



K.P. KAUFFMAN

SURVEY REPORT

SUCKLA BROWN UNIT #16

KPK 2

2/8/2015



The **Ultimate Partner** In Wellbore Placement

CUSTOMER K.P. Kauffman
PROJECT Suckla Brown Unit #16
FIELD Spindle

SDI JOB NO. 252726
SDI DISTRICT Casper
SDI KIT/UNIT

SITE INFORMATION

Site Name Weld County, Colorado
Lat/Long 40.05981° N, 104.86976° W
Northing
Easting

Section SESE 10
Township 1N
Range 67W 6PM

MAP INFORMATION

North Reference True North
Grid Correction
System
Datum
Map Zone



WELL INFORMATION

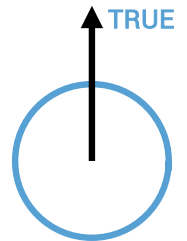
Lat/Long 40.05981° N, 104.86976° W
Northing
Easting
UWI 05-123-08877

DEPTH AND ELEVATION REFERENCE

Ground Level 5030 ft above Mean Sea Level
Reference Datum GL
Reference Height 0 ft above G.L.
Reference Elevation 5030 ft

VERTICAL SECTION REFERENCE

+N/-S 0 ft
+E/-W 0 ft
Proposal Direction
Calculation Method Minimum Curvature



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity 999.032 mG [computed]

WELL NOTES

Keeper gyro survey run in 4.5" casing from surface to 4849'

OPERATORS

Jon Valenzuela

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
30.98	0.47	145.00	30.98	0.00	-0.10	0.07	1.50	0.13	145.00
48.87	0.44	127.28	48.87	-0.02	-0.20	0.17	0.79	0.27	140.46
73.34	0.45	118.77	73.34	-0.10	-0.31	0.33	0.28	0.45	133.17
99.85	0.43	121.15	99.85	-0.19	-0.41	0.50	0.12	0.65	129.06
124.07	0.47	116.76	124.07	-0.27	-0.50	0.67	0.23	0.84	126.76
149.75	0.36	125.64	149.75	-0.35	-0.60	0.83	0.51	1.02	125.64
173.81	0.50	114.83	173.80	-0.43	-0.68	0.99	0.69	1.20	124.70
198.98	0.42	124.00	198.98	-0.52	-0.78	1.16	0.45	1.40	123.88
224.83	0.40	119.23	224.83	-0.60	-0.88	1.32	0.14	1.59	123.62
246.48	0.39	123.27	246.48	-0.66	-0.96	1.45	0.14	1.74	123.41
271.75	0.62	116.74	271.74	-0.76	-1.06	1.64	0.92	1.96	122.94
297.71	0.68	125.54	297.70	-0.88	-1.22	1.89	0.45	2.25	122.73
323.53	0.85	120.67	323.52	-1.01	-1.40	2.18	0.71	2.59	122.75
348.70	0.85	124.38	348.68	-1.16	-1.60	2.50	0.22	2.97	122.72
374.59	0.89	124.42	374.58	-1.30	-1.83	2.82	0.17	3.36	122.92
395.71	0.82	128.33	395.69	-1.41	-2.01	3.08	0.44	3.68	123.21
422.19	0.95	129.68	422.17	-1.53	-2.27	3.39	0.51	4.08	123.79
449.45	0.98	136.52	449.42	-1.63	-2.59	3.73	0.44	4.54	124.74
471.57	0.94	142.68	471.54	-1.67	-2.87	3.97	0.50	4.90	125.85
498.94	0.96	141.13	498.91	-1.70	-3.23	4.25	0.11	5.34	127.19
521.79	0.92	145.99	521.75	-1.71	-3.53	4.47	0.38	5.70	128.25
548.41	0.97	142.97	548.37	-1.72	-3.89	4.73	0.27	6.12	129.40
571.09	0.93	145.29	571.04	-1.73	-4.19	4.95	0.27	6.49	130.25
598.03	0.92	144.13	597.99	-1.74	-4.54	5.20	0.08	6.91	131.14
624.22	0.95	141.36	624.17	-1.76	-4.88	5.46	0.22	7.33	131.82
646.69	0.87	138.72	646.64	-1.80	-5.16	5.69	0.43	7.68	132.20
672.88	0.67	137.77	672.83	-1.84	-5.42	5.92	0.75	8.03	132.47
699.65	0.48	137.41	699.59	-1.88	-5.62	6.10	0.70	8.30	132.63
722.10	0.48	137.37	722.05	-1.91	-5.76	6.23	0.00	8.49	132.74
748.25	0.52	136.71	748.20	-1.94	-5.93	6.39	0.13	8.72	132.85
770.68	0.55	140.70	770.62	-1.97	-6.08	6.53	0.23	8.92	132.99

