



Gyroscopic Survey Report
for
K. P. Kauffman

Well Location	Weld County, Colorado
Well Name	Martin T. Hart No. 2
Rig Number	KPK 8
Survey Date	4/28/2014
Latitude	40.1043660°N
Longitude	104.8793450°W
North Reference	True North
Grid Correction	None
Depth Reference	Ground Elevation (5002.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 236.05Azim (deg)
Definitive Survey	Martin T. Hart #2
Operator(s)	Jon Valenzuela

Well Notes

Survey Report

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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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
50.37	0.68	1.92	50.37	-0.18	0.30	0.01	1.36	0.30	1.92
98.82	0.53	350.27	98.81	-0.44	0.81	-0.02	0.41	0.81	358.74
149.82	0.40	334.26	149.82	-0.56	1.20	-0.14	0.34	1.21	353.56
198.80	0.39	330.12	198.79	-0.60	1.50	-0.29	0.06	1.53	348.92
249.06	0.37	338.38	249.05	-0.64	1.80	-0.44	0.12	1.85	346.29
299.21	0.35	341.53	299.21	-0.72	2.10	-0.55	0.06	2.17	345.37
348.93	0.22	327.08	348.92	-0.76	2.32	-0.65	0.29	2.41	344.43
398.85	0.13	328.78	398.84	-0.76	2.44	-0.73	0.18	2.55	343.45
449.52	0.14	323.95	449.51	-0.76	2.54	-0.79	0.03	2.66	342.71
499.49	0.09	309.89	499.48	-0.75	2.62	-0.86	0.10	2.75	341.85
549.17	0.11	305.89	549.16	-0.72	2.67	-0.93	0.03	2.83	340.87
599.23	0.10	331.23	599.22	-0.71	2.73	-0.98	0.09	2.91	340.20
649.63	0.08	323.46	649.62	-0.71	2.80	-1.03	0.04	2.98	339.87
699.82	0.12	311.41	699.81	-0.70	2.86	-1.09	0.09	3.06	339.22
748.97	0.08	314.20	748.96	-0.68	2.92	-1.15	0.08	3.14	338.52
798.85	0.23	318.19	798.84	-0.66	3.02	-1.24	0.31	3.27	337.66
849.89	0.32	304.12	849.88	-0.59	3.18	-1.43	0.22	3.48	335.78
899.00	0.20	298.90	898.98	-0.50	3.30	-1.62	0.25	3.67	333.85
948.67	0.19	309.50	948.66	-0.43	3.39	-1.76	0.08	3.82	332.57
999.04	0.26	308.82	999.03	-0.38	3.52	-1.92	0.13	4.01	331.43
1049.86	0.37	308.68	1049.85	-0.29	3.70	-2.14	0.21	4.27	329.98
1099.49	0.31	307.70	1099.48	-0.20	3.88	-2.37	0.12	4.54	328.59
1148.43	0.33	305.57	1148.42	-0.11	4.04	-2.59	0.04	4.80	327.37
1199.13	0.33	293.87	1199.11	0.02	4.19	-2.84	0.13	5.06	325.84
1249.79	0.32	293.29	1249.77	0.17	4.30	-3.10	0.03	5.30	324.19
1298.98	0.32	275.34	1298.96	0.35	4.37	-3.36	0.20	5.51	322.39
1349.47	0.36	263.16	1349.46	0.60	4.36	-3.66	0.16	5.70	319.98
1399.88	0.38	250.23	1399.86	0.91	4.29	-3.98	0.17	5.85	317.13
1449.05	0.33	255.26	1449.03	1.20	4.19	-4.27	0.12	5.99	314.48
1499.38	0.31	258.12	1499.36	1.46	4.13	-4.55	0.05	6.14	312.25
1549.69	0.39	246.48	1549.67	1.76	4.03	-4.84	0.21	6.30	309.82
1599.79	0.41	251.98	1599.77	2.10	3.91	-5.16	0.08	6.47	307.14
1649.51	0.43	249.56	1649.48	2.45	3.79	-5.50	0.06	6.68	304.55
1698.72	0.41	249.38	1698.70	2.80	3.66	-5.84	0.04	6.89	302.09
1748.79	0.44	241.41	1748.76	3.17	3.51	-6.18	0.14	7.11	299.57

