



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

Well Location	WELD, CO
Well Name	AMOCO ENERGY SMITS UNIT C#1
Rig Number	
Survey Date	8/28/2014
Latitude	40.1144800°N
Longitude	104.7899600°W
North Reference	True North
Grid Correction	None
Depth Reference	GROUND LEVEL (4913.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 315.18Azim (deg)
Definitive Survey	None
Operator(s)	P HOLBROOK, T CELLAN

Well Notes

Survey Report

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Survey Date: 8/28/2014

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
88.11	0.44	97.61	88.11	-0.27	-0.04	0.34	0.50	0.34	97.61
111.64	0.35	86.14	111.63	-0.39	-0.05	0.50	0.50	0.50	95.95
135.11	0.27	71.90	135.10	-0.46	-0.03	0.62	0.47	0.62	92.72
160.46	0.40	92.31	160.46	-0.55	-0.01	0.77	0.67	0.77	91.06
185.37	0.41	92.30	185.37	-0.68	-0.02	0.95	0.04	0.95	91.30
210.87	0.27	53.18	210.87	-0.76	0.01	1.08	1.03	1.08	89.44
236.34	0.29	19.68	236.34	-0.74	0.11	1.15	0.64	1.16	84.67
261.92	0.30	347.21	261.92	-0.65	0.24	1.16	0.65	1.18	78.54
286.64	0.31	358.29	286.63	-0.55	0.36	1.14	0.24	1.20	72.31
311.98	0.26	355.59	311.97	-0.45	0.49	1.14	0.18	1.24	66.68
334.35	0.32	355.84	334.35	-0.37	0.60	1.13	0.24	1.28	61.89
359.77	0.30	9.42	359.76	-0.28	0.74	1.13	0.29	1.35	56.92
385.20	0.30	2.51	385.20	-0.19	0.87	1.15	0.14	1.44	52.83
409.87	0.33	355.34	409.87	-0.09	1.01	1.15	0.22	1.52	48.71
434.71	0.30	7.49	434.70	0.00	1.14	1.15	0.30	1.62	45.13
459.76	0.29	0.25	459.75	0.09	1.27	1.16	0.15	1.72	42.28
484.67	0.31	355.36	484.66	0.18	1.40	1.15	0.12	1.82	39.40
510.13	0.30	358.63	510.12	0.28	1.54	1.15	0.07	1.92	36.69
535.10	0.23	7.78	535.09	0.36	1.65	1.15	0.31	2.01	34.85
562.76	0.27	357.98	562.76	0.44	1.77	1.16	0.22	2.12	33.09
587.67	0.33	357.42	587.66	0.54	1.91	1.15	0.23	2.23	31.12
612.58	0.32	358.05	612.57	0.64	2.05	1.14	0.05	2.35	29.22
637.39	0.34	350.61	637.38	0.76	2.19	1.13	0.19	2.46	27.32
662.28	0.41	352.61	662.27	0.89	2.35	1.11	0.28	2.60	25.22
686.56	0.38	346.23	686.55	1.02	2.51	1.08	0.21	2.74	23.18
712.05	0.33	352.40	712.04	1.16	2.67	1.05	0.26	2.87	21.41
736.84	0.29	357.40	736.83	1.26	2.80	1.03	0.19	2.99	20.26
761.72	0.28	342.08	761.71	1.36	2.92	1.01	0.31	3.09	19.11
786.66	0.28	345.56	786.65	1.47	3.04	0.98	0.07	3.19	17.84
810.79	0.13	6.64	810.78	1.54	3.13	0.97	0.69	3.27	17.19
835.54	0.15	347.73	835.53	1.58	3.19	0.96	0.20	3.33	16.82
860.39	0.18	345.72	860.38	1.64	3.26	0.95	0.13	3.39	16.21
885.23	0.02	114.22	885.22	1.67	3.29	0.94	0.78	3.42	15.94
909.28	0.04	195.11	909.27	1.67	3.28	0.94	0.15	3.42	16.00
937.63	0.14	2.97	937.61	1.68	3.31	0.94	0.61	3.44	15.87

