



SURVEY REPORT

Report Date: 1/10/2018
 Customer: Devon Energy
 Job Name: MD-12784936
 Well Name: Rio Blanco 4-33 Fed Com

Field: Leonard A
 Rig: Cactus 168
 Rig Loc: Lea, Co., NM

Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
Grid North	359.57 deg	48011 nT	60.16 deg	6.93 deg	0.46 deg	6.47 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	0.00 ft	0.00 deg	0.00 deg	0.00 ft	0.00 ft	0.00 ft

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
199.00	0.49	277.35	199.00	0.11	-0.84	0.12	0.25
320.00	0.25	282.81	319.99	0.23	-1.61	0.25	0.20
412.00	0.78	332.77	411.99	0.83	-2.10	0.85	0.70
512.00	0.84	35.92	511.98	2.03	-1.98	2.05	0.85
572.00	0.77	45.72	571.98	2.67	-1.43	2.68	0.26
663.00	1.06	51.79	662.97	3.62	-0.33	3.62	0.34
755.00	1.44	58.91	754.94	4.74	1.33	4.73	0.45
846.00	1.78	42.46	845.91	6.38	3.26	6.35	0.63
939.00	1.34	25.40	938.87	8.42	4.70	8.39	0.68
1031.00	1.26	1.88	1030.85	10.41	5.20	10.37	0.58
1122.00	0.92	342.00	1121.83	12.10	5.00	12.06	0.55
1215.00	0.91	351.24	1214.82	13.54	4.66	13.51	0.16
1305.00	0.74	328.29	1304.81	14.74	4.25	14.71	0.41
1397.00	1.11	275.83	1396.80	15.34	3.05	15.31	0.96
1490.00	1.75	250.31	1489.77	14.95	0.81	14.94	0.95
1583.00	2.31	245.28	1582.72	13.69	-2.23	13.70	0.63
1675.00	2.77	232.46	1674.63	11.56	-5.67	11.60	0.79
1766.00	3.23	232.74	1765.50	8.67	-9.46	8.74	0.51
1857.00	3.04	233.86	1856.36	5.69	-13.45	5.79	0.22
1952.00	3.47	234.38	1951.21	2.53	-17.82	2.66	0.45
2047.00	3.84	232.33	2046.02	-1.09	-22.67	-0.92	0.41
2142.00	3.55	239.00	2140.82	-4.55	-27.71	-4.34	0.55
2236.00	3.81	235.80	2234.63	-7.80	-32.79	-7.55	0.35
2338.00	4.21	238.98	2336.38	-11.63	-38.80	-11.34	0.45
2433.00	4.26	249.53	2431.12	-14.67	-45.10	-14.33	0.82
2527.00	4.03	249.89	2524.87	-17.02	-51.47	-16.64	0.25
2622.00	3.57	251.59	2619.66	-19.10	-57.41	-18.67	0.50
2716.00	3.56	249.34	2713.48	-21.06	-62.92	-20.59	0.15
2811.00	2.63	261.72	2808.34	-22.41	-67.83	-21.90	1.20
2906.00	1.77	263.97	2903.27	-22.88	-71.45	-22.34	0.91
3001.00	1.00	240.17	2998.24	-23.45	-73.63	-22.89	1.00
3095.00	0.71	206.80	3092.23	-24.38	-74.60	-23.81	0.60
3190.00	0.38	242.48	3187.23	-25.05	-75.15	-24.48	0.48
3284.00	0.45	177.74	3281.23	-25.56	-75.41	-24.99	0.48
3379.00	0.14	15.09	3376.23	-25.82	-75.36	-25.25	0.62