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
796.82	0.54	138.18	796.76	-2.00	-6.28	6.69	0.10	9.17	133.17
823.65	0.56	138.80	823.59	-2.03	-6.47	6.86	0.05	9.43	133.31
846.05	0.53	134.91	845.99	-2.06	-6.62	7.01	0.21	9.64	133.39
872.15	0.57	134.25	872.09	-2.11	-6.80	7.18	0.15	9.89	133.42
898.60	0.61	137.59	898.53	-2.16	-6.99	7.37	0.22	10.16	133.49
921.34	0.62	142.38	921.28	-2.18	-7.18	7.53	0.23	10.40	133.64
947.30	0.72	143.90	947.23	-2.19	-7.42	7.71	0.40	10.70	133.91
974.06	0.89	148.70	973.99	-2.19	-7.74	7.92	0.67	11.07	134.34
996.41	0.85	144.83	996.34	-2.18	-8.02	8.10	0.31	11.40	134.70
1022.32	0.84	146.43	1022.25	-2.18	-8.34	8.32	0.11	11.78	135.06
1049.06	0.81	155.35	1048.98	-2.15	-8.67	8.51	0.49	12.15	135.55
1070.64	1.15	172.48	1070.55	-2.03	-9.03	8.60	2.06	12.47	136.39
1097.43	1.10	167.41	1097.34	-1.81	-9.54	8.69	0.42	12.91	137.68
1124.21	1.20	169.03	1124.12	-1.61	-10.07	8.80	0.40	13.37	138.85
1145.84	1.20	172.49	1145.74	-1.41	-10.52	8.87	0.34	13.76	139.85
1172.61	1.24	177.21	1172.51	-1.14	-11.08	8.92	0.41	14.23	141.16
1199.25	1.29	177.23	1199.14	-0.83	-11.67	8.95	0.19	14.71	142.51
1220.97	1.33	182.81	1220.85	-0.55	-12.17	8.95	0.61	15.11	143.66
1247.60	1.33	183.60	1247.48	-0.17	-12.78	8.92	0.07	15.59	145.11
1273.60	1.30	181.65	1273.47	0.18	-13.38	8.89	0.21	16.06	146.40
1295.89	1.35	181.83	1295.76	0.49	-13.89	8.87	0.25	16.49	147.44
1322.59	1.30	184.65	1322.44	0.86	-14.51	8.84	0.32	16.99	148.65
1348.30	1.32	179.65	1348.15	1.21	-15.10	8.82	0.46	17.48	149.71
1374.93	1.36	183.71	1374.77	1.58	-15.72	8.80	0.39	18.02	150.77
1397.41	1.38	185.25	1397.24	1.91	-16.26	8.76	0.18	18.47	151.69
1423.16	1.40	184.31	1422.99	2.31	-16.88	8.70	0.12	18.99	152.72
1449.67	1.38	186.10	1449.50	2.72	-17.52	8.65	0.19	19.54	153.74
1471.56	1.37	183.91	1471.38	3.05	-18.04	8.60	0.25	19.99	154.52
1496.67	1.40	190.64	1496.48	3.45	-18.64	8.52	0.66	20.50	155.43
1522.83	1.36	178.80	1522.63	3.84	-19.27	8.47	1.10	21.05	156.27
1548.46	1.37	179.60	1548.25	4.18	-19.88	8.48	0.08	21.61	156.90
1574.35	1.45	192.05	1574.13	4.59	-20.51	8.41	1.22	22.16	157.69