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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
962.35	0.19	125.34	962.34	1.66	3.32	0.98	1.16	3.46	16.40
987.18	0.09	31.23	987.16	1.63	3.31	1.02	0.87	3.46	17.13
1011.90	0.11	176.14	1011.89	1.62	3.30	1.03	0.78	3.46	17.34
1036.10	0.14	11.82	1036.09	1.61	3.31	1.04	1.00	3.47	17.44
1061.42	0.07	164.09	1061.40	1.62	3.32	1.05	0.77	3.48	17.52
1086.22	0.19	40.15	1086.21	1.61	3.34	1.08	0.93	3.51	17.90
1110.90	0.04	98.60	1110.88	1.61	3.37	1.11	0.69	3.55	18.29
1135.73	0.09	82.34	1135.72	1.59	3.37	1.14	0.19	3.56	18.71
1160.33	0.19	322.64	1160.32	1.61	3.41	1.14	0.98	3.59	18.44
1187.24	0.10	80.58	1187.23	1.64	3.44	1.13	0.94	3.63	18.21
1211.39	0.09	118.44	1211.38	1.61	3.44	1.17	0.27	3.63	18.83
1235.62	0.08	92.59	1235.60	1.58	3.43	1.21	0.17	3.63	19.40
1259.83	0.09	95.31	1259.82	1.55	3.43	1.24	0.04	3.64	19.94
1287.48	0.13	31.51	1287.46	1.54	3.45	1.28	0.45	3.68	20.37
1310.90	0.23	138.52	1310.89	1.51	3.44	1.33	1.26	3.69	21.09
1335.77	0.22	153.03	1335.76	1.41	3.36	1.38	0.23	3.63	22.34
1362.83	0.30	139.87	1362.82	1.29	3.26	1.45	0.35	3.57	23.99
1387.18	0.29	144.83	1387.17	1.17	3.16	1.53	0.11	3.51	25.79
1411.32	0.25	145.44	1411.30	1.05	3.07	1.59	0.15	3.46	27.43
1434.86	0.29	149.51	1434.85	0.94	2.97	1.65	0.18	3.40	29.06
1462.48	0.29	151.53	1462.47	0.81	2.85	1.72	0.04	3.33	31.12
1486.82	0.30	157.86	1486.80	0.69	2.74	1.78	0.14	3.26	32.98
1511.06	0.30	145.55	1511.04	0.57	2.62	1.83	0.27	3.20	34.96
1535.21	0.37	164.76	1535.19	0.44	2.50	1.89	0.54	3.13	37.12
1562.97	0.29	195.65	1562.95	0.33	2.34	1.89	0.68	3.01	38.96
1586.34	0.39	179.34	1586.33	0.24	2.21	1.88	0.58	2.90	40.43
1610.61	0.44	192.30	1610.59	0.13	2.03	1.86	0.43	2.76	42.46
1634.85	0.43	199.20	1634.84	0.04	1.86	1.81	0.22	2.59	44.29
1662.98	0.42	201.22	1662.97	-0.05	1.66	1.74	0.07	2.40	46.33
1687.20	0.46	190.43	1687.18	-0.14	1.48	1.69	0.39	2.25	48.75
1711.22	0.55	181.04	1711.20	-0.28	1.27	1.67	0.50	2.10	52.75
1736.40	0.45	194.58	1736.38	-0.41	1.05	1.64	0.61	1.95	57.37
1760.57	0.50	189.35	1760.55	-0.52	0.85	1.60	0.28	1.81	61.92
1782.07	0.35	199.45	1782.05	-0.61	0.70	1.56	0.81	1.71	65.90
1812.40	0.46	205.94	1812.38	-0.69	0.50	1.48	0.40	1.56	71.20
1836.85	0.44	214.48	1836.82	-0.74	0.34	1.38	0.28	1.42	76.27



