



Gyroscopic Survey Report
for
K.P. Kauffman

Well Location	Weld County, Colorado
Well Name	Carl A Miller B-No.14
Rig Number	KPK 2
Survey Date	3/21/2014
Latitude	40.0741480°N
North Reference	True North
Grid Correction	None
Depth Reference	Ground Level (5049.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 252.52Azim (deg)
Definitive Survey	Carl A Miller B-14
Operator(s)	Jon Valenzuela

Well Notes

Survey Report

Well Name: Carl A Miller B-No.14
Survey: Carl A Miller B-14
Survey Date: 3/21/2014

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
50.07	0.37	149.71	50.07	-0.04	-0.14	0.08	0.73	0.16	149.71
99.41	0.28	154.07	99.41	-0.09	-0.38	0.21	0.18	0.44	150.91
149.40	0.22	147.20	149.40	-0.13	-0.57	0.32	0.14	0.65	150.96
199.75	0.19	124.09	199.75	-0.21	-0.70	0.44	0.17	0.82	147.95
249.59	0.14	80.44	249.59	-0.32	-0.73	0.56	0.26	0.92	142.43
299.38	0.13	80.80	299.38	-0.43	-0.71	0.68	0.02	0.98	136.39
349.73	0.13	59.91	349.72	-0.55	-0.68	0.78	0.09	1.04	130.72
399.60	0.09	62.78	399.60	-0.64	-0.63	0.87	0.08	1.07	126.00
449.16	0.06	34.54	449.16	-0.70	-0.59	0.92	0.09	1.09	122.79
499.28	0.02	55.43	499.27	-0.73	-0.56	0.94	0.09	1.10	120.88
548.36	0.02	106.89	548.36	-0.74	-0.56	0.95	0.04	1.11	120.34
599.54	0.05	314.69	599.53	-0.74	-0.55	0.95	0.12	1.09	119.98
649.21	0.04	355.67	649.21	-0.73	-0.52	0.93	0.06	1.06	119.02
699.28	0.17	247.23	699.28	-0.66	-0.53	0.86	0.37	1.01	121.66
749.73	0.15	232.48	749.73	-0.52	-0.60	0.74	0.09	0.95	129.21
798.94	0.30	253.30	798.94	-0.33	-0.68	0.56	0.33	0.88	140.30
849.10	0.35	249.03	849.10	-0.05	-0.77	0.29	0.12	0.82	159.07
899.45	0.20	233.38	899.45	0.19	-0.88	0.08	0.34	0.88	174.77
948.77	0.45	255.27	948.77	0.46	-0.98	-0.17	0.56	0.99	190.15
999.44	0.37	243.60	999.43	0.82	-1.10	-0.51	0.23	1.21	205.03
1049.69	0.41	248.02	1049.68	1.16	-1.24	-0.83	0.10	1.49	213.70
1099.74	0.41	254.85	1099.73	1.52	-1.35	-1.17	0.10	1.79	220.76
1149.79	0.45	257.65	1149.78	1.89	-1.44	-1.53	0.08	2.10	226.70
1199.83	0.49	263.75	1199.82	2.30	-1.51	-1.93	0.13	2.45	232.05
1249.84	0.52	263.65	1249.82	2.73	-1.56	-2.37	0.07	2.84	236.74
1299.83	0.51	251.08	1299.82	3.17	-1.65	-2.81	0.23	3.26	239.53
1348.96	0.52	266.46	1348.95	3.61	-1.74	-3.24	0.28	3.67	241.79
1399.67	0.55	265.27	1399.65	4.07	-1.77	-3.71	0.06	4.11	244.49
1449.83	0.55	263.74	1449.81	4.54	-1.82	-4.19	0.03	4.57	246.56
1499.70	0.56	265.79	1499.68	5.01	-1.86	-4.67	0.04	5.03	248.28
1549.01	0.55	270.96	1548.98	5.47	-1.87	-5.15	0.10	5.48	249.99
1598.78	0.62	277.97	1598.75	5.94	-1.83	-5.65	0.21	5.94	252.03
1648.63	0.63	281.58	1648.60	6.43	-1.74	-6.19	0.08	6.43	254.29
1699.68	0.64	281.77	1699.65	6.92	-1.63	-6.74	0.02	6.94	256.45
1749.37	0.65	287.31	1749.33	7.39	-1.49	-7.29	0.13	7.44	258.48

