



Gyroscopic Survey Report  
for  
K.P. Kauffman

Well Location	Weld County, Colorado
Well Name	Albert Sack 14-31
Rig Number	KPK 2
Survey Date	8/11/2014
Latitude	40.0017000°N
Longitude	104.9352700°W
North Reference	True North
Grid Correction	None
Depth Reference	Ground Level (5050.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 232.22Azim (deg)
Definitive Survey	ALBERT SACK 14-31
Operator(s)	Jon Valenzuela

**Well Notes**

# Survey Report

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**Survey Date:** 8/11/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
99.20	0.19	325.07	99.20	-0.01	0.13	-0.09	0.19	0.16	325.07
112.93	0.18	310.33	112.93	0.00	0.16	-0.12	0.35	0.20	323.56
136.54	0.17	316.03	136.54	0.01	0.21	-0.17	0.08	0.27	320.87
161.54	0.41	43.40	161.54	-0.08	0.30	-0.14	1.73	0.33	335.56
187.89	0.10	327.26	187.89	-0.17	0.39	-0.09	1.49	0.40	347.48
211.57	0.10	356.90	211.57	-0.18	0.43	-0.10	0.22	0.44	346.94
235.16	0.07	342.56	235.15	-0.20	0.46	-0.10	0.16	0.47	347.23
261.95	0.07	356.87	261.95	-0.22	0.49	-0.11	0.07	0.51	347.41
285.47	0.03	190.25	285.47	-0.22	0.50	-0.11	0.42	0.51	347.42
312.86	0.12	142.46	312.86	-0.21	0.47	-0.10	0.36	0.48	348.50
335.70	0.20	166.99	335.70	-0.20	0.42	-0.07	0.48	0.42	350.03
359.19	0.20	141.70	359.19	-0.18	0.34	-0.04	0.38	0.34	353.63
385.87	0.16	151.49	385.87	-0.17	0.27	0.01	0.20	0.27	1.65
412.22	0.15	158.44	412.22	-0.16	0.21	0.04	0.07	0.21	10.31
435.35	0.20	171.30	435.35	-0.13	0.14	0.06	0.25	0.15	21.44
462.14	0.18	172.85	462.14	-0.09	0.06	0.07	0.08	0.09	50.53
485.13	0.21	195.40	485.13	-0.04	-0.02	0.06	0.36	0.06	108.10
511.65	0.18	195.57	511.65	0.04	-0.11	0.04	0.12	0.11	161.01
534.78	0.19	218.51	534.78	0.10	-0.17	0.00	0.33	0.17	179.13
561.59	0.13	216.09	561.58	0.18	-0.23	-0.04	0.22	0.24	190.72
587.84	0.20	231.26	587.84	0.25	-0.29	-0.10	0.29	0.30	198.78
610.90	0.26	222.12	610.89	0.34	-0.35	-0.16	0.31	0.39	205.01
637.74	0.17	229.07	637.74	0.44	-0.42	-0.23	0.34	0.48	209.08
660.82	0.18	246.77	660.82	0.51	-0.46	-0.29	0.24	0.54	212.67
687.09	0.13	286.89	687.09	0.57	-0.47	-0.36	0.45	0.59	217.65
710.21	0.21	278.99	710.21	0.61	-0.45	-0.42	0.36	0.62	223.22
737.25	0.25	263.94	737.25	0.70	-0.45	-0.53	0.28	0.70	229.74
759.58	0.26	320.83	759.57	0.74	-0.42	-0.61	1.10	0.74	235.85
786.01	0.27	327.88	786.00	0.73	-0.32	-0.68	0.13	0.75	245.22
809.24	0.23	324.06	809.24	0.73	-0.23	-0.74	0.18	0.78	252.69
836.28	0.27	316.24	836.28	0.73	-0.14	-0.82	0.17	0.83	260.20
862.68	0.29	321.21	862.68	0.74	-0.04	-0.90	0.14	0.90	267.18
885.91	0.19	296.38	885.91	0.76	0.02	-0.97	0.63	0.97	271.11
912.91	0.13	315.10	912.91	0.78	0.06	-1.03	0.28	1.04	273.33
936.10	0.20	313.64	936.10	0.79	0.11	-1.08	0.30	1.09	275.63

