



Gyroscopic Survey Report
for
KP KAUFMAN

Well Location	WELD COUNTY, COLORADO
Well Name	UPPR 43 PAN AM I-18
Rig Number	
Survey Date	10/7/2014
Latitude	40.0675820°N
Longitude	104.9729910°W
North Reference	True North
Grid Correction	None
Depth Reference	GL (5028.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 304.75Azim (deg)
Definitive Survey	UPPR 43 PAN AM I-18
Operator(s)	C KIRBY

Well Notes

API-05-123-09020

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
86.56	0.20	308.48	86.56	0.15	0.10	-0.12	0.23	0.15	308.48
123.05	0.20	312.32	123.05	0.28	0.18	-0.22	0.04	0.28	309.35
146.90	0.17	118.55	146.89	0.29	0.19	-0.22	1.56	0.29	311.13
172.71	0.13	81.56	172.71	0.23	0.18	-0.15	0.41	0.23	318.94
196.44	0.14	87.73	196.44	0.18	0.18	-0.10	0.06	0.20	331.85
221.08	0.13	78.99	221.08	0.14	0.19	-0.04	0.09	0.19	347.93
248.95	0.14	124.79	248.95	0.08	0.17	0.02	0.38	0.17	6.23
273.50	0.12	144.88	273.50	0.03	0.13	0.06	0.20	0.15	23.73
296.93	0.07	139.75	296.93	-0.01	0.10	0.08	0.21	0.13	39.00
321.12	0.13	133.89	321.12	-0.05	0.07	0.11	0.24	0.13	57.60
344.58	0.04	27.84	344.58	-0.08	0.06	0.14	0.62	0.15	66.25
373.61	0.20	328.38	373.61	-0.03	0.11	0.11	0.64	0.16	45.35
397.92	0.26	308.84	397.92	0.06	0.18	0.05	0.39	0.19	14.68
421.38	0.34	306.74	421.38	0.19	0.26	-0.05	0.37	0.26	349.09
445.63	0.28	293.58	445.62	0.32	0.33	-0.16	0.38	0.36	333.40
473.01	0.30	309.71	473.01	0.46	0.40	-0.28	0.31	0.49	324.84
497.19	0.24	314.86	497.19	0.57	0.48	-0.37	0.30	0.60	322.41
520.54	0.44	322.79	520.54	0.70	0.58	-0.45	0.89	0.74	321.96
549.41	0.42	314.44	549.41	0.91	0.74	-0.60	0.23	0.95	321.23
573.54	0.48	315.34	573.53	1.10	0.87	-0.73	0.27	1.14	320.19
596.12	0.47	313.64	596.12	1.28	1.01	-0.86	0.08	1.33	319.39
624.92	0.54	322.56	624.91	1.53	1.19	-1.03	0.36	1.58	319.23
648.30	0.74	326.46	648.29	1.77	1.41	-1.18	0.88	1.84	320.02
672.45	0.90	325.67	672.44	2.09	1.69	-1.37	0.68	2.18	320.97
695.94	0.90	323.50	695.92	2.44	1.99	-1.59	0.15	2.55	321.49
724.66	0.89	320.59	724.64	2.87	2.35	-1.86	0.16	3.00	321.58
747.97	0.87	324.44	747.95	3.21	2.63	-2.08	0.27	3.36	321.68
772.14	0.92	320.37	772.12	3.57	2.93	-2.31	0.35	3.73	321.74
796.19	0.87	328.67	796.16	3.93	3.24	-2.53	0.58	4.11	321.99
824.06	0.90	327.36	824.03	4.32	3.60	-2.76	0.11	4.54	322.56
848.13	0.88	322.02	848.10	4.67	3.91	-2.98	0.35	4.91	322.72
871.38	0.90	316.03	871.35	5.02	4.18	-3.21	0.41	5.27	322.46
895.49	0.92	319.34	895.46	5.40	4.46	-3.47	0.23	5.65	322.14
923.56	0.94	319.59	923.52	5.84	4.81	-3.77	0.07	6.11	321.94
947.62	0.93	324.05	947.58	6.21	5.12	-4.01	0.30	6.50	321.93