Survey Report

Well Name: Carl A Miller B-No.14
Survey: Carl A Miller B-14
Survey Date: 3/21/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
1799.75	0.53	285.14	1799.71	7.83	-1.34	-7.78	0.24	7.90	260.24
1849.00	0.52	303.68	1848.96	8.16	-1.15	-8.19	0.35	8.27	261.98
1899.42	0.55	322.65	1899.37	8.39	-0.84	-8.53	0.35	8.57	264.41
1949.67	0.33	344.06	1949.63	8.47	-0.51	-8.72	0.54	8.73	266.67
1999.01	0.38	344.71	1998.97	8.46	-0.22	-8.80	0.10	8.80	268.60
2048.66	0.45	342.21	2048.61	8.45	0.13	-8.90	0.15	8.90	270.81
2099.77	0.44	345.95	2099.72	8.44	0.51	-9.01	0.06	9.02	273.21
2149.57	0.13	349.71	2149.52	8.42	0.75	-9.06	0.62	9.09	274.70
2198.80	0.09	7.02	2198.75	8.40	0.84	-9.07	0.10	9.11	275.29
2249.11	0.11	336.05	2249.06	8.39	0.92	-9.08	0.11	9.13	275.79
2298.54	0.14	174.13	2298.49	8.40	0.90	-9.10	0.48	9.14	275.68
2349.70	0.05	152.03	2349.65	8.41	0.82	-9.08	0.18	9.12	275.19
2399.06	0.08	138.84	2399.01	8.39	0.78	-9.04	0.07	9.08	274.91
2449.56	0.23	161.20	2449.50	8.38	0.65	-8.99	0.32	9.01	274.14
2499.96	0.27	157.80	2499.91	8.36	0.44	-8.91	0.07	8.92	272.85
2548.97	0.41	177.45	2548.92	8.40	0.16	-8.86	0.37	8.86	271.05
2599.24	0.46	175.92	2599.19	8.49	-0.22	-8.83	0.10	8.84	268.59
2649.49	0.49	178.43	2649.43	8.60	-0.63	-8.81	0.08	8.84	265.89
2699.95	0.51	176.08	2699.89	8.71	-1.08	-8.79	0.06	8.86	263.02
2748.86	0.54	163.87	2748.80	8.77	-1.52	-8.71	0.24	8.84	260.13
2799.14	0.54	166.67	2799.08	8.79	-1.97	-8.59	0.05	8.82	257.07
2849.33	0.53	172.04	2849.27	8.84	-2.43	-8.51	0.10	8.85	254.04
2899.83	0.53	168.55	2899.76	8.91	-2.89	-8.43	0.06	8.91	251.05
2948.78	0.54	184.47	2948.71	9.02	-3.35	-8.40	0.30	9.04	248.28
2999.12	0.54	202.41	2999.05	9.26	-3.80	-8.51	0.34	9.32	245.92
3049.86	0.57	215.88	3049.79	9.62	-4.23	-8.75	0.27	9.72	244.19
3098.81	0.56	221.23	3098.73	10.02	-4.61	-9.05	0.11	10.16	243.01
3149.19	0.48	248.04	3149.11	10.44	-4.87	-9.41	0.50	10.60	242.62
3199.67	0.75	300.02	3199.59	10.87	-4.79	-9.89	1.17	10.99	244.17
3249.19	1.15	325.47	3249.10	11.24	-4.22	-10.45	1.15	11.27	248.03
3298.70	1.21	326.70	3298.60	11.52	-3.37	-11.02	0.13	11.52	252.97
3349.58	1.22	325.21	3349.47	11.83	-2.48	-11.62	0.07	11.88	257.94
3399.76	0.94	318.47	3399.64	12.16	-1.74	-12.20	0.61	12.32	261.90
3449.85	0.73	303.27	3449.72	12.52	-1.25	-12.74	0.60	12.80	264.38
3499.93	0.69	267.22	3499.81	13.02	-1.09	-13.31	0.88	13.35	265.30
3548.63	0.81	253.35	3548.50	13.65	-1.21	-13.93	0.44	13.98	265.05