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
962.49	0.20	337.71	962.48	0.78	0.18	-1.13	0.32	1.15	279.09
985.57	0.17	354.56	985.57	0.76	0.25	-1.15	0.28	1.18	282.35
1012.51	0.21	358.89	1012.50	0.71	0.34	-1.16	0.15	1.20	286.36
1035.18	0.15	338.42	1035.17	0.67	0.41	-1.17	0.36	1.24	289.26
1060.94	0.14	13.52	1060.94	0.64	0.47	-1.17	0.35	1.26	291.91
1087.66	0.23	313.39	1087.65	0.62	0.54	-1.20	0.76	1.32	294.20
1110.47	0.20	314.80	1110.46	0.63	0.60	-1.27	0.14	1.40	295.38
1136.38	0.14	336.60	1136.38	0.63	0.66	-1.31	0.33	1.47	296.77
1162.80	0.24	322.00	1162.80	0.62	0.73	-1.36	0.44	1.54	298.42
1185.66	0.22	339.76	1185.66	0.61	0.81	-1.40	0.33	1.62	300.13
1212.21	0.20	343.43	1212.21	0.58	0.91	-1.43	0.09	1.70	302.29
1234.34	0.22	316.59	1234.33	0.57	0.97	-1.47	0.45	1.77	303.45
1260.76	0.21	314.56	1260.75	0.58	1.04	-1.54	0.05	1.86	304.09
1287.25	0.20	333.28	1287.25	0.58	1.12	-1.60	0.26	1.95	305.02
1310.10	0.20	310.18	1310.09	0.58	1.18	-1.65	0.35	2.03	305.66
1335.76	0.22	321.45	1335.75	0.59	1.25	-1.71	0.18	2.12	306.12
1362.33	0.23	311.45	1362.32	0.60	1.32	-1.78	0.15	2.22	306.59
1385.11	0.21	334.96	1385.11	0.60	1.39	-1.83	0.40	2.30	307.18
1411.59	0.21	315.29	1411.58	0.59	1.47	-1.89	0.27	2.39	307.88
1437.37	0.30	299.57	1437.36	0.62	1.54	-1.98	0.46	2.51	307.79
1460.24	0.25	335.79	1460.23	0.64	1.61	-2.05	0.79	2.61	308.13
1485.57	0.32	295.24	1485.56	0.65	1.69	-2.14	0.82	2.73	308.34
1511.88	0.30	289.97	1511.87	0.72	1.75	-2.27	0.13	2.87	307.57
1537.56	0.32	311.35	1537.55	0.77	1.82	-2.39	0.45	3.00	307.27
1562.84	0.30	314.67	1562.83	0.80	1.91	-2.49	0.09	3.14	307.52
1587.77	0.31	315.66	1587.76	0.81	2.01	-2.58	0.03	3.27	307.83
1612.02	0.43	300.86	1612.01	0.85	2.10	-2.71	0.64	3.43	307.80
1634.74	0.48	289.65	1634.73	0.94	2.18	-2.87	0.44	3.60	307.16
1661.11	0.38	308.52	1661.10	1.02	2.27	-3.04	0.65	3.79	306.69
1686.42	0.41	315.48	1686.40	1.05	2.38	-3.17	0.21	3.97	306.93
1712.31	0.49	294.36	1712.29	1.11	2.49	-3.34	0.71	4.16	306.79
1734.52	0.48	299.75	1734.50	1.19	2.58	-3.50	0.21	4.35	306.37
1760.38	0.51	300.78	1760.36	1.27	2.69	-3.69	0.14	4.57	306.07
1785.62	0.61	297.94	1785.60	1.37	2.81	-3.91	0.39	4.82	305.73
1811.33	0.51	308.73	1811.31	1.45	2.95	-4.12	0.55	5.07	305.58
1837.00	0.57	298.09	1836.98	1.53	3.08	-4.32	0.45	5.31	305.47

