



Gyroscopic Survey Report
for
KP KAUFMAN
1675 BROADWAY
SUITE 2800
DENVER, CO 80202

Well Location	WELD, CO
Well Name	JAMES A DAMIANA #1
Rig Number	
Survey Date	8/24/2014
Latitude	40.1181390°N
Longitude	104.7940810°W
North Reference	True North
Grid Correction	None
Depth Reference	GROUND (0.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 270.85Azim (deg)
Definitive Survey	JAMES A DAMIANA #1
Operator(s)	P HOLBROOK / C KIRBY

Well Notes

Survey Report

Well Name:		JAMES A DAMIANA #1							
Survey:		JAMES A DAMIANA #1							
Survey Date:		8/24/2014							
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
86.05	0.44	223.32	86.05	0.22	-0.24	-0.23	0.51	0.33	223.32
110.11	0.31	195.98	110.11	0.30	-0.37	-0.31	0.91	0.48	219.81
136.07	0.37	194.99	136.07	0.34	-0.52	-0.35	0.26	0.62	213.98
159.08	0.52	196.50	159.07	0.39	-0.69	-0.40	0.64	0.80	209.97
186.41	0.49	197.36	186.41	0.45	-0.92	-0.47	0.10	1.03	206.94
208.73	0.46	200.18	208.72	0.51	-1.10	-0.53	0.17	1.22	205.69
236.05	0.49	188.30	236.04	0.56	-1.32	-0.58	0.38	1.44	203.87
258.33	0.43	192.91	258.33	0.59	-1.49	-0.62	0.33	1.62	202.40
285.64	0.40	191.36	285.63	0.63	-1.69	-0.66	0.11	1.81	201.29
307.91	0.34	189.22	307.90	0.66	-1.83	-0.68	0.27	1.95	200.49
335.21	0.36	179.56	335.20	0.67	-2.00	-0.70	0.23	2.11	199.22
358.20	0.38	187.12	358.20	0.67	-2.15	-0.70	0.23	2.26	198.18
384.74	0.34	171.65	384.73	0.67	-2.31	-0.70	0.40	2.42	196.95
407.72	0.36	164.45	407.72	0.64	-2.45	-0.67	0.22	2.54	195.41
435.12	0.43	173.68	435.11	0.60	-2.63	-0.64	0.33	2.71	193.66
461.67	0.45	182.63	461.65	0.59	-2.84	-0.63	0.27	2.91	192.60
484.67	0.46	182.54	484.66	0.60	-3.02	-0.64	0.05	3.09	192.01
511.91	0.46	194.10	511.90	0.63	-3.23	-0.67	0.34	3.30	191.76
534.15	0.43	200.37	534.14	0.67	-3.40	-0.72	0.24	3.48	192.03
561.41	0.42	198.36	561.39	0.74	-3.59	-0.79	0.08	3.68	192.44
583.64	0.37	202.52	583.63	0.79	-3.73	-0.85	0.25	3.83	192.75
610.91	0.36	197.36	610.90	0.85	-3.90	-0.90	0.13	4.00	193.06
633.09	0.33	194.64	633.08	0.88	-4.03	-0.94	0.14	4.14	193.16
660.00	0.33	176.66	659.98	0.89	-4.18	-0.96	0.39	4.29	192.89
686.76	0.38	181.29	686.75	0.89	-4.35	-0.95	0.19	4.45	192.38
707.86	0.43	178.40	707.85	0.89	-4.50	-0.95	0.28	4.60	191.97
734.60	0.49	184.33	734.58	0.89	-4.71	-0.96	0.28	4.81	191.51
760.91	0.47	187.40	760.90	0.91	-4.93	-0.98	0.12	5.03	191.26
783.26	0.56	196.50	783.24	0.95	-5.13	-1.02	0.54	5.23	191.30
810.12	0.52	203.99	810.10	1.03	-5.37	-1.11	0.31	5.48	191.70
836.27	0.50	203.50	836.25	1.12	-5.58	-1.21	0.06	5.71	192.19
858.72	0.38	204.62	858.70	1.19	-5.74	-1.28	0.56	5.88	192.53
885.56	0.47	209.80	885.54	1.28	-5.91	-1.37	0.38	6.07	193.02
910.97	0.35	200.62	910.95	1.36	-6.08	-1.45	0.53	6.25	193.39
932.95	0.35	188.49	932.92	1.39	-6.21	-1.48	0.34	6.38	193.41