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1861.41	0.46	189.24	1861.39	-0.81	0.16	1.31	0.81	1.32	82.95
1886.85	0.40	197.61	1886.82	-0.91	-0.02	1.27	0.35	1.27	91.03
1912.26	0.42	199.28	1912.23	-0.99	-0.19	1.21	0.09	1.23	99.10
1935.72	0.39	207.33	1935.69	-1.06	-0.35	1.15	0.28	1.20	106.72
1962.50	0.41	210.20	1962.47	-1.11	-0.51	1.06	0.12	1.18	115.64
1987.17	0.37	207.53	1987.15	-1.15	-0.66	0.98	0.18	1.18	123.85
2011.17	0.40	223.28	2011.14	-1.18	-0.79	0.88	0.46	1.18	131.65
2037.49	0.47	233.82	2037.46	-1.17	-0.92	0.73	0.40	1.17	141.36
2062.55	0.48	237.39	2062.52	-1.13	-1.04	0.56	0.13	1.18	151.54
2087.36	0.46	234.34	2087.33	-1.09	-1.15	0.39	0.16	1.21	161.14
2112.09	0.48	233.34	2112.06	-1.06	-1.27	0.23	0.10	1.29	169.72
2137.34	0.65	253.17	2137.30	-0.98	-1.37	0.01	1.02	1.37	179.65
2160.54	0.89	271.89	2160.50	-0.79	-1.41	-0.30	1.50	1.44	191.99
2185.90	0.67	248.52	2185.87	-0.58	-1.45	-0.63	1.52	1.59	203.61
2211.06	0.66	236.59	2211.02	-0.50	-1.59	-0.89	0.55	1.82	209.38
2236.08	0.72	233.70	2236.04	-0.44	-1.76	-1.14	0.26	2.10	212.96
2261.19	0.89	250.48	2261.15	-0.34	-1.92	-1.45	1.14	2.40	217.10
2285.57	0.90	258.50	2285.53	-0.15	-2.02	-1.82	0.51	2.71	221.97
2310.68	0.83	258.38	2310.63	0.06	-2.09	-2.19	0.28	3.03	226.23
2335.69	0.83	254.59	2335.64	0.24	-2.18	-2.54	0.22	3.34	229.34
2360.74	0.75	263.96	2360.68	0.43	-2.24	-2.87	0.59	3.65	232.02
2385.95	0.91	268.98	2385.89	0.68	-2.26	-3.24	0.71	3.95	235.03
2410.42	0.89	274.11	2410.36	0.95	-2.25	-3.62	0.34	4.27	238.11
2435.49	0.98	291.22	2435.43	1.30	-2.16	-4.02	1.16	4.56	241.69
2460.57	0.87	293.16	2460.50	1.67	-2.01	-4.39	0.43	4.83	245.39
2485.47	0.96	298.93	2485.40	2.05	-1.84	-4.75	0.51	5.09	248.86
2510.00	1.09	289.30	2509.92	2.45	-1.66	-5.15	0.87	5.41	252.14
2535.04	0.95	307.52	2534.97	2.87	-1.45	-5.54	1.40	5.73	255.29
2559.99	1.04	295.31	2559.91	3.29	-1.23	-5.91	0.93	6.03	258.23
2585.05	1.01	302.38	2584.96	3.72	-1.02	-6.30	0.52	6.38	260.85
2610.13	0.96	311.58	2610.04	4.15	-0.76	-6.64	0.66	6.69	263.50
2634.44	0.91	303.60	2634.35	4.54	-0.51	-6.96	0.57	6.98	265.77
2662.88	0.83	309.01	2662.79	4.97	-0.26	-7.31	0.41	7.31	267.97
2687.51	0.78	309.72	2687.41	5.31	-0.04	-7.57	0.20	7.57	269.70
2711.88	0.77	319.95	2711.78	5.64	0.19	-7.81	0.57	7.81	271.41
2736.41	0.73	317.75	2736.31	5.96	0.44	-8.02	0.21	8.03	273.11