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
1862.84	0.56	302.07	1862.82	1.63	3.21	-4.54	0.16	5.56	305.23
1884.38	0.53	297.18	1884.35	1.70	3.31	-4.72	0.25	5.76	305.03
1909.91	0.58	299.28	1909.89	1.80	3.43	-4.94	0.22	6.01	304.75
1935.80	0.56	300.33	1935.78	1.90	3.55	-5.16	0.09	6.27	304.55
1960.77	0.69	290.89	1960.74	2.03	3.67	-5.41	0.64	6.53	304.16
1986.54	0.62	289.69	1986.52	2.18	3.77	-5.68	0.25	6.82	303.57
2011.34	0.63	293.38	2011.31	2.32	3.87	-5.93	0.17	7.09	303.11
2035.63	0.60	294.18	2035.60	2.44	3.98	-6.17	0.11	7.34	302.78
2060.48	0.63	290.03	2060.45	2.58	4.08	-6.42	0.22	7.61	302.41
2085.24	0.64	293.30	2085.21	2.72	4.18	-6.68	0.15	7.88	302.03
2110.08	0.61	294.42	2110.05	2.85	4.29	-6.93	0.14	8.15	301.76
2137.79	0.55	288.93	2137.76	2.99	4.39	-7.19	0.29	8.42	301.43
2159.52	0.67	285.16	2159.49	3.12	4.46	-7.41	0.58	8.65	301.05
2187.36	0.69	287.50	2187.32	3.32	4.55	-7.72	0.12	8.97	300.51
2212.14	0.58	293.16	2212.10	3.46	4.65	-7.98	0.50	9.24	300.20
2236.52	0.46	296.36	2236.48	3.57	4.74	-8.18	0.50	9.46	300.07
2260.48	0.64	286.27	2260.44	3.69	4.82	-8.40	0.85	9.69	299.84
2284.76	0.42	312.77	2284.72	3.78	4.92	-8.60	1.34	9.90	299.77
2312.12	0.39	299.87	2312.08	3.83	5.03	-8.75	0.35	10.10	299.90
2336.56	0.36	297.12	2336.51	3.90	5.11	-8.89	0.16	10.26	299.88
2360.91	0.53	283.95	2360.86	4.00	5.17	-9.07	0.83	10.44	299.69
2385.25	0.38	308.54	2385.20	4.09	5.25	-9.24	1.01	10.63	299.59
2412.38	0.33	295.76	2412.33	4.15	5.34	-9.38	0.34	10.79	299.64
2437.21	0.38	290.03	2437.16	4.22	5.40	-9.52	0.25	10.95	299.54
2460.78	0.48	278.83	2460.73	4.33	5.44	-9.69	0.55	11.12	299.30
2488.77	0.30	286.87	2488.72	4.45	5.48	-9.88	0.68	11.30	299.01
2510.82	0.26	284.42	2510.78	4.52	5.51	-9.98	0.18	11.40	298.89
2535.36	0.26	278.78	2535.31	4.59	5.53	-10.09	0.11	11.51	298.72
2562.59	0.23	287.28	2562.54	4.66	5.56	-10.21	0.17	11.62	298.56
2587.10	0.13	249.97	2587.05	4.72	5.56	-10.28	0.62	11.69	298.41
2611.69	0.14	260.64	2611.64	4.77	5.55	-10.34	0.11	11.73	298.21
2635.48	0.15	250.05	2635.43	4.83	5.53	-10.40	0.13	11.78	298.01
2659.92	0.16	232.69	2659.87	4.90	5.50	-10.45	0.19	11.81	297.74
2684.27	0.08	6.16	2684.22	4.92	5.50	-10.48	0.91	11.83	297.67
2711.87	0.09	47.86	2711.82	4.88	5.53	-10.46	0.22	11.83	297.85
2736.07	0.26	48.68	2736.02	4.81	5.58	-10.41	0.72	11.81	298.18

