



Gyroscopic Survey Report  
for  
KPK

Well Location	WELD
Well Name	FRANK J VOGL #1
Rig Number	
Survey Date	11/7/2014
Latitude	40.0856900°N
Longitude	104.8511600°W
North Reference	True North
Grid Correction	None
Depth Reference	GL (4940.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 262.04Azim (deg)
Definitive Survey	FRANK J VOGL #1 (05-123-08787)
Operator(s)	C KIRBY

**Well Notes**

api-05-123-08787

# Survey Report

**Well Name:** FRANK J VOGL #1  
**Survey:** FRANK J VOGL #1 (05-123-08787)  
**Survey Date:** 11/7/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
86.97	0.26	252.08	86.97	0.20	-0.06	-0.19	0.20	252.08	0.30
122.20	0.36	253.24	122.20	0.39	-0.12	-0.37	0.39	252.41	0.27
148.69	0.28	260.92	148.69	0.53	-0.15	-0.52	0.54	253.55	0.34
170.37	0.23	257.52	170.36	0.63	-0.17	-0.61	0.63	254.43	0.25
196.77	0.27	232.60	196.76	0.73	-0.22	-0.71	0.74	252.88	0.43
223.31	0.18	224.47	223.31	0.82	-0.29	-0.79	0.84	250.04	0.35
249.31	0.23	246.70	249.31	0.90	-0.34	-0.86	0.93	248.76	0.36
271.58	0.28	249.88	271.58	1.00	-0.37	-0.96	1.03	248.73	0.21
298.17	0.31	230.43	298.17	1.12	-0.44	-1.07	1.16	247.67	0.40
324.08	0.33	212.14	324.08	1.23	-0.55	-1.17	1.29	244.82	0.40
346.34	0.37	229.61	346.33	1.33	-0.65	-1.25	1.41	242.66	0.51
372.99	0.47	247.28	372.99	1.51	-0.75	-1.42	1.60	242.28	0.61
398.82	0.63	237.77	398.81	1.74	-0.86	-1.64	1.85	242.22	0.71
421.23	0.61	234.35	421.22	1.96	-1.00	-1.84	2.09	241.51	0.18
447.67	0.49	244.98	447.66	2.19	-1.13	-2.05	2.34	241.25	0.61
473.68	0.59	244.60	473.67	2.42	-1.23	-2.28	2.59	241.58	0.41
495.99	0.57	242.93	495.98	2.64	-1.33	-2.48	2.81	241.76	0.14
521.87	0.56	233.87	521.85	2.87	-1.46	-2.70	3.07	241.48	0.35
549.02	0.50	245.14	549.01	3.10	-1.59	-2.91	3.32	241.31	0.44
572.27	0.57	247.66	572.26	3.31	-1.68	-3.11	3.53	241.62	0.31
599.45	0.68	245.84	599.44	3.60	-1.80	-3.38	3.83	242.01	0.43
623.16	0.79	250.60	623.15	3.89	-1.91	-3.66	4.13	242.49	0.54
649.27	0.95	253.34	649.25	4.29	-2.03	-4.04	4.52	243.33	0.61
672.52	1.04	256.93	672.50	4.69	-2.13	-4.43	4.92	244.30	0.48
695.72	1.05	258.66	695.69	5.11	-2.22	-4.85	5.33	245.36	0.14
722.37	1.16	262.02	722.34	5.62	-2.31	-5.35	5.83	246.67	0.50
749.95	1.21	265.47	749.92	6.19	-2.37	-5.92	6.38	248.18	0.32
773.07	1.30	264.55	773.02	6.70	-2.42	-6.43	6.87	249.41	0.38
795.73	1.30	261.48	795.68	7.21	-2.48	-6.94	7.37	250.35	0.31
823.23	1.17	267.50	823.17	7.81	-2.54	-7.53	7.94	251.38	0.67
845.91	1.21	271.04	845.85	8.27	-2.54	-8.00	8.39	252.37	0.37
873.39	1.33	265.00	873.32	8.88	-2.56	-8.61	8.98	253.41	0.66
896.09	1.23	259.78	896.02	9.38	-2.63	-9.11	9.48	253.89	0.69
923.72	1.08	267.21	923.64	9.94	-2.70	-9.66	10.03	254.40	0.77
947.72	1.16	263.02	947.63	10.41	-2.74	-10.12	10.49	254.88	0.50