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
2760.15	0.64	311.04	2760.04	6.25	0.64	-8.22	0.51	8.25	274.42
2784.81	0.78	308.95	2784.71	6.55	0.83	-8.46	0.55	8.50	275.61
2812.68	0.67	313.24	2812.58	6.90	1.06	-8.72	0.42	8.79	276.94
2837.19	0.74	310.46	2837.08	7.20	1.26	-8.95	0.30	9.04	278.03
2861.72	0.68	313.69	2861.61	7.51	1.47	-9.17	0.29	9.29	279.08
2885.52	0.72	312.24	2885.41	7.80	1.66	-9.39	0.20	9.53	280.05
2910.03	0.72	320.69	2909.91	8.10	1.89	-9.60	0.43	9.78	281.12
2934.46	0.62	314.23	2934.35	8.39	2.10	-9.79	0.52	10.01	282.10
2962.42	0.72	314.20	2962.31	8.72	2.33	-10.03	0.37	10.29	283.07
2986.96	0.53	320.01	2986.84	8.99	2.52	-10.21	0.83	10.52	283.88
3010.75	0.69	310.50	3010.63	9.24	2.70	-10.39	0.80	10.74	284.57
3035.30	0.70	302.03	3035.17	9.54	2.88	-10.63	0.42	11.01	285.14
3059.71	0.60	313.04	3059.58	9.81	3.04	-10.85	0.66	11.27	285.67
3087.80	0.53	318.97	3087.67	10.09	3.24	-11.04	0.34	11.51	286.36
3111.97	0.73	300.25	3111.84	10.35	3.40	-11.25	1.20	11.76	286.83
3135.98	0.53	309.39	3135.85	10.61	3.55	-11.47	0.95	12.01	287.21
3160.52	0.68	313.26	3160.39	10.86	3.72	-11.66	0.64	12.24	287.71
3185.05	0.77	299.83	3184.92	11.17	3.91	-11.91	0.78	12.54	288.15
3212.98	0.75	300.06	3212.85	11.52	4.09	-12.23	0.08	12.90	288.49
3237.37	0.65	301.07	3237.24	11.81	4.24	-12.49	0.38	13.19	288.76
3261.14	0.69	303.49	3261.00	12.08	4.39	-12.72	0.19	13.46	289.03
3285.52	0.67	305.21	3285.38	12.37	4.55	-12.96	0.11	13.74	289.35
3311.76	0.74	308.27	3311.62	12.69	4.75	-13.22	0.32	14.05	289.75
3335.90	0.75	300.03	3335.76	13.00	4.92	-13.48	0.44	14.35	290.06
3361.33	0.68	309.49	3361.19	13.31	5.10	-13.74	0.53	14.66	290.37
3388.58	0.53	294.13	3388.44	13.59	5.26	-13.98	0.81	14.94	290.60
3412.73	0.65	303.10	3412.59	13.82	5.38	-14.20	0.63	15.18	290.74
3437.13	0.68	295.81	3436.98	14.10	5.52	-14.45	0.36	15.46	290.90
3461.15	0.31	311.36	3461.00	14.30	5.62	-14.62	1.60	15.67	291.03
3485.42	0.35	311.21	3485.27	14.44	5.71	-14.73	0.13	15.80	291.20
3509.93	0.25	268.42	3509.78	14.55	5.76	-14.84	0.96	15.92	291.22
3537.70	0.23	279.63	3537.55	14.63	5.77	-14.96	0.18	16.03	291.10
3562.06	0.06	57.76	3561.91	14.67	5.79	-14.99	1.17	16.07	291.10
3585.75	0.17	124.45	3585.60	14.64	5.77	-14.95	0.64	16.03	291.11
3610.28	0.33	121.45	3610.12	14.53	5.72	-14.86	0.69	15.93	291.03
3634.70	0.50	127.04	3634.54	14.36	5.61	-14.72	0.70	15.75	290.88