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
2759.38	0.24	47.35	2759.33	4.71	5.64	-10.33	0.10	11.77	298.65
2787.13	0.03	98.87	2787.08	4.65	5.68	-10.28	0.80	11.75	298.92
2811.73	0.12	3.07	2811.68	4.63	5.71	-10.28	0.52	11.76	299.05
2836.11	0.04	28.08	2836.06	4.60	5.74	-10.27	0.37	11.77	299.20
2859.58	0.13	205.33	2859.53	4.62	5.72	-10.28	0.73	11.77	299.10
2887.50	0.21	216.80	2887.45	4.70	5.65	-10.33	0.31	11.77	298.69
2911.42	0.28	208.35	2911.37	4.80	5.56	-10.38	0.33	11.78	298.19
2935.00	0.26	206.93	2934.95	4.90	5.46	-10.43	0.09	11.78	297.64
2962.93	0.33	207.92	2962.88	5.03	5.33	-10.50	0.25	11.78	296.93
2986.96	0.43	218.81	2986.91	5.18	5.20	-10.59	0.50	11.80	296.16
3009.59	0.44	209.07	3009.54	5.35	5.06	-10.68	0.33	11.82	295.34
3034.91	0.14	243.24	3034.86	5.46	4.96	-10.76	1.31	11.85	294.76
3060.80	0.52	219.95	3060.75	5.61	4.86	-10.86	1.54	11.90	294.09
3083.86	0.40	226.34	3083.80	5.79	4.72	-10.99	0.58	11.96	293.25
3109.78	0.44	253.85	3109.72	5.98	4.63	-11.15	0.79	12.07	292.55
3134.89	0.47	226.31	3134.83	6.17	4.53	-11.32	0.86	12.19	291.83
3160.68	0.48	191.94	3160.62	6.36	4.35	-11.41	1.09	12.22	290.88
3186.57	0.33	144.28	3186.51	6.44	4.19	-11.39	1.38	12.14	290.18
3211.66	0.32	95.10	3211.61	6.39	4.12	-11.28	1.08	12.01	290.07
3236.75	0.02	255.94	3236.69	6.34	4.11	-11.22	1.35	11.95	290.15
3258.41	0.28	232.70	3258.35	6.40	4.08	-11.26	1.24	11.98	289.92
3287.68	0.35	211.17	3287.62	6.56	3.96	-11.37	0.46	12.04	289.21
3309.34	0.46	200.00	3309.28	6.69	3.82	-11.43	0.61	12.05	288.49
3337.73	0.31	172.53	3337.67	6.83	3.64	-11.46	0.82	12.02	287.62
3362.79	0.50	172.18	3362.73	6.92	3.46	-11.43	0.77	11.95	286.85
3383.98	0.17	121.67	3383.92	6.95	3.35	-11.39	1.96	11.88	286.40
3409.69	0.59	125.03	3409.63	6.90	3.26	-11.25	1.64	11.71	286.14
3435.38	0.72	144.15	3435.32	6.87	3.05	-11.05	0.97	11.46	285.43
3460.01	0.73	169.23	3459.95	6.94	2.77	-10.93	1.28	11.28	284.23
3485.26	0.85	184.12	3485.19	7.14	2.43	-10.91	0.93	11.18	282.54
3510.79	1.06	161.40	3510.72	7.34	2.01	-10.85	1.68	11.04	280.52
3535.40	1.03	150.51	3535.33	7.45	1.61	-10.67	0.81	10.79	278.56
3560.69	0.42	151.77	3560.62	7.50	1.33	-10.51	2.43	10.60	277.19
3585.98	0.65	193.63	3585.91	7.63	1.10	-10.50	1.74	10.56	276.00
3610.70	0.99	193.80	3610.62	7.90	0.76	-10.59	1.36	10.62	274.11
3636.03	0.98	200.40	3635.94	8.26	0.35	-10.72	0.45	10.72	271.85