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg
1597.58	1.44	186.60	1597.35	4.99	-21.08	8.32	0.59	22.66	158.47
1624.85	1.56	181.90	1624.62	5.43	-21.79	8.27	0.65	23.31	159.23
1649.76	1.68	178.51	1649.51	5.83	-22.50	8.27	0.59	23.97	159.83
1670.46	1.41	185.21	1670.21	6.16	-23.05	8.25	1.55	24.49	160.31
1697.25	1.34	187.39	1696.99	6.58	-23.69	8.18	0.32	25.07	160.95
1724.28	1.21	197.04	1724.01	7.01	-24.28	8.06	0.93	25.58	161.65
1745.33	1.19	201.47	1745.06	7.36	-24.70	7.91	0.45	25.93	162.24
1772.94	1.09	208.04	1772.66	7.83	-25.19	7.68	0.60	26.34	163.04
1799.82	1.15	205.32	1799.54	8.29	-25.66	7.45	0.30	26.72	163.82
1821.57	1.08	209.77	1821.28	8.66	-26.04	7.25	0.50	27.03	164.44
1848.32	1.09	206.93	1848.03	9.12	-26.49	7.01	0.20	27.40	165.18
1870.77	1.12	203.32	1870.48	9.49	-26.88	6.83	0.33	27.73	165.75
1896.91	1.06	205.02	1896.61	9.91	-27.33	6.62	0.24	28.12	166.38
1923.76	1.02	204.18	1923.46	10.33	-27.78	6.42	0.17	28.51	166.99
1945.49	1.02	205.13	1945.19	10.66	-28.13	6.26	0.08	28.81	167.45
1972.23	0.98	208.52	1971.92	11.07	-28.54	6.05	0.25	29.18	168.03
1999.09	0.93	211.62	1998.77	11.47	-28.93	5.82	0.27	29.51	168.62
2024.92	0.86	211.30	2024.61	11.84	-29.27	5.61	0.29	29.81	169.14
2047.38	0.90	211.07	2047.06	12.15	-29.57	5.44	0.22	30.06	169.58
2074.13	0.88	209.45	2073.81	12.53	-29.93	5.23	0.13	30.38	170.10
2095.76	0.82	208.74	2095.44	12.82	-30.21	5.07	0.29	30.63	170.48
2122.72	0.79	207.38	2122.39	13.15	-30.55	4.89	0.12	30.93	170.90
2148.83	0.76	208.88	2148.50	13.46	-30.86	4.72	0.17	31.22	171.30
2171.35	0.79	209.67	2171.02	13.74	-31.12	4.58	0.14	31.46	171.64
2198.31	0.80	217.24	2197.97	14.08	-31.43	4.37	0.39	31.73	172.08
2224.41	0.62	218.19	2224.08	14.38	-31.68	4.17	0.69	31.96	172.49
2247.04	0.66	213.47	2246.70	14.62	-31.89	4.03	0.29	32.14	172.80
2273.84	0.61	214.90	2273.51	14.90	-32.13	3.86	0.17	32.37	173.15
2294.87	0.58	213.80	2294.53	15.10	-32.31	3.74	0.17	32.53	173.40
2322.65	0.59	216.23	2322.31	15.37	-32.55	3.57	0.10	32.74	173.73
2349.32	0.45	210.48	2348.98	15.59	-32.75	3.44	0.58	32.93	174.00
2370.86	0.38	197.20	2370.51	15.72	-32.89	3.38	0.55	33.06	174.14

