3080.66	3.23	81.34	3080.0	29.8	-22.0	21.2	0.18	0.17	-0.91									9	
3101.98	3.47	82.50	3101.3	30.8	-21.8	22.4	0.36	0.34	1.66									9	
3130.21	3.75	81.59	3129.4	32.1	-21.6	24.2	0.31	0.30	-0.98									9	
3167.65	3.79	84.07	3166.8	34.0	-21.3	26.6	0.14	0.03	2.02									10	
3194.79	3.87	83.32	3193.9	35.4	-21.1	28.4	0.11	0.09	-0.84									11	
3223.60	4.33	83.41	3222.6	36.9	-20.9	30.5	0.49	0.49	0.10									11	
3235.00	4.33	83.41	3234.0	37.6	-20.8	31.3	0.00	0.00	0.00									11	

SECTION 6

BHA Data

sperry-sun

DRILLING SERVICES

BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 3

BHA# 3 : Date In 15/10/2009 MD In (m) : 935 TVD In (m) : 935 Date Out 20/10/2009 MD Out (m): 2271 TVD Out (m): 2271

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
3	12.250	Reed Hycalog	RSR616M-A2	222369	8x13	1.037	1-1-BT-N -X-I-CT-PP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
1	9.625	SSDS	SperryDrill	963448	0.78°		117	77.50

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Reed RSR616M - A21 12-1/4" PDC	222369	12.250	3.000	12.250	377.57	P 6-5/8" Reg	0.30	
2	9-5/8" SperryDrill Lobe 6/7 - 5.0 stg w/Float	963448	9.625	6.135	12.125	147.21	B 6-5/8" Reg	9.22	1.16
3	12-1/4" Integral Blade Stabilizer	701049	8.000	3.000	12.250	147.22	B 6-5/8" Reg	1.86	10.25
4	8" RLL w/ EWR + DGR + HCIM	PA90218962	8.000	2.375	8.625	156.21	B 6-5/8" Reg	7.28	
5	8" Non Mag HOC w/Tm + Dir	246906	8.063	2.375		158.92	B 6-5/8" Reg	4.80	
6	12-1/4" Integral Blade Stabilizer	231191	8.063	3.000	12.250	149.92	B 6-5/8" Reg	1.88	24.17
7	6x 8-1/4" Spiral Drill collars	Rig	8.250	2.875		160.05	B 6-5/8" Reg	56.43	
8	8" Drilling Jar	17621339	8.000	3.000		147.22	B 6-5/8" Reg	9.68	
9	2x 8-1/4" Spiral Drill collar	Rig	8.250	2.875		160.05	B 6-5/8" Reg	18.63	
10	X-over Sub 6-5/8" <> 4-1/2" IF	Rig 1792	6.750	2.813		100.77	B 4-1/2" IF	1.09	
11	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.54	
								252.71	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :	2000	28000	11944	Drilling :	65.00	in Air (Total) : 80225	DP(S)-NC50(XH)-19.50#	5.000	2018
RPM (rpm) :	80	110	103	Reaming :	1.00	in Mud (Total) : 68976			
Flow (gpm) :	956	1000	997	Circ-Other :	11.50	in Air (Bel Jars) : 42513			
SPP (psi) :	1810	3150	2539	Total :	77.50	in Mud (Bel Jars) : 36552			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	0.74	0.76	Oriented :	37.00	4		2.03
Azimuth (deg)	185.62	89.05	Rotated :	1299.00	21		
			Total :	1336.00	21	0.00	0.00
						0.00	0.03

COMMENTS

Rig Floor Offset - 49.4 deg
 Motor below RT 05:00 on 14-10-2009
 Motor Above RT 02.00 on 19-10-2009
 Bit to survey - 19.76m
 Bit to Gamma - 12.34m
 Bit to EWR - 14.81m

OBJECTIVES:

The 12-1/4" section will be drilled to 2510mTVDRT or +/-418m below the top of the Eastern View Group. A deep set 9.5/8" shoe will assist with obtaining all the wire line logging data required in the subsequent 8-1/2" hole section.

RESULTS:

The six bladed Reed RSR616M PDC bit with 9-5/8" Sperry Motor and MWD/LWD tools were made up and downloaded without problems. A shallow test was performed on the first stand of HWDP at 140m, the test was conducted with 800GPM which gave 1050psi. Top of cement was tagged at 917m MD, and cement and shoe track was drilled relatively quickly with sea water to 930m. The hole was displaced to 9.1ppg KCl/Polymer mud, while the rat hole was cleaned to 935m. The assembly was worked twice through the shoe prior to drilling 3m of new formation to 938m for a FIT. While drilling the shoe track with salt water, the pump pressure was averaging 2230psi. This dropped off significantly at the start of displacing to mud averaging 1500 to 1600psi, on investigation it was discovered the mud was aerated and had to be conditioned before performing FIT.

Drilling Commenced with a significant ROP which averaged at around 160 m/hr from 938m to 1236m this was cut back to 80m/hr due to the shakers over loading, the well was circulated while the shakers were cleaned and drilling resumed once again ROP through the Upper Angahook and Angahook Volcanic Equivalent formations 1236m to 1563m was averaging 80m/hr with the following parameters 2-10kwob, 1000gpm, 100rpm. Torque 3-10-k ft-lb. Once entering the Undiff Oligocene formation at 1569m MDRT it dropped off to 30m/hr with intermittent spikes of 50m/hr seen, this trend continued through the Demons Bluff formation 1850m MDRT as well. The WOB was increased to 25K ft-lb's in an attempt to increase ROP with some success. Forward projections showed that the well path would be intersecting the targets just at the 50m radius, as a result two short slides were attempted with little success very poor tool face control at 1419m and again at 1504m. Continue drilling in rotary to 1937m where an 18m low side oriented slide was utilised to keep the inclination from building and turn the azimuth. This showed favourable results and the well path was lined up well within target 50 m radius.

The Motor performed excellent in upper section of well bore with no problems differential pressure from 100-250PSI. At 2105m the Motor stalled out twice once on bottom and again when tagging bottom. At 2132m while making a connection the saver sub on the top drive was backed out. One stand was racked back, and side entry sub made up to the string to circulate well while repairing top drive pipe handler. The string was rotated slowly in the slips. Drilling continued with little progress drill string stalled several times and it was thought the Motor was stalling but going back to bottom on one occasion the string stalled off bottom after investigating it was determined that the torque limiter on the top drive was set to 14K ft lbs, this was increased to 22K ft lbs drilling resumed with no stalling occurring. Some stick slip was experienced and measures were taken to minimize the level acceptable for tools to work without failure and satisfy the customer with a reasonable ROP.