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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
3662.43	0.45	114.77	3662.28	14.14	5.50	-14.52	0.41	15.53	290.73
3686.74	0.49	118.29	3686.58	13.95	5.41	-14.35	0.19	15.33	290.65
3710.62	0.43	125.14	3710.46	13.76	5.31	-14.18	0.32	15.14	290.52
3734.90	0.39	130.85	3734.75	13.59	5.20	-14.04	0.23	14.98	290.32
3762.58	0.26	121.72	3762.43	13.43	5.10	-13.92	0.51	14.82	290.14
3786.97	0.29	112.75	3786.81	13.32	5.05	-13.81	0.21	14.71	290.08
3811.34	0.23	126.19	3811.18	13.21	5.00	-13.72	0.35	14.60	290.02
3835.16	0.22	123.67	3835.00	13.12	4.94	-13.64	0.08	14.51	289.92
3862.74	0.11	44.17	3862.58	13.07	4.93	-13.58	0.82	14.45	289.97
3887.09	0.39	349.81	3886.93	13.14	5.03	-13.58	1.36	14.48	290.34
3911.43	0.48	341.45	3911.27	13.30	5.21	-13.62	0.48	14.58	290.93
3935.58	0.65	332.10	3935.42	13.52	5.43	-13.72	0.80	14.75	291.59
3962.83	0.65	334.32	3962.66	13.82	5.71	-13.86	0.09	14.99	292.38
3987.18	0.72	329.83	3987.02	14.09	5.96	-14.00	0.36	15.21	293.07
4011.44	0.76	326.73	4011.27	14.40	6.23	-14.16	0.25	15.47	293.74
4035.59	0.83	328.60	4035.42	14.73	6.51	-14.34	0.29	15.75	294.43
4060.14	0.85	322.35	4059.97	15.08	6.81	-14.54	0.38	16.06	295.09
4087.21	0.89	326.87	4087.03	15.49	7.14	-14.78	0.30	16.42	295.79
4111.56	1.01	329.97	4111.38	15.88	7.49	-14.99	0.54	16.76	296.54
4135.69	1.04	327.57	4135.51	16.30	7.86	-15.22	0.21	17.13	297.32
4162.81	0.99	334.33	4162.62	16.76	8.28	-15.45	0.49	17.53	298.18
4186.59	1.02	329.47	4186.40	17.16	8.64	-15.65	0.39	17.88	298.92
4210.01	1.02	338.58	4209.82	17.55	9.02	-15.83	0.69	18.22	299.67
4237.12	0.98	335.31	4236.93	17.99	9.45	-16.01	0.26	18.60	300.55
4260.89	0.79	346.61	4260.69	18.32	9.80	-16.14	1.06	18.88	301.26
4284.65	0.73	354.20	4284.45	18.58	10.11	-16.19	0.51	19.08	301.97
4311.98	0.96	18.03	4311.78	18.82	10.50	-16.14	1.52	19.25	303.04
4335.11	0.74	33.74	4334.90	18.94	10.80	-15.99	1.37	19.30	304.04
4359.45	0.69	57.41	4359.24	18.94	11.01	-15.78	1.22	19.25	304.91
4386.65	0.82	81.88	4386.44	18.79	11.13	-15.45	1.26	19.04	305.77
4410.50	0.94	84.85	4410.29	18.56	11.17	-15.09	0.52	18.77	306.52
4437.70	0.89	93.52	4437.48	18.26	11.18	-14.66	0.53	18.43	307.33
4461.55	0.81	100.92	4461.33	17.98	11.13	-14.30	0.58	18.13	307.90
4485.38	0.70	92.63	4485.16	17.73	11.10	-13.99	0.64	17.86	308.41
4512.24	0.76	88.13	4512.02	17.49	11.09	-13.65	0.30	17.59	309.10
4537.22	0.72	81.77	4536.99	17.29	11.12	-13.33	0.37	17.36	309.84



Well Name: AMOCO ENERGY SMITS UNIT C#1
Survey: AMOCO ENERGY SMITS UNIT C #1
Survey Date: 8/28/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
4562.45	0.87	85.00	4562.22	17.07	11.16	-12.99	0.63	17.12	310.68
4586.22	0.99	84.06	4585.98	16.83	11.20	-12.60	0.52	16.86	311.62
4612.08	1.11	67.13	4611.85	16.59	11.32	-12.15	1.28	16.60	312.97
4637.40	0.85	68.18	4637.16	16.43	11.48	-11.75	1.03	16.43	314.34
4654.02	0.88	54.16	4653.78	16.36	11.60	-11.53	1.28	16.36	315.18