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
960.78	0.53	190.52	960.75	1.42	-6.42	-1.52	0.64	6.59	193.29
983.55	0.47	188.33	983.53	1.45	-6.61	-1.55	0.26	6.79	193.18
1011.46	0.55	191.02	1011.43	1.49	-6.86	-1.59	0.28	7.04	193.06
1034.21	0.66	208.49	1034.18	1.57	-7.08	-1.67	0.95	7.27	193.31
1057.60	0.64	211.42	1057.57	1.70	-7.31	-1.81	0.17	7.53	193.89
1084.85	0.63	218.37	1084.82	1.87	-7.56	-1.98	0.29	7.81	194.68
1108.24	0.58	217.29	1108.21	2.02	-7.75	-2.13	0.20	8.04	195.37
1136.25	0.60	217.48	1136.21	2.19	-7.98	-2.31	0.07	8.31	196.12
1158.85	0.66	215.36	1158.81	2.33	-8.18	-2.45	0.26	8.54	196.70
1186.80	0.63	214.30	1186.77	2.51	-8.44	-2.63	0.10	8.84	197.33
1210.12	0.61	213.28	1210.09	2.65	-8.65	-2.77	0.09	9.08	197.78
1232.71	0.69	211.24	1232.67	2.78	-8.87	-2.91	0.36	9.33	198.17
1260.41	0.70	218.55	1260.37	2.97	-9.14	-3.10	0.32	9.65	198.75
1283.10	0.74	219.39	1283.06	3.14	-9.36	-3.28	0.19	9.92	199.31
1311.03	0.92	233.45	1310.99	3.43	-9.64	-3.58	0.96	10.28	200.36
1333.74	0.97	234.11	1333.69	3.73	-9.86	-3.88	0.23	10.59	201.47
1361.59	0.80	239.61	1361.53	4.08	-10.09	-4.23	0.66	10.94	202.76
1385.06	0.77	240.26	1385.00	4.36	-10.25	-4.51	0.14	11.20	203.76
1407.58	0.60	244.12	1407.53	4.59	-10.38	-4.75	0.80	11.41	204.59
1435.53	0.83	237.06	1435.47	4.89	-10.55	-5.05	0.91	11.70	205.58
1458.84	0.78	234.99	1458.78	5.16	-10.74	-5.32	0.26	11.98	206.37
1486.05	0.89	231.58	1485.98	5.48	-10.97	-5.64	0.45	12.34	207.21
1509.33	0.89	232.67	1509.27	5.76	-11.20	-5.93	0.07	12.67	207.90
1536.48	0.99	232.58	1536.41	6.11	-11.47	-6.28	0.34	13.07	208.71
1559.45	0.96	236.11	1559.38	6.42	-11.69	-6.60	0.28	13.43	209.43
1586.94	0.95	239.98	1586.87	6.81	-11.94	-6.99	0.24	13.83	210.34
1609.11	0.93	244.73	1609.03	7.13	-12.11	-7.31	0.36	14.14	211.12
1636.55	0.88	245.21	1636.47	7.52	-12.29	-7.70	0.19	14.50	212.08
1658.71	0.80	248.50	1658.62	7.82	-12.42	-8.00	0.41	14.77	212.79
1686.22	0.89	242.31	1686.13	8.18	-12.59	-8.37	0.45	15.12	213.62
1709.02	0.93	235.83	1708.93	8.49	-12.77	-8.68	0.48	15.44	214.19
1735.65	0.94	234.85	1735.56	8.84	-13.02	-9.03	0.07	15.85	214.76
1758.47	1.04	233.04	1758.37	9.15	-13.25	-9.35	0.46	16.22	215.21
1785.80	1.01	231.63	1785.69	9.54	-13.55	-9.74	0.14	16.69	215.71
1807.88	1.15	235.75	1807.77	9.87	-13.79	-10.07	0.74	17.08	216.14
1835.20	1.05	240.65	1835.08	10.31	-14.07	-10.52	0.51	17.57	216.78