At 2269m a pressure spike was seen along with increase in torque to 20K after which a 300-350psi pressure drop was observed. Pop off valves on pumps 1 and 2 blew on different occasions while trying to continue drilling ahead due to the fact that they were set to 3500psi and flowing at 1000gpm off bottom psi was 2950 to 3000psi. Had the mud pumps had 6" liners instead of 6-1/2" there would have been better buffer between system pressure and the pop off setting. All through this run the pump pressure has been fluctuating. Due to the pressure loss it was decided to POOH to investigate and for bit change. The hole was circulated clean, and the BHA was pooh from 2271m several tight spots were encountered and the hole was back reamed to the shoe at surface the motor was checked and tested 700gpm, 550psi ok observe bypass flow and bit spinning bearing play out - 5mm. The bit looked in good condition and was graded 1-1-BT-N-X-I-CT-PP. A decision was made to re run the same bit.

BRT hours:	117hrs
Circulating hours:	71.58hrs
On bottom Drilling Hours:	39.2hrs
Drilled from 935m to 2271m	1336m
Average ROP:	21m/hr

RECOMMENDATIONS:

The float and plugs may be more effectively drilled with a milled tooth bit, as opposed to a quite flat faced, heavy set PDC Bit. Deck rollers could be utilised to facilitate making up BHA offline thus saving rig time while picking up BHA. The use of 6" liners would have given more room between operating pressure and pop off settings, this would be particularly helpful when running a down hole motor

BHA Schematic

Origin Energy Services

Trefoil-2

BHA ID #: 3

12-1/4" Performance Motor Assy

BHA Configuration

O.D.	Length	Description
12.25"	0.3m	Reed RSR616M - A21 12-1/4" PDC
9.625"	9.22m	9-5/8" SperryDrill Lobe 6/7 - 5.0 stg w/Float
8"	1.86m	12-1/4" Integral Blade Stabilizer
8"	7.28m	8" RLL w/ EWR + DGR + HCIM
8.063"	4.8m	8" Non Mag HOC w/Tm + Dir
8.063"	1.88m	12-1/4" Integral Blade Stabilizer
8.25"	56.43m	6 x 6x 8-1/4" Spiral Drill collars
8"	9.68m	8" Drilling Jar
8.25"	18.63m	2 x 2x 8-1/4" Spiral Drill collar
6.75"	1.09m	X-over Sub 6-5/8" <> 4-1/2"IF
5"	141.54m	15 x 5" HWDP

BHA Discussion

Rig Floor Offset - 49.4 deg

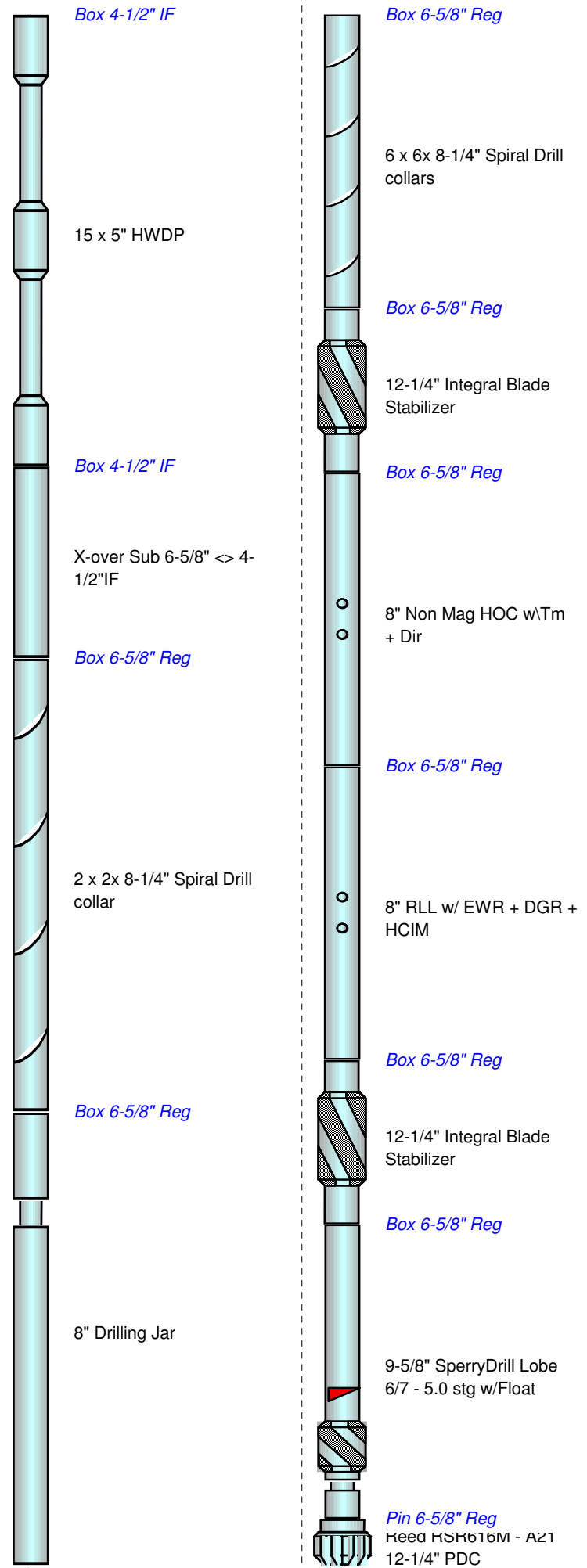
Motor below RT 05:00 on 14-10-2009

Motor Above RT 02:00 on 19-10-2009

Bit to survey - 19.76m

Bit to Gamma - 12.34m

Bit to EWR - 14.81m



sperry-sun

DRILLING SERVICES

BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 4

BHA# 4 : Date In 20/10/200 MD In (m) : 2271 TVD In (m) : 2271 Date Out 22/10/200 MD Out (m): 2520 TVD Out (m): 2520

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
3rr1	12.250	Reed Hycalog	RSR616M-A2	222369	8x13	1.037	1-1-CT-A-X-I-PN-TD

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs
2	9.625	SSDS	SperryDrill	963448	0.78°		112	104.00

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Reed RSR616M - A21 12-1/4" PDC	222369	12.250	3.000	12.250	377.57	P 6-5/8" Reg	0.30	
2	9-5/8" SperryDrill Lobe 6/7 - 5.0 stg w/Float	963448	9.625	6.135	12.125	147.21	B 6-5/8" Reg	9.22	1.16
3	12-1/4" Integral Blade Stabilizer	701049	8.000	3.000	12.250	147.22	B 6-5/8" Reg	1.86	10.25
4	8" RLL w/ EWR + DGR + HCIM	PA90218962	8.000	2.375	8.625	156.21	B 6-5/8" Reg	7.28	
5	8" Non Mag HOC w/Tm + Dir	246907	8.063	2.375		158.92	B 6-5/8" Reg	4.80	
6	12-1/4" Integral Blade Stabilizer	231191	8.063	3.000	12.125	149.92	B 6-5/8" Reg	1.88	24.17
7	6x 8-1/4" Spiral Drill collars	Rig	8.250	2.875		160.05	B 6-5/8" Reg	56.43	
8	8" Drilling Jar	17621339	8.000	3.000		147.22	B 6-5/8" Reg	9.68	
9	2x 8-1/4" Spiral Drill collar	Rig	8.250	2.875		160.05	B 6-5/8" Reg	18.63	
10	X-over Sub 6-5/8" <> 4-1/2" IF	Rig 1792	6.750	2.813		100.77	B 4-1/2" IF	1.09	
11	15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.54	
								252.71	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :	5000	20000	12550	Drilling :	19.00	in Air (Total) : 80225	DP(S)-NC50(XH)-19.50#	5.000	2267
RPM (rpm) :	100	120	108	Reaming :	2.50	in Mud (Total) : 68853			
Flow (gpm) :	950	975	953	Circ-Other :	5.00	in Air (Bel Jars) : 42513			
SPP (psi) :	2825	3050	2955	Total :	26.50	in Mud (Bel Jars) : 36487			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	0.76	1.01	Oriented :	0.00	0		2.03
Azimuth (deg)	89.05	96.32	Rotated :	249.00	13		
			Total :	249.00	13	0.03	0.00
							0.03