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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
1798.36	0.51	242.11	1798.33	3.58	3.31	-6.54	0.14	7.33	296.83
1848.93	0.56	235.86	1848.89	4.05	3.07	-6.95	0.15	7.60	293.81
1899.41	0.63	236.06	1899.37	4.58	2.77	-7.38	0.14	7.89	290.58
1949.60	0.61	241.33	1949.56	5.12	2.49	-7.85	0.12	8.23	287.60
1999.65	0.61	244.29	1999.61	5.65	2.25	-8.32	0.06	8.62	285.11
2049.18	0.61	251.08	2049.14	6.16	2.05	-8.81	0.15	9.04	283.09
2098.70	0.47	236.57	2098.66	6.62	1.85	-9.23	0.40	9.41	281.34
2148.98	0.42	230.23	2148.93	7.01	1.62	-9.54	0.14	9.67	279.64
2198.79	0.44	221.39	2198.74	7.37	1.36	-9.80	0.14	9.90	277.91
2249.47	0.41	199.32	2249.42	7.70	1.04	-9.99	0.32	10.05	275.97
2299.62	0.50	207.16	2299.57	8.04	0.68	-10.15	0.21	10.17	273.83
2350.00	0.49	215.43	2349.95	8.43	0.31	-10.38	0.14	10.38	271.71
2398.90	0.45	221.44	2398.84	8.82	-0.01	-10.63	0.13	10.63	269.96
2449.27	0.36	226.41	2449.21	9.17	-0.26	-10.87	0.20	10.87	268.60
2499.54	0.36	210.13	2499.48	9.46	-0.51	-11.06	0.20	11.08	267.36
2549.74	0.45	213.36	2549.68	9.79	-0.81	-11.25	0.18	11.28	265.88
2599.89	0.39	230.85	2599.83	10.13	-1.08	-11.49	0.28	11.54	264.63
2648.63	0.44	206.53	2648.57	10.46	-1.35	-11.70	0.38	11.78	263.41
2698.79	0.67	213.12	2698.73	10.90	-1.77	-11.95	0.47	12.08	261.56
2748.80	0.78	215.45	2748.73	11.49	-2.29	-12.31	0.22	12.52	259.44
2798.83	0.66	208.76	2798.76	12.06	-2.82	-12.64	0.29	12.95	257.41
2848.89	0.63	205.21	2848.82	12.56	-3.33	-12.90	0.10	13.32	255.54
2898.59	0.75	214.68	2898.51	13.10	-3.84	-13.20	0.33	13.75	253.76
2949.77	0.65	210.36	2949.68	13.67	-4.37	-13.54	0.22	14.23	252.10
2999.43	0.79	209.52	2999.35	14.24	-4.92	-13.85	0.27	14.70	250.46
3049.10	0.65	226.94	3049.01	14.82	-5.41	-14.23	0.52	15.22	249.20
3099.69	0.66	219.99	3099.59	15.38	-5.82	-14.62	0.16	15.74	248.28
3149.19	0.62	231.47	3149.09	15.92	-6.21	-15.01	0.27	16.25	247.54
3198.72	0.58	224.81	3198.62	16.44	-6.55	-15.40	0.15	16.74	246.95
3249.52	0.49	220.73	3249.42	16.90	-6.90	-15.73	0.19	17.17	246.30
3298.95	0.51	216.85	3298.85	17.31	-7.24	-16.00	0.07	17.56	245.65
3349.63	0.59	231.52	3349.52	17.78	-7.58	-16.34	0.32	18.01	245.10
3398.98	0.48	233.30	3398.88	18.24	-7.86	-16.70	0.21	18.46	244.79
3449.61	0.54	236.34	3449.50	18.70	-8.12	-17.07	0.12	18.90	244.55
3498.81	0.38	248.94	3498.70	19.08	-8.31	-17.41	0.39	19.29	244.49
3549.75	0.57	235.00	3549.64	19.50	-8.51	-17.77	0.43	19.71	244.41

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3598.92	0.57	242.16	3598.80	19.98	-8.77	-18.19	0.14	20.19	244.27
3649.78	0.65	235.18	3649.66	20.52	-9.05	-18.65	0.21	20.73	244.12
3699.29	0.77	220.51	3699.17	21.12	-9.46	-19.09	0.44	21.31	243.64
3749.47	1.10	215.47	3749.34	21.89	-10.10	-19.59	0.68	22.04	242.71
3799.46	1.41	209.53	3799.32	22.89	-11.03	-20.17	0.68	22.99	241.33
3849.49	1.34	211.21	3849.34	23.97	-12.06	-20.77	0.17	24.02	239.86
3899.70	1.38	216.06	3899.54	25.07	-13.05	-21.43	0.24	25.09	238.66
3949.60	1.45	220.46	3949.42	26.24	-14.02	-22.19	0.26	26.25	237.73
3999.45	1.35	223.66	3999.25	27.42	-14.92	-23.01	0.25	27.42	237.04
4049.17	1.47	228.22	4048.96	28.62	-15.77	-23.89	0.34	28.62	236.57
4098.91	1.53	230.47	4098.68	29.92	-16.62	-24.88	0.16	29.92	236.26
4149.85	1.47	235.13	4149.60	31.25	-17.42	-25.94	0.26	31.25	236.11
4199.72	1.59	235.16	4199.46	32.58	-18.18	-27.03	0.23	32.58	236.07
4249.45	1.50	239.26	4249.16	33.92	-18.91	-28.16	0.28	33.92	236.11
4298.79	1.41	238.22	4298.49	35.17	-19.56	-29.23	0.19	35.17	236.21
4349.85	1.50	239.63	4349.54	36.47	-20.23	-30.34	0.18	36.47	236.30
4399.43	1.31	238.11	4399.10	37.68	-20.86	-31.38	0.39	37.68	236.39
4448.94	1.03	242.50	4448.60	38.69	-21.36	-32.26	0.59	38.69	236.48
4499.21	0.98	237.43	4498.86	39.57	-21.80	-33.02	0.20	39.57	236.56
4549.97	0.99	226.99	4549.62	40.43	-22.34	-33.71	0.35	40.43	236.47
4599.02	0.91	232.13	4598.66	41.24	-22.86	-34.32	0.23	41.24	236.33
4648.93	1.00	217.61	4648.56	42.05	-23.45	-34.90	0.52	42.05	236.10
4699.72	0.63	254.61	4699.35	42.73	-23.88	-35.44	1.23	42.73	236.03
4739.38	0.79	224.03	4739.01	43.21	-24.13	-35.84	1.02	43.21	236.05