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
1861.80	0.98	243.30	1861.68	10.72	-14.29	-10.93	0.31	18.00	217.42
1884.59	1.01	246.08	1884.47	11.08	-14.46	-11.29	0.24	18.35	217.98
1911.76	0.91	248.36	1911.64	11.49	-14.64	-11.71	0.38	18.75	218.66
1933.95	0.90	245.16	1933.82	11.81	-14.78	-12.03	0.24	19.06	219.16
1961.13	0.90	244.76	1960.99	12.20	-14.96	-12.42	0.03	19.44	219.71
1983.31	0.85	241.31	1983.18	12.50	-15.11	-12.72	0.35	19.75	220.10
2010.47	0.87	241.89	2010.33	12.85	-15.30	-13.08	0.08	20.13	220.52
2033.38	0.80	242.27	2033.25	13.14	-15.46	-13.37	0.31	20.44	220.86
2059.84	0.82	243.11	2059.70	13.47	-15.63	-13.71	0.11	20.79	221.24
2082.73	0.86	252.99	2082.59	13.78	-15.76	-14.02	0.66	21.09	221.66
2109.88	0.71	255.25	2109.73	14.14	-15.86	-14.38	0.57	21.40	222.19
2136.41	0.71	253.90	2136.27	14.45	-15.95	-14.69	0.06	21.68	222.66
2159.16	0.76	249.83	2159.01	14.73	-16.04	-14.97	0.32	21.94	223.03
2185.51	0.70	252.96	2185.36	15.05	-16.15	-15.29	0.27	22.23	223.44
2208.50	0.59	253.99	2208.35	15.29	-16.22	-15.54	0.48	22.46	223.77
2235.74	0.53	249.43	2235.58	15.55	-16.30	-15.79	0.27	22.70	224.08
2257.73	0.49	254.30	2257.58	15.73	-16.36	-15.97	0.29	22.87	224.31
2284.97	0.46	252.70	2284.81	15.94	-16.43	-16.19	0.12	23.06	224.58
2311.48	0.50	251.64	2311.33	16.15	-16.50	-16.40	0.17	23.26	224.84
2333.56	0.53	252.82	2333.40	16.34	-16.56	-16.59	0.14	23.44	225.06
2360.02	0.54	254.88	2359.86	16.58	-16.62	-16.83	0.08	23.65	225.35
2382.71	0.59	257.55	2382.55	16.80	-16.68	-17.04	0.27	23.85	225.62
2409.90	0.47	252.04	2409.74	17.04	-16.74	-17.29	0.48	24.07	225.92
2435.83	0.45	264.93	2435.67	17.24	-16.78	-17.49	0.41	24.24	226.19
2458.28	0.23	254.20	2458.12	17.37	-16.80	-17.63	1.03	24.35	226.37
2484.91	0.25	247.91	2484.74	17.48	-16.84	-17.73	0.13	24.46	226.48
2510.93	0.27	229.72	2510.76	17.58	-16.90	-17.83	0.32	24.57	226.53
2533.25	0.28	236.34	2533.09	17.66	-16.97	-17.92	0.14	24.68	226.56
2559.90	0.47	239.75	2559.74	17.81	-17.06	-18.07	0.75	24.85	226.64
2585.95	0.28	198.97	2585.79	17.92	-17.17	-18.18	1.23	25.01	226.63
2608.25	0.33	217.77	2608.09	17.98	-17.27	-18.24	0.51	25.12	226.55
2634.01	0.27	211.43	2633.85	18.05	-17.39	-18.31	0.27	25.25	226.49
2660.73	0.24	198.16	2660.56	18.10	-17.49	-18.37	0.26	25.36	226.39
2683.17	0.17	200.09	2683.00	18.13	-17.57	-18.39	0.30	25.43	226.31
2709.16	0.22	187.93	2709.00	18.15	-17.66	-18.41	0.26	25.51	226.20
2735.77	0.12	170.80	2735.60	18.15	-17.74	-18.41	0.42	25.57	226.08