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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
971.66	0.95	324.15	971.61	6.58	5.44	-4.24	0.08	6.90	322.06
999.63	0.89	317.51	999.58	7.02	5.79	-4.52	0.44	7.34	321.99
1023.64	0.91	317.49	1023.59	7.38	6.07	-4.78	0.10	7.72	321.77
1046.85	0.80	320.10	1046.80	7.72	6.33	-5.01	0.50	8.07	321.64
1070.83	0.95	324.13	1070.77	8.07	6.62	-5.23	0.65	8.43	321.67
1099.51	0.91	325.04	1099.44	8.51	6.99	-5.50	0.14	8.90	321.82
1122.67	0.95	322.10	1122.60	8.86	7.30	-5.72	0.26	9.27	321.89
1146.25	0.92	318.30	1146.18	9.23	7.59	-5.97	0.29	9.66	321.82
1173.74	0.98	321.83	1173.67	9.67	7.94	-6.26	0.30	10.11	321.74
1197.31	0.82	326.62	1197.23	10.02	8.24	-6.48	0.73	10.48	321.82
1221.61	0.99	329.55	1221.53	10.37	8.57	-6.68	0.71	10.86	322.05
1248.29	1.11	332.60	1248.20	10.81	8.99	-6.92	0.50	11.34	322.44
1271.87	1.14	330.41	1271.78	11.22	9.40	-7.14	0.22	11.80	322.79
1299.15	1.24	330.18	1299.05	11.73	9.89	-7.42	0.36	12.36	323.14
1322.66	1.12	329.53	1322.56	12.17	10.31	-7.66	0.50	12.84	323.39
1345.60	1.16	330.43	1345.49	12.58	10.70	-7.89	0.21	13.30	323.62
1373.54	1.13	328.33	1373.43	13.09	11.18	-8.17	0.20	13.85	323.85
1397.00	1.17	328.97	1396.88	13.52	11.59	-8.42	0.19	14.32	324.01
1424.29	1.14	329.54	1424.17	14.02	12.06	-8.70	0.10	14.87	324.20
1447.72	1.24	330.10	1447.59	14.46	12.48	-8.94	0.42	15.35	324.38
1471.14	1.15	331.19	1471.01	14.90	12.91	-9.18	0.42	15.84	324.57
1498.45	1.23	330.39	1498.32	15.41	13.40	-9.46	0.30	16.40	324.78
1521.90	1.15	330.74	1521.76	15.85	13.82	-9.70	0.32	16.89	324.95
1549.12	1.13	334.38	1548.98	16.33	14.30	-9.95	0.28	17.42	325.18
1572.56	1.17	332.52	1572.41	16.74	14.73	-10.16	0.25	17.89	325.40
1595.38	1.11	335.31	1595.22	17.14	15.13	-10.36	0.38	18.34	325.61
1623.28	1.12	334.17	1623.12	17.61	15.62	-10.59	0.09	18.87	325.87
1646.68	1.14	334.56	1646.52	18.01	16.04	-10.79	0.11	19.33	326.07
1673.93	0.99	336.86	1673.77	18.44	16.50	-11.00	0.57	19.83	326.32
1697.30	1.03	336.68	1697.12	18.79	16.88	-11.16	0.15	20.24	326.53
1720.79	0.96	336.92	1720.62	19.14	17.26	-11.32	0.30	20.64	326.73
1747.93	0.95	338.06	1747.75	19.52	17.67	-11.50	0.08	21.08	326.96
1771.46	0.99	335.65	1771.28	19.86	18.04	-11.65	0.25	21.48	327.14
1798.47	0.92	336.52	1798.29	20.24	18.45	-11.83	0.28	21.92	327.33
1822.15	0.86	337.33	1821.96	20.55	18.79	-11.98	0.26	22.28	327.48
1849.95	0.89	336.74	1849.75	20.91	19.18	-12.14	0.13	22.70	327.66