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
3511.00	0.20	252.90	3508.23	-25.73	-75.54	-25.16	0.23
3606.00	0.22	38.15	3603.23	-25.64	-75.59	-25.07	0.42
3701.00	0.20	326.98	3698.23	-25.35	-75.56	-24.79	0.26
3796.00	0.16	14.38	3793.23	-25.09	-75.62	-24.52	0.16
3890.00	0.41	78.24	3887.22	-24.89	-75.26	-24.33	0.39
3985.00	0.41	79.78	3982.22	-24.76	-74.59	-24.20	0.01
4173.00	0.58	88.03	4170.22	-24.61	-72.98	-24.06	0.10
4363.00	0.14	180.21	4360.21	-24.81	-72.02	-24.27	0.32
4551.00	0.69	215.09	4548.21	-25.96	-72.67	-25.42	0.31
4741.00	1.15	265.81	4738.18	-27.04	-75.23	-26.47	0.47
4930.00	1.38	253.87	4927.14	-27.81	-79.31	-27.22	0.18
5110.00	1.20	259.29	5107.09	-28.76	-83.24	-28.14	0.12
5291.00	1.04	269.32	5288.06	-29.14	-86.75	-28.48	0.14
5386.00	0.70	332.55	5383.05	-28.63	-87.88	-27.97	1.01
5480.00	1.43	6.50	5477.03	-26.96	-88.01	-26.29	0.99
5575.00	1.53	11.48	5572.00	-24.53	-87.62	-23.88	0.17
5670.00	1.53	6.51	5666.97	-22.03	-87.23	-21.38	0.14
5764.00	1.89	20.96	5760.93	-19.34	-86.53	-18.69	0.59
5858.00	2.73	40.15	5854.85	-16.18	-84.53	-15.54	1.20
5953.00	2.66	40.49	5949.74	-12.77	-81.64	-12.16	0.08
6048.00	2.57	41.46	6044.65	-9.50	-78.80	-8.91	0.11
6142.00	2.59	38.21	6138.55	-6.25	-76.09	-5.68	0.16
6235.00	2.53	42.84	6231.46	-3.10	-73.40	-2.54	0.23
6330.00	2.52	39.96	6326.37	0.04	-70.63	0.57	0.13
6425.00	2.61	42.96	6421.27	3.23	-67.81	3.74	0.17
6519.00	2.13	37.56	6515.19	6.18	-65.29	6.67	0.56
6615.00	3.08	62.42	6611.09	8.79	-61.92	9.25	1.52
6708.00	3.01	61.30	6703.96	11.11	-57.56	11.55	0.10
6803.00	3.07	64.45	6798.83	13.41	-53.08	13.81	0.19
6898.00	2.97	66.20	6893.70	15.50	-48.53	15.86	0.14
6993.00	3.12	70.81	6988.56	17.34	-43.84	17.67	0.30
7088.00	3.24	71.32	7083.41	19.05	-38.85	19.34	0.13
7181.00	2.60	70.19	7176.29	20.61	-34.38	20.87	0.69
7275.00	1.79	61.78	7270.22	22.03	-31.08	22.26	0.93
7369.00	1.19	55.41	7364.19	23.27	-28.98	23.49	0.66
7464.00	1.37	46.42	7459.17	24.62	-27.35	24.82	0.28
7560.00	1.33	43.02	7555.14	26.22	-25.75	26.42	0.09
7654.00	0.94	42.75	7649.12	27.59	-24.49	27.77	0.41
7749.00	1.60	41.52	7744.10	29.15	-23.08	29.32	0.70
7844.00	1.51	48.87	7839.06	30.97	-21.26	31.13	0.23
7939.00	1.27	50.31	7934.04	32.46	-19.50	32.61	0.26
8034.00	1.05	47.44	8029.02	33.73	-18.05	33.86	0.24
8065.00	1.03	51.50	8060.01	34.09	-17.62	34.22	0.25
8080.00	0.82	47.33	8075.01	34.25	-17.44	34.38	1.47
8128.00	2.48	18.35	8122.99	35.47	-16.86	35.59	3.76
8175.00	12.03	8.83	8169.56	41.28	-15.79	41.40	20.41
8224.00	20.00	3.56	8216.62	54.72	-14.48	54.82	16.52
8255.00	25.79	2.57	8245.17	66.75	-13.85	66.86	18.72
8287.00	30.92	4.31	8273.32	81.92	-12.92	82.01	16.24
8319.00	34.33	4.20	8300.27	99.12	-11.64	99.20	10.66

