



Gyroscopic Survey Report
for
KP KAUFFMAN

Well Location	WELD
Well Name	CARTER 21-33
Rig Number	KPK
Survey Date	7/29/2014
Latitude	40.0999200°N
Longitude	104.7852100°W
North Reference	True North
Grid Correction	None
Depth Reference	GL (0.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 342.62Azim (deg)
Definitive Survey	CARTER 21-33
Operator(s)	J. MONICA

Well Notes

Survey Report

Well Name: CARTER 21-33
Survey: CARTER 21-33
Survey Date: 7/29/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
49.71	0.33	18.86	49.71	0.12	0.14	0.05	0.15	18.86	0.67
74.71	0.31	19.54	74.71	0.23	0.27	0.09	0.29	19.02	0.09
99.80	0.46	347.49	99.80	0.38	0.43	0.09	0.44	12.32	1.01
124.84	0.43	344.41	124.84	0.58	0.62	0.05	0.62	4.37	0.13
149.91	0.48	353.85	149.91	0.78	0.82	0.01	0.82	0.75	0.36
174.89	0.58	351.89	174.89	1.01	1.05	-0.02	1.05	358.99	0.39
198.74	0.55	342.74	198.73	1.24	1.28	-0.07	1.28	356.89	0.40
224.66	0.46	346.70	224.66	1.47	1.50	-0.13	1.50	355.04	0.37
249.44	0.53	349.13	249.43	1.68	1.71	-0.17	1.71	354.16	0.31
274.49	0.52	348.90	274.48	1.91	1.93	-0.22	1.94	353.56	0.05
298.94	0.55	345.81	298.93	2.13	2.15	-0.27	2.17	352.90	0.17
324.17	0.48	341.99	324.16	2.36	2.37	-0.33	2.39	352.06	0.28
349.69	0.43	347.33	349.68	2.56	2.57	-0.38	2.60	351.47	0.26
374.37	0.49	349.52	374.36	2.76	2.76	-0.42	2.80	351.26	0.25
398.96	0.47	342.50	398.95	2.97	2.96	-0.47	3.00	350.90	0.25
424.37	0.46	340.88	424.36	3.18	3.16	-0.54	3.21	350.31	0.08
449.46	0.49	345.20	449.44	3.38	3.36	-0.60	3.41	349.88	0.18
474.53	0.52	337.22	474.52	3.60	3.57	-0.67	3.63	349.34	0.32
498.61	0.42	336.09	498.59	3.80	3.75	-0.75	3.82	348.70	0.43
524.48	0.46	346.82	524.46	4.00	3.94	-0.81	4.02	348.35	0.36
548.98	0.52	332.96	548.96	4.21	4.13	-0.88	4.22	347.92	0.53
574.51	0.39	335.00	574.49	4.41	4.31	-0.97	4.42	347.28	0.49
598.90	0.37	318.24	598.88	4.56	4.45	-1.06	4.57	346.58	0.46
623.78	0.41	315.29	623.76	4.71	4.57	-1.18	4.72	345.55	0.20
649.70	0.39	319.64	649.68	4.88	4.70	-1.30	4.88	344.54	0.14
674.64	0.45	313.82	674.62	5.04	4.84	-1.43	5.04	343.57	0.27
699.04	0.32	314.42	699.02	5.19	4.95	-1.54	5.19	342.68	0.51
724.85	0.44	320.26	724.83	5.34	5.08	-1.66	5.34	341.91	0.48
749.74	0.37	299.44	749.72	5.49	5.19	-1.79	5.49	340.98	0.66
774.01	0.42	308.47	773.99	5.62	5.28	-1.93	5.62	339.97	0.33
799.76	0.42	300.15	799.74	5.76	5.39	-2.08	5.78	338.89	0.23
824.52	0.38	306.63	824.49	5.90	5.48	-2.22	5.92	337.92	0.23
849.38	0.45	302.39	849.36	6.04	5.58	-2.37	6.07	336.98	0.32
873.55	0.38	304.23	873.53	6.17	5.68	-2.52	6.21	336.08	0.33
899.89	0.44	305.66	899.86	6.32	5.79	-2.67	6.38	335.21	0.24