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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
1873.46	0.78	336.75	1873.26	21.20	19.49	-12.28	0.49	23.04	327.79
1898.21	0.79	335.71	1898.01	21.49	19.80	-12.41	0.07	23.37	327.92
1922.13	0.74	338.55	1921.93	21.76	20.10	-12.54	0.25	23.69	328.04
1947.01	0.82	340.07	1946.80	22.04	20.41	-12.66	0.34	24.02	328.20
1974.54	0.83	331.25	1974.33	22.38	20.77	-12.82	0.46	24.41	328.32
1998.70	0.80	342.14	1998.49	22.67	21.09	-12.96	0.65	24.75	328.43
2022.27	0.79	346.80	2022.06	22.92	21.40	-13.05	0.28	25.07	328.64
2046.76	0.74	347.15	2046.55	23.16	21.72	-13.12	0.22	25.38	328.87
2070.45	0.72	349.92	2070.24	23.38	22.02	-13.18	0.17	25.66	329.10
2099.59	0.77	346.77	2099.38	23.65	22.39	-13.26	0.21	26.02	329.37
2124.99	0.78	7.80	2124.77	23.86	22.73	-13.27	1.11	26.32	329.72
2149.65	1.13	8.69	2149.43	24.04	23.13	-13.21	1.39	26.64	330.27
2173.53	0.79	31.62	2173.31	24.15	23.51	-13.09	2.11	26.90	330.89
2196.62	0.96	30.70	2196.39	24.18	23.81	-12.91	0.76	27.08	331.53
2221.26	1.11	39.59	2221.03	24.17	24.17	-12.65	0.88	27.28	332.37
2245.08	1.17	44.70	2244.84	24.11	24.52	-12.33	0.48	27.45	333.30
2274.58	1.19	45.30	2274.33	24.00	24.95	-11.90	0.10	27.64	334.50
2299.21	1.21	45.72	2298.96	23.91	25.31	-11.53	0.09	27.82	335.50
2323.06	1.13	51.44	2322.80	23.79	25.63	-11.17	0.61	27.96	336.45
2347.69	0.90	57.06	2347.43	23.65	25.89	-10.82	0.99	28.06	337.32
2371.70	0.78	59.46	2371.44	23.51	26.08	-10.52	0.55	28.12	338.03
2396.32	0.58	63.36	2396.05	23.38	26.22	-10.27	0.82	28.15	338.62
2420.13	0.50	60.38	2419.87	23.28	26.32	-10.07	0.36	28.18	339.07
2449.46	0.41	67.51	2449.20	23.16	26.42	-9.86	0.34	28.20	339.54
2474.24	0.39	37.39	2473.97	23.11	26.53	-9.72	0.85	28.25	339.87
2498.08	0.34	39.49	2497.82	23.10	26.64	-9.63	0.24	28.33	340.13
2522.67	0.33	46.04	2522.41	23.08	26.75	-9.53	0.16	28.40	340.38
2546.47	0.33	24.97	2546.20	23.08	26.86	-9.46	0.51	28.47	340.60
2571.06	0.35	32.69	2570.79	23.10	26.99	-9.39	0.20	28.57	340.82
2594.86	0.33	357.45	2594.59	23.14	27.12	-9.35	0.87	28.68	340.98
2624.25	0.42	330.97	2623.99	23.29	27.30	-9.41	0.65	28.87	340.99
2648.80	0.57	329.96	2648.53	23.48	27.48	-9.51	0.63	29.08	340.91
2672.59	0.66	327.77	2672.32	23.71	27.70	-9.64	0.36	29.33	340.81
2697.26	0.66	325.67	2696.99	23.97	27.94	-9.80	0.10	29.60	340.67
2720.96	0.70	328.08	2720.69	24.23	28.17	-9.95	0.22	29.88	340.54
2745.37	0.70	334.99	2745.09	24.50	28.43	-10.09	0.35	30.17	340.46