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2757.60	0.09	150.44	2757.44	18.14	-17.77	-18.40	0.24	25.58	226.00
2784.20	0.16	145.45	2784.04	18.10	-17.82	-18.37	0.28	25.59	225.87
2810.79	0.21	150.08	2810.63	18.06	-17.90	-18.32	0.20	25.61	225.68
2836.75	0.17	154.77	2836.59	18.02	-17.97	-18.28	0.17	25.64	225.49
2859.03	0.16	165.71	2858.86	17.99	-18.03	-18.26	0.15	25.67	225.36
2885.69	0.08	178.20	2885.52	17.98	-18.09	-18.25	0.33	25.70	225.26
2907.52	0.10	279.72	2907.35	18.00	-18.10	-18.27	0.62	25.72	225.27
2934.86	0.25	303.72	2934.70	18.07	-18.06	-18.34	0.59	25.74	225.44
2957.93	0.29	288.08	2957.76	18.17	-18.02	-18.44	0.38	25.78	225.66
2985.09	0.45	313.61	2984.92	18.31	-17.92	-18.58	0.81	25.82	226.03
3008.28	0.50	320.38	3008.11	18.44	-17.78	-18.71	0.32	25.81	226.46
3035.30	0.62	323.21	3035.13	18.61	-17.57	-18.87	0.48	25.79	227.04
3058.48	0.69	326.47	3058.31	18.77	-17.36	-19.03	0.32	25.75	227.62
3086.22	0.70	322.77	3086.04	18.96	-17.08	-19.22	0.17	25.72	228.37
3109.39	0.65	318.60	3109.21	19.14	-16.87	-19.39	0.29	25.71	228.97
3136.30	0.73	318.49	3136.13	19.36	-16.63	-19.61	0.29	25.71	229.70
3158.69	0.77	319.29	3158.52	19.56	-16.41	-19.80	0.18	25.72	230.35
3186.46	0.80	321.90	3186.27	19.80	-16.11	-20.04	0.16	25.72	231.20
3209.61	1.00	301.90	3209.42	20.08	-15.88	-20.31	1.61	25.78	231.99
3236.57	1.01	307.56	3236.39	20.47	-15.61	-20.70	0.37	25.93	232.99
3259.57	1.10	309.86	3259.38	20.80	-15.34	-21.03	0.43	26.04	233.89
3282.09	1.19	308.12	3281.89	21.16	-15.06	-21.39	0.42	26.16	234.85
3309.36	1.20	306.57	3309.15	21.62	-14.72	-21.84	0.12	26.33	236.03
3336.63	1.23	303.91	3336.42	22.09	-14.38	-22.31	0.23	26.54	237.19
3358.77	1.37	299.65	3358.55	22.52	-14.12	-22.74	0.78	26.76	238.16
3385.88	1.38	302.11	3385.66	23.09	-13.79	-23.29	0.22	27.07	239.38
3408.04	1.30	299.77	3407.81	23.54	-13.52	-23.74	0.44	27.32	240.34
3435.13	1.36	299.12	3434.89	24.09	-13.21	-24.29	0.22	27.65	241.46
3457.98	1.31	298.66	3457.74	24.56	-12.95	-24.75	0.23	27.94	242.38
3484.32	1.26	290.59	3484.07	25.09	-12.71	-25.29	0.71	28.30	243.32
3511.39	1.25	292.20	3511.13	25.65	-12.49	-25.84	0.13	28.70	244.20
3534.21	1.22	285.11	3533.95	26.12	-12.33	-26.31	0.68	29.05	244.88
3560.57	1.10	289.85	3560.30	26.63	-12.17	-26.82	0.58	29.45	245.59
3583.22	1.09	289.51	3582.95	27.04	-12.03	-27.22	0.08	29.76	246.17
3610.35	1.21	287.81	3610.07	27.56	-11.85	-27.74	0.47	30.17	246.86
3636.75	1.18	291.27	3636.47	28.08	-11.67	-28.26	0.30	30.57	247.56