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
923.65	0.34	306.45	923.63	6.45	5.88	-2.80	6.52	334.52	0.43
949.78	0.43	303.77	949.75	6.59	5.98	-2.95	6.67	333.78	0.37
974.32	0.30	293.02	974.29	6.70	6.06	-3.08	6.80	333.04	0.61
998.53	0.45	308.96	998.50	6.82	6.14	-3.21	6.93	332.39	0.77
1024.05	0.34	297.32	1024.02	6.96	6.24	-3.36	7.09	331.71	0.53
1048.56	0.36	315.59	1048.53	7.08	6.33	-3.48	7.23	331.20	0.47
1074.86	0.21	314.02	1074.83	7.20	6.43	-3.57	7.35	330.92	0.59
1099.41	0.29	329.93	1099.38	7.30	6.51	-3.64	7.46	330.81	0.43
1124.99	0.23	312.33	1124.95	7.41	6.60	-3.71	7.57	330.68	0.39
1149.37	0.22	332.37	1149.34	7.50	6.68	-3.77	7.67	330.57	0.33
1174.78	0.30	318.06	1174.75	7.61	6.77	-3.83	7.78	330.48	0.38
1199.20	0.29	326.02	1199.17	7.72	6.87	-3.91	7.90	330.35	0.17
1223.51	0.28	312.07	1223.48	7.83	6.96	-3.99	8.02	330.18	0.28
1249.86	0.08	330.24	1249.83	7.90	7.02	-4.04	8.10	330.04	0.79
1274.16	0.17	303.57	1274.12	7.95	7.05	-4.08	8.15	329.93	0.45
1298.60	0.10	313.87	1298.57	7.99	7.08	-4.13	8.20	329.77	0.30
1323.31	0.26	319.35	1323.28	8.07	7.14	-4.18	8.28	329.66	0.65
1349.05	0.18	305.26	1349.02	8.15	7.21	-4.25	8.37	329.48	0.39
1374.32	0.17	312.59	1374.29	8.21	7.26	-4.31	8.44	329.29	0.09
1399.57	0.17	288.49	1399.53	8.27	7.29	-4.37	8.50	329.06	0.28
1423.75	0.18	314.10	1423.72	8.32	7.33	-4.43	8.57	328.84	0.33
1448.98	0.18	267.62	1448.95	8.37	7.36	-4.50	8.63	328.54	0.56
1474.49	0.14	304.16	1474.45	8.40	7.37	-4.57	8.67	328.23	0.41
1499.69	0.15	280.45	1499.65	8.44	7.40	-4.62	8.72	327.99	0.23
1524.86	0.12	261.40	1524.82	8.46	7.40	-4.68	8.76	327.68	0.20
1549.19	0.18	281.00	1549.15	8.48	7.40	-4.74	8.79	327.35	0.34
1574.10	0.12	272.30	1574.07	8.51	7.41	-4.81	8.84	327.02	0.29
1599.21	0.19	268.36	1599.18	8.53	7.41	-4.88	8.87	326.66	0.31
1624.91	0.20	247.09	1624.88	8.54	7.39	-4.96	8.90	326.13	0.29
1649.82	0.17	257.75	1649.79	8.54	7.37	-5.04	8.93	325.63	0.19
1674.43	0.26	260.39	1674.40	8.55	7.35	-5.13	8.96	325.08	0.36
1699.98	0.21	233.16	1699.95	8.54	7.31	-5.23	8.99	324.45	0.48
1724.45	0.23	240.97	1724.42	8.52	7.26	-5.30	8.99	323.85	0.16
1748.84	0.21	236.61	1748.81	8.49	7.21	-5.39	9.00	323.25	0.12
1774.86	0.23	229.57	1774.82	8.46	7.15	-5.47	9.00	322.62	0.13
1799.76	0.32	231.29	1799.72	8.41	7.08	-5.56	9.00	321.85	0.37

