



LEAM Drilling Systems, Inc. 2027A Airport Rd., Conroe, TX 77301

Survey Report

MINIMUM CURVATURE CALCULATION

Operator: Approach Operating LLC
 Well Name: University 45 #2124HC
 Location: Crockett County, TX
 Start Date: 3/9/2014
 End Date: 3/18/2014
 Direction: 180.16°

Survey Number	MD ft	INC °	AZM °	TVD ft	N-S ft	E-W ft	SECT ft	DLS °/100'
TIE IN	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	135	0.90	332.90	134.99	0.94	-0.48	-0.94	0.67
2	242	0.10	96.50	241.99	1.68	-0.77	-1.68	0.90
3	364	0.90	34.90	363.98	2.46	-0.12	-2.45	0.70
4	456	0.80	44.80	455.97	3.50	0.75	-3.51	0.19
5	549	0.90	52.10	548.96	4.41	1.78	-4.42	0.16
6	641	0.70	41.30	640.96	5.28	2.72	-5.29	0.27
7	733	2.10	58.30	732.93	6.59	4.53	-6.60	1.57
8	825	2.60	57.30	824.85	8.60	7.72	-8.62	0.55
9	917	2.40	48.60	916.76	11.00	10.92	-11.03	0.47
10	1009	3.30	54.70	1008.65	13.81	14.52	-13.85	1.03
11	1103	4.70	58.70	1102.42	17.37	20.02	-17.43	1.52
12	1186	5.90	60.20	1185.06	21.26	26.63	-21.33	1.46
13	1344	4.60	69.10	1342.40	27.55	39.60	-27.66	0.97
14	1534	5.10	126.60	1531.82	25.23	53.50	-25.38	2.46
15	1724	3.60	155.80	1721.29	14.76	62.73	-14.93	1.38
16	1914	3.20	148.00	1910.95	4.82	67.98	-5.01	0.32
17	2105	2.30	138.20	2101.73	-2.56	73.36	2.36	0.53
18	2296	1.80	137.80	2292.61	-7.64	77.93	7.42	0.26
19	2487	2.10	102.50	2483.51	-10.62	83.37	10.39	0.64
20	2675	3.00	95.00	2671.32	-11.79	91.63	11.54	0.51
21	2866	1.20	68.60	2862.19	-11.50	98.47	11.22	1.05
22	3055	3.10	97.80	3051.05	-11.47	105.38	11.18	1.13
23	3245	2.20	93.60	3240.84	-12.40	114.11	12.08	0.48
24	3434	4.00	86.50	3429.56	-12.22	124.31	11.88	0.97
25	3623	2.50	81.60	3618.25	-11.22	134.97	10.84	0.81
26	3812	3.80	55.60	3806.97	-7.08	144.21	6.67	1.01
27	4001	3.40	73.20	3995.60	-1.92	154.75	1.49	0.62
28	4192	4.60	93.60	4186.14	-0.76	167.81	0.29	0.97
29	4383	0.60	92.10	4376.91	-1.28	176.46	0.79	2.09
30	4574	4.40	86.30	4567.69	-0.84	184.77	0.33	1.99

