



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

Well Location	WELD
Well Name	SAM FUNAKOSHI A-2
Rig Number	
Survey Date	9/4/2014
Latitude	40.1000360°N
Longitude	104.8409070°W
North Reference	True North
Grid Correction	None
Depth Reference	GL (4898.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 256.47Azim (deg)
Definitive Survey	SAM FUNAKOSHI A-2
Operator(s)	C KIRBY, P HOLBROOK

Well Notes

API 05-123-09071

Survey Report

Well Name:		SAM FUNAKOSHI A-2							
Survey:		SAM FUNAKOSHI A-2							
Survey Date:		9/4/2014							
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
87.77	0.60	300.64	87.77	0.33	0.24	-0.40	0.69	0.46	300.64
110.57	0.56	286.37	110.57	0.51	0.33	-0.61	0.66	0.69	298.36
135.97	0.57	293.69	135.96	0.72	0.41	-0.84	0.29	0.94	296.16
160.05	0.55	296.35	160.05	0.91	0.51	-1.06	0.14	1.18	295.92
183.82	0.51	286.13	183.81	1.09	0.59	-1.26	0.44	1.40	295.22
210.81	0.42	283.14	210.80	1.28	0.65	-1.47	0.36	1.61	293.82
235.23	0.42	279.72	235.22	1.44	0.69	-1.65	0.11	1.79	292.59
258.73	0.44	290.05	258.72	1.60	0.73	-1.82	0.34	1.96	291.90
283.04	0.45	295.32	283.03	1.75	0.80	-1.99	0.18	2.15	291.98
308.83	0.45	291.20	308.82	1.91	0.88	-2.18	0.13	2.35	292.09
335.00	0.43	282.33	334.99	2.08	0.94	-2.37	0.27	2.55	291.68
360.77	0.48	286.58	360.75	2.26	0.99	-2.57	0.24	2.75	291.16
382.86	0.48	302.33	382.85	2.41	1.07	-2.73	0.60	2.94	291.37
409.33	0.45	302.45	409.32	2.56	1.19	-2.92	0.14	3.15	292.12
435.10	0.49	286.17	435.08	2.72	1.27	-3.11	0.54	3.36	292.23
461.46	0.48	282.02	461.44	2.92	1.32	-3.32	0.14	3.58	291.73
483.00	0.42	294.80	482.99	3.06	1.38	-3.48	0.55	3.74	291.56
509.48	0.43	292.15	509.46	3.22	1.45	-3.66	0.10	3.94	291.65
536.60	0.48	291.50	536.58	3.40	1.53	-3.86	0.18	4.15	291.66
558.96	0.48	296.37	558.94	3.54	1.61	-4.03	0.18	4.34	291.76
586.95	0.50	272.97	586.93	3.75	1.67	-4.26	0.71	4.57	291.39
610.61	0.36	282.76	610.59	3.92	1.69	-4.44	0.67	4.75	290.86
635.89	0.40	284.45	635.87	4.06	1.73	-4.60	0.16	4.91	290.61
660.46	0.40	286.55	660.44	4.21	1.77	-4.76	0.06	5.08	290.44
685.56	0.39	296.04	685.54	4.35	1.84	-4.92	0.26	5.25	290.47
710.32	0.37	296.68	710.29	4.48	1.91	-5.07	0.08	5.41	290.65
734.40	0.42	303.56	734.38	4.60	1.99	-5.21	0.28	5.58	290.93
757.32	0.41	297.80	757.30	4.72	2.08	-5.35	0.18	5.74	291.21
782.36	0.46	277.47	782.34	4.88	2.13	-5.53	0.64	5.93	291.08
811.94	0.48	325.73	811.92	5.03	2.25	-5.72	1.30	6.14	291.48
835.89	0.41	309.20	835.86	5.12	2.39	-5.84	0.61	6.31	292.23
860.88	0.38	297.01	860.85	5.23	2.48	-5.98	0.36	6.48	292.52
884.84	0.58	340.49	884.81	5.31	2.63	-6.09	1.69	6.64	293.36
909.74	0.51	325.83	909.71	5.36	2.84	-6.20	0.64	6.82	294.63
933.71	0.43	315.30	933.68	5.44	2.99	-6.32	0.48	6.99	295.34

