

Gyroscopic Survey Report for:

K.P. Kauffman

API: 05-123-08695

Well Location: Weld County, Colorado

Well Name: **Martin T. Hart F No. 1**

Rig Number: KPK 2

Survey Date: 4/17/2014

Latitude: 40.1042470°N -104.88388°W

North Reference: True North

Grid Correction: None

Depth Reference: Ground Level (5014.00 ft)

Calculation Method: Minimum Curvature

Section (VS) Ref: 0.00N (ft), 0.00E (ft), 300.34Azim (deg)

Definitive Survey: Kpk Martin T Hart No. 1 outrun survey definitive

Operator(s): Jon Valenzuela

Measured Depth ft	Inclination deg	Azimuth deg	True Vertical Depth ft	Vertical Section ft	N/S ft	E/W ft	Dogleg Severity °/100ft	Closure Distance ft	Closure Direction deg
0	0	0	0	0	0	0	Invalid	0	0
50.42	0.35	144.54	50.42	-0.14	-0.13	0.09	0.7	0.16	144.54
98.76	0.36	142.2	98.76	-0.42	-0.37	0.27	0.03	0.45	143.76
149.5	0.43	122.35	149.5	-0.76	-0.6	0.53	0.31	0.8	138.39
198.95	0.41	125.63	198.95	-1.12	-0.8	0.83	0.06	1.15	133.85
249.12	0.47	142.51	249.11	-1.49	-1.07	1.11	0.28	1.54	134.04
299.28	0.52	170.43	299.27	-1.83	-1.45	1.27	0.48	1.93	138.92
349.58	0.65	169.97	349.57	-2.16	-1.96	1.35	0.26	2.38	145.32
399.78	0.76	179.94	399.77	-2.51	-2.57	1.4	0.33	2.93	151.35
449.12	0.84	190.69	449.1	-2.8	-3.26	1.34	0.35	3.52	157.67
499.28	0.54	203.92	499.26	-2.95	-3.84	1.17	0.68	4.01	163.01
549	0.66	219.04	548.98	-2.93	-4.28	0.9	0.4	4.37	168.17
599.13	0.78	213.64	599.1	-2.87	-4.79	0.52	0.27	4.81	173.74
649.23	0.8	213.97	649.2	-2.83	-5.36	0.14	0.03	5.36	178.48
699.7	0.98	225.86	699.66	-2.69	-5.95	-0.37	0.52	5.96	183.51
749.29	1.4	233.82	749.24	-2.34	-6.6	-1.16	0.89	6.7	189.95
799.26	1.47	226.21	799.19	-1.92	-7.41	-2.11	0.4	7.7	195.92
849.7	1.27	229.39	849.62	-1.56	-8.22	-3	0.43	8.75	200.07
899.55	1.47	230.45	899.45	-1.16	-8.98	-3.91	0.41	9.8	203.54
949.34	1.34	237.33	949.23	-0.68	-9.7	-4.89	0.42	10.87	206.77
998.63	1.12	234.16	998.51	-0.22	-10.3	-5.77	0.46	11.8	209.28
1049.47	0.94	240.54	1049.34	0.19	-10.79	-6.54	0.43	12.62	211.21
1099.75	1.05	250.94	1099.61	0.7	-11.14	-7.33	0.42	13.34	213.33
1148.55	1.02	250.86	1148.41	1.27	-11.43	-8.16	0.05	14.05	215.53
1198.95	0.84	246.02	1198.8	1.78	-11.73	-8.92	0.4	14.74	217.26
1249.73	0.85	268.77	1249.58	2.31	-11.89	-9.64	0.66	15.3	219.03
1299.94	0.94	261.64	1299.78	2.95	-11.96	-10.42	0.28	15.86	221.06
1349.58	0.95	259.89	1349.41	3.58	-12.09	-11.22	0.06	16.49	222.87
1398.72	0.85	261.42	1398.54	4.17	-12.21	-11.98	0.21	17.11	224.45
1449.15	0.97	266.9	1448.97	4.82	-12.29	-12.78	0.3	17.73	226.12
1499.57	1.07	263.4	1499.38	5.56	-12.37	-13.68	0.23	18.44	227.87
1549.9	0.99	260.33	1549.7	6.27	-12.5	-14.57	0.19	19.2	229.39
1598.92	0.97	269.65	1598.71	6.95	-12.57	-15.41	0.33	19.88	230.79
1649.95	1.06	270.66	1649.74	7.73	-12.57	-16.31	0.19	20.59	232.39
1698.77	1.07	270.62	1698.55	8.52	-12.56	-17.22	0.01	21.31	233.9
1748.86	1.02	270.71	1748.63	9.31	-12.55	-18.13	0.1	22.05	235.32
1798.81	0.99	279.34	1798.57	10.1	-12.47	-19	0.31	22.73	236.72
1848.8	1.08	279.53	1848.56	10.94	-12.32	-19.89	0.19	23.4	238.22
1899.55	1.03	277.09	1899.29	11.81	-12.19	-20.81	0.14	24.12	239.65
1948.53	1.02	279.52	1948.27	12.62	-12.06	-21.68	0.09	24.81	240.91
1999.14	1	293.76	1998.87	13.48	-11.81	-22.53	0.5	25.43	242.33
2048.78	1.12	296.53	2048.51	14.39	-11.42	-23.36	0.27	26	243.95
2098.93	1.32	293.49	2098.64	15.46	-10.97	-24.33	0.42	26.69	245.73
2148.53	1.6	290.94	2148.23	16.71	-10.49	-25.5	0.57	27.57	247.63
2199.6	1.29	297.52	2199.28	17.98	-9.97	-26.67	0.69	28.47	249.5
2249.21	1.76	302.19	2248.87	19.3	-9.31	-27.81	0.99	29.33	251.49
2298.73	1.73	296.57	2298.36	20.81	-8.57	-29.13	0.35	30.36	253.61
2349.87	1.66	301.77	2349.48	22.32	-7.83	-30.45	0.33	31.44	255.58
2399.28	1.48	308.61	2398.88	23.67	-7.05	-31.56	0.52	32.34	257.4
2448.54	1.33	323.19	2448.12	24.83	-6.2	-32.4	0.79	32.99	259.17
2499.62	1.27	323.52	2499.19	25.9	-5.27	-33.09	0.11	33.51	260.95
2548.74	1.52	315.75	2548.29	27.03	-4.36	-33.87	0.64	34.15	262.66
2598.96	1.27	324.25	2598.49	28.18	-3.43	-34.66	0.65	34.83	264.34
2649.46	1.32	331.13	2648.99	29.19	-2.47	-35.27	0.33	35.36	265.99

