

K P KAUFFMAN COMPANY

SURVEY REPORT

MOSER #1-A

FMC WIRELINE

1/16/2015



The **Ultimate Partner** In Wellbore Placement

CUSTOMER K P Kauffman Company
PROJECT Moser #1-A
FIELD Spindle

SDI JOB NO. 244384
SDI DISTRICT Casper
SDI KIT/UNIT

SITE INFORMATION

Site Name Moser #1-A
Lat/Long 40.027483° N, 104.850866° W
Northing
Easting

Section 26
Township 1N
Range 67W

MAP INFORMATION

North Reference True North
Grid Correction
System US State Plane 1927
Datum North American Datum 1927 (Clarke 1866)
Map Zone Colorado North: 0501



WELL INFORMATION

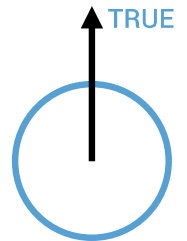
Lat/Long 40.027483° N, 104.850866° W
Northing
Easting
UWI 05-123-09700

DEPTH AND ELEVATION REFERENCE

Ground Level 4986 ft above Mean Sea Level
Reference Datum Ground
Reference Height 0 ft above G.L.
Reference Elevation 4986 ft

VERTICAL SECTION REFERENCE

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



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity 999.033 mG [computed]

WELL NOTES

Keeper Gyro Survey ran in 4 1/2 inch casing. Tool zeroed on ground.

OPERATORS

J. Jackson

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
25.00	0.40	241.74	25.00	0.08	-0.04	-0.08	1.61	0.09	241.74
50.00	0.82	237.69	50.00	0.33	-0.18	-0.31	1.69	0.35	239.69
75.00	0.54	234.19	75.00	0.61	-0.34	-0.55	1.13	0.65	238.14
100.00	0.48	221.83	100.00	0.83	-0.49	-0.72	0.50	0.87	235.66
125.00	0.59	227.52	124.99	1.06	-0.66	-0.88	0.47	1.10	233.41
150.00	0.60	236.00	149.99	1.31	-0.82	-1.09	0.36	1.36	233.11
175.00	0.69	246.90	174.99	1.57	-0.95	-1.34	0.59	1.64	234.59
200.00	0.82	244.97	199.99	1.86	-1.08	-1.64	0.55	1.96	236.47
225.00	0.97	242.97	224.99	2.21	-1.26	-1.99	0.59	2.35	237.70
250.00	0.94	238.17	249.98	2.59	-1.46	-2.35	0.34	2.76	238.13
275.00	1.00	233.27	274.98	2.99	-1.70	-2.69	0.41	3.18	237.80
300.00	0.98	233.10	299.98	3.41	-1.96	-3.04	0.05	3.62	237.25
325.00	0.80	235.02	324.97	3.78	-2.18	-3.35	0.76	4.00	236.93
350.00	0.85	242.41	349.97	4.12	-2.37	-3.66	0.48	4.36	237.09
375.00	0.82	239.22	374.97	4.45	-2.55	-3.98	0.23	4.72	237.38
400.00	1.01	244.33	399.96	4.82	-2.73	-4.33	0.82	5.12	237.74
425.00	0.95	235.75	424.96	5.21	-2.95	-4.70	0.63	5.55	237.93
450.00	1.05	229.48	449.96	5.64	-3.21	-5.05	0.58	5.98	237.53
475.00	0.90	234.07	474.95	6.05	-3.48	-5.38	0.67	6.40	237.14
500.00	0.86	238.84	499.95	6.41	-3.69	-5.70	0.34	6.79	237.10
525.00	0.86	247.09	524.95	6.75	-3.86	-6.03	0.49	7.16	237.40
550.00	0.89	247.98	549.94	7.08	-4.00	-6.38	0.13	7.53	237.91
575.00	0.89	252.18	574.94	7.41	-4.13	-6.75	0.26	7.91	238.50
600.00	0.91	241.98	599.94	7.75	-4.29	-7.11	0.65	8.30	238.90
625.00	0.91	239.80	624.94	8.11	-4.48	-7.45	0.14	8.70	238.99
650.00	0.78	237.29	649.93	8.46	-4.67	-7.77	0.54	9.06	238.98
675.00	0.71	238.52	674.93	8.76	-4.84	-8.04	0.29	9.39	238.94
700.00	0.76	244.22	699.93	9.06	-5.00	-8.32	0.36	9.71	239.02
725.00	0.68	242.57	724.93	9.34	-5.14	-8.61	0.33	10.02	239.16
750.00	0.79	244.08	749.92	9.63	-5.28	-8.89	0.44	10.34	239.29
775.00	0.84	238.33	774.92	9.96	-5.45	-9.20	0.38	10.70	239.35