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg
2397.48	0.49	202.07	2397.14	15.89	-33.08	3.31	0.45	33.24	174.29
2423.39	0.57	211.37	2423.05	16.09	-33.29	3.20	0.44	33.44	174.51
2449.88	0.49	214.01	2449.54	16.32	-33.50	3.07	0.30	33.64	174.77
2472.11	0.51	213.91	2471.76	16.50	-33.66	2.96	0.08	33.79	174.98
2497.98	0.43	216.43	2497.64	16.70	-33.83	2.84	0.31	33.95	175.21
2524.45	0.37	211.22	2524.10	16.87	-33.99	2.73	0.27	34.10	175.40
2545.94	0.42	213.03	2545.59	17.01	-34.11	2.65	0.22	34.22	175.55
2572.49	0.40	217.44	2572.14	17.19	-34.27	2.54	0.13	34.36	175.75
2598.92	0.32	207.10	2598.57	17.34	-34.41	2.45	0.39	34.49	175.92
2624.73	0.33	201.89	2624.38	17.46	-34.54	2.39	0.12	34.62	176.04
2646.88	0.38	201.83	2646.52	17.58	-34.67	2.34	0.23	34.75	176.14
2673.37	0.44	222.42	2673.01	17.75	-34.83	2.24	0.59	34.90	176.32
2699.03	0.37	229.96	2698.68	17.93	-34.95	2.11	0.35	35.01	176.54
2721.12	0.50	242.00	2720.77	18.09	-35.04	1.97	0.75	35.10	176.78
2747.57	0.50	255.27	2747.22	18.32	-35.13	1.76	0.44	35.17	177.14
2773.21	0.62	252.73	2772.86	18.56	-35.20	1.52	0.46	35.23	177.53
2799.70	0.64	260.73	2799.35	18.83	-35.26	1.23	0.34	35.28	178.00
2821.87	0.65	256.77	2821.51	19.06	-35.31	0.99	0.21	35.32	178.39
2847.70	0.75	253.94	2847.34	19.36	-35.39	0.68	0.42	35.40	178.89
2874.08	0.89	261.03	2873.71	19.71	-35.47	0.32	0.66	35.47	179.49
2895.48	1.04	269.08	2895.11	20.02	-35.50	-0.04	0.93	35.50	180.07
2921.93	1.07	267.67	2921.56	20.43	-35.51	-0.53	0.15	35.52	180.85
2948.26	1.07	266.88	2947.88	20.85	-35.54	-1.02	0.06	35.55	181.64
2973.96	1.06	268.19	2973.59	21.25	-35.56	-1.50	0.12	35.59	182.41
2995.98	1.10	265.72	2995.59	21.61	-35.58	-1.91	0.29	35.63	183.07
3022.38	1.12	263.30	3022.00	22.05	-35.63	-2.42	0.19	35.71	183.88
3047.94	1.14	267.50	3047.55	22.49	-35.67	-2.92	0.34	35.79	184.68
3074.18	1.21	272.17	3073.78	22.94	-35.67	-3.46	0.45	35.84	185.54
3098.76	1.19	270.59	3098.35	23.36	-35.66	-3.97	0.16	35.88	186.36
3121.41	1.17	267.93	3121.00	23.74	-35.66	-4.44	0.26	35.94	187.10
3149.06	1.14	260.44	3148.65	24.23	-35.72	-4.99	0.55	36.07	187.96
3173.95	1.45	272.96	3173.53	24.71	-35.74	-5.55	1.69	36.17	188.83