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS °/100ft
1824.67	0.23	252.90	1824.63	8.39	7.02	-5.66	9.02	321.11	0.55
1849.69	0.32	235.86	1849.65	8.37	6.96	-5.77	9.04	320.38	0.47
1874.10	0.29	239.44	1874.06	8.34	6.90	-5.87	9.06	319.57	0.12
1899.29	0.27	252.56	1899.25	8.32	6.85	-5.99	9.09	318.83	0.27
1924.93	0.34	233.90	1924.89	8.30	6.78	-6.11	9.13	318.00	0.47
1949.03	0.29	254.79	1949.00	8.28	6.72	-6.22	9.16	317.22	0.52
1974.37	0.32	243.86	1974.34	8.27	6.68	-6.35	9.21	316.45	0.26
1999.58	0.34	238.13	1999.54	8.24	6.61	-6.47	9.25	315.57	0.16
2024.92	0.34	261.99	2024.88	8.23	6.55	-6.61	9.31	314.75	0.56
2049.92	0.38	256.24	2049.88	8.25	6.52	-6.77	9.40	313.96	0.23
2073.56	0.35	257.57	2073.52	8.26	6.49	-6.91	9.48	313.19	0.12
2099.55	0.33	257.78	2099.51	8.27	6.46	-7.07	9.57	312.42	0.08
2124.81	0.42	262.24	2124.77	8.30	6.43	-7.23	9.67	311.65	0.35
2149.91	0.36	274.71	2149.87	8.34	6.42	-7.40	9.80	310.96	0.40
2174.51	0.40	300.30	2174.47	8.43	6.47	-7.55	9.95	310.60	0.70
2198.93	0.39	302.84	2198.89	8.56	6.56	-7.69	10.11	310.45	0.09
2223.90	0.44	310.10	2223.86	8.71	6.67	-7.84	10.29	310.39	0.30
2249.46	0.51	316.05	2249.42	8.89	6.81	-7.99	10.50	310.45	0.34
2274.46	0.48	310.68	2274.42	9.08	6.96	-8.15	10.72	310.51	0.23
2299.53	0.32	306.73	2299.49	9.22	7.07	-8.28	10.89	310.49	0.62
2324.42	0.46	318.70	2324.37	9.37	7.19	-8.41	11.06	310.53	0.63
2349.81	0.41	304.77	2349.76	9.54	7.32	-8.55	11.25	310.56	0.45
2374.17	0.33	294.53	2374.12	9.65	7.40	-8.68	11.41	310.42	0.42
2399.14	0.33	304.26	2399.09	9.76	7.47	-8.81	11.55	310.28	0.23
2424.56	0.27	283.04	2424.51	9.85	7.52	-8.93	11.68	310.11	0.50
2449.97	0.35	258.38	2449.92	9.88	7.52	-9.06	11.78	309.68	0.59
2474.31	0.27	204.86	2474.26	9.85	7.45	-9.16	11.81	309.13	1.17
2499.51	0.29	187.78	2499.46	9.75	7.34	-9.19	11.76	308.59	0.34
2524.91	0.45	169.00	2524.86	9.59	7.17	-9.18	11.65	308.00	0.80
2549.11	0.65	157.79	2549.06	9.36	6.95	-9.11	11.46	307.34	0.91
2573.90	0.69	151.70	2573.85	9.07	6.69	-8.99	11.21	306.67	0.34
2598.96	0.77	157.48	2598.91	8.76	6.40	-8.85	10.93	305.88	0.43
2624.09	0.66	155.42	2624.04	8.44	6.12	-8.73	10.66	305.02	0.44
2649.27	0.71	165.44	2649.22	8.15	5.83	-8.63	10.42	304.06	0.51
2674.50	0.72	162.69	2674.44	7.83	5.53	-8.54	10.18	302.93	0.14
2699.66	0.74	166.92	2699.60	7.51	5.22	-8.46	9.94	301.70	0.23