31	4765	4.50	91.40	4758.12	-0.55	199.58	0.00	0.21
32	4956	4.20	83.20	4948.57	0.09	214.01	-0.69	0.36
33	5144	4.10	86.20	5136.08	1.35	227.55	-1.99	0.13
34	5333	2.00	82.30	5324.80	2.24	237.56	-2.90	1.12
35	5525	2.60	82.00	5516.64	3.30	245.20	-3.98	0.31
36	5700	2.10	80.90	5691.50	4.36	252.29	-5.06	0.29
37	5765	3.00	142.90	5756.44	3.19	254.50	-3.90	4.21
38	5797	7.20	161.90	5788.31	0.61	255.62	-1.33	13.97
39	5829	11.30	162.60	5819.89	-4.29	257.19	3.57	12.82
40	5860	15.90	160.50	5850.01	-11.19	259.51	10.47	14.92
41	5891	19.50	161.90	5879.54	-20.12	262.54	19.38	11.69
42	5924	23.20	165.30	5910.27	-31.64	265.90	30.90	11.82
43	5955	25.10	170.40	5938.56	-44.03	268.55	43.28	9.10
44	5987	28.20	172.80	5967.15	-58.23	270.63	57.48	10.25
45	6018	31.00	173.40	5994.11	-73.43	272.46	72.67	9.08
46	6050	35.30	174.60	6020.89	-90.83	274.28	90.06	13.59
47	6081	39.90	175.50	6045.45	-109.67	275.91	108.90	14.94
48	6112	44.20	176.90	6068.46	-130.38	277.27	129.61	14.20
49	6144	47.80	177.00	6090.69	-153.37	278.49	152.59	11.25
50	6175	51.40	177.20	6110.78	-176.94	279.69	176.16	11.62
51	6207	52.80	177.00	6130.43	-202.16	280.97	201.37	4.40
52	6238	55.10	176.30	6148.67	-227.18	282.43	226.39	7.64
53	6270	56.90	175.50	6166.57	-253.63	284.33	252.84	5.99
54	6301	58.90	174.90	6183.04	-279.80	286.53	279.00	6.66
55	6332	59.40	174.80	6198.94	-306.31	288.92	305.50	1.64
56	6364	59.20	174.80	6215.27	-333.71	291.41	332.90	0.63
57	6396	58.70	174.60	6231.78	-361.01	293.94	360.19	1.65
58	6428	58.70	174.80	6248.40	-388.23	296.47	387.40	0.53
59	6460	58.70	174.90	6265.03	-415.47	298.92	414.63	0.27
60	6491	59.40	175.60	6280.97	-441.96	301.13	441.12	2.97
61	6522	61.60	176.30	6296.24	-468.87	303.03	468.02	7.36
62	6554	63.60	177.80	6310.96	-497.24	304.49	496.39	7.51
63	6585	63.80	177.80	6324.70	-525.01	305.55	524.16	0.65
64	6617	64.60	177.40	6338.62	-553.80	306.76	552.94	2.74
65	6648	66.90	176.90	6351.36	-582.03	308.17	581.16	7.56
66	6680	67.60	176.70	6363.73	-611.49	309.82	610.62	2.26
67	6711	67.80	176.50	6375.49	-640.12	311.52	639.25	0.88
68	6743	68.80	178.10	6387.33	-669.82	312.92	668.94	5.60
69	6775	69.50	179.00	6398.72	-699.71	313.67	698.83	3.42
70	6806	71.00	180.20	6409.19	-728.89	313.87	728.01	6.06
71	6837	73.30	181.40	6418.69	-758.39	313.46	757.51	8.28
72	6869	74.90	181.80	6427.46	-789.15	312.60	788.28	5.14
73	6901	76.40	180.70	6435.39	-820.14	311.92	819.27	5.75
74	6932	78.30	179.20	6442.18	-850.39	311.95	849.51	7.74
75	6963	80.90	177.90	6447.78	-880.87	312.73	879.99	9.35
76	6994	83.80	177.60	6451.90	-911.56	313.93	910.68	9.40
77	7088	87.80	176.90	6458.78	-1005.18	318.43	1004.29	4.32
78	7183	91.80	179.00	6459.12	-1100.10	321.83	1099.20	4.76
79	7278	91.50	177.60	6456.38	-1195.01	324.64	1194.10	1.51