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
3199.59	1.36	260.91	3199.16	25.24	-35.77	-6.18	1.21	36.30	189.80
3223.42	1.38	259.42	3222.99	25.76	-35.87	-6.74	0.17	36.50	190.64
3249.93	1.39	262.05	3249.49	26.34	-35.98	-7.37	0.24	36.72	191.58
3271.46	1.44	263.36	3271.01	26.82	-36.04	-7.90	0.26	36.90	192.36
3297.94	1.34	257.80	3297.48	27.40	-36.15	-8.53	0.62	37.14	193.28
3324.47	1.48	265.06	3324.01	27.98	-36.24	-9.18	0.85	37.39	194.21
3347.49	1.40	260.13	3347.02	28.50	-36.32	-9.75	0.64	37.60	195.03
3371.01	1.41	255.51	3370.53	29.03	-36.44	-10.31	0.48	37.87	195.80
3398.11	1.46	259.83	3397.62	29.66	-36.58	-10.98	0.45	38.19	196.70
3421.36	1.32	261.92	3420.86	30.17	-36.67	-11.53	0.68	38.44	197.46
3449.06	1.19	263.39	3448.56	30.71	-36.75	-12.13	0.48	38.70	198.27
3471.58	1.17	260.82	3471.07	31.13	-36.81	-12.59	0.25	38.91	198.88
3499.40	1.16	262.90	3498.88	31.64	-36.89	-13.15	0.15	39.17	199.62
3521.89	1.15	263.97	3521.38	32.04	-36.94	-13.60	0.11	39.37	200.21
3549.70	1.15	263.44	3549.18	32.53	-37.01	-14.16	0.04	39.62	200.94
3572.19	1.18	263.16	3571.66	32.94	-37.06	-14.61	0.13	39.84	201.52
3599.87	1.21	264.81	3599.34	33.44	-37.12	-15.18	0.16	40.11	202.25
3623.23	1.14	269.21	3622.69	33.85	-37.15	-15.66	0.49	40.31	202.86
3645.58	1.23	267.75	3645.04	34.24	-37.16	-16.12	0.45	40.51	203.46
3673.37	1.22	269.02	3672.82	34.74	-37.17	-16.72	0.11	40.76	204.22
3696.59	1.12	265.54	3696.04	35.15	-37.20	-17.19	0.53	40.98	204.81
3723.65	1.26	269.37	3723.09	35.63	-37.22	-17.76	0.58	41.24	205.50
3746.83	1.29	267.38	3746.26	36.06	-37.24	-18.27	0.24	41.48	206.14
3773.97	1.21	267.76	3773.40	36.57	-37.26	-18.87	0.30	41.76	206.85
3797.27	1.21	264.47	3796.69	36.99	-37.29	-19.36	0.30	42.02	207.43
3819.81	1.23	263.55	3819.23	37.42	-37.34	-19.84	0.12	42.29	207.98
3847.55	1.25	264.27	3846.96	37.94	-37.41	-20.43	0.08	42.62	208.64
3870.83	1.28	268.37	3870.24	38.38	-37.44	-20.94	0.41	42.90	209.22
3897.94	1.26	265.19	3897.34	38.90	-37.47	-21.54	0.27	43.22	209.89
3921.23	1.25	268.01	3920.62	39.34	-37.50	-22.05	0.27	43.51	210.45
3949.08	1.31	272.51	3948.47	39.85	-37.50	-22.67	0.41	43.82	211.16
3971.62	1.34	269.07	3971.00	40.27	-37.49	-23.19	0.38	44.09	211.74