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
800.00	0.75	225.62	799.92	10.29	-5.66	-9.48	0.78	11.04	239.13
825.00	0.62	222.19	824.92	10.59	-5.88	-9.69	0.57	11.33	238.74
850.00	0.56	215.57	849.92	10.85	-6.08	-9.85	0.35	11.57	238.31
875.00	0.54	211.98	874.92	11.09	-6.28	-9.98	0.17	11.79	237.83
900.00	0.54	206.85	899.91	11.32	-6.48	-10.10	0.19	12.00	237.30
925.00	0.64	214.48	924.91	11.57	-6.70	-10.23	0.50	12.23	236.76
950.00	0.64	213.60	949.91	11.85	-6.93	-10.38	0.04	12.49	236.27
975.00	0.72	211.40	974.91	12.15	-7.18	-10.54	0.34	12.76	235.73
1000.00	0.73	217.00	999.91	12.46	-7.45	-10.72	0.28	13.05	235.22
1025.00	0.67	191.71	1024.91	12.75	-7.72	-10.85	1.24	13.31	234.57
1050.00	0.62	192.08	1049.90	13.00	-7.99	-10.90	0.21	13.52	233.76
1075.00	0.53	201.11	1074.90	13.24	-8.23	-10.97	0.50	13.72	233.13
1100.00	0.64	189.99	1099.90	13.47	-8.48	-11.04	0.61	13.92	232.48
1125.00	0.66	191.83	1124.90	13.72	-8.76	-11.09	0.14	14.13	231.72
1150.00	0.78	189.21	1149.90	14.00	-9.07	-11.15	0.48	14.37	230.89
1175.00	0.73	189.92	1174.90	14.29	-9.39	-11.21	0.19	14.62	230.04
1200.00	0.74	189.16	1199.89	14.58	-9.71	-11.26	0.05	14.87	229.23
1225.00	0.70	184.42	1224.89	14.85	-10.02	-11.30	0.28	15.10	228.43
1250.00	0.68	188.50	1249.89	15.10	-10.32	-11.33	0.22	15.33	227.67
1275.00	0.65	194.57	1274.89	15.36	-10.60	-11.39	0.31	15.56	227.04
1300.00	0.67	197.82	1299.89	15.63	-10.88	-11.47	0.17	15.81	226.51
1325.00	0.71	200.11	1324.88	15.91	-11.16	-11.57	0.18	16.07	226.02
1350.00	0.78	199.72	1349.88	16.22	-11.47	-11.68	0.29	16.37	225.52
1375.00	0.75	195.92	1374.88	16.54	-11.79	-11.78	0.22	16.66	224.98
1400.00	0.72	193.69	1399.88	16.83	-12.10	-11.86	0.18	16.94	224.44
1425.00	0.65	196.51	1424.88	17.11	-12.39	-11.94	0.30	17.20	223.95
1450.00	0.62	204.29	1449.87	17.37	-12.64	-12.03	0.37	17.46	223.58
1475.00	0.63	210.56	1474.87	17.64	-12.89	-12.16	0.28	17.72	223.34
1500.00	0.70	213.62	1499.87	17.93	-13.13	-12.31	0.32	18.00	223.16
1525.00	0.75	210.18	1524.87	18.24	-13.40	-12.48	0.26	18.31	222.97
1550.00	0.75	209.16	1549.87	18.56	-13.68	-12.64	0.05	18.63	222.74
1575.00	0.80	201.48	1574.87	18.89	-13.99	-12.78	0.46	18.95	222.43