2699.77	1.22	343.02	2699.28	30.08	-1.45	-35.71	0.56	35.74	267.68
2749.9	1.4	345.76	2749.4	30.91	-0.35	-36.01	0.38	36.01	269.45
2798.69	1.31	349.93	2798.18	31.68	0.78	-36.26	0.28	36.26	271.23
2848.81	1.33	347.62	2848.28	32.45	1.91	-36.48	0.11	36.53	272.99
2899.31	1.26	344.23	2898.77	33.24	3.01	-36.76	0.21	36.88	274.68
2949.32	1.09	349.39	2948.77	33.95	4.01	-36.99	0.39	37.21	276.18
2999.38	1.13	356.86	2998.82	34.54	4.97	-37.11	0.3	37.44	277.63
3049.43	1.11	357.62	3048.86	35.07	5.95	-37.15	0.06	37.63	279.09
3099.46	1.08	357.12	3098.88	35.59	6.9	-37.2	0.06	37.83	280.51
3149.17	1.03	359.43	3148.58	36.08	7.81	-37.23	0.13	38.04	281.86
3199.23	1.03	359.02	3198.63	36.54	8.71	-37.24	0.02	38.24	283.17
3249.76	1.05	1.93	3249.16	37	9.63	-37.23	0.12	38.46	284.5
3298.79	1.08	358.8	3298.18	37.45	10.54	-37.23	0.13	38.69	285.81
3348.94	1.1	4.21	3348.32	37.91	11.5	-37.2	0.21	38.94	287.17
3399.16	1.09	2.58	3398.53	38.35	12.45	-37.14	0.06	39.18	288.54
3449.32	1.13	353.56	3448.68	38.87	13.42	-37.18	0.36	39.53	289.86
3499.4	1.15	357.69	3498.76	39.43	14.42	-37.25	0.17	39.95	291.16
3549.86	1.17	2.7	3549.2	39.95	15.44	-37.25	0.21	40.32	292.51
3599.6	1.09	357.78	3598.93	40.44	16.42	-37.24	0.25	40.7	293.79
3649.89	1.08	4.13	3649.22	40.9	17.37	-37.23	0.24	41.08	295.01
3699.13	1.08	12.75	3698.45	41.25	18.28	-37.09	0.33	41.35	296.24
3749.81	0.87	17.24	3749.12	41.48	19.12	-36.87	0.44	41.53	297.41
3799.16	0.74	15.94	3798.46	41.64	19.78	-36.67	0.27	41.67	298.35
3849.66	0.45	341.3	3848.96	41.88	20.29	-36.65	0.89	41.89	298.97
3899.31	0.52	322.16	3898.6	42.23	20.65	-36.85	0.35	42.24	299.27
3949.88	0.61	313.68	3949.17	42.71	21.02	-37.18	0.26	42.71	299.48
3999.09	0.85	314.23	3998.38	43.32	21.45	-37.63	0.48	43.32	299.69
4049.5	0.9	308.69	4048.78	44.07	21.96	-38.21	0.19	44.07	299.89
4098.5	0.83	305.87	4097.78	44.8	22.41	-38.8	0.16	44.8	300.01
4149.4	1.22	309.26	4148.67	45.71	22.97	-39.52	0.78	45.71	300.17
4199.75	1.27	315.19	4199.01	46.77	23.7	-40.32	0.27	46.77	300.45
4249.99	1.27	320	4249.23	47.84	24.52	-41.07	0.21	47.84	300.84
4298.84	1.25	315.62	4298.07	48.86	25.32	-41.8	0.2	48.87	301.21
4349.89	1.26	307.63	4349.11	49.96	26.06	-42.63	0.34	49.96	301.44
4399.29	1.32	306.53	4398.5	51.06	26.73	-43.51	0.13	51.07	301.56
4448.57	1.26	296.07	4447.77	52.16	27.31	-44.46	0.49	52.17	301.56
4499.55	1.08	295.11	4498.74	53.2	27.76	-45.4	0.35	53.21	301.44
4548.83	0.94	290.1	4548.01	54.06	28.09	-46.2	0.34	54.07	301.3
4599.59	0.94	292.14	4598.76	54.89	28.39	-46.98	0.07	54.89	301.15
4648.76	1.02	270.88	4647.93	55.67	28.55	-47.79	0.76	55.67	300.86
4699	0.68	276.37	4698.16	56.33	28.59	-48.54	0.71	56.33	300.5
4730.3	1.12	283.93	4729.46	56.79	28.69	-49.02	1.46	56.79	300.34