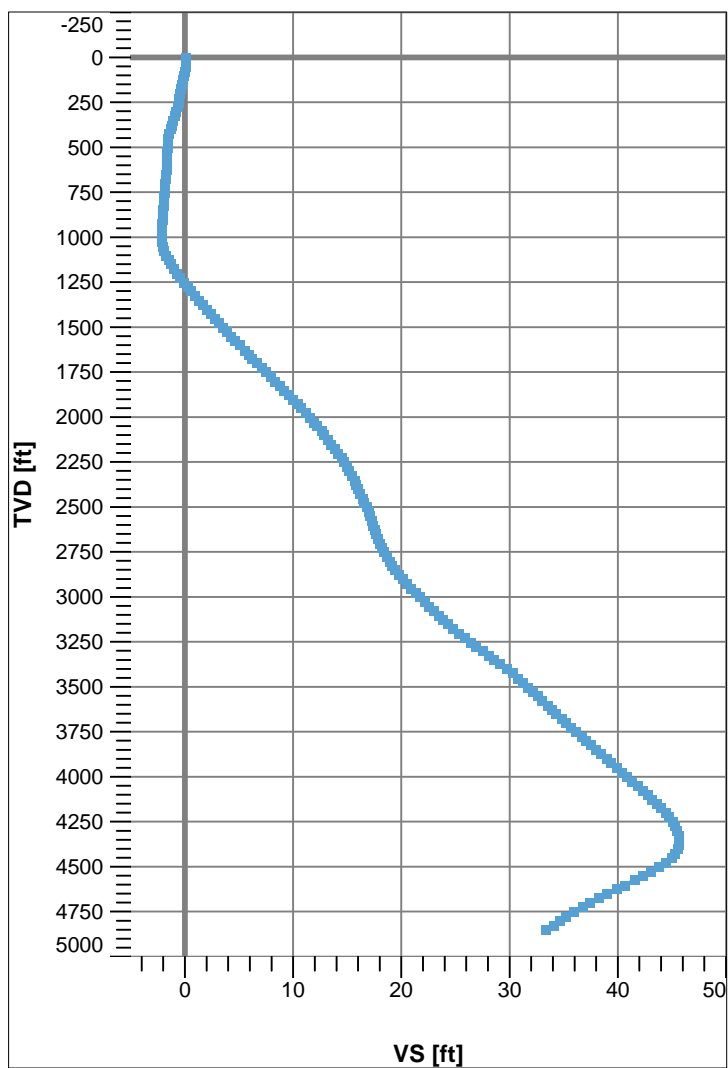
MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
3999.33	1.32	271.65	3998.70	40.80	-37.49	-23.83	0.23	44.42	212.44
4021.83	1.42	273.31	4021.19	41.23	-37.47	-24.37	0.47	44.69	213.04
4049.56	1.52	279.33	4048.92	41.77	-37.39	-25.08	0.67	45.02	213.85
4072.39	1.52	282.17	4071.74	42.20	-37.27	-25.67	0.33	45.26	214.56
4099.04	1.62	289.38	4098.38	42.67	-37.07	-26.37	0.82	45.50	215.43
4121.90	1.77	290.61	4121.23	43.06	-36.84	-27.01	0.69	45.68	216.24
4148.43	1.75	292.40	4147.74	43.52	-36.54	-27.77	0.22	45.90	217.23
4171.30	1.81	293.03	4170.60	43.91	-36.27	-28.42	0.25	46.08	218.08
4198.53	1.90	298.62	4197.82	44.35	-35.89	-29.21	0.73	46.27	219.15
4220.66	1.86	302.15	4219.94	44.66	-35.52	-29.84	0.55	46.39	220.03
4247.89	1.85	308.87	4247.15	44.96	-35.01	-30.55	0.80	46.47	221.11
4270.97	1.88	310.16	4270.23	45.17	-34.53	-31.13	0.24	46.49	222.04
4297.45	1.92	313.92	4296.69	45.38	-33.94	-31.79	0.50	46.50	223.12
4324.78	1.94	318.27	4324.00	45.53	-33.28	-32.43	0.54	46.46	224.26
4346.87	1.87	323.04	4346.08	45.60	-32.71	-32.89	0.78	46.39	225.16
4374.22	1.76	330.59	4373.42	45.58	-31.99	-33.37	0.97	46.22	226.21
4397.09	1.79	336.79	4396.27	45.49	-31.35	-33.68	0.85	46.01	227.05
4423.59	1.75	350.72	4422.76	45.23	-30.57	-33.91	1.63	45.66	227.97
4446.44	1.71	4.96	4445.60	44.87	-29.88	-33.94	1.89	45.22	228.63
4473.05	1.84	9.53	4472.20	44.32	-29.07	-33.83	0.72	44.60	229.33
4495.89	1.94	17.81	4495.03	43.76	-28.34	-33.65	1.27	43.99	229.90
4523.20	2.01	22.34	4522.32	43.00	-27.45	-33.33	0.62	43.18	230.52
4549.65	2.02	28.61	4548.75	42.20	-26.61	-32.93	0.83	42.34	231.05
4572.45	2.14	29.52	4571.54	41.46	-25.89	-32.53	0.56	41.57	231.48
4599.76	2.00	32.29	4598.83	40.56	-25.04	-32.02	0.65	40.65	231.97
4621.83	2.04	35.85	4620.89	39.84	-24.40	-31.59	0.60	39.91	232.31
4649.00	2.03	37.50	4648.05	38.93	-23.63	-31.01	0.22	38.98	232.70
4671.20	2.01	37.13	4670.22	38.19	-23.00	-30.54	0.15	38.23	233.01
4698.36	1.74	40.76	4697.37	37.34	-22.31	-29.98	1.06	37.37	233.34
4721.14	1.86	34.96	4720.14	36.66	-21.75	-29.54	0.95	36.68	233.64
4747.41	1.71	47.90	4746.40	35.87	-21.14	-29.01	1.63	35.89	233.92
4773.81	1.55	33.31	4772.79	35.15	-20.57	-28.52	1.68	35.16	234.19

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
4797.54	1.57	16.37	4796.51	34.60	-19.99	-28.25	1.94	34.61	234.71
4822.53	1.74	35.85	4821.49	33.98	-19.36	-27.93	2.33	33.98	235.28
4849.73	1.61	34.61	4848.68	33.24	-18.71	-27.47	0.50	33.24	235.74



Name : Keeper Gyro Wireline Survey: Outrun
Generated : 2/11/2015 23:34:10 Mountain Standard Time

VS View



Plan View

