



Gyroscopic Survey Report
for
KP KAUFMAN

Well Location	WELD COUNTY
Well Name	GEORGE GERHARDT #2
Rig Number	
Survey Date	10/7/2014
Latitude	40.1288980°N
Longitude	104.8416080°W
North Reference	True North
Grid Correction	None
Depth Reference	GL (4878.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 254.22Azim (deg)
Definitive Survey	GEORGE GERHARDT #2
Operator(s)	C KIRBY

Well Notes

API-05-123-08124

Well Name: GEORGE GERHARDT #2
Survey: GEORGE GERHARDT #2
Survey Date: 10/7/2014

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
87.56	0.14	233.47	87.56	0.10	-0.06	-0.08	0.16	0.10	233.47
121.13	0.12	265.92	121.13	0.17	-0.09	-0.15	0.22	0.17	239.49
148.98	0.10	304.14	148.98	0.21	-0.08	-0.20	0.26	0.21	248.71
171.65	0.09	298.66	171.65	0.24	-0.06	-0.23	0.06	0.24	255.79
197.31	0.04	230.64	197.31	0.26	-0.05	-0.25	0.32	0.26	257.81
220.35	0.14	214.83	220.35	0.29	-0.08	-0.28	0.44	0.29	253.15
248.73	0.18	202.04	248.73	0.34	-0.15	-0.31	0.17	0.35	243.93
272.44	0.17	202.86	272.44	0.39	-0.22	-0.34	0.02	0.40	237.15
299.82	0.21	223.65	299.82	0.46	-0.29	-0.39	0.29	0.49	233.04
323.15	0.25	230.76	323.15	0.54	-0.36	-0.46	0.21	0.58	232.15
345.72	0.24	231.89	345.72	0.63	-0.42	-0.54	0.05	0.68	232.03
373.65	0.23	239.13	373.65	0.74	-0.48	-0.63	0.11	0.80	232.52
396.25	0.22	221.94	396.25	0.82	-0.54	-0.70	0.30	0.88	232.35
424.06	0.15	224.61	424.06	0.90	-0.61	-0.76	0.26	0.97	231.50
447.48	0.22	207.65	447.48	0.95	-0.67	-0.80	0.37	1.04	230.31
474.49	0.13	191.46	474.49	1.00	-0.74	-0.83	0.37	1.12	228.32
497.78	0.23	204.89	497.78	1.05	-0.81	-0.86	0.47	1.18	226.65
521.07	0.32	215.69	521.06	1.13	-0.91	-0.92	0.46	1.29	225.33
548.19	0.33	209.93	548.18	1.24	-1.04	-1.00	0.13	1.44	223.98
571.42	0.33	220.45	571.42	1.35	-1.15	-1.08	0.26	1.57	223.23
598.40	0.43	219.31	598.39	1.50	-1.28	-1.19	0.37	1.75	222.88
621.75	0.45	217.78	621.74	1.64	-1.42	-1.30	0.12	1.93	222.48
644.85	0.28	220.46	644.85	1.76	-1.54	-1.39	0.77	2.08	222.22
673.29	0.42	210.11	673.28	1.89	-1.68	-1.49	0.55	2.25	221.61
697.29	0.45	220.20	697.29	2.03	-1.83	-1.60	0.34	2.43	221.14
724.97	0.24	222.18	724.96	2.17	-1.95	-1.71	0.76	2.59	221.12
748.78	0.50	212.64	748.77	2.29	-2.08	-1.79	1.11	2.74	220.82
772.60	0.51	213.55	772.59	2.45	-2.25	-1.91	0.05	2.95	220.28
795.62	0.52	213.28	795.61	2.60	-2.42	-2.02	0.04	3.16	219.83
824.09	0.47	212.79	824.08	2.79	-2.63	-2.16	0.15	3.40	219.34
847.10	0.77	213.76	847.09	2.98	-2.84	-2.29	1.26	3.65	218.94
870.88	0.74	215.66	870.87	3.22	-3.10	-2.47	0.15	3.96	218.60
898.54	0.71	217.95	898.52	3.50	-3.38	-2.68	0.15	4.31	218.45
922.31	0.71	222.30	922.30	3.74	-3.60	-2.87	0.23	4.60	218.56
946.07	0.71	219.01	946.05	3.99	-3.82	-3.06	0.17	4.90	218.69