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS °/100ft
2724.34	0.67	184.00	2724.28	7.22	4.93	-8.43	9.77	300.29	0.89
2748.57	0.67	190.67	2748.50	6.97	4.65	-8.47	9.66	298.75	0.32
2774.28	0.64	191.94	2774.21	6.71	4.36	-8.53	9.58	297.07	0.11
2799.41	0.51	205.45	2799.35	6.50	4.12	-8.60	9.54	295.59	0.77
2824.58	0.49	212.31	2824.51	6.35	3.93	-8.71	9.56	294.28	0.25
2849.18	0.36	217.85	2849.11	6.24	3.78	-8.81	9.59	293.22	0.56
2874.48	0.27	250.16	2874.41	6.19	3.70	-8.92	9.65	292.53	0.76
2899.05	0.30	254.42	2898.98	6.19	3.66	-9.03	9.75	292.06	0.15
2923.97	0.27	267.18	2923.90	6.21	3.64	-9.16	9.85	291.69	0.28
2949.52	0.41	262.85	2949.45	6.24	3.63	-9.31	9.99	291.29	0.53
2973.65	0.42	267.01	2973.58	6.28	3.61	-9.48	10.14	290.86	0.14
2999.98	0.44	282.40	2999.91	6.35	3.63	-9.67	10.33	290.56	0.44
3024.96	0.47	285.33	3024.89	6.46	3.68	-9.87	10.53	290.43	0.16
3049.37	0.51	291.46	3049.30	6.58	3.74	-10.07	10.74	290.40	0.27
3074.81	0.46	292.78	3074.73	6.72	3.82	-10.26	10.95	290.43	0.21
3099.17	0.53	303.45	3099.10	6.87	3.92	-10.45	11.16	290.58	0.47
3124.59	0.93	341.18	3124.52	7.16	4.18	-10.61	11.41	291.51	2.37
3148.64	1.22	357.14	3148.56	7.60	4.62	-10.69	11.64	293.38	1.74
3174.87	1.34	4.57	3174.79	8.16	5.21	-10.68	11.88	295.99	0.77
3199.70	1.33	6.80	3199.60	8.69	5.78	-10.62	12.09	298.56	0.21
3225.00	1.38	9.11	3224.90	9.23	6.37	-10.54	12.31	301.16	0.28
3249.82	1.40	6.72	3249.72	9.77	6.97	-10.45	12.56	303.68	0.25
3274.50	1.23	5.10	3274.39	10.29	7.53	-10.40	12.84	305.92	0.72
3299.78	1.10	4.88	3299.66	10.77	8.04	-10.35	13.11	307.85	0.49
3323.66	1.15	5.91	3323.54	11.20	8.51	-10.31	13.37	309.55	0.20
3349.19	1.06	4.17	3349.06	11.66	9.00	-10.26	13.65	311.25	0.37
3374.94	0.92	2.62	3374.80	12.07	9.44	-10.24	13.93	312.69	0.57
3399.75	0.84	4.89	3399.62	12.43	9.82	-10.21	14.17	313.89	0.33
3424.60	0.77	358.41	3424.46	12.75	10.17	-10.20	14.41	314.92	0.47
3449.39	0.72	359.65	3449.25	13.06	10.49	-10.21	14.64	315.80	0.20
3474.03	0.74	354.32	3473.89	13.37	10.81	-10.22	14.88	316.59	0.28
3498.58	0.55	2.99	3498.44	13.63	11.08	-10.23	15.08	317.28	0.84
3524.11	0.56	354.40	3523.97	13.87	11.33	-10.24	15.27	317.90	0.33
3549.07	0.59	355.18	3548.93	14.12	11.58	-10.26	15.47	318.46	0.13
3574.02	0.62	0.87	3573.88	14.37	11.84	-10.27	15.68	319.07	0.26
3599.65	0.54	356.82	3599.50	14.62	12.10	-10.27	15.87	319.67	0.33