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		Vsect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
8350.00	36.77	3.12	8325.49	117.11	-10.49	117.18	8.13
8381.00	39.30	2.12	8349.90	136.18	-9.62	136.25	8.40
8413.00	41.85	2.09	8374.20	156.98	-8.86	157.04	7.97
8445.00	42.77	2.13	8397.87	178.51	-8.07	178.56	2.88
8476.00	42.69	1.32	8420.64	199.53	-7.43	199.58	1.79
8508.00	42.26	0.36	8444.24	221.14	-7.12	221.19	2.43
8539.00	41.83	359.23	8467.26	241.90	-7.19	241.95	2.81
8571.00	41.21	357.43	8491.22	263.10	-7.81	263.15	4.20
8602.00	42.31	356.90	8514.35	283.72	-8.83	283.78	3.73
8634.00	45.86	357.05	8537.33	305.95	-10.00	306.02	11.10
8665.00	49.19	357.78	8558.26	328.79	-11.03	328.86	10.88
8696.00	50.78	0.03	8578.19	352.52	-11.48	352.60	7.56
8728.00	51.00	2.31	8598.38	377.34	-10.97	377.42	5.57
8759.00	51.44	4.76	8617.80	401.46	-9.48	401.52	6.32
8791.00	54.29	5.26	8637.12	426.87	-7.25	426.91	8.99
8823.00	55.99	5.32	8655.41	453.02	-4.83	453.04	5.31
8855.00	56.66	5.62	8673.15	479.52	-2.29	479.53	2.23
8886.00	57.81	4.82	8689.93	505.48	0.08	505.47	4.30
8918.00	60.50	4.50	8706.33	532.86	2.31	532.83	8.45
8949.00	63.92	3.81	8720.78	560.21	4.30	560.16	11.21
8981.00	66.75	2.63	8734.14	589.24	5.93	589.18	9.46
9012.00	68.88	1.24	8745.84	617.93	6.89	617.86	8.03
9044.00	70.25	0.41	8757.01	647.91	7.32	647.84	4.92
9076.00	71.87	1.94	8767.40	678.17	7.95	678.09	6.79
9107.00	73.69	3.05	8776.58	707.75	9.24	707.66	6.79
9139.00	75.72	4.80	8785.02	738.54	11.35	738.44	8.25
9165.00	77.39	5.15	8791.06	763.73	13.54	763.61	6.56
9196.00	79.96	5.06	8797.15	794.01	16.25	793.86	8.30
9228.00	82.14	5.38	8802.13	825.48	19.13	825.32	6.88
9258.00	84.68	5.81	8805.57	855.14	22.03	854.95	8.59
9290.00	87.13	6.25	8807.86	886.88	25.38	886.67	7.78
9321.00	88.32	6.36	8809.09	917.67	28.79	917.43	3.86
9384.00	90.70	4.51	8809.63	980.38	34.75	980.09	4.78
9479.00	91.54	3.01	8807.77	1075.15	40.98	1074.81	1.81
9574.00	91.40	1.33	8805.33	1170.05	44.58	1169.68	1.77
9669.00	92.10	1.02	8802.43	1264.98	46.52	1264.60	0.81
9763.00	90.77	0.77	8800.08	1358.94	47.99	1358.54	1.44
9858.00	89.37	0.66	8799.96	1453.93	49.18	1453.52	1.48
9953.00	88.95	0.55	8801.35	1548.91	50.18	1548.49	0.46
10047.00	89.30	0.27	8802.79	1642.90	50.85	1642.47	0.48
10142.00	91.26	0.04	8802.33	1737.89	51.11	1737.46	2.08
10237.00	93.36	359.76	8798.50	1832.81	50.94	1832.38	2.23
10332.00	93.22	358.80	8793.04	1927.65	49.75	1927.22	1.02
10427.00	93.15	358.47	8787.77	2022.47	47.49	2022.06	0.35
10521.00	92.31	357.99	8783.29	2116.32	44.59	2115.92	1.03
10616.00	90.70	358.18	8780.79	2211.23	41.42	2210.86	1.71
10710.00	90.42	358.37	8779.87	2305.18	38.59	2304.83	0.36
10804.00	90.49	359.10	8779.13	2399.16	36.51	2398.81	0.78
10899.00	90.21	359.71	8778.55	2494.15	35.53	2493.81	0.71
10994.00	90.42	359.60	8778.03	2589.15	34.96	2588.81	0.25