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
973.62	0.73	220.87	973.60	4.27	-4.09	-3.28	0.12	5.24	218.77
997.52	0.74	223.65	997.50	4.53	-4.32	-3.49	0.15	5.55	218.96
1020.53	0.67	224.99	1020.51	4.78	-4.52	-3.69	0.30	5.83	219.22
1048.94	0.70	218.92	1048.91	5.07	-4.77	-3.92	0.27	6.17	219.37
1072.67	0.67	218.49	1072.64	5.30	-4.99	-4.09	0.11	6.46	219.34
1095.63	0.69	212.05	1095.60	5.51	-5.21	-4.25	0.35	6.73	219.17
1123.85	0.80	211.52	1123.81	5.78	-5.53	-4.44	0.39	7.09	218.79
1146.42	0.83	212.61	1146.39	6.02	-5.80	-4.61	0.16	7.41	218.50
1174.23	0.85	211.53	1174.20	6.32	-6.15	-4.83	0.07	7.82	218.17
1197.71	0.87	210.78	1197.67	6.58	-6.45	-5.01	0.11	8.16	217.86
1224.68	0.97	209.60	1224.63	6.89	-6.82	-5.23	0.36	8.59	217.48
1248.27	0.99	212.75	1248.23	7.18	-7.16	-5.44	0.25	8.99	217.20
1270.82	0.96	211.80	1270.77	7.47	-7.49	-5.64	0.16	9.37	217.00
1298.74	1.00	213.52	1298.68	7.82	-7.89	-5.90	0.20	9.85	216.79
1321.90	0.94	212.25	1321.84	8.12	-8.22	-6.11	0.29	10.24	216.64
1349.05	0.89	212.29	1348.99	8.44	-8.58	-6.34	0.17	10.67	216.46
1372.22	0.90	216.35	1372.15	8.72	-8.88	-6.55	0.28	11.04	216.39
1399.47	1.02	215.50	1399.40	9.08	-9.25	-6.82	0.42	11.49	216.37
1421.98	1.04	218.03	1421.91	9.40	-9.58	-7.06	0.22	11.90	216.39
1449.06	0.88	211.26	1448.99	9.75	-9.95	-7.32	0.72	12.35	216.33
1472.26	0.82	210.53	1472.19	10.00	-10.25	-7.50	0.25	12.69	216.19
1495.60	0.91	213.29	1495.52	10.26	-10.54	-7.68	0.40	13.05	216.07
1522.55	0.74	205.02	1522.47	10.54	-10.88	-7.87	0.75	13.43	215.89
1545.92	0.90	212.62	1545.83	10.77	-11.17	-8.04	0.82	13.76	215.72
1573.63	0.80	214.20	1573.54	11.08	-11.52	-8.26	0.36	14.18	215.65
1596.14	0.82	214.42	1596.05	11.33	-11.78	-8.44	0.06	14.49	215.62
1623.99	0.80	218.21	1623.90	11.64	-12.10	-8.68	0.20	14.89	215.64
1646.48	0.90	218.41	1646.38	11.91	-12.36	-8.88	0.43	15.22	215.70
1674.25	0.80	221.45	1674.15	12.25	-12.68	-9.15	0.38	15.63	215.81
1696.70	0.84	224.35	1696.59	12.53	-12.91	-9.37	0.23	15.95	215.95
1724.34	0.85	227.67	1724.23	12.88	-13.20	-9.66	0.18	16.35	216.20
1747.68	0.92	230.60	1747.58	13.21	-13.43	-9.93	0.34	16.70	216.48
1774.54	0.86	233.21	1774.43	13.59	-13.69	-10.26	0.25	17.10	216.85
1797.73	0.90	239.21	1797.61	13.93	-13.88	-10.55	0.43	17.44	217.24
1820.90	0.98	240.64	1820.78	14.30	-14.07	-10.88	0.36	17.79	217.71
1847.85	1.00	241.87	1847.73	14.75	-14.30	-11.29	0.11	18.22	218.29