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS °/100ft
971.00	1.22	265.84	970.91	10.89	-2.78	-10.61	10.97	255.30	0.36
997.93	1.13	262.89	997.83	11.44	-2.84	-11.16	11.51	255.73	0.42
1021.29	1.09	262.69	1021.19	11.89	-2.89	-11.61	11.96	256.00	0.18
1048.21	1.19	260.79	1048.10	12.43	-2.97	-12.13	12.49	256.24	0.40
1071.53	1.18	259.47	1071.42	12.91	-3.05	-12.61	12.97	256.39	0.13
1099.14	1.06	264.54	1099.02	13.45	-3.13	-13.14	13.51	256.61	0.54
1121.72	1.22	262.69	1121.60	13.90	-3.18	-13.59	13.96	256.83	0.73
1149.33	1.19	259.82	1149.20	14.48	-3.27	-14.17	14.54	257.01	0.25
1171.82	1.10	263.44	1171.69	14.93	-3.33	-14.61	14.99	257.14	0.54
1199.35	1.19	264.25	1199.22	15.48	-3.39	-15.15	15.53	257.38	0.33
1222.58	1.34	257.60	1222.43	15.99	-3.48	-15.66	16.04	257.49	0.91
1249.40	1.29	261.60	1249.26	16.60	-3.59	-16.26	16.65	257.56	0.39
1272.54	1.04	267.04	1272.39	17.07	-3.64	-16.73	17.12	257.74	1.15
1299.85	1.15	257.30	1299.69	17.59	-3.71	-17.24	17.64	257.86	0.78
1321.99	0.93	262.38	1321.82	17.99	-3.78	-17.64	18.04	257.90	1.07
1349.06	0.92	263.42	1348.90	18.43	-3.83	-18.07	18.47	258.02	0.07
1371.22	1.10	262.44	1371.05	18.82	-3.88	-18.46	18.86	258.12	0.83
1398.31	1.08	257.61	1398.14	19.33	-3.97	-18.96	19.38	258.17	0.35
1420.48	0.96	257.93	1420.30	19.73	-4.06	-19.35	19.77	258.16	0.52
1448.05	0.94	267.20	1447.87	20.18	-4.11	-19.80	20.23	258.26	0.56
1471.64	1.07	257.70	1471.46	20.59	-4.17	-20.21	20.64	258.34	0.88
1498.97	0.93	252.92	1498.78	21.07	-4.29	-20.67	21.11	258.27	0.58
1522.39	0.84	255.82	1522.20	21.43	-4.39	-21.02	21.48	258.21	0.43
1545.84	0.85	255.13	1545.64	21.77	-4.48	-21.36	21.82	258.16	0.06
1573.29	0.92	251.77	1573.09	22.19	-4.60	-21.77	22.25	258.07	0.29
1596.52	0.77	253.54	1596.33	22.53	-4.70	-22.09	22.59	257.99	0.63
1624.11	0.90	256.78	1623.90	22.93	-4.80	-22.48	22.99	257.94	0.50
1647.47	0.89	255.67	1647.27	23.30	-4.89	-22.84	23.36	257.92	0.10
1670.33	0.87	251.46	1670.12	23.64	-4.99	-23.18	23.71	257.85	0.29
1698.47	0.86	257.87	1698.26	24.06	-5.10	-23.59	24.13	257.79	0.35
1722.06	0.94	253.21	1721.84	24.43	-5.19	-23.94	24.50	257.76	0.46
1749.37	0.74	256.04	1749.15	24.83	-5.30	-24.33	24.90	257.71	0.74
1772.92	0.68	258.88	1772.70	25.12	-5.37	-24.62	25.19	257.70	0.30
1796.40	0.81	265.56	1796.18	25.43	-5.41	-24.92	25.50	257.76	0.66
1823.79	0.74	260.68	1823.57	25.80	-5.45	-25.29	25.87	257.84	0.35
1847.31	0.74	260.73	1847.08	26.10	-5.50	-25.58	26.17	257.87	0.00