Survey Report

Well Name: Carl A Miller B-No.14
Survey: Carl A Miller B-14
Survey Date: 3/21/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
3599.95	0.92	242.15	3599.81	14.41	-1.50	-14.64	0.40	14.72	264.14
3649.38	1.00	239.19	3649.24	15.23	-1.91	-15.36	0.19	15.48	262.91
3698.91	1.07	245.07	3698.75	16.11	-2.33	-16.15	0.25	16.32	261.80
3749.74	1.10	250.11	3749.58	17.07	-2.69	-17.04	0.20	17.26	261.02
3799.56	1.07	244.13	3799.39	18.01	-3.06	-17.91	0.23	18.17	260.31
3849.19	1.13	242.45	3849.01	18.95	-3.49	-18.77	0.14	19.09	259.47
3898.68	1.10	247.52	3898.49	19.90	-3.90	-19.64	0.21	20.02	258.78
3949.37	1.16	249.77	3949.17	20.90	-4.26	-20.57	0.16	21.01	258.30
3999.19	1.14	255.84	3998.98	21.90	-4.56	-21.52	0.25	22.00	258.05
4049.30	1.17	260.05	4049.08	22.91	-4.77	-22.51	0.18	23.01	258.05
4099.19	1.17	261.72	4098.96	23.92	-4.93	-23.52	0.07	24.03	258.17
4149.12	1.58	256.79	4148.87	25.11	-5.16	-24.70	0.85	25.23	258.20
4199.06	1.84	254.57	4198.80	26.59	-5.53	-26.14	0.55	26.72	258.05
4248.92	1.82	255.19	4248.63	28.19	-5.95	-27.68	0.07	28.31	257.88
4298.89	1.87	254.77	4298.58	29.79	-6.36	-29.23	0.12	29.92	257.72
4348.98	1.91	255.24	4348.63	31.45	-6.79	-30.83	0.08	31.57	257.58
4399.57	1.93	254.24	4399.20	33.14	-7.24	-32.47	0.08	33.27	257.43
4449.50	1.83	252.14	4449.10	34.78	-7.71	-34.04	0.25	34.90	257.24
4499.69	1.62	247.38	4499.27	36.29	-8.23	-35.46	0.51	36.40	256.93
4549.58	1.37	239.11	4549.14	37.58	-8.81	-36.62	0.66	37.67	256.48
4599.64	1.21	221.87	4599.18	38.61	-9.51	-37.49	0.83	38.67	255.77
4648.60	1.22	218.88	4648.13	39.49	-10.30	-38.16	0.13	39.53	254.89
4699.48	1.11	207.84	4699.00	40.29	-11.16	-38.73	0.49	40.31	253.93
4749.67	1.11	207.27	4749.19	40.98	-12.02	-39.18	0.02	40.98	252.94
4798.37	1.15	198.55	4797.87	41.60	-12.90	-39.55	0.36	41.60	251.93
4849.98	1.17	188.79	4849.47	42.14	-13.91	-39.80	0.38	42.16	250.73
4899.02	1.38	179.92	4898.51	42.54	-15.00	-39.87	0.58	42.60	249.39
4948.99	1.38	178.59	4948.46	42.88	-16.20	-39.86	0.07	43.02	247.88
4998.80	1.71	184.36	4998.25	43.33	-17.54	-39.90	0.72	43.58	246.27
5049.80	1.75	185.40	5049.23	43.91	-19.08	-40.03	0.11	44.34	244.52
5099.20	1.94	189.20	5098.60	44.58	-20.65	-40.23	0.45	45.23	242.83
5148.58	1.90	189.96	5147.95	45.33	-22.28	-40.51	0.10	46.23	241.19
5199.63	1.99	188.76	5198.97	46.11	-23.99	-40.79	0.20	47.32	239.54
5248.22	1.59	192.13	5247.54	46.82	-25.49	-41.06	0.86	48.33	238.17
5299.49	1.34	196.98	5298.80	47.51	-26.75	-41.38	0.55	49.28	237.12
5349.29	1.00	213.22	5348.59	48.17	-27.67	-41.79	0.95	50.12	236.49