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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
1871.04	1.04	245.00	1870.91	15.16	-14.48	-11.66	0.29	18.59	218.83
1897.88	0.99	251.20	1897.75	15.63	-14.66	-12.10	0.44	19.01	219.53
1921.17	1.11	245.14	1921.04	16.05	-14.82	-12.49	0.72	19.38	220.13
1948.71	0.96	257.67	1948.57	16.55	-14.98	-12.96	0.99	19.81	220.87
1970.92	1.00	254.43	1970.78	16.93	-15.07	-13.33	0.30	20.12	221.49
1998.13	1.02	256.14	1997.99	17.41	-15.19	-13.79	0.15	20.52	222.23
2024.59	1.08	260.08	2024.44	17.89	-15.29	-14.27	0.35	20.92	223.01
2047.34	1.06	259.37	2047.18	18.31	-15.37	-14.69	0.10	21.26	223.70
2074.42	1.06	264.45	2074.27	18.81	-15.44	-15.18	0.35	21.65	224.51
2095.69	1.05	270.91	2095.53	19.19	-15.46	-15.57	0.56	21.94	225.21
2122.90	1.16	271.36	2122.73	19.69	-15.45	-16.09	0.40	22.31	226.18
2149.19	1.07	278.77	2149.02	20.17	-15.40	-16.60	0.64	22.65	227.15
2172.00	1.02	285.63	2171.83	20.53	-15.31	-17.01	0.59	22.89	228.00
2199.03	1.03	283.96	2198.86	20.95	-15.19	-17.48	0.12	23.16	229.00
2220.98	1.04	283.37	2220.80	21.29	-15.10	-17.86	0.06	23.39	229.79
2248.08	1.05	289.02	2247.90	21.71	-14.96	-18.34	0.38	23.66	230.79
2270.08	1.05	286.40	2269.89	22.05	-14.84	-18.72	0.22	23.89	231.60
2297.21	1.12	290.35	2297.01	22.48	-14.67	-19.21	0.35	24.17	232.62
2324.20	1.14	302.71	2324.00	22.87	-14.44	-19.68	0.91	24.41	233.74
2346.13	1.15	305.04	2345.92	23.15	-14.19	-20.05	0.21	24.56	234.70
2373.21	1.22	306.94	2373.00	23.50	-13.86	-20.50	0.29	24.75	235.92
2395.13	1.19	315.45	2394.91	23.75	-13.56	-20.84	0.82	24.87	236.95
2422.05	1.16	320.90	2421.82	23.99	-13.15	-21.21	0.43	24.96	238.20
2449.14	1.23	314.34	2448.92	24.24	-12.74	-21.59	0.57	25.07	239.47
2471.04	1.11	320.78	2470.80	24.44	-12.41	-21.89	0.80	25.17	240.46
2498.13	1.09	324.66	2497.89	24.63	-11.99	-22.21	0.29	25.24	241.64
2520.49	1.31	338.35	2520.24	24.73	-11.58	-22.43	1.60	25.24	242.69
2546.93	1.32	321.46	2546.68	24.88	-11.06	-22.73	1.46	25.28	244.05
2573.97	0.81	303.03	2573.71	25.13	-10.72	-23.08	2.24	25.45	245.10
2596.58	0.58	309.39	2596.33	25.30	-10.56	-23.31	1.06	25.58	245.63
2622.87	0.71	320.97	2622.61	25.44	-10.34	-23.51	0.68	25.69	246.25
2649.76	0.72	308.78	2649.51	25.60	-10.11	-23.75	0.57	25.81	246.94
2671.72	0.77	310.55	2671.46	25.76	-9.93	-23.97	0.23	25.94	247.50
2698.60	0.70	305.09	2698.33	25.97	-9.72	-24.24	0.36	26.11	248.15
2721.12	0.75	308.46	2720.86	26.14	-9.55	-24.46	0.31	26.26	248.68
2747.35	0.72	302.51	2747.09	26.35	-9.35	-24.74	0.31	26.45	249.29