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
11089.00	89.72	358.47	8777.91	2684.13	33.36	2683.80	1.40
11184.00	89.44	359.51	8778.61	2779.11	31.68	2778.79	1.13
11279.00	88.95	0.65	8779.94	2874.10	31.81	2873.78	1.31
11374.00	89.72	2.10	8781.04	2969.06	34.09	2968.72	1.73
11468.00	91.19	2.07	8780.30	3062.99	37.51	3062.63	1.56
11564.00	92.31	0.83	8777.37	3158.92	39.94	3158.53	1.74
11658.00	92.31	0.69	8773.58	3252.83	41.19	3252.43	0.15
11753.00	92.52	0.25	8769.57	3347.74	41.97	3347.33	0.51
11847.00	92.24	358.93	8765.67	3441.66	41.29	3441.25	1.43
11942.00	90.35	356.98	8763.52	3536.56	37.90	3536.18	2.86
12036.00	89.58	357.92	8763.58	3630.47	33.72	3630.11	1.29
12131.00	89.51	358.40	8764.33	3725.42	30.67	3725.08	0.51
12225.00	90.77	359.64	8764.10	3819.40	29.06	3819.07	1.88
12320.00	90.70	359.04	8762.89	3914.38	27.97	3914.06	0.64
12413.00	90.56	358.60	8761.86	4007.36	26.05	4007.05	0.50
12508.00	90.63	358.29	8760.88	4102.32	23.48	4102.03	0.33
12603.00	89.09	358.59	8761.11	4197.28	20.89	4197.01	1.65
12697.00	89.16	359.10	8762.54	4291.25	19.00	4290.99	0.55
12792.00	89.93	359.96	8763.30	4386.24	18.22	4385.98	1.22
12887.00	90.07	0.68	8763.30	4481.24	18.75	4480.97	0.77
12983.00	89.86	0.50	8763.36	4577.23	19.74	4576.96	0.29
13077.00	90.70	1.06	8762.90	4671.22	21.02	4670.93	1.07
13172.00	90.98	0.84	8761.51	4766.20	22.59	4765.90	0.37
13267.00	90.91	1.04	8759.94	4861.17	24.15	4860.86	0.22
13362.00	88.67	359.77	8760.29	4956.16	24.82	4955.84	2.71
13456.00	89.79	359.54	8761.55	5050.15	24.25	5049.83	1.22
13551.00	90.00	358.59	8761.72	5145.14	22.70	5144.82	1.02
13646.00	89.65	358.71	8762.01	5240.11	20.47	5239.81	0.39
13741.00	88.81	359.79	8763.29	5335.09	19.22	5334.80	1.44
13836.00	88.81	359.36	8765.26	5430.07	18.52	5429.78	0.45
13930.00	90.28	359.12	8766.01	5524.05	17.27	5523.77	1.58
14025.00	89.30	359.34	8766.36	5619.04	15.99	5618.77	1.06
14120.00	89.72	359.01	8767.17	5714.03	14.63	5713.76	0.56
14214.00	91.12	358.56	8766.48	5808.00	12.63	5807.75	1.56
14308.00	89.51	359.83	8765.97	5901.99	11.31	5901.74	2.18
14403.00	88.74	359.54	8767.42	5996.98	10.79	5996.73	0.87
14497.00	89.79	358.83	8768.62	6090.96	9.45	6090.71	1.35
14591.00	91.12	358.44	8767.88	6184.92	7.22	6184.70	1.47
14686.00	91.82	359.64	8765.44	6279.88	5.62	6279.66	1.46
14780.00	91.05	0.27	8763.08	6373.85	5.55	6373.63	1.06
14875.00	91.68	0.03	8760.82	6468.82	5.80	6468.59	0.71
14970.00	91.26	0.28	8758.38	6563.79	6.06	6563.56	0.51
15065.00	92.10	0.19	8755.60	6658.74	6.45	6658.51	0.89
15159.00	90.63	0.30	8753.36	6752.71	6.85	6752.47	1.57
15254.00	90.00	0.70	8752.84	6847.71	7.68	6847.46	0.79
15348.00	90.07	359.78	8752.78	6941.71	8.07	6941.45	0.98
15443.00	92.17	359.08	8750.92	7036.68	7.13	7036.43	2.33
15538.00	91.47	359.46	8747.91	7131.62	5.92	7131.38	0.84
15632.00	90.63	359.91	8746.18	7225.60	5.40	7225.36	1.01
15726.00	89.23	0.42	8746.30	7319.60	5.67	7319.35	1.59

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
15821.00	89.02	0.76	8747.75	7414.58	6.65	7414.32	0.42
15916.00	89.44	0.35	8749.03	7509.57	7.57	7509.30	0.62
15973.00	89.65	0.10	8749.48	7566.57	7.79	7566.30	0.57

Vertical Section is 7628.31 ft along the target direction of 359.57 deg at a measured depth of 16035.02 ft.
Horizontal Displacement is 7628.59 ft along the well bore azimuth of 0.06 deg.
The total correction is 6.47 deg relative to Grid North.