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
1874.66	0.73	265.04	1874.44	26.45	-5.54	-25.93	26.52	257.94	0.20
1898.16	0.79	265.37	1897.94	26.76	-5.57	-26.24	26.83	258.02	0.25
1920.94	0.62	266.12	1920.71	27.04	-5.59	-26.52	27.11	258.10	0.73
1949.03	0.78	266.14	1948.80	27.39	-5.61	-26.87	27.45	258.20	0.57
1972.53	0.77	269.96	1972.30	27.70	-5.62	-27.19	27.76	258.31	0.23
1999.67	0.70	258.95	1999.43	28.05	-5.66	-27.53	28.11	258.39	0.59
2022.71	0.69	271.37	2022.47	28.33	-5.68	-27.81	28.38	258.46	0.65
2045.82	0.75	270.42	2045.58	28.61	-5.67	-28.10	28.67	258.58	0.24
2072.67	0.66	260.01	2072.43	28.94	-5.70	-28.43	28.99	258.66	0.59
2095.66	0.69	260.79	2095.41	29.21	-5.74	-28.69	29.26	258.68	0.17
2122.75	0.71	261.79	2122.50	29.55	-5.79	-29.02	29.60	258.71	0.08
2145.78	0.69	250.67	2145.53	29.83	-5.86	-29.30	29.88	258.69	0.60
2173.50	0.57	249.99	2173.25	30.12	-5.96	-29.58	30.18	258.60	0.47
2195.79	0.54	256.98	2195.53	30.34	-6.03	-29.79	30.39	258.57	0.32
2223.50	0.68	261.64	2223.25	30.63	-6.08	-30.08	30.69	258.58	0.53
2245.82	0.69	253.15	2245.57	30.90	-6.14	-30.34	30.95	258.56	0.46
2273.43	0.67	246.67	2273.17	31.22	-6.25	-30.65	31.28	258.47	0.29
2296.53	0.57	248.21	2296.28	31.46	-6.35	-30.88	31.52	258.39	0.43
2323.31	0.79	257.12	2323.05	31.77	-6.44	-31.18	31.84	258.34	0.89
2346.47	0.56	245.86	2346.21	32.04	-6.52	-31.44	32.11	258.29	1.13
2373.77	0.52	255.51	2373.51	32.29	-6.60	-31.68	32.36	258.23	0.36
2396.22	0.63	255.49	2395.95	32.51	-6.66	-31.90	32.59	258.21	0.47
2423.94	0.68	253.24	2423.68	32.83	-6.74	-32.20	32.90	258.17	0.20
2446.36	0.62	258.29	2446.10	33.08	-6.81	-32.45	33.15	258.15	0.36
2474.04	0.64	269.79	2473.77	33.38	-6.84	-32.75	33.45	258.21	0.46
2496.54	0.74	273.75	2496.27	33.65	-6.83	-33.02	33.72	258.31	0.51
2524.13	0.78	277.29	2523.86	34.00	-6.79	-33.38	34.07	258.50	0.22
2547.25	0.72	276.63	2546.97	34.29	-6.76	-33.68	34.35	258.66	0.28
2574.07	0.75	282.31	2573.79	34.62	-6.70	-34.02	34.67	258.86	0.31
2597.21	0.83	273.87	2596.93	34.93	-6.66	-34.34	34.98	259.03	0.61
2624.76	0.82	259.20	2624.48	35.32	-6.68	-34.73	35.37	259.11	0.77
2647.12	0.60	259.60	2646.83	35.60	-6.73	-35.00	35.64	259.12	0.98
2674.46	0.52	256.69	2674.17	35.87	-6.78	-35.27	35.91	259.11	0.32
2695.87	0.35	233.79	2695.58	36.02	-6.85	-35.41	36.07	259.06	1.11
2723.47	0.28	199.80	2723.18	36.13	-6.96	-35.50	36.18	258.91	0.72
2746.24	0.42	197.23	2745.95	36.19	-7.09	-35.55	36.25	258.71	0.60