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
2774.21	0.83	301.58	2773.94	26.59	-9.16	-25.04	0.40	26.67	249.91
2795.84	0.68	297.17	2795.57	26.79	-9.02	-25.29	0.75	26.85	250.37
2822.28	0.66	297.65	2822.01	27.01	-8.88	-25.56	0.07	27.06	250.85
2848.69	0.79	293.59	2848.41	27.27	-8.73	-25.87	0.55	27.30	251.34
2874.65	0.62	303.57	2874.37	27.50	-8.58	-26.15	0.80	27.52	251.82
2896.67	0.59	283.75	2896.39	27.67	-8.49	-26.36	0.96	27.69	252.14
2923.38	1.11	282.16	2923.10	28.02	-8.40	-26.74	1.97	28.03	252.55
2949.09	0.70	295.00	2948.81	28.36	-8.29	-27.13	1.78	28.37	253.02
2971.33	0.35	308.83	2971.04	28.50	-8.19	-27.31	1.67	28.51	253.31
2997.72	0.48	277.69	2997.43	28.65	-8.12	-27.48	0.98	28.65	253.54
3023.46	0.76	262.64	3023.17	28.92	-8.13	-27.76	1.22	28.92	253.68
3049.81	1.02	260.60	3049.52	29.32	-8.19	-28.16	1.01	29.33	253.79
3071.95	0.77	281.76	3071.65	29.65	-8.19	-28.50	1.85	29.65	253.97
3096.98	0.27	251.53	3096.69	29.86	-8.17	-28.72	2.23	29.86	254.12
3123.34	0.67	246.63	3123.04	30.08	-8.25	-28.92	1.54	30.08	254.07
3148.41	0.62	261.09	3148.11	30.36	-8.33	-29.19	0.68	30.36	254.07
3174.70	0.46	256.93	3174.40	30.61	-8.38	-29.44	0.64	30.61	254.11
3196.06	0.55	248.09	3195.76	30.79	-8.44	-29.62	0.57	30.79	254.10
3222.48	0.54	249.10	3222.18	31.04	-8.53	-29.85	0.07	31.04	254.05
3248.90	0.50	241.73	3248.60	31.28	-8.63	-30.07	0.29	31.28	253.99
3274.50	0.63	238.83	3274.20	31.52	-8.75	-30.28	0.51	31.52	253.88
3296.53	0.53	235.88	3296.23	31.74	-8.87	-30.47	0.45	31.74	253.77
3322.96	0.68	228.85	3322.65	32.00	-9.05	-30.69	0.64	32.00	253.58
3348.65	0.65	242.90	3348.35	32.28	-9.21	-30.94	0.65	32.28	253.42
3374.96	0.58	238.39	3374.65	32.55	-9.35	-31.18	0.31	32.56	253.31
3396.30	0.66	238.26	3395.99	32.77	-9.47	-31.38	0.35	32.78	253.20
3422.64	0.61	242.81	3422.33	33.06	-9.62	-31.63	0.26	33.06	253.09
3449.18	0.57	278.01	3448.87	33.32	-9.66	-31.89	1.35	33.32	253.14
3472.12	0.90	234.75	3471.80	33.59	-9.75	-32.15	2.73	33.60	253.13
3495.78	0.97	213.57	3495.46	33.92	-10.03	-32.41	1.48	33.93	252.81
3523.22	0.59	235.16	3522.90	34.23	-10.30	-32.66	1.72	34.24	252.50
3546.86	0.67	235.83	3546.54	34.47	-10.45	-32.87	0.33	34.49	252.37
3570.56	0.58	238.22	3570.23	34.72	-10.59	-33.09	0.38	34.74	252.26
3597.81	0.57	223.41	3597.49	34.97	-10.76	-33.30	0.55	34.99	252.10
3621.00	0.43	239.52	3620.67	35.15	-10.88	-33.45	0.83	35.18	251.98
3648.74	0.64	231.03	3648.41	35.40	-11.04	-33.66	0.81	35.43	251.85