Survey Report

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Survey Date:		9/4/2014							
MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
958.45	0.54	332.64	958.42	5.52	3.16	-6.44	0.73	7.17	296.16
982.56	0.55	337.62	982.53	5.56	3.37	-6.53	0.20	7.35	297.28
1007.35	0.50	342.47	1007.31	5.59	3.58	-6.61	0.25	7.52	298.45
1036.96	0.55	342.41	1036.93	5.61	3.84	-6.69	0.16	7.72	299.86
1060.94	0.64	330.70	1060.91	5.65	4.07	-6.79	0.62	7.92	300.92
1085.72	0.54	323.68	1085.69	5.74	4.29	-6.93	0.49	8.15	301.73
1109.58	0.54	330.34	1109.54	5.81	4.47	-7.05	0.26	8.35	302.38
1134.62	0.51	328.10	1134.58	5.88	4.67	-7.17	0.15	8.56	303.08
1158.58	0.57	327.46	1158.54	5.95	4.86	-7.29	0.24	8.76	303.69
1183.34	0.70	339.26	1183.30	6.01	5.10	-7.41	0.74	9.00	304.56
1208.32	0.68	340.73	1208.28	6.04	5.39	-7.51	0.09	9.24	305.64
1232.01	0.59	335.31	1231.97	6.08	5.63	-7.61	0.45	9.47	306.50
1261.67	0.51	338.94	1261.62	6.13	5.89	-7.72	0.30	9.72	307.35
1285.75	0.53	353.40	1285.70	6.13	6.11	-7.77	0.55	9.89	308.15
1310.63	0.47	349.68	1310.58	6.11	6.32	-7.81	0.30	10.04	309.00
1334.84	0.41	349.34	1334.79	6.10	6.50	-7.84	0.22	10.19	309.68
1359.44	0.40	355.67	1359.40	6.08	6.68	-7.86	0.19	10.31	310.34
1384.25	0.31	349.25	1384.20	6.06	6.83	-7.88	0.40	10.43	310.91
1408.17	0.31	357.22	1408.12	6.05	6.96	-7.90	0.18	10.52	311.38
1433.80	0.52	18.42	1433.75	5.97	7.14	-7.86	1.01	10.62	312.22
1461.31	0.31	9.40	1461.26	5.88	7.33	-7.81	0.79	10.71	313.17
1485.75	0.53	11.93	1485.70	5.81	7.50	-7.78	0.88	10.81	313.97
1510.74	0.36	5.85	1510.69	5.73	7.69	-7.75	0.69	10.92	314.81
1533.44	0.31	1.55	1533.39	5.69	7.83	-7.74	0.25	11.01	315.33
1557.91	0.43	5.83	1557.85	5.64	7.99	-7.73	0.52	11.11	315.95
1586.03	0.26	9.75	1585.98	5.58	8.15	-7.70	0.64	11.22	316.62
1610.14	0.48	13.61	1610.09	5.51	8.31	-7.67	0.94	11.31	317.27
1633.72	0.43	15.71	1633.67	5.43	8.49	-7.62	0.22	11.41	318.07
1658.86	0.19	358.84	1658.80	5.37	8.62	-7.60	1.03	11.49	318.60
1681.53	0.31	13.04	1681.48	5.34	8.72	-7.59	0.62	11.55	318.97
1710.50	0.24	7.96	1710.44	5.28	8.85	-7.56	0.25	11.64	319.51
1734.70	0.29	13.71	1734.64	5.23	8.97	-7.54	0.24	11.71	319.95
1757.36	0.32	58.30	1757.31	5.14	9.06	-7.47	1.04	11.74	320.49
1786.35	0.24	34.57	1786.30	5.02	9.15	-7.36	0.49	11.75	321.17
1809.77	0.18	26.67	1809.71	4.96	9.22	-7.32	0.27	11.78	321.57
1834.09	0.29	35.64	1834.03	4.89	9.31	-7.27	0.48	11.81	322.03