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MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS %/100ft
2772.65	0.30	212.24	2772.36	36.27	-7.24	-35.61	36.34	258.50	0.58
2799.73	0.69	222.46	2799.44	36.44	-7.42	-35.76	36.52	258.27	1.46
2821.85	0.75	220.48	2821.56	36.65	-7.63	-35.94	36.74	258.01	0.30
2848.93	0.80	213.57	2848.64	36.91	-7.92	-36.16	37.02	257.64	0.40
2871.70	0.81	219.84	2871.41	37.14	-8.18	-36.35	37.26	257.32	0.39
2897.95	0.71	220.62	2897.65	37.39	-8.44	-36.58	37.54	257.00	0.37
2920.70	0.77	222.48	2920.40	37.62	-8.66	-36.77	37.78	256.74	0.30
2947.63	0.91	226.18	2947.33	37.93	-8.95	-37.05	38.11	256.43	0.55
2974.00	0.79	220.51	2973.70	38.24	-9.23	-37.32	38.44	256.11	0.56
2996.63	0.70	225.98	2996.32	38.47	-9.44	-37.52	38.69	255.87	0.50
3023.61	0.67	237.67	3023.30	38.74	-9.64	-37.77	38.98	255.68	0.53
3045.53	0.76	247.54	3045.22	39.00	-9.77	-38.02	39.25	255.59	0.68
3072.66	0.64	244.42	3072.35	39.32	-9.90	-38.32	39.58	255.51	0.45
3099.07	0.70	236.75	3098.76	39.61	-10.05	-38.59	39.87	255.40	0.40
3121.77	0.53	247.67	3121.46	39.83	-10.17	-38.80	40.11	255.31	0.90
3148.97	0.58	249.73	3148.65	40.09	-10.26	-39.04	40.37	255.27	0.18
3170.91	0.54	256.28	3170.59	40.30	-10.33	-39.25	40.59	255.26	0.33
3198.08	0.66	256.49	3197.76	40.59	-10.39	-39.53	40.87	255.27	0.44
3224.41	0.63	256.71	3224.09	40.88	-10.46	-39.82	41.17	255.28	0.11
3247.02	0.47	243.71	3246.70	41.10	-10.53	-40.02	41.39	255.25	0.90
3274.08	0.29	256.74	3273.76	41.27	-10.60	-40.19	41.57	255.23	0.73
3295.94	0.17	251.00	3295.61	41.36	-10.62	-40.28	41.65	255.22	0.57
3323.06	0.31	277.12	3322.74	41.47	-10.63	-40.39	41.76	255.26	0.63
3345.57	0.39	255.64	3345.24	41.60	-10.64	-40.52	41.89	255.29	0.68
3371.86	0.34	258.54	3371.54	41.77	-10.68	-40.68	42.06	255.30	0.21
3398.48	0.51	234.05	3398.16	41.95	-10.76	-40.86	42.25	255.24	0.92
3420.14	0.46	225.12	3419.81	42.11	-10.88	-41.00	42.42	255.14	0.42
3446.64	0.41	227.82	3446.31	42.27	-11.02	-41.14	42.59	255.01	0.18
3473.09	0.53	219.15	3472.76	42.44	-11.18	-41.29	42.78	254.85	0.51
3499.01	0.50	228.29	3498.68	42.62	-11.34	-41.45	42.98	254.69	0.33
3521.18	0.72	225.58	3520.85	42.82	-11.51	-41.62	43.18	254.55	0.97
3548.32	0.62	228.23	3547.99	43.08	-11.72	-41.85	43.47	254.35	0.37
3570.71	0.83	228.22	3570.38	43.31	-11.91	-42.07	43.72	254.19	0.93
3598.41	0.62	243.46	3598.08	43.62	-12.12	-42.35	44.05	254.04	1.02
3620.84	1.03	249.62	3620.50	43.93	-12.24	-42.65	44.37	253.99	1.85
3648.55	0.85	263.47	3648.21	44.38	-12.35	-43.09	44.82	254.01	1.03