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3671.20	0.63	228.87	3670.87	35.62	-11.20	-33.86	0.11	35.66	251.70
3698.82	0.56	227.01	3698.49	35.88	-11.39	-34.07	0.26	35.92	251.51
3721.36	0.77	231.55	3721.02	36.12	-11.56	-34.27	0.94	36.17	251.36
3748.92	0.61	238.74	3748.59	36.43	-11.75	-34.54	0.66	36.48	251.21
3771.28	0.60	235.14	3770.94	36.66	-11.88	-34.74	0.17	36.71	251.12
3798.94	0.72	245.76	3798.60	36.97	-12.03	-35.02	0.63	37.03	251.03
3820.50	0.69	239.24	3820.16	37.23	-12.16	-35.25	0.40	37.29	250.97
3847.98	0.57	256.75	3847.64	37.53	-12.27	-35.53	0.83	37.59	250.94
3871.14	0.36	232.89	3870.80	37.71	-12.34	-35.70	1.22	37.77	250.93
3897.86	0.32	260.96	3897.52	37.86	-12.41	-35.84	0.63	37.92	250.91
3920.90	0.40	255.43	3920.56	38.00	-12.44	-35.98	0.38	38.07	250.93
3948.33	0.24	293.20	3947.99	38.14	-12.44	-36.12	0.93	38.20	251.00
3970.59	0.09	349.88	3970.25	38.18	-12.40	-36.17	0.92	38.24	251.07
3997.94	0.12	189.26	3997.60	38.19	-12.41	-36.18	0.77	38.25	251.07
4020.15	0.26	172.60	4019.81	38.21	-12.48	-36.17	0.64	38.27	250.96
4047.74	0.21	166.23	4047.39	38.22	-12.59	-36.16	0.20	38.29	250.80
4070.66	0.22	182.42	4070.32	38.23	-12.68	-36.15	0.27	38.31	250.67
4097.34	0.14	180.62	4097.00	38.26	-12.76	-36.15	0.31	38.34	250.56
4124.75	0.05	309.33	4124.41	38.27	-12.79	-36.16	0.64	38.35	250.53
4146.86	0.08	75.63	4146.51	38.26	-12.78	-36.15	0.55	38.34	250.54
4174.11	0.23	54.02	4173.77	38.19	-12.74	-36.09	0.58	38.27	250.56
4196.97	0.25	49.17	4196.62	38.10	-12.68	-36.01	0.11	38.18	250.60
4223.57	0.37	48.43	4223.23	37.97	-12.58	-35.90	0.47	38.04	250.69
4246.37	0.38	52.39	4246.03	37.84	-12.49	-35.79	0.12	37.90	250.76
4273.70	0.48	49.15	4273.36	37.65	-12.36	-35.63	0.38	37.71	250.87
4295.77	0.45	42.91	4295.43	37.49	-12.23	-35.50	0.26	37.55	250.99
4322.91	0.40	43.56	4322.57	37.32	-12.09	-35.36	0.19	37.37	251.13
4345.07	0.40	51.01	4344.72	37.18	-11.98	-35.25	0.23	37.23	251.22
4372.18	0.27	39.08	4371.84	37.04	-11.87	-35.14	0.52	37.09	251.33
4399.24	0.15	11.60	4398.89	36.97	-11.79	-35.09	0.59	37.02	251.43
4420.89	0.32	7.91	4420.54	36.94	-11.70	-35.08	0.80	36.98	251.55
4447.51	0.48	343.00	4447.17	36.91	-11.52	-35.10	0.87	36.94	251.82
4474.19	0.65	23.50	4473.84	36.82	-11.28	-35.07	1.57	36.84	252.17
4495.85	0.51	5.33	4495.50	36.70	-11.07	-35.01	1.06	36.72	252.45
4522.45	0.51	353.81	4522.10	36.64	-10.84	-35.01	0.38	36.65	252.80
4548.54	0.72	6.15	4548.19	36.56	-10.56	-35.01	0.94	36.57	253.21



Well Name: GEORGE GERHARDT #2
Survey: GEORGE GERHARDT #2
Survey Date: 10/7/2014

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Closure Distance	Closure Direction
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
4574.02	0.62	4.83	4573.66	36.45	-10.27	-34.98	0.37	36.46	253.65
4598.93	0.77	18.27	4598.57	36.31	-9.97	-34.92	0.88	36.31	254.06
4607.74	0.70	8.27	4607.39	36.26	-9.86	-34.89	1.68	36.26	254.22