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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
1857.46	0.30	53.65	1857.40	4.78	9.39	-7.18	0.40	11.82	322.61
1886.44	0.30	55.95	1886.38	4.64	9.48	-7.06	0.04	11.82	323.34
1910.67	0.33	46.35	1910.61	4.52	9.56	-6.96	0.25	11.83	323.98
1934.05	0.32	51.20	1934.00	4.41	9.65	-6.86	0.12	11.84	324.61
1958.34	0.23	69.64	1958.28	4.30	9.71	-6.76	0.51	11.83	325.17
1986.37	0.24	69.72	1986.31	4.18	9.75	-6.65	0.02	11.80	325.71
2010.38	0.25	77.32	2010.32	4.08	9.78	-6.55	0.14	11.77	326.18
2034.78	0.24	82.08	2034.72	3.98	9.80	-6.45	0.09	11.73	326.65
2058.28	0.30	89.65	2058.22	3.87	9.81	-6.34	0.28	11.68	327.12
2086.99	0.23	120.35	2086.93	3.75	9.78	-6.21	0.53	11.58	327.56
2110.48	0.26	122.09	2110.42	3.68	9.72	-6.13	0.12	11.49	327.78
2134.48	0.15	140.34	2134.42	3.63	9.67	-6.06	0.52	11.41	327.92
2161.96	0.11	195.55	2161.90	3.63	9.62	-6.04	0.46	11.36	327.85
2186.69	0.08	146.61	2186.63	3.63	9.58	-6.04	0.32	11.33	327.77
2210.59	0.22	186.87	2210.53	3.64	9.52	-6.04	0.70	11.27	327.62
2233.59	0.27	204.58	2233.53	3.69	9.43	-6.06	0.39	11.21	327.25
2261.96	0.24	223.22	2261.90	3.78	9.32	-6.13	0.31	11.16	326.67
2284.96	0.21	219.14	2284.89	3.85	9.26	-6.19	0.14	11.14	326.22
2308.56	0.26	215.20	2308.50	3.93	9.18	-6.25	0.23	11.11	325.74
2336.72	0.57	232.43	2336.66	4.11	9.04	-6.40	1.17	11.08	324.70
2359.72	0.53	231.14	2359.66	4.31	8.90	-6.57	0.21	11.07	323.56
2383.47	0.46	238.83	2383.41	4.50	8.79	-6.74	0.39	11.07	322.51
2410.85	0.51	231.39	2410.78	4.71	8.65	-6.93	0.29	11.09	321.32
2434.60	0.51	226.54	2434.54	4.90	8.51	-7.09	0.18	11.08	320.23
2458.23	0.61	221.32	2458.16	5.09	8.35	-7.25	0.47	11.05	319.04
2485.77	0.62	229.81	2485.70	5.34	8.14	-7.46	0.34	11.04	317.52
2509.40	0.74	236.37	2509.33	5.60	7.98	-7.68	0.59	11.07	316.08
2536.92	0.55	233.97	2536.85	5.89	7.80	-7.94	0.71	11.13	314.51
2560.57	0.35	206.32	2560.49	6.04	7.67	-8.06	1.21	11.12	313.58
2583.49	0.41	243.94	2583.42	6.17	7.57	-8.16	1.11	11.13	312.84
2611.80	0.29	276.81	2611.73	6.33	7.53	-8.33	0.82	11.23	312.14
2635.17	0.37	223.07	2635.09	6.45	7.49	-8.44	1.30	11.28	311.59
2658.17	0.23	169.82	2658.09	6.51	7.39	-8.48	1.28	11.24	311.07
2686.47	0.69	336.28	2686.40	6.55	7.49	-8.54	3.24	11.36	311.26
2710.22	0.56	278.13	2710.14	6.68	7.64	-8.71	2.62	11.58	311.24
2733.23	0.31	204.64	2733.15	6.82	7.60	-8.85	2.44	11.66	310.65