COMMENTS

BHA below RT on 11.00 hrs -20-10-09
 BHA Above RT on 09:00 hrs -22-10-09
 Circulating hrs =
 Drilling hrs =
 Rig Floor Offset = 311.11deg

Customer : Origin Energy Services**Well :** Trefoil-2**Field :** Australia**Slot :** Bass Basin**Rig :** Kan Tan IV**Job # :** AU-DD-0006714148**BHA# 4****OBJECTIVES:**

To continue drilling 12-1/4" hole section to TD at 2510mTVDRT or +/-418m below the top of the Eastern View Group.

RESULTS:

This BHA was picked up with a new HOC, the motor was scribed to MWD then shallow tested on the first stand of HWDP. The BHA was run in and fill was tagged at 2165m with 20K WOB. Wash down to bottom at 2271m. Drilling commenced with reduced parameters of 900gpm, 100rpm and 2-5klbs WOB was used for the first 2-3m before bringing WOB up to 20K, 950gpm and 100rpm. High stick slip and torsional vibration was experienced with those drilling parameters. To mitigate above mentioned vibration rpm was increased to 110 and then to 120 This did not cure the vibration. The stick-slip and torsional vibrations were minimized only when picked up off bottom or when drilling with WOB less then 10klbs, but then ROP decreased below 25m/hr after consultation with client this was deemed an acceptable ROP from client point of view. Drilled to section TD at 2520m, the hole was circulated clean and a short wiper trip was made to 2271m and back to TD. The BHA was POOH to run 9 5/8" casing

RECOMMENDATIONS:

None

BHA Schematic

Origin Energy Services

Trefoil-2

BHA ID #: 4

12-1/4" Performance Motor Assy

BHA Configuration

O.D.	Length	Description
12.25"	0.3m	Reed RSR616M - A21 12-1/4" PDC
9.625"	9.22m	9-5/8" SperryDrill Lobe 6/7 - 5.0 stg w/Float
8"	1.86m	12-1/4" Integral Blade Stabilizer
8"	7.28m	8" RLL w/ EWR + DGR + HCIM
8.063"	4.8m	8" Non Mag HOC w/Tm + Dir
8.063"	1.88m	12-1/4" Integral Blade Stabilizer
8.25"	56.43m	6 x 6x 8-1/4" Spiral Drill collars
8"	9.68m	8" Drilling Jar
8.25"	18.63m	2 x 2x 8-1/4" Spiral Drill collar
6.75"	1.09m	X-over Sub 6-5/8" <> 4-1/2"IF
5"	141.54m	15 x 5" HWDP

BHA Discussion

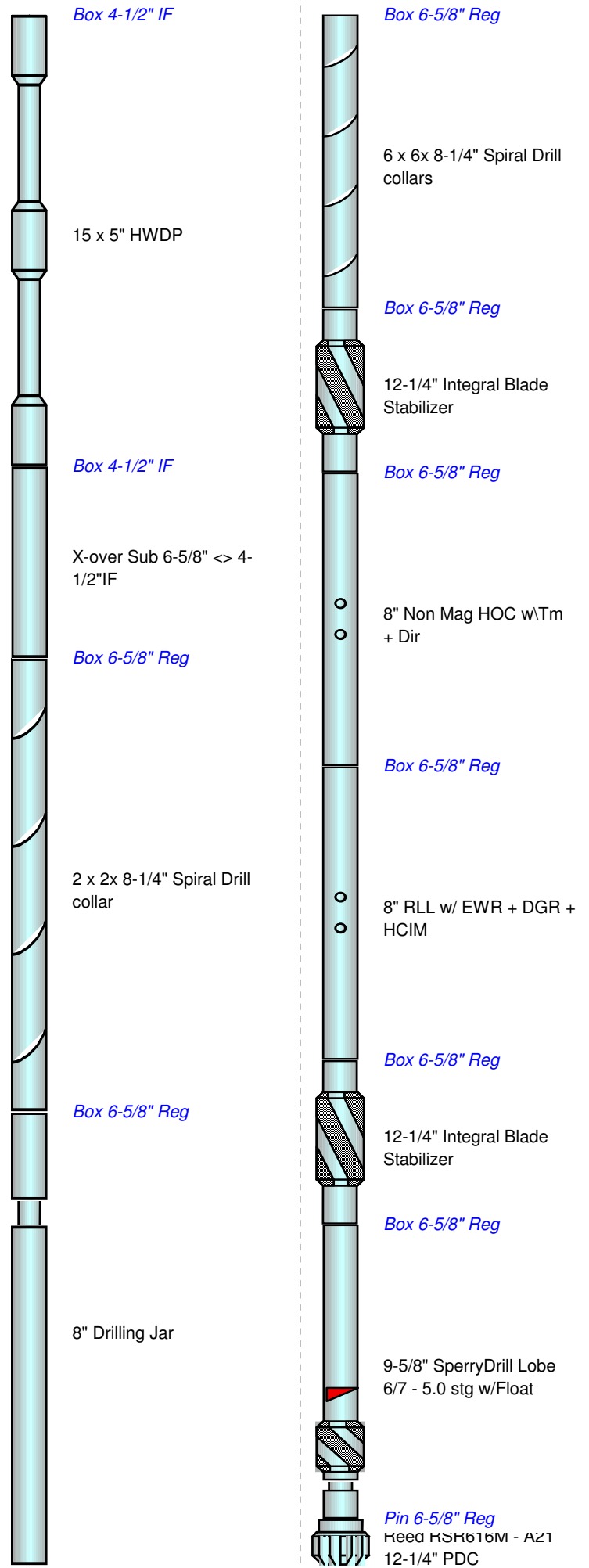
BHA below RT on 11.00 hrs -20-10-09

BHA Above RT on 09:00 hrs -22-10-09

Circulating hrs =

Drilling hrs =

Rig Floor Offset = 311.11deg



sperry-sun

DRILLING SERVICES

BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 5

BHA# 5 : Date In 6/11/2009 MD In (m) : 2520 TVD In (m) : 2520 Date Out 8/11/2009 MD Out (m): 2523 TVD Out (m): 2523

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
4	8.500	Hughes	GT-1	6076381	3x22	1.114	1-1-WT-A -1-I-NO-BHA