Survey Report

Well Name: Carl A Miller B-No.14
Survey: Carl A Miller B-14
Survey Date: 3/21/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
5399.38	0.82	224.00	5398.67	48.82	-28.29	-42.28	0.50	50.87	236.21
5449.06	0.69	246.27	5448.34	49.43	-28.67	-42.80	0.64	51.51	236.18
5499.70	0.68	256.47	5498.98	50.03	-28.86	-43.37	0.24	52.09	236.36
5548.84	0.75	280.42	5548.12	50.61	-28.87	-43.97	0.62	52.60	236.71
5599.37	0.66	294.42	5598.65	51.12	-28.69	-44.56	0.39	53.00	237.23
5649.43	0.76	292.28	5648.70	51.59	-28.44	-45.13	0.20	53.35	237.78
5699.06	0.90	299.79	5698.32	52.11	-28.12	-45.78	0.36	53.73	238.44
5749.57	0.92	298.68	5748.83	52.66	-27.73	-46.48	0.04	54.12	239.18
5798.68	0.96	298.80	5797.93	53.22	-27.34	-47.18	0.08	54.53	239.91
5849.15	0.90	302.92	5848.40	53.76	-26.92	-47.89	0.17	54.94	240.65
5899.66	0.96	309.40	5898.90	54.25	-26.44	-48.55	0.24	55.28	241.43
5948.44	0.95	314.93	5947.67	54.66	-25.89	-49.15	0.19	55.55	242.22
5999.26	0.85	317.35	5998.48	55.01	-25.32	-49.70	0.22	55.78	243.01
6048.66	0.71	328.78	6047.88	55.24	-24.79	-50.11	0.41	55.91	243.68
6099.78	0.67	346.45	6099.00	55.30	-24.22	-50.35	0.42	55.87	244.31
6149.90	0.67	333.55	6149.12	55.32	-23.67	-50.55	0.30	55.81	244.90
6199.50	0.87	340.70	6198.71	55.38	-23.06	-50.80	0.44	55.79	245.58
6248.79	0.69	25.96	6247.99	55.19	-22.44	-50.79	1.26	55.53	246.16
6299.75	0.77	36.93	6298.95	54.70	-21.89	-50.45	0.32	55.00	246.54
6349.45	0.72	65.65	6348.64	54.11	-21.49	-49.96	0.75	54.39	246.72
6399.24	0.68	29.25	6398.43	53.59	-21.11	-49.53	0.88	53.84	246.92
6449.14	0.75	62.25	6448.33	53.05	-20.70	-49.10	0.82	53.29	247.14
6499.60	0.72	52.35	6498.78	52.43	-20.35	-48.56	0.26	52.65	247.26
6549.20	0.77	54.27	6548.38	51.82	-19.97	-48.04	0.13	52.03	247.43
6599.31	0.60	43.82	6598.49	51.27	-19.58	-47.59	0.42	51.46	247.63
6649.16	0.76	46.96	6648.34	50.74	-19.17	-47.16	0.32	50.91	247.88
6699.90	0.92	61.86	6699.07	50.04	-18.75	-46.56	0.53	50.20	248.07
6749.17	0.69	59.67	6748.33	49.37	-18.41	-45.96	0.46	49.51	248.17
6799.78	0.92	49.39	6798.94	48.70	-17.99	-45.39	0.53	48.82	248.37
6849.78	0.98	54.43	6848.93	47.92	-17.48	-44.74	0.20	48.03	248.65
6899.31	1.02	54.26	6898.45	47.10	-16.98	-44.03	0.10	47.19	248.91
6949.40	1.05	50.25	6948.53	46.25	-16.43	-43.32	0.15	46.33	249.23
7000.00	1.12	48.44	6999.13	45.37	-15.80	-42.59	0.16	45.43	249.64
7049.88	1.16	52.69	7048.99	44.45	-15.17	-41.83	0.19	44.49	250.06
7098.78	1.18	47.16	7097.89	43.53	-14.53	-41.06	0.23	43.56	250.51
7148.67	1.15	41.67	7147.77	42.64	-13.81	-40.35	0.23	42.65	251.11

Well Name: Carl A Miller B-No.14
Survey: Carl A Miller B-14
Survey Date: 3/21/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
7199.77	1.07	21.84	7198.86	41.90	-12.99	-39.84	0.76	41.90	251.95
7249.29	1.00	10.08	7248.37	41.41	-12.13	-39.59	0.45	41.41	252.96
7299.11	0.65	25.40	7298.19	41.01	-11.45	-39.39	0.82	41.02	253.80
7348.73	0.66	28.39	7347.80	40.62	-10.94	-39.14	0.07	40.64	254.38
7399.44	0.45	46.24	7398.51	40.23	-10.55	-38.85	0.52	40.26	254.81
7448.95	0.28	128.61	7448.02	39.99	-10.49	-38.62	1.01	40.02	254.80
7499.49	0.33	114.78	7498.56	39.81	-10.63	-38.39	0.17	39.83	254.53
7548.56	0.56	115.34	7547.62	39.53	-10.79	-38.05	0.47	39.55	254.17
7598.77	0.45	125.59	7597.83	39.23	-11.01	-37.66	0.27	39.24	253.71
7648.69	0.37	132.04	7647.76	39.03	-11.23	-37.38	0.20	39.03	253.28
7699.79	0.58	105.04	7698.85	38.73	-11.41	-37.01	0.60	38.73	252.87
7736.93	0.58	119.36	7735.99	38.44	-11.55	-36.67	0.39	38.44	252.52