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Survey Date:		9/4/2014							
MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
2761.35	0.44	318.65	2761.27	6.92	7.61	-8.95	2.23	11.75	310.37
2784.34	0.36	341.91	2784.27	6.97	7.74	-9.03	0.77	11.90	310.61
2807.96	0.36	47.15	2807.88	6.91	7.86	-9.00	1.65	11.95	311.15
2835.49	0.31	202.41	2835.42	6.88	7.85	-8.96	2.39	11.92	311.23
2858.36	0.20	252.84	2858.28	6.95	7.79	-9.03	1.05	11.92	310.78
2885.86	0.57	307.00	2885.78	7.09	7.85	-9.18	1.74	12.08	310.55
2909.19	0.13	311.62	2909.11	7.18	7.94	-9.29	1.88	12.22	310.52
2933.10	0.46	64.75	2933.03	7.10	8.00	-9.22	2.20	12.21	310.93
2960.13	0.45	36.69	2960.05	6.91	8.13	-9.06	0.82	12.18	311.90
2983.33	0.38	324.46	2983.25	6.87	8.27	-9.05	2.12	12.26	312.40
3011.02	0.55	333.34	3010.94	6.93	8.46	-9.17	0.66	12.47	312.71
3033.40	0.85	10.68	3033.32	6.89	8.72	-9.18	2.36	12.66	313.51
3061.09	0.52	9.26	3061.01	6.76	9.04	-9.12	1.19	12.85	314.74
3083.43	0.63	331.90	3083.34	6.75	9.25	-9.17	1.71	13.02	315.26
3111.10	0.51	302.76	3111.02	6.87	9.45	-9.34	1.11	13.29	315.33
3133.47	0.05	13.39	3133.38	6.94	9.51	-9.42	2.24	13.39	315.27
3161.13	0.39	169.34	3161.04	6.94	9.43	-9.40	1.57	13.32	315.09
3184.21	0.44	198.02	3184.12	6.99	9.27	-9.42	0.92	13.21	314.55
3210.85	0.87	207.24	3210.76	7.17	8.99	-9.54	1.65	13.11	313.31
3234.22	1.02	229.22	3234.13	7.47	8.70	-9.78	1.66	13.09	311.66
3261.84	0.64	259.80	3261.75	7.84	8.51	-10.12	2.07	13.22	310.08
3284.25	0.60	206.90	3284.16	8.04	8.39	-10.29	2.46	13.28	309.17
3311.89	1.12	206.88	3311.79	8.31	8.02	-10.48	1.88	13.19	307.41
3334.23	0.94	230.24	3334.13	8.62	7.70	-10.72	2.03	13.20	305.71
3361.11	1.61	218.03	3361.00	9.11	7.27	-11.12	2.68	13.28	303.17
3383.43	1.68	223.29	3383.31	9.63	6.78	-11.54	0.74	13.38	300.45
3411.05	0.74	226.66	3410.93	10.12	6.37	-11.94	3.40	13.53	298.06
3433.71	1.07	220.44	3433.58	10.42	6.11	-12.19	1.52	13.63	296.61
3460.95	1.56	223.89	3460.81	10.94	5.65	-12.61	1.82	13.81	294.12
3483.74	0.86	225.95	3483.60	11.35	5.30	-12.95	3.07	13.99	292.27
3510.82	1.15	216.29	3510.68	11.73	4.94	-13.25	1.22	14.14	290.46
3533.68	1.23	217.82	3533.53	12.10	4.56	-13.54	0.40	14.29	288.63
3561.31	1.06	220.84	3561.16	12.54	4.14	-13.89	0.65	14.49	286.58
3583.65	1.13	211.17	3583.49	12.86	3.79	-14.14	0.88	14.64	285.01
3611.26	1.06	204.11	3611.10	13.21	3.32	-14.38	0.55	14.76	283.01
3634.24	1.02	218.63	3634.07	13.50	2.97	-14.60	1.16	14.90	281.50