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Hughes - GT1	6076381	8.500	3.000	8.500	169.30	B 4-1/2" Reg	0.25	
2	Bit Sub	87	6.900	2.375		112.34	B 4-1/2" IF	1.19	
3	8 x 6-3/4" Spiral Drill collar	Rig	6.750	2.813		101.00	B 4-1/2" IF	75.20	
4	6-1/2" Drilling Jar	17602018	6.500	2.813		91.91	B 4-1/2" IF	9.91	
5	3x 6-1/2" Spiral Drill collar	Rig	6.750	2.813		101.00	B 6-5/8" Reg	28.21	
6	15x 15 x 5" HWDP		5.000	3.000		49.30	B 4-1/2" IF	141.13	
								255.89	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :				Drilling :	2.50	in Air (Total) : 60659	DP(S)-NC50(XH)-19.50#	5.000	2267
RPM (rpm) :				Reaming :	1.50	in Mud (Total) : 52061			
Flow (gpm) :				Circ-Other :	1.00	in Air (Bel Jars) : 25496			
SPP (psi) :				Total :	5.00	in Mud (Bel Jars) : 21882			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (%/100')	Turn (%/100')	DLS (%/100')
Inclination (deg)	1.01	1.00	Oriented :	0.00	0		
Azimuth (deg)	96.32	96.89	Rotated :	3.00	0		
			Total :	3.00	1	-0.04	5.79
							0.00

COMMENTS

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 5

OBJECTIVES:

Drill out the shoe track and 3m of formation before conducting an FIT then POOH for an FEWD assembly

RESULTS:

Assembly achieved required results without problems

BHA Schematic

Origin Energy Services

Trefoil-2

BHA ID #: 5

8-1/2" Drillout Assembly

BHA Configuration

O.D.	Length	Description
8.5"	0.25m	Hughes - GT1
6.9"	1.19m	Bit Sub
6.75"	75.2m	8 x 6-3/4" Spiral Drill collar
6.5"	9.91m	6-1/2" Drilling Jar
6.75"	28.21m	3 x 3x 6-1/2" Spiral Drill collar
5"	141.13m	15x 15 x 5" HWDP

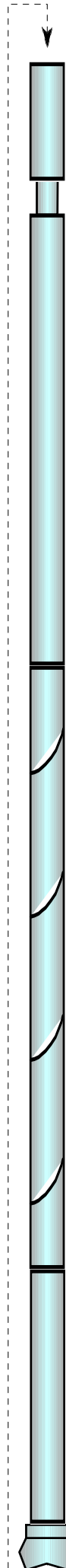


Box 6-5/8" Reg

3 x 3x 6-1/2" Spiral Drill collar

Box 4-1/2" IF

15x 15 x 5" HWDP



Box 4-1/2" IF

6-1/2" Drilling Jar

Box 4-1/2" IF

8 x 6-3/4" Spiral Drill collar

Box 4-1/2" IF

Bit Sub

Box 4-1/2" Reg
Hughes - GT1

sperry-sun

DRILLING SERVICES

BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 6

BHA# 6 : Date In 8/11/2009 MD In (m) : 2523 TVD In (m) : 2523 Date Out 9/11/2009 MD Out (m): 2633 TVD Out (m): 2633

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
5	8.500	Smith	Mi616VBPX	TX2104	6x14	0.902	1-1-WT-A -X-I-NO-DTF

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Smith Mi616VBPX PDC	TX2104	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.28	1.03
2	8-3/8" NB IB Stab w/Float	700172	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.50	
3	6-3/4" RLL w/DGR + EWR	90222557	6.750	1.920		112.09	B 4-1/2" IF	7.13	
4	6-3/4" PM/DM w/Dir	194443	6.750	1.920		112.09	B 4-1/2" IF	2.79	
5	6-3/4" ALD + CTN	90219755	6.750	1.920	8.250	112.09	B 4-1/2" IF	8.45	
6	6-3/4" BAT-Sonic	90227156	6.750	1.920		112.09	B 4-1/2" IF	6.72	
7	6-3/4" HOC w/TM	203846	6.750	1.920		112.09	B 4-1/2" IF	3.05	
8	6-3/4" ACAL	90223655	6.750	1.920		112.09	B 4-1/2" IF	1.83	
9	8-3/8" Integral Blade Stabilizer	700802	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.70	32.75
10	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
11	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	
12	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	29.91	
13	15x 15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								289.37	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :				Drilling :	11.00	in Air (Total) : 70069	DP(S)-NC50(XH)-19.50#	5.000	2344
RPM (rpm) :				Reaming :	4.00	in Mud (Total) : 60137			
Flow (gpm) :				Circ-Other :	2.50	in Air (Bel Jars) : 37039			
SPP (psi) :				Total :	17.50	in Mud (Bel Jars) : 31789			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	1.00	1.40	Oriented :	0.00	0		
Azimuth (deg)	96.89	87.25	Rotated :	110.00	0		
			Total :	110.00	10	0.11	-2.67
							0.12

COMMENTS

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 6

OBJECTIVES:

To drill vertically and log to the first core point at approximately 2971m

RESULTS:

Drilled from 2553m to 2633m at which point the MWD pulser failed to start after a connection, the asseby was pulled to change out MWD