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3661.46	0.51	211.59	3661.37	8.55	0.05	-10.85	1.90	10.85	270.25
3686.08	0.53	195.27	3686.00	8.74	-0.16	-10.94	0.61	10.94	269.18
3711.41	0.98	197.95	3711.32	9.02	-0.48	-11.04	1.79	11.05	267.52
3736.71	1.01	229.71	3736.62	9.42	-0.83	-11.27	2.15	11.30	265.80
3761.43	0.78	258.07	3761.33	9.79	-1.00	-11.60	1.98	11.65	265.06
3786.66	0.59	246.87	3786.56	10.07	-1.09	-11.89	0.92	11.94	264.76
3811.85	0.32	216.02	3811.75	10.26	-1.20	-12.05	1.42	12.11	264.32
3836.36	0.28	226.74	3836.26	10.39	-1.29	-12.14	0.29	12.21	263.91
3861.53	0.47	252.76	3861.43	10.54	-1.37	-12.28	0.99	12.36	263.65
3886.78	0.53	256.51	3886.68	10.75	-1.43	-12.49	0.29	12.58	263.49
3911.15	0.48	254.86	3911.05	10.95	-1.48	-12.70	0.21	12.79	263.36
3936.20	0.29	232.10	3936.10	11.11	-1.55	-12.86	0.98	12.95	263.15
3960.20	0.21	166.63	3960.10	11.19	-1.63	-12.89	1.16	13.00	262.82
3984.81	0.64	211.61	3984.71	11.33	-1.79	-12.96	2.08	13.08	262.15
4010.11	0.74	219.48	4010.01	11.63	-2.03	-13.13	0.56	13.29	261.20
4035.15	0.80	237.42	4035.04	11.96	-2.25	-13.38	0.99	13.57	260.45
4059.71	0.86	210.87	4059.60	12.30	-2.50	-13.62	1.57	13.85	259.59
4084.74	1.13	196.41	4084.63	12.68	-2.90	-13.79	1.47	14.09	258.12
4109.78	0.96	203.52	4109.67	13.06	-3.33	-13.94	0.86	14.34	256.57
4134.14	1.04	204.88	4134.02	13.44	-3.72	-14.12	0.37	14.60	255.25
4159.29	1.31	209.98	4159.17	13.91	-4.17	-14.36	1.13	14.95	253.79
4184.30	1.25	215.31	4184.16	14.43	-4.64	-14.66	0.52	15.38	252.42
4212.64	1.13	214.18	4212.50	14.99	-5.13	-14.99	0.43	15.85	251.12
4237.54	1.30	217.30	4237.39	15.50	-5.55	-15.30	0.71	16.28	250.05
4262.70	1.06	235.07	4262.55	16.01	-5.91	-15.67	1.72	16.74	249.32
4286.97	1.41	229.61	4286.82	16.53	-6.24	-16.08	1.54	17.24	248.80
4312.01	1.44	216.77	4311.84	17.14	-6.69	-16.50	1.28	17.80	247.94
4336.80	1.18	197.16	4336.64	17.65	-7.18	-16.76	2.07	18.24	246.81
4361.13	1.16	185.27	4360.96	18.02	-7.67	-16.86	1.00	18.52	245.55
4386.05	1.46	192.20	4385.87	18.44	-8.23	-16.95	1.38	18.84	244.11
4411.05	1.44	205.30	4410.87	18.96	-8.82	-17.15	1.33	19.29	242.77
4435.26	1.48	206.47	4435.06	19.51	-9.38	-17.42	0.19	19.78	241.70
4460.12	1.38	205.03	4459.91	20.07	-9.94	-17.69	0.41	20.29	240.68
4483.69	1.48	214.45	4483.48	20.61	-10.44	-17.98	1.08	20.79	239.85
4512.70	1.57	213.47	4512.48	21.34	-11.08	-18.41	0.31	21.49	238.95
4537.62	1.50	216.37	4537.38	21.98	-11.63	-18.79	0.41	22.10	238.25

**Well Name:** Albert Sack 14-31  
**Survey:** ALBERT SACK 14-31  
**Survey Date:** 8/11/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
4562.58	1.53	218.22	4562.35	22.62	-12.15	-19.19	0.22	22.72	237.65
4586.82	1.34	220.30	4586.58	23.21	-12.62	-19.58	0.80	23.29	237.18
4611.59	1.28	218.90	4611.34	23.76	-13.06	-19.94	0.27	23.83	236.77
4634.77	1.32	219.06	4634.51	24.27	-13.47	-20.27	0.18	24.34	236.39
4659.26	1.45	217.59	4658.99	24.85	-13.94	-20.63	0.54	24.90	235.97
4687.75	1.48	218.58	4687.47	25.55	-14.51	-21.08	0.15	25.59	235.47
4712.40	1.55	219.09	4712.12	26.19	-15.02	-21.49	0.29	26.22	235.06
4736.17	1.73	218.33	4735.88	26.85	-15.55	-21.92	0.75	26.87	234.65
4760.61	1.57	217.06	4760.30	27.53	-16.11	-22.35	0.68	27.55	234.22
4785.05	1.64	223.88	4784.74	28.20	-16.62	-22.79	0.84	28.21	233.90
4812.76	1.84	227.34	4812.43	29.04	-17.21	-23.40	0.81	29.05	233.66
4837.06	1.70	218.69	4836.72	29.78	-17.76	-23.91	1.24	29.78	233.40
4861.45	1.81	221.63	4861.10	30.51	-18.33	-24.39	0.56	30.51	233.08
4885.04	1.35	213.95	4884.68	31.14	-18.84	-24.79	2.14	31.14	232.77
4912.44	1.51	221.72	4912.07	31.80	-19.37	-25.21	0.93	31.80	232.46
4937.92	1.62	220.89	4937.55	32.48	-19.90	-25.67	0.43	32.48	232.22