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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
2774.58	0.73	332.76	2774.30	24.82	28.76	-10.25	0.13	30.54	340.38
2798.00	0.59	337.34	2797.72	25.05	29.01	-10.37	0.62	30.80	340.33
2822.37	0.60	333.13	2822.09	25.27	29.24	-10.48	0.18	31.06	340.29
2845.76	0.65	321.86	2845.48	25.51	29.45	-10.61	0.58	31.31	340.18
2874.62	0.64	322.96	2874.34	25.82	29.71	-10.81	0.06	31.62	340.00
2898.61	0.75	326.43	2898.32	26.09	29.95	-10.98	0.48	31.90	339.86
2921.91	0.83	331.17	2921.62	26.39	30.22	-11.15	0.44	32.21	339.76
2946.14	0.66	328.74	2945.85	26.67	30.50	-11.30	0.71	32.52	339.66
2973.97	0.56	338.70	2973.68	26.93	30.76	-11.44	0.53	32.82	339.61
2998.31	0.55	342.02	2998.02	27.12	30.98	-11.52	0.14	33.05	339.61
3021.56	0.61	335.85	3021.27	27.32	31.20	-11.60	0.37	33.29	339.60
3045.67	0.59	329.13	3045.37	27.54	31.42	-11.72	0.30	33.54	339.55
3074.31	0.74	323.74	3074.01	27.85	31.70	-11.90	0.57	33.86	339.42
3097.56	0.84	326.14	3097.26	28.15	31.96	-12.09	0.45	34.17	339.29
3121.70	0.76	330.22	3121.40	28.46	32.25	-12.26	0.42	34.50	339.18
3149.43	0.64	335.61	3149.13	28.76	32.55	-12.42	0.48	34.84	339.12
3172.64	0.43	334.92	3172.34	28.94	32.74	-12.51	0.91	35.05	339.09
3195.98	0.49	323.42	3195.67	29.11	32.90	-12.60	0.47	35.23	339.04
3224.83	0.59	312.45	3224.52	29.38	33.10	-12.79	0.49	35.49	338.88
3248.18	0.75	323.35	3247.88	29.64	33.30	-12.97	0.88	35.74	338.73
3272.18	0.77	332.91	3271.87	29.93	33.57	-13.13	0.53	36.05	338.64
3296.08	0.73	345.08	3295.76	30.19	33.86	-13.25	0.68	36.36	338.64
3323.97	0.27	267.89	3323.66	30.37	34.03	-13.36	2.59	36.56	338.57
3347.32	0.55	276.22	3347.01	30.52	34.04	-13.52	1.24	36.63	338.33
3370.55	0.53	280.50	3370.24	30.71	34.08	-13.74	0.21	36.74	338.04
3399.11	0.28	281.92	3398.79	30.90	34.11	-13.94	0.86	36.85	337.78
3422.36	0.46	289.20	3422.05	31.04	34.16	-14.08	0.78	36.94	337.59
3446.27	0.45	302.07	3445.96	31.23	34.24	-14.25	0.43	37.08	337.40
3474.93	0.53	305.83	3474.61	31.47	34.37	-14.45	0.29	37.29	337.19
3498.10	0.57	301.19	3497.78	31.69	34.50	-14.64	0.27	37.47	337.00
3520.50	0.50	294.46	3520.18	31.90	34.59	-14.82	0.43	37.64	336.80
3549.13	0.17	297.04	3548.80	32.07	34.67	-14.98	1.15	37.76	336.64
3572.93	0.35	313.44	3572.61	32.17	34.73	-15.06	0.81	37.86	336.56
3595.95	0.54	293.49	3595.62	32.35	34.82	-15.21	1.05	38.00	336.40
3624.06	0.81	293.14	3623.74	32.67	34.96	-15.52	0.96	38.24	336.06
3647.58	1.04	279.17	3647.26	33.03	35.05	-15.88	1.36	38.48	335.63

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3674.16	0.69	276.34	3673.83	33.39	35.11	-16.28	1.32	38.70	335.13
3697.67	0.73	273.64	3697.34	33.64	35.14	-16.57	0.22	38.85	334.75
3720.52	0.70	279.48	3720.19	33.89	35.17	-16.85	0.34	39.00	334.39
3748.45	0.80	280.77	3748.12	34.23	35.23	-17.21	0.35	39.21	333.96
3771.17	0.79	286.44	3770.84	34.52	35.31	-17.52	0.35	39.42	333.61
3799.22	0.72	277.21	3798.88	34.86	35.38	-17.88	0.49	39.65	333.19
3821.91	0.79	268.41	3821.56	35.11	35.40	-18.18	0.59	39.79	332.82
3848.86	0.73	269.16	3848.51	35.40	35.39	-18.54	0.23	39.95	332.36
3871.52	0.71	267.68	3871.17	35.63	35.38	-18.82	0.10	40.08	331.99
3899.44	0.88	274.18	3899.09	35.96	35.39	-19.21	0.67	40.27	331.51
3923.10	0.79	284.06	3922.75	36.26	35.44	-19.55	0.72	40.48	331.12
3945.83	0.70	285.39	3945.48	36.54	35.52	-19.83	0.39	40.68	330.82
3973.85	0.88	281.43	3973.49	36.90	35.61	-20.21	0.69	40.94	330.42
3997.13	0.99	278.05	3996.78	37.25	35.67	-20.58	0.49	41.18	330.01
4024.49	1.35	270.71	4024.13	37.72	35.71	-21.14	1.43	41.49	329.38
4047.61	1.29	269.30	4047.24	38.16	35.71	-21.67	0.30	41.77	328.75
4074.95	0.77	297.97	4074.57	38.59	35.79	-22.14	2.61	42.08	328.26
4098.32	1.22	262.58	4097.94	38.93	35.83	-22.52	3.18	42.32	327.85
4121.03	1.56	264.09	4120.65	39.35	35.77	-23.07	1.49	42.56	327.18
4148.76	1.21	272.75	4148.36	39.88	35.74	-23.74	1.46	42.91	326.41
4172.08	1.19	273.31	4171.69	40.29	35.77	-24.23	0.11	43.20	325.89
4199.28	1.03	283.08	4198.88	40.76	35.84	-24.75	0.90	43.55	325.38
4222.60	1.58	258.86	4222.19	41.18	35.83	-25.27	3.31	43.84	324.81
4245.65	1.43	264.81	4245.23	41.62	35.74	-25.87	0.95	44.12	324.11
4273.08	1.42	267.59	4272.65	42.16	35.69	-26.55	0.26	44.48	323.36
4296.42	1.51	270.66	4295.99	42.64	35.68	-27.14	0.50	44.83	322.74
4323.63	1.39	269.56	4323.19	43.21	35.69	-27.83	0.45	45.26	322.05
4347.00	1.48	264.04	4346.55	43.67	35.65	-28.41	0.70	45.59	321.45
4374.80	1.60	261.19	4374.34	44.22	35.56	-29.15	0.51	45.98	320.65
4397.11	1.71	260.29	4396.65	44.68	35.45	-29.79	0.53	46.31	319.96
4424.50	1.85	262.98	4424.01	45.31	35.33	-30.63	0.59	46.76	319.08
4447.35	1.92	260.59	4446.86	45.86	35.22	-31.37	0.47	47.17	318.31
4473.86	1.87	258.55	4473.35	46.47	35.06	-32.24	0.32	47.63	317.40
4499.77	1.98	259.18	4499.24	47.08	34.89	-33.09	0.44	48.09	316.52
4522.58	1.98	257.01	4522.04	47.62	34.73	-33.86	0.33	48.51	315.72
4549.75	2.04	259.59	4549.19	48.28	34.54	-34.80	0.39	49.03	314.79