BHA Schematic

Origin Energy Services

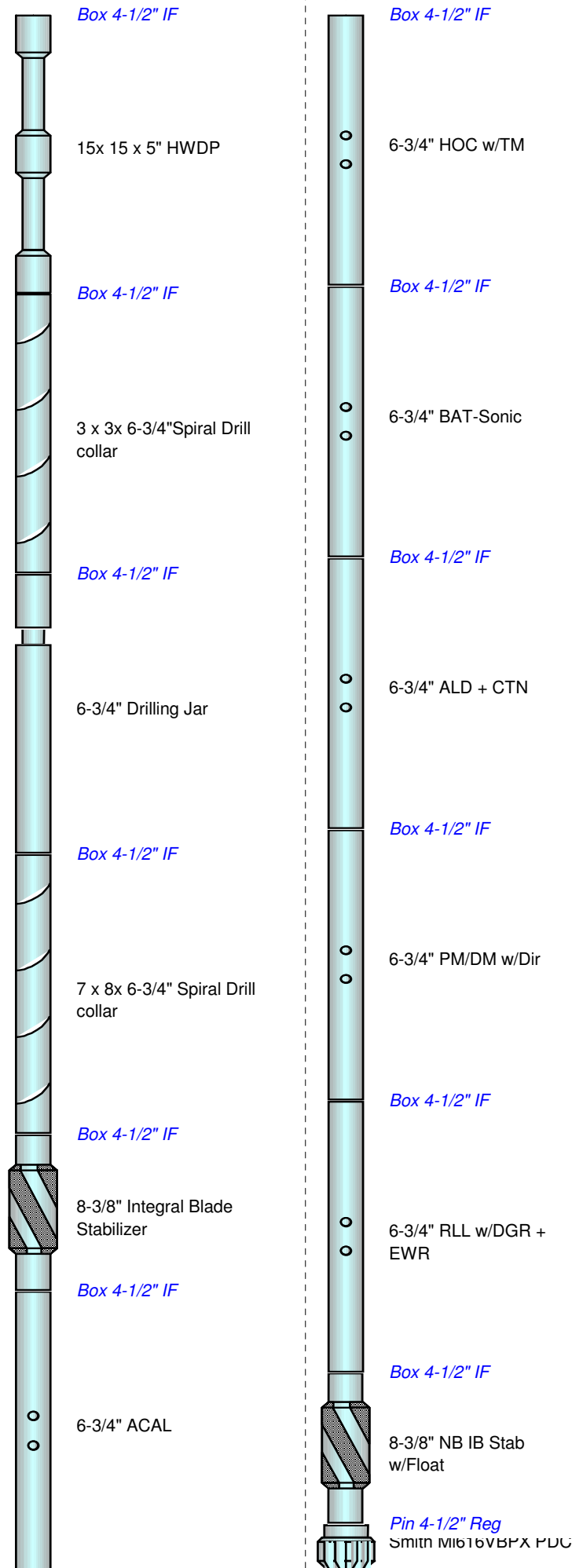
Trefoil-2

BHA ID #: 6

8.5" Rotary FEWD Assembly

BHA Configuration

O.D.	Length	Description
8.5"	0.28m	Smith Mi616VBPX PDC
6.75"	1.5m	8-3/8" NB IB Stab w/Float
6.75"	7.13m	6-3/4" RLL w/DGR + EWR
6.75"	2.79m	6-3/4" PM/DM w/Dir
6.75"	8.45m	6-3/4" ALD + CTN
6.75"	6.72m	6-3/4" BAT-Sonic
6.75"	3.05m	6-3/4" HOC w/TM
6.75"	1.83m	6-3/4" ACAL
6.75"	1.7m	8-3/8" Integral Blade Stabilizer
6.75"	74.97m	7 x 8x 6-3/4" Spiral Drill collar
6.75"	9.91m	6-3/4" Drilling Jar
6.75"	29.91m	3 x 3x 6-3/4" Spiral Drill collar
5"	141.13m	15x 15 x 5" HWDP



BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 7

BHA# 7 : Date In 9/11/2009 MD In (m) : 2633 TVD In (m) : 2633 Date Out 12/11/2009 MD Out (m) : 2983 TVD Out (m) : 2982

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
5rr1	8.500	Smith	Mi616VBPX	TX2104	6x14	0.902	1-2-CT-S -X-I-WT-CP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Smith Mi616VBPX PDC	TX2104	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.28	1.03
2	8-3/8" NB IB Stab w/Float	700172	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.50	
3	6-3/4" RLL w/DGR + EWR	90222505	6.750	1.920		112.09	B 4-1/2" IF	7.07	
4	6-3/4" PM/DM w/Dir	1025744	6.750	1.920		112.09	B 4-1/2" IF	2.81	
5	6-3/4" ALD + CTN	9022683	6.750	1.920	8.250	112.09	B 4-1/2" IF	9.20	
6	6-3/4" BAT-Sonic	90227155	6.750	1.920		112.09	B 4-1/2" IF	6.76	
7	6-3/4" HOC w/TM	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
8	6-3/4" ACAL	90223063	6.750	1.920		112.09	B 4-1/2" IF	1.81	
9	8-3/8" Integral Blade Stabilizer	700802	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.70	
10	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
11	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	33.46
12	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	28.21	
13	15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								288.38	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :				Drilling :	33.50	in Air (Total) : 69768	DP(S)-NC50(XH)-19.50#	5.000	2695
RPM (rpm) :				Reaming :	1.00	in Mud (Total) : 59772			
Flow (gpm) :				Circ-Other :	2.50	in Air (Bel Jars) : 37301			
SPP (psi) :				Total :	37.00	in Mud (Bel Jars) : 31956			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	1.40	2.90	Oriented :	0.00	0		
Azimuth (deg)	87.25	84.11	Rotated :	350.00	0		
			Total :	350.00	10	0.13	-0.27
							0.13

COMMENTS

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 7

OBJECTIVES:

To complete drilling and logging to the first core point

RESULTS:

Completed drilling to the first core point at 2983m without any problems

BHA Schematic

Origin Energy Services

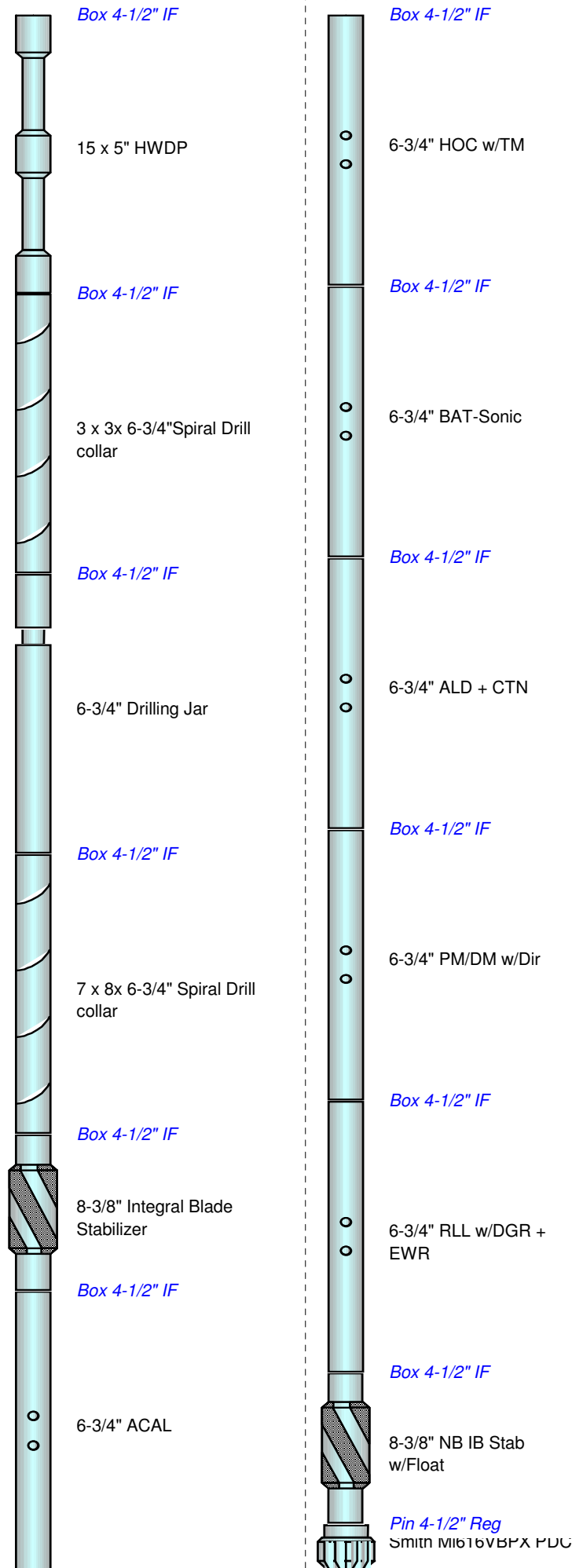
Trefoil-2

BHA ID #: 7

8-1/2" Rotary FEWD CP1 BHA

BHA Configuration

O.D.	Length	Description
8.5"	0.28m	Smith Mi616VBPX PDC
6.75"	1.5m	8-3/8" NB IB Stab w/Float
6.75"	7.07m	6-3/4" RLL w/DGR + EWR
6.75"	2.81m	6-3/4" PM/DM w/Dir
6.75"	9.2m	6-3/4" ALD + CTN
6.75"	6.76m	6-3/4" BAT-Sonic
6.75"	3.03m	6-3/4" HOC w/TM
6.75"	1.81m	6-3/4" ACAL
6.75"	1.7m	8-3/8" Integral Blade Stabilizer
6.75"	74.97m	7 x 8x 6-3/4" Spiral Drill collar
6.75"	9.91m	6-3/4" Drilling Jar
6.75"	28.21m	3 x 3x 6-3/4" Spiral Drill collar
5"	141.13m	15 x 5" HWDP



BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 8

BHA# 8 : Date In 12/11/200 MD In (m) : 2983 TVD In (m) : 2982 Date Out 13/11/200 MD Out (m): 3013 TVD Out (m): 3012

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
6	8.500	Corpro	MCP572	083691	1x28	0.601	1-1-NO-FC-X-I-NO-BHA

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	PDC Coring	083691	8.500	2.500	8.500	176.66	P 4" Mod	0.28	
2	8-7/16" Coring Stabilizer	WO137319	7.130	5.630	8.440	51.23	B 4" Mod	0.76	0.68
3	CoreBarrel	WO135110	7.130	5.630		51.23	B 4" Mod	5.33	
4	8-7/16" Coring Stabilizer	WO137237	7.130	5.630	8.440	51.23	B 4" Mod	0.76	6.77
5	CoreBarrel	WO135194	7.130	5.630		51.23	B 4" Mod	5.33	
6	8-7/16" Coring Stabilizer	WO137312	7.130	5.630	8.440	51.23	B 4" Mod	0.76	12.86
7	CoreBarrel	S8414	7.130	5.630		51.23	B 4" Mod	5.33	
8	8-7/16" Coring Stabilizer	WO137258	7.130	5.630	8.440	51.23	B 4" Mod	0.76	18.95
9	CoreBarrel	723189	7.130	5.630		51.23	B 4" Mod	5.33	
10	8-7/16" Coring Stabilizer	WO137219	7.130	5.630	8.440	51.23	B 4" Mod	0.76	25.04
11	CoreBarrel	SBO6	7.130	5.630		51.23	B 4" Mod	5.33	
12	8-7/16" Integral Blade Stabilizer	WO137014	7.130	5.630	8.440	51.23	B 4" Mod	0.76	31.13
13	Top Head	W1856027	7.130	5.630		51.23	B 4-1/2" IF	0.61	
14	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
15	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	
16	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	28.21	
17	15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								286.32	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :				Drilling :	4.50	in Air (Total) : 62776	DP(S)-NC50(XH)-19.50#	5.000	2727
RPM (rpm) :				Reaming :	1.00	in Mud (Total) : 53782			
Flow (gpm) :				Circ-Other :	0.00	in Air (Bel Jars) : 30309			
SPP (psi) :				Total :	5.50	in Mud (Bel Jars) : 25966			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	2.90	2.97	Oriented :	0.00	0		
Azimuth (deg)	84.11	83.32	Rotated :	30.00	0		
			Total :	30.00	7	0.08	-0.81
							0.09

COMMENTS

BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 9

BHA# 9 : Date In 13/11/200 MD In (m) : 3013 TVD In (m) : 3012 Date Out 15/11/200 MD Out (m): 3145 TVD Out (m): 3144

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
5rr2	8.500	Smith	Mi616VBPX	TX2104	6x14	0.902	1-2-CT-S -X-I-NO-CP

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Smith Mi616VBPX PDC	TX2104	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.28	1.03
2	8-3/8" NB IB Stab w/Float	700172	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.50	
3	6-3/4" RLL w/DGR + EWR	90222505	6.750	1.920		112.09	B 4-1/2" IF	7.07	
4	6-3/4" PM/DM w/Dir	1025744	6.750	1.920		112.09	B 4-1/2" IF	2.81	
5	6-3/4" ALD + CTN	9022683	6.750	1.920	8.250	112.09	B 4-1/2" IF	9.20	
6	6-3/4" BAT-Sonic	90227155	6.750	1.920		112.09	B 4-1/2" IF	6.76	
7	6-3/4" HOC w/TM	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
8	6-3/4" ACAL	90223063	6.750	1.920		112.09	B 4-1/2" IF	1.81	
9	8-3/8" Integral Blade Stabilizer	700802	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.70	
10	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
11	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	33.46
12	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	28.21	
13	15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								288.38	

Parameter	Min	Max	Ave
WOB (lbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	16.00
Reaming :	4.00
Circ-Other :	1.50
Total :	21.50

BHA Weight (lb)
in Air (Total) : 69768
in Mud (Total) : 59666
in Air (Bel Jars) : 37301
in Mud (Bel Jars) : 31899

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	2857

PERFORMANCE

	In	Out
Inclination (deg)	2.97	3.76
Azimuth (deg)	83.32	82.58

	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Oriented :	0.00	0			
Rotated :	132.00	0			
Total :	132.00	8	0.18	-0.17	0.18

COMMENTS

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Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 9

OBJECTIVES:

To log the cored interval and drill to core point 2 at about 3128m

RESULTS:

Logged and drilled to core point 2 at 3145m with out any problems

BHA Schematic

Origin Energy Services

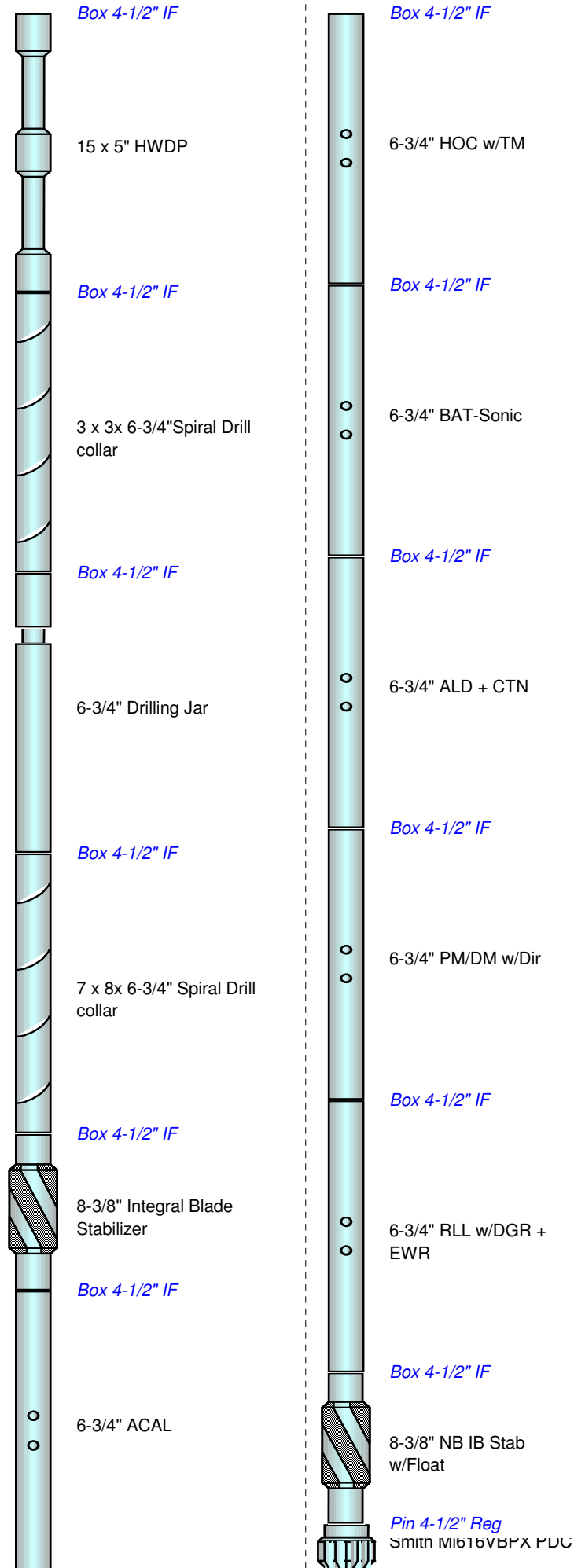
Trefoil-2

BHA ID #: 9

8-1/2" Rotary FEWD CP2 BHA

BHA Configuration

O.D.	Length	Description
8.5"	0.28m	Smith Mi616VBPX PDC
6.75"	1.5m	8-3/8" NB IB Stab w/Float
6.75"	7.07m	6-3/4" RLL w/DGR + EWR
6.75"	2.81m	6-3/4" PM/DM w/Dir
6.75"	9.2m	6-3/4" ALD + CTN
6.75"	6.76m	6-3/4" BAT-Sonic
6.75"	3.03m	6-3/4" HOC w/TM
6.75"	1.81m	6-3/4" ACAL
6.75"	1.7m	8-3/8" Integral Blade Stabilizer
6.75"	74.97m	7 x 8x 6-3/4" Spiral Drill collar
6.75"	9.91m	6-3/4" Drilling Jar
6.75"	28.21m	3 x 3x 6-3/4" Spiral Drill collar
5"	141.13m	15 x 5" HWDP



BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 10

BHA# 10 : Date In 15/11/200 MD In (m) : 3145 TVD In (m) : 3144 Date Out 16/11/200 MD Out (m): 3175 TVD Out (m): 3174

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
6rr1	8.500	Corpro	MCP572	083691	1x28	0.601	1-1-NO-A -X-I-NO-BHA

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	PDC Coring	083691	8.500	2.500	8.500	176.66	P 4" Mod	0.28	
2	8-7/16" Coring Stabilizer	WO137319	7.130	5.630	8.440	51.23	B 4" Mod	0.76	0.68
3	CoreBarrel	WO135110	7.130	5.630		51.23	B 4" Mod	5.33	
4	8-7/16" Coring Stabilizer	WO137237	7.130	5.630	8.440	51.23	B 4" Mod	0.76	6.77
5	CoreBarrel	WO135194	7.130	5.630		51.23	B 4" Mod	5.33	
6	8-7/16" Coring Stabilizer	WO137312	7.130	5.630	8.440	51.23	B 4" Mod	0.76	12.86
7	CoreBarrel	S8414	7.130	5.630		51.23	B 4" Mod	5.33	
8	8-7/16" Coring Stabilizer	WO137258	7.130	5.630	8.440	51.23	B 4" Mod	0.76	18.95
9	CoreBarrel	723189	7.130	5.630		51.23	B 4" Mod	5.33	
10	8-7/16" Coring Stabilizer	WO137219	7.130	5.630	8.440	51.23	B 4" Mod	0.76	25.04
11	CoreBarrel	SBO6	7.130	5.630		51.23	B 4" Mod	5.33	
12	8-7/16" Integral Blade Stabilizer	WO137014	7.130	5.630	8.440	51.23	B 4" Mod	0.76	31.13
13	Top Head	W1856027	7.130	5.630		51.23	B 4-1/2" IF	0.61	
14	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
15	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	
16	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	28.21	
17	15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								286.32	

Parameter	Min	Max	Ave	Activity	Hrs	BHA Weight (lb)	Drill String	OD(in)	Len (m)
WOB (lbs) :				Drilling :	4.50	in Air (Total) : 62776	DP(S)-NC50(XH)-19.50#	5.000	2889
RPM (rpm) :				Reaming :	0.50	in Mud (Total) : 53782			
Flow (gpm) :				Circ-Other :	0.00	in Air (Bel Jars) : 30309			
SPP (psi) :				Total :	5.00	in Mud (Bel Jars) : 25966			

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	3.76	3.81	Oriented :	0.00	0		
Azimuth (deg)	82.58	83.86	Rotated :	30.00	0		
			Total :	30.00	7	0.05	1.31
							0.10