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3659.40	1.22	293.42	3659.11	28.52	-11.49	-28.69	0.29	30.91	248.18
3685.80	1.22	295.74	3685.51	29.04	-11.26	-29.21	0.19	31.30	248.92
3708.42	1.11	298.21	3708.12	29.45	-11.05	-29.62	0.55	31.61	249.54
3735.53	1.16	297.40	3735.23	29.93	-10.80	-30.09	0.20	31.97	250.26
3761.86	1.18	306.26	3761.55	30.38	-10.52	-30.54	0.69	32.30	251.00
3784.46	1.12	300.01	3784.15	30.77	-10.27	-30.92	0.61	32.58	251.63
3810.80	1.10	303.58	3810.48	31.20	-10.00	-31.36	0.28	32.91	252.31
3833.51	1.13	300.68	3833.19	31.58	-9.76	-31.73	0.28	33.20	252.90
3860.57	1.05	301.03	3860.24	32.03	-9.50	-32.17	0.29	33.55	253.55
3886.75	1.06	302.05	3886.42	32.44	-9.25	-32.58	0.08	33.87	254.16
3909.44	1.14	299.07	3909.11	32.82	-9.03	-32.96	0.45	34.17	254.68
3936.40	1.11	300.27	3936.06	33.29	-8.76	-33.42	0.15	34.55	255.31
3958.39	1.10	301.05	3958.04	33.65	-8.55	-33.78	0.09	34.85	255.80
3985.52	1.21	300.79	3985.17	34.13	-8.27	-34.25	0.42	35.24	256.43
4007.61	1.22	299.76	4007.25	34.53	-8.03	-34.66	0.10	35.57	256.95
4034.92	1.20	302.05	4034.56	35.03	-7.74	-35.15	0.19	35.99	257.59
4057.72	1.19	301.11	4057.35	35.44	-7.49	-35.55	0.09	36.33	258.11
4084.30	1.16	303.93	4083.93	35.90	-7.20	-36.01	0.25	36.72	258.70
4111.65	1.09	302.92	4111.28	36.35	-6.90	-36.46	0.27	37.11	259.28
4134.21	1.12	305.65	4133.83	36.71	-6.66	-36.82	0.27	37.41	259.75
4161.45	1.03	308.95	4161.06	37.13	-6.35	-37.22	0.39	37.76	260.32
4184.39	1.10	308.47	4184.00	37.46	-6.08	-37.56	0.31	38.05	260.80
4210.88	1.09	309.72	4210.48	37.86	-5.76	-37.95	0.10	38.38	261.37
4233.82	1.14	315.78	4233.42	38.19	-5.46	-38.28	0.57	38.66	261.88
4259.51	1.19	316.85	4259.10	38.56	-5.08	-38.64	0.20	38.97	262.51
4286.64	1.19	321.15	4286.23	38.93	-4.66	-39.01	0.33	39.28	263.19
4309.36	1.18	310.66	4308.95	39.26	-4.32	-39.33	0.96	39.57	263.73
4335.85	1.08	319.64	4335.43	39.64	-3.95	-39.70	0.77	39.90	264.31
4358.68	1.10	323.19	4358.26	39.91	-3.62	-39.97	0.31	40.13	264.83
4385.73	1.13	327.21	4385.30	40.22	-3.18	-40.27	0.31	40.39	265.48
4411.60	1.09	332.09	4411.17	40.48	-2.75	-40.52	0.39	40.61	266.11
4433.03	1.07	338.70	4432.59	40.65	-2.39	-40.69	0.59	40.76	266.64
4457.80	1.03	351.23	4457.36	40.77	-1.95	-40.81	0.94	40.85	267.26
4484.23	0.78	342.99	4483.78	40.87	-1.54	-40.90	1.07	40.92	267.84
4511.02	0.84	336.74	4510.57	41.00	-1.19	-41.03	0.39	41.04	268.34
4533.63	0.86	312.66	4533.18	41.20	-0.92	-41.22	1.57	41.23	268.72

**Well Name:** JAMES A DAMIANA #1**Survey:** JAMES A DAMIANA #1**Survey Date:** 8/24/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
4559.72	1.00	307.74	4559.26	41.53	-0.65	-41.54	0.63	41.55	269.11
4583.93	0.89	317.07	4583.48	41.83	-0.38	-41.84	0.79	41.84	269.48
4610.19	0.85	325.61	4609.73	42.08	-0.07	-42.08	0.51	42.08	269.90
4634.90	0.85	318.73	4634.44	42.31	0.22	-42.31	0.41	42.31	270.29
4660.93	1.06	304.23	4660.47	42.64	0.50	-42.63	1.24	42.64	270.67
4673.27	1.10	308.89	4672.80	42.83	0.64	-42.82	0.79	42.83	270.85