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
3624.10	0.66	356.31	3623.95	14.87	12.36	-10.29	16.08	320.22	0.47
3649.91	0.66	350.72	3649.76	15.16	12.65	-10.32	16.33	320.79	0.25
3674.86	0.60	354.99	3674.71	15.43	12.92	-10.36	16.56	321.29	0.31
3699.81	0.69	352.14	3699.65	15.70	13.20	-10.39	16.80	321.80	0.38
3724.26	0.79	354.78	3724.10	16.01	13.51	-10.42	17.07	322.35	0.45
3748.99	0.80	348.86	3748.83	16.35	13.85	-10.47	17.37	322.91	0.33
3774.79	0.88	353.12	3774.63	16.72	14.23	-10.53	17.70	323.49	0.39
3799.11	0.84	358.72	3798.94	17.08	14.59	-10.56	18.01	324.11	0.38
3824.95	0.91	357.55	3824.78	17.46	14.98	-10.57	18.34	324.80	0.29
3849.68	1.15	353.11	3849.50	17.89	15.43	-10.61	18.72	325.48	1.01
3874.40	1.14	357.13	3874.22	18.37	15.92	-10.65	19.15	326.21	0.33
3899.09	1.31	351.27	3898.90	18.89	16.44	-10.71	19.62	326.93	0.85
3924.53	1.33	355.78	3924.34	19.47	17.02	-10.77	20.15	327.68	0.42
3949.63	1.32	355.65	3949.44	20.03	17.60	-10.82	20.66	328.43	0.03
3974.12	1.45	359.11	3973.91	20.60	18.20	-10.84	21.18	329.21	0.62
3999.54	1.58	351.62	3999.33	21.26	18.86	-10.90	21.79	329.99	0.94
4024.70	1.61	356.58	4024.48	21.94	19.56	-10.97	22.43	330.72	0.56
4048.77	1.74	357.64	4048.53	22.62	20.26	-11.00	23.06	331.49	0.59
4074.62	1.92	357.08	4074.37	23.42	21.09	-11.04	23.80	332.36	0.67
4098.90	1.83	354.89	4098.64	24.20	21.88	-11.10	24.53	333.10	0.48
4123.43	1.92	350.71	4123.16	24.98	22.67	-11.20	25.29	333.71	0.67
4148.41	1.95	350.81	4148.12	25.82	23.50	-11.33	26.09	334.26	0.12
4174.19	1.90	349.85	4173.89	26.68	24.36	-11.48	26.93	334.77	0.21
4198.77	1.84	347.78	4198.46	27.47	25.15	-11.64	27.71	335.17	0.39
4224.36	1.73	343.11	4224.03	28.27	25.92	-11.83	28.49	335.46	0.70
4249.76	1.63	341.29	4249.43	29.01	26.63	-12.06	29.23	335.63	0.47
4274.86	1.55	344.58	4274.51	29.71	27.29	-12.27	29.92	335.80	0.47
4299.97	1.20	353.79	4299.62	30.31	27.88	-12.39	30.51	336.05	1.66
4324.00	1.20	347.45	4323.64	30.81	28.38	-12.47	30.99	336.28	0.55
4349.07	0.92	2.08	4348.71	31.26	28.83	-12.52	31.43	336.53	1.56
4374.12	0.89	2.37	4373.75	31.63	29.23	-12.50	31.79	336.84	0.09
4399.15	0.98	18.38	4398.78	31.99	29.63	-12.43	32.13	337.25	1.10
4424.17	1.12	27.48	4423.79	32.33	30.05	-12.25	32.45	337.83	0.87
4448.83	1.06	33.33	4448.45	32.65	30.45	-12.01	32.74	338.48	0.51
4474.20	1.05	40.09	4473.82	32.93	30.83	-11.73	32.99	339.17	0.49
4499.91	0.99	32.25	4499.53	33.20	31.20	-11.46	33.24	339.83	0.60

Well Name: CARTER 21-33
Survey: CARTER 21-33
Survey Date: 7/29/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS °/100ft
4524.07	0.90	25.00	4523.68	33.47	31.55	-11.27	33.50	340.34	0.62
4549.26	0.76	28.84	4548.86	33.73	31.87	-11.10	33.75	340.79	0.58
4574.40	0.67	18.02	4574.00	33.97	32.16	-10.98	33.98	341.15	0.66
4598.95	0.58	14.65	4598.55	34.19	32.41	-10.90	34.20	341.41	0.38
4624.52	0.59	10.43	4624.12	34.42	32.67	-10.85	34.42	341.64	0.17
4648.96	0.55	17.46	4648.56	34.62	32.90	-10.79	34.63	341.85	0.32
4674.43	0.44	23.58	4674.03	34.80	33.11	-10.71	34.80	342.08	0.47
4699.83	0.48	28.63	4699.43	34.95	33.30	-10.62	34.95	342.31	0.21
4724.94	0.29	24.96	4724.54	35.07	33.44	-10.54	35.07	342.50	0.76
4750.15	0.25	11.14	4749.74	35.16	33.56	-10.51	35.16	342.62	0.30