COMMENTS

BHA Schematic

Origin Energy Services

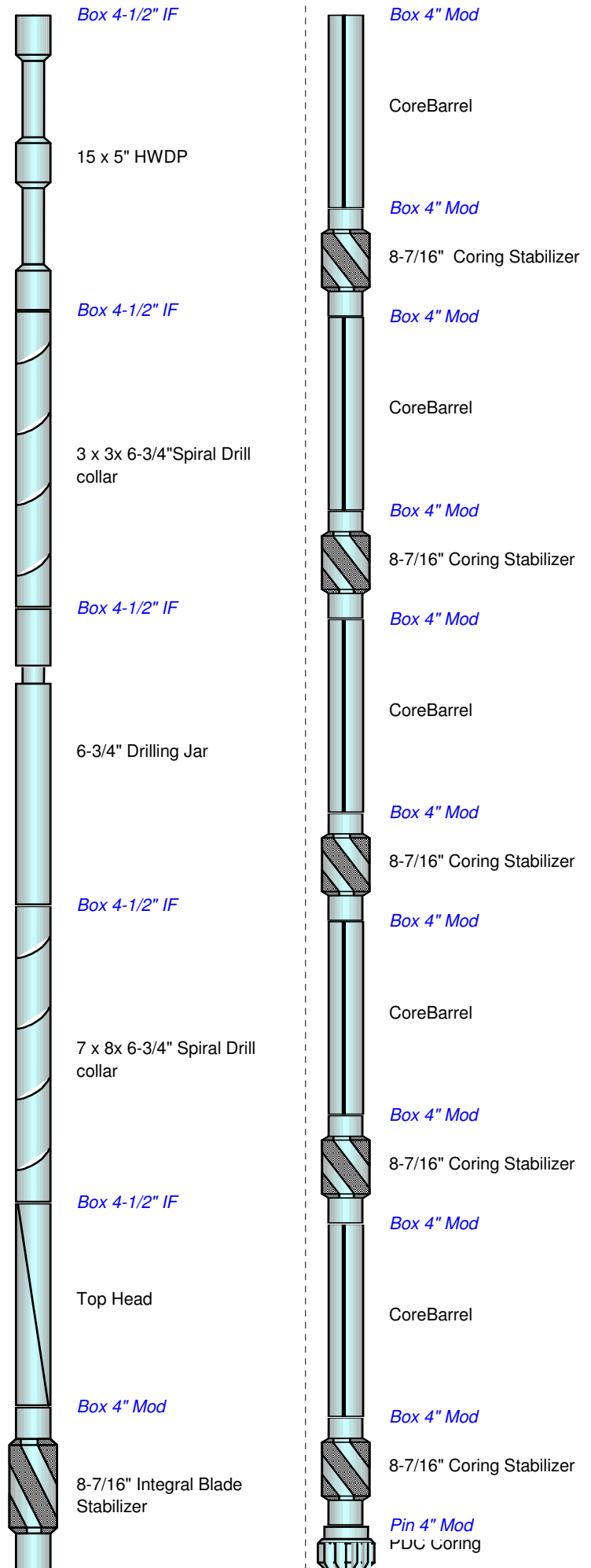
Trefoil-2

BHA ID #: 10

Coring Assembly - 2

BHA Configuration

O.D.	Length	Description
8.5"	0.28m	PDC Coring
7.13"	0.76m	8-7/16" Coring Stabilizer
7.13"	5.33m	CoreBarrel
7.13"	0.76m	8-7/16" Coring Stabilizer
7.13"	5.33m	CoreBarrel
7.13"	0.76m	8-7/16" Coring Stabilizer
7.13"	5.33m	CoreBarrel
7.13"	0.76m	8-7/16" Coring Stabilizer
7.13"	5.33m	CoreBarrel
7.13"	0.76m	8-7/16" Coring Stabilizer
7.13"	5.33m	CoreBarrel
7.13"	0.76m	8-7/16" Integral Blade Stabilizer
7.13"	0.61m	Top Head
6.75"	74.97m	7 x 8x 6-3/4" Spiral Drill collar
6.75"	9.91m	6-3/4" Drilling Jar
6.75"	28.21m	3 x 3x 6-3/4"Spiral Drill collar
5"	141.13m	15 x 5" HWDP



BHA Report

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 11

BHA# 11 : Date In : 17/11/200 MD In (m) : 3175 TVD In (m) : 3174 Date Cur: 19/11/200 MD Cur (m): 3235 TVD Cur (m): 3234

BIT DATA

Bit #	OD (in)	MFR	Style	Serial#	Nozzles (/32's)	TFA (in ²)	Dull Condition
5rr3	8.500	Smith	Mi616VBPX	TX2104	6x14	0.902	

MOTOR DATA

Run #	OD (in)	MFR	Model	Serial#	Bend	Nzl (/32's)	Avg Dif (psi)	Cum Circ Hrs

COMPONENT DATA

Item #	Description	Serial #	OD (in)	ID (in)	Gauge (in)	Weight (lbs/ft)	Top Con	Length (m)	Bit - Center Blade (m)
1	Smith Mi616VBPX PDC	TX2104	8.500	2.500	8.500	176.66	P 4-1/2" Reg	0.28	1.03
2	8-3/8" NB IB Stab w/Float	700172	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.50	
3	6-3/4" RLL w/DGR + EWR	90222505	6.750	1.920		112.09	B 4-1/2" IF	7.07	
4	6-3/4" PM/DM w/Dir	1025744	6.750	1.920		112.09	B 4-1/2" IF	2.81	33.46
5	6-3/4" ALD + CTN	9022683	6.750	1.920	8.250	112.09	B 4-1/2" IF	9.20	
6	6-3/4" BAT-Sonic	90227155	6.750	1.920		112.09	B 4-1/2" IF	6.76	
7	6-3/4" HOC w/TM	302842	6.750	1.920		112.09	B 4-1/2" IF	3.03	
8	6-3/4" ACAL	90223063	6.750	1.920		112.09	B 4-1/2" IF	1.81	
9	8-3/8" Integral Blade Stabilizer	700802	6.750	2.813	8.375	100.77	B 4-1/2" IF	1.70	
10	8x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	74.97	
11	6-3/4" Drilling Jar	17602018	6.750	2.750		101.71	B 4-1/2" IF	9.91	
12	3x 6-3/4" Spiral Drill collar	Rig	6.750	2.810		100.82	B 4-1/2" IF	28.21	
13	15 x 5" HWDP		5.000	3.000		42.83	B 4-1/2" IF	141.13	
								288.38	

Parameter	Min	Max	Ave
WOB (lbs) :			
RPM (rpm) :			
Flow (gpm) :			
SPP (psi) :			

Activity	Hrs
Drilling :	11.50
Reaming :	1.50
Circ-Other :	2.50
Total :	15.50

BHA Weight (lb)
in Air (Total) : 69768
in Mud (Total) : 59772
in Air (Bel Jars) : 37301
in Mud (Bel Jars) : 31956

Drill String	OD(in)	Len (m)
DP(S)-NC50(XH)-19.50#	5.000	2947

PERFORMANCE

	In	Out	Distance(m)	ROP (m/hr)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	3.81	4.33	Oriented :	0.00	0		
Azimuth (deg)	83.86	83.41	Rotated :	60.00	0		
			Total :	60.00	5	0.26	-0.23
							0.26

COMMENTS

Customer : Origin Energy Services

Well : Trefoil-2

Field : Australia

Slot : Bass Basin

Rig : Kan Tan IV

Job # : AU-DD-0006714148

BHA# 11

OBJECTIVES:

To log the cored interval and drill to TD

RESULTS:

Logged and drilled to TD without any problems.

BHA Schematic

Origin Energy Services

Trefoil-2

BHA ID #: 11

8-1/2" Rotary FEWDTD BHA

BHA Configuration

O.D.	Length	Description
8.5"	0.28m	Smith Mi616VBPX PDC
6.75"	1.5m	8-3/8" NB IB Stab w/Float
6.75"	7.07m	6-3/4" RLL w/DGR + EWR
6.75"	2.81m	6-3/4" PM/DM w/Dir
6.75"	9.2m	6-3/4" ALD + CTN
6.75"	6.76m	6-3/4" BAT-Sonic
6.75"	3.03m	6-3/4" HOC w/TM
6.75"	1.81m	6-3/4" ACAL
6.75"	1.7m	8-3/8" Integral Blade Stabilizer
6.75"	74.97m	7 x 8x 6-3/4" Spiral Drill collar
6.75"	9.91m	6-3/4" Drilling Jar
6.75"	28.21m	3 x 3x 6-3/4" Spiral Drill collar
5"	141.13m	15 x 5" HWDP