Well Name: UPPR 43 PAN AM I-18

Survey: UPPR 43 PAN AM I-18

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
4571.83	2.07	260.82	4571.26	48.84	34.40	-35.58	0.25	49.49	314.04
4599.09	1.96	267.03	4598.51	49.57	34.30	-36.53	0.91	50.11	313.20
4622.01	1.76	271.23	4621.42	50.17	34.29	-37.27	1.04	50.64	312.61
4648.28	1.77	261.32	4647.67	50.80	34.24	-38.08	1.16	51.20	311.96
4671.27	1.69	267.46	4670.65	51.33	34.17	-38.77	0.88	51.67	311.39
4697.82	1.77	271.34	4697.19	51.98	34.16	-39.57	0.54	52.27	310.81
4724.97	1.77	263.33	4724.32	52.65	34.12	-40.40	0.91	52.88	310.18
4747.69	1.66	263.78	4747.03	53.16	34.04	-41.08	0.47	53.35	309.65
4774.20	1.69	263.97	4773.53	53.74	33.96	-41.85	0.09	53.90	309.06
4796.95	1.76	264.93	4796.27	54.26	33.90	-42.53	0.33	54.38	308.56
4823.43	1.68	261.59	4822.74	54.86	33.80	-43.32	0.47	54.95	307.97
4846.20	1.66	263.20	4845.50	55.35	33.72	-43.98	0.23	55.41	307.48
4873.37	1.83	266.13	4872.66	55.98	33.64	-44.80	0.69	56.02	306.90
4899.72	1.80	264.78	4899.00	56.63	33.57	-45.63	0.19	56.65	306.35
4922.42	1.64	265.87	4921.69	57.16	33.52	-46.31	0.71	57.17	305.90
4949.55	1.42	279.15	4948.81	57.76	33.54	-47.03	1.54	57.77	305.50
4971.46	1.36	287.54	4970.71	58.25	33.66	-47.55	0.96	58.26	305.30
4998.34	1.29	290.12	4997.59	58.85	33.86	-48.13	0.36	58.85	305.13
5020.23	1.02	290.16	5019.47	59.28	34.02	-48.55	1.23	59.28	305.02
5048.69	1.13	296.51	5047.92	59.80	34.23	-49.03	0.57	59.80	304.92
5074.48	0.90	291.68	5073.71	60.25	34.42	-49.45	0.96	60.25	304.84
5099.56	0.74	298.18	5098.78	60.60	34.56	-49.77	0.74	60.60	304.78
5124.48	0.75	305.19	5123.71	60.92	34.73	-50.05	0.37	60.92	304.76
5137.36	1.08	300.05	5136.58	61.12	34.84	-50.22	2.65	61.12	304.75