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3671.66	0.75	267.43	3671.32	44.70	-12.38	-43.41	45.14	254.09	0.51
3698.30	0.70	264.67	3697.96	45.04	-12.40	-43.74	45.47	254.17	0.21
3721.68	0.76	284.19	3721.34	45.33	-12.37	-44.04	45.74	254.31	1.09
3749.33	0.76	286.79	3748.98	45.66	-12.28	-44.39	46.06	254.54	0.12
3771.62	0.65	286.86	3771.27	45.91	-12.20	-44.65	46.29	254.72	0.49
3799.30	0.66	277.44	3798.95	46.21	-12.13	-44.96	46.57	254.90	0.39
3821.57	0.63	272.35	3821.22	46.45	-12.11	-45.21	46.80	255.01	0.29
3849.25	0.42	271.46	3848.89	46.70	-12.10	-45.46	47.05	255.10	0.76
3871.56	0.40	266.70	3871.21	46.86	-12.10	-45.63	47.20	255.14	0.17
3899.23	0.33	267.71	3898.87	47.04	-12.11	-45.80	47.38	255.19	0.27
3922.30	0.40	285.43	3921.94	47.18	-12.09	-45.95	47.51	255.25	0.57
3949.19	0.30	316.40	3948.84	47.30	-12.02	-46.08	47.63	255.38	0.78
3972.23	0.43	305.29	3971.87	47.40	-11.92	-46.20	47.71	255.53	0.66
3998.34	0.62	336.35	3997.98	47.51	-11.74	-46.33	47.80	255.78	1.27
4021.27	0.72	310.67	4020.91	47.64	-11.53	-46.49	47.90	256.07	1.37
4048.66	0.69	309.10	4048.29	47.87	-11.31	-46.75	48.10	256.39	0.14
4070.73	0.70	312.93	4070.37	48.04	-11.14	-46.95	48.26	256.65	0.22
4097.92	0.66	312.36	4097.55	48.25	-10.92	-47.19	48.44	256.97	0.15
4119.95	0.60	310.77	4119.58	48.41	-10.76	-47.37	48.58	257.21	0.29
4147.09	0.58	316.73	4146.72	48.58	-10.56	-47.58	48.73	257.48	0.24
4174.21	0.48	314.44	4173.84	48.73	-10.39	-47.75	48.87	257.73	0.37
4196.16	0.39	314.78	4195.79	48.83	-10.27	-47.87	48.96	257.89	0.42
4223.27	0.40	309.37	4222.90	48.95	-10.15	-48.01	49.07	258.07	0.15
4245.15	0.50	337.44	4244.78	49.02	-10.01	-48.10	49.13	258.25	1.10
4272.20	0.36	327.02	4271.82	49.09	-9.83	-48.19	49.19	258.47	0.59
4299.15	0.36	323.10	4298.77	49.17	-9.69	-48.29	49.25	258.66	0.09
4321.12	0.35	316.96	4320.74	49.24	-9.58	-48.38	49.32	258.80	0.19
4348.03	0.31	343.26	4347.66	49.30	-9.45	-48.45	49.37	258.96	0.57
4370.59	0.45	334.55	4370.22	49.33	-9.32	-48.51	49.40	259.13	0.67
4396.91	0.47	321.29	4396.53	49.42	-9.14	-48.62	49.47	259.35	0.41
4423.93	0.34	303.17	4423.56	49.54	-9.01	-48.76	49.58	259.53	0.67
4446.48	0.35	275.28	4446.11	49.65	-8.97	-48.88	49.70	259.61	0.74
4472.77	0.50	310.92	4472.39	49.81	-8.88	-49.05	49.85	259.73	1.14
4499.60	0.44	325.20	4499.22	49.93	-8.72	-49.20	49.96	259.95	0.49
4521.48	0.50	305.48	4521.10	50.04	-8.60	-49.32	50.07	260.11	0.77
4548.31	0.45	307.43	4547.93	50.20	-8.47	-49.50	50.22	260.30	0.17



**Well Name:** FRANK J VOGL #1  
**Survey:** FRANK J VOGL #1 (05-123-08787)  
**Survey Date:** 11/7/2014

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	Closure Distance ft	Closure Direction deg	DLS °/100ft
4570.77	0.59	312.90	4570.39	50.33	-8.33	-49.66	50.35	260.47	0.63
4596.98	0.53	302.47	4596.60	50.51	-8.18	-49.86	50.52	260.69	0.44
4623.86	0.58	310.08	4623.48	50.69	-8.02	-50.06	50.70	260.90	0.32
4645.56	0.83	278.70	4645.18	50.92	-7.93	-50.30	50.92	261.04	2.07
4672.37	0.68	323.26	4671.99	51.18	-7.77	-50.59	51.18	261.27	2.19
4699.11	0.46	342.50	4698.73	51.27	-7.54	-50.72	51.27	261.54	1.10
4723.74	0.52	347.83	4723.35	51.30	-7.34	-50.77	51.30	261.77	0.32
4749.78	0.72	307.66	4749.39	51.42	-7.12	-50.92	51.42	262.04	1.78