80	7373	91.60	176.70	6453.81	-1289.86	329.37	1288.94	0.95
81	7468	92.70	175.50	6450.25	-1384.57	335.82	1383.63	1.71
82	7562	93.60	177.40	6445.08	-1478.24	341.63	1477.28	2.23
83	7658	91.50	178.60	6440.81	-1574.08	344.98	1573.11	2.52
84	7752	90.90	179.20	6438.84	-1668.04	346.78	1667.07	0.90
85	7846	88.90	178.50	6439.01	-1762.02	348.67	1761.04	2.25
86	7941	90.70	181.10	6439.34	-1857.01	349.00	1856.02	3.33
87	8035	91.60	180.60	6437.45	-1950.98	347.61	1950.00	1.10
88	8129	91.70	181.40	6434.74	-2044.92	345.97	2043.95	0.86
89	8224	89.30	181.30	6433.92	-2139.89	343.73	2138.92	2.53
90	8318	91.10	181.40	6433.59	-2233.85	341.52	2232.89	1.92
91	8414	84.70	175.60	6437.11	-2329.67	344.02	2328.70	8.99
92	8508	84.20	175.30	6446.20	-2422.93	351.44	2421.94	0.62
93	8604	85.80	176.30	6454.56	-2518.30	358.44	2517.29	1.96
94	8698	87.50	177.90	6460.06	-2612.02	363.19	2610.99	2.48
95	8793	90.00	180.40	6462.13	-2706.97	364.59	2705.94	3.72
96	8887	90.70	179.90	6461.56	-2800.97	364.35	2799.94	0.92
97	8982	91.50	182.70	6459.73	-2895.91	362.19	2894.89	3.06
98	9077	87.70	181.80	6460.39	-2990.82	358.46	2989.81	4.11
99	9172	87.80	181.40	6464.12	-3085.71	355.81	3084.70	0.43
100	9265	89.60	181.40	6466.23	-3178.65	353.54	3177.65	1.94
101	9360	89.50	179.00	6466.98	-3273.64	353.21	3272.64	2.53
102	9455	90.70	181.40	6466.81	-3368.63	352.88	3367.64	2.82
103	9541	89.30	180.00	6466.81	-3454.62	351.83	3453.63	2.30
104	9636	91.10	181.30	6466.48	-3549.61	350.75	3548.62	2.34
105	9729	91.30	182.70	6464.54	-3642.53	347.51	3641.55	1.52
106	9821	89.50	181.60	6463.89	-3734.46	344.05	3733.48	2.29
107	9913	89.60	181.60	6464.62	-3826.42	341.49	3825.45	0.11
108	10004	91.90	182.10	6463.42	-3917.36	338.55	3916.40	2.59
109	10126	90.70	182.80	6460.66	-4039.21	333.34	4038.27	1.14
110	10217	89.50	177.90	6460.50	-4130.18	332.78	4129.24	5.54
111	10312	90.10	176.50	6460.83	-4225.07	337.42	4224.11	1.60
112	10407	88.90	173.70	6461.66	-4319.70	345.53	4318.72	3.21
113	10501	89.60	176.00	6462.89	-4413.31	353.97	4412.30	2.56
114	10596	89.60	178.50	6463.55	-4508.19	358.53	4507.17	2.63
115	10691	90.90	181.60	6463.14	-4603.18	358.44	4602.16	3.54
116	10784	91.50	184.10	6461.19	-4696.03	353.82	4695.03	2.76
117	10879	90.50	182.50	6459.53	-4790.86	348.35	4789.86	1.99
118	10973	89.60	180.90	6459.45	-4884.81	345.57	4883.83	1.95
119	11068	90.20	182.50	6459.62	-4979.76	342.75	4978.79	1.80
120	11163	90.70	181.40	6458.87	-5074.70	339.52	5073.74	1.27
121	11255	90.00	177.20	6458.31	-5166.68	340.64	5165.70	4.63
122	11350	90.00	178.60	6458.31	-5261.61	344.12	5260.63	1.47
123	11445	90.30	179.90	6458.06	-5356.60	345.36	5355.61	1.40
124	11541	90.00	181.40	6457.81	-5452.59	344.27	5451.61	1.59
125	11633	90.50	181.10	6457.41	-5544.57	342.27	5543.59	0.63
126	11730	90.40	180.20	6456.64	-5641.56	341.17	5640.58	0.93
127	11823	88.80	182.80	6457.29	-5734.51	338.73	5733.54	3.28
128	11918	89.40	184.30	6458.79	-5829.31	332.85	5828.36	1.70

	129	12012	88.50	183.40	6460.51	-5923.08	326.54	5922.15	1.35
	130	12107	89.30	183.90	6462.33	-6017.87	320.49	6016.95	0.99
	131	12203	91.00	186.70	6462.08	-6113.45	311.63	6112.55	3.41
	132	12298	91.30	185.50	6460.17	-6207.89	301.54	6207.02	1.30
	133	12393	89.60	182.10	6459.43	-6302.66	295.24	6301.81	4.00
	134	12488	90.90	181.80	6459.01	-6397.60	292.01	6396.76	1.40
	135	12583	91.80	181.80	6456.77	-6492.53	289.03	6491.70	0.95
	136	12678	91.80	179.70	6453.79	-6587.47	287.78	6586.64	2.21
	137	12771	90.40	177.40	6452.00	-6680.41	290.14	6679.58	2.89
	138	12868	91.50	176.00	6450.40	-6777.23	295.72	6776.38	1.84
	139	12964	90.50	177.80	6448.72	-6873.07	300.91	6872.21	2.14
	140	13059	88.90	180.70	6449.22	-6968.05	302.15	6967.18	3.49
	141	13154	90.40	181.40	6449.80	-7063.03	300.41	7062.16	1.74
	142	13249	90.90	181.40	6448.72	-7158.00	298.09	7157.14	0.53
	143	13344	90.40	180.90	6447.64	-7252.97	296.18	7252.11	0.74
	144	13435	90.60	182.70	6446.85	-7343.92	293.33	7343.07	1.99
	145	13530	90.50	184.10	6445.94	-7438.74	287.69	7437.91	1.48
	146	13625	89.20	184.10	6446.19	-7533.50	280.90	7532.68	1.37
	147	13719	87.80	182.80	6448.65	-7627.29	275.25	7626.49	2.03
	148	13813	87.50	182.10	6452.50	-7721.13	271.23	7720.34	0.81
	149	13908	87.50	182.10	6456.64	-7815.97	267.75	7815.19	0.00
	150	14004	87.00	181.40	6461.25	-7911.82	264.83	7911.05	0.89
	151	14099	86.80	180.90	6466.39	-8006.66	262.92	8005.89	0.57
	152	14120	86.80	180.70	6467.56	-8027.62	262.63	8026.86	0.95
PTB		14175	86.80	180.70	6470.63	-8082.53	261.96	8081.77	0.00