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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
3661.05	0.97	219.37	3660.88	13.87	2.61	-14.89	0.18	15.12	279.94
3683.71	0.94	212.57	3683.53	14.15	2.30	-15.11	0.52	15.29	278.67
3710.01	0.99	212.36	3709.83	14.47	1.93	-15.35	0.18	15.47	277.17
3732.39	0.98	211.78	3732.21	14.75	1.61	-15.55	0.07	15.64	275.90
3759.30	0.80	211.49	3759.11	15.04	1.25	-15.77	0.64	15.82	274.54
3785.80	0.82	209.05	3785.61	15.30	0.93	-15.96	0.15	15.99	273.32
3808.21	0.76	206.93	3808.02	15.51	0.65	-16.11	0.30	16.12	272.32
3834.59	0.77	208.96	3834.40	15.74	0.34	-16.27	0.11	16.28	271.21
3861.46	0.75	202.83	3861.27	15.97	0.02	-16.43	0.31	16.43	270.08
3884.08	0.74	205.67	3883.88	16.15	-0.25	-16.55	0.18	16.55	269.15
3910.24	0.74	208.38	3910.04	16.37	-0.55	-16.70	0.13	16.71	268.13
3932.96	0.74	217.83	3932.76	16.58	-0.79	-16.86	0.54	16.88	267.32
3959.84	0.68	218.40	3959.64	16.84	-1.05	-17.07	0.25	17.10	266.47
3986.84	0.82	214.87	3986.63	17.11	-1.34	-17.28	0.56	17.33	265.58
4008.66	0.88	221.03	4008.45	17.36	-1.59	-17.48	0.49	17.55	264.80
4035.67	0.73	218.59	4035.46	17.67	-1.88	-17.72	0.57	17.82	263.94
4057.57	0.65	226.88	4057.36	17.88	-2.08	-17.90	0.57	18.02	263.39
4084.52	0.70	218.72	4084.30	18.15	-2.31	-18.11	0.40	18.26	262.74
4110.79	0.70	212.45	4110.58	18.39	-2.57	-18.30	0.29	18.48	262.01
4133.35	0.69	223.93	4133.13	18.60	-2.78	-18.46	0.61	18.67	261.44
4160.24	0.69	222.38	4160.02	18.87	-3.02	-18.69	0.07	18.93	260.83
4186.63	0.60	221.36	4186.40	19.12	-3.24	-18.88	0.33	19.16	260.27
4209.07	0.61	208.80	4208.84	19.29	-3.43	-19.02	0.59	19.33	259.78
4235.29	0.62	221.32	4235.06	19.50	-3.66	-19.18	0.52	19.53	259.20
4257.96	0.65	225.71	4257.74	19.72	-3.84	-19.35	0.25	19.73	258.77
4284.97	0.62	228.48	4284.74	19.98	-4.05	-19.57	0.17	19.99	258.32
4311.14	0.48	244.01	4310.91	20.21	-4.19	-19.78	0.76	20.22	258.04
4333.78	0.55	241.44	4333.55	20.41	-4.28	-19.96	0.32	20.42	257.89
4360.64	0.38	215.55	4360.41	20.60	-4.42	-20.13	1.00	20.61	257.62
4386.86	0.27	219.43	4386.63	20.72	-4.54	-20.22	0.42	20.72	257.35
4408.90	0.17	196.17	4408.67	20.77	-4.61	-20.26	0.60	20.78	257.18
4435.34	0.10	311.97	4435.11	20.81	-4.63	-20.29	0.89	20.81	257.14
4461.06	0.15	261.37	4460.83	20.85	-4.62	-20.34	0.46	20.86	257.20
4482.88	0.14	270.94	4482.65	20.91	-4.63	-20.39	0.12	20.91	257.22
4508.78	0.12	351.62	4508.55	20.94	-4.60	-20.43	0.66	20.94	257.32
4534.65	0.12	87.37	4534.42	20.91	-4.57	-20.41	0.68	20.91	257.38

**Well Name:** SAM FUNAKOSHI A-2**Survey:** SAM FUNAKOSHI A-2**Survey Date:** 9/4/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Closure Distance ft	Closure Direction deg
4558.98	0.29	157.52	4558.74	20.88	-4.62	-20.36	1.13	20.88	257.20
4584.44	0.27	223.84	4584.21	20.92	-4.73	-20.37	1.20	20.92	256.94
4609.65	0.29	283.78	4609.42	21.02	-4.75	-20.48	1.11	21.02	256.93
4636.48	0.52	243.34	4636.25	21.20	-4.79	-20.65	1.30	21.20	256.94
4660.55	0.23	209.88	4660.32	21.34	-4.88	-20.77	1.44	21.34	256.77
4686.24	0.33	227.19	4686.01	21.44	-4.98	-20.85	0.52	21.44	256.57
4703.08	0.36	240.17	4702.84	21.53	-5.04	-20.94	0.49	21.53	256.47