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg
1600.00	0.68	199.87	1599.86	19.20	-14.29	-12.90	0.48	19.25	222.08
1625.00	0.58	204.09	1624.86	19.46	-14.54	-13.00	0.44	19.50	221.80
1650.00	0.55	209.26	1649.86	19.70	-14.76	-13.11	0.24	19.74	221.61
1675.00	0.62	216.57	1674.86	19.95	-14.97	-13.25	0.41	19.99	221.50
1700.00	0.64	218.60	1699.86	20.23	-15.19	-13.42	0.12	20.26	221.45
1725.00	0.66	213.86	1724.86	20.51	-15.42	-13.58	0.24	20.55	221.38
1750.00	0.61	212.21	1749.85	20.79	-15.65	-13.73	0.21	20.82	221.27
1775.00	0.47	217.96	1774.85	21.02	-15.84	-13.87	0.59	21.06	221.20
1800.00	0.43	226.71	1799.85	21.22	-15.99	-14.00	0.33	21.25	221.20
1825.00	0.37	241.22	1824.85	21.39	-16.09	-14.14	0.47	21.42	221.30
1850.00	0.41	256.04	1849.85	21.53	-16.15	-14.30	0.43	21.57	221.51
1875.00	0.46	253.77	1874.85	21.68	-16.20	-14.48	0.22	21.73	221.79
1900.00	0.48	251.67	1899.85	21.85	-16.27	-14.68	0.10	21.91	222.07
1925.00	0.47	244.06	1924.85	22.03	-16.34	-14.87	0.26	22.10	222.30
1950.00	0.42	241.97	1949.85	22.21	-16.43	-15.05	0.24	22.28	222.48
1975.00	0.37	236.56	1974.85	22.37	-16.52	-15.19	0.25	22.44	222.60
2000.00	0.33	249.12	1999.85	22.50	-16.59	-15.33	0.34	22.58	222.73
2025.00	0.35	257.05	2024.85	22.62	-16.63	-15.47	0.21	22.71	222.92
2050.00	0.39	274.77	2049.85	22.73	-16.64	-15.63	0.48	22.83	223.20
2075.00	0.44	275.68	2074.85	22.83	-16.62	-15.81	0.23	22.94	223.56
2100.00	0.46	268.82	2099.84	22.94	-16.62	-16.00	0.22	23.07	223.92
2125.00	0.45	261.76	2124.84	23.08	-16.63	-16.20	0.23	23.22	224.24
2150.00	0.36	257.30	2149.84	23.21	-16.66	-16.37	0.38	23.36	224.50
2175.00	0.34	279.52	2174.84	23.30	-16.67	-16.52	0.55	23.47	224.75
2200.00	0.23	294.39	2199.84	23.35	-16.64	-16.64	0.52	23.53	225.01
2225.00	0.27	299.09	2224.84	23.37	-16.59	-16.74	0.16	23.56	225.26
2250.00	0.55	284.74	2249.84	23.43	-16.53	-16.91	1.22	23.64	225.65
2275.00	0.54	286.97	2274.84	23.52	-16.46	-17.14	0.10	23.76	226.15
2300.00	0.56	272.80	2299.84	23.63	-16.42	-17.37	0.55	23.90	226.61
2325.00	0.58	262.95	2324.84	23.79	-16.43	-17.62	0.41	24.09	227.00
2350.00	0.48	265.05	2349.84	23.95	-16.46	-17.85	0.42	24.28	227.33
2375.00	0.31	263.03	2374.84	24.07	-16.47	-18.02	0.69	24.42	227.57

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
2400.00	0.47	281.34	2399.84	24.16	-16.46	-18.19	0.80	24.53	227.85
2425.00	0.49	293.95	2424.84	24.23	-16.40	-18.39	0.43	24.64	228.27
2450.00	0.47	298.84	2449.83	24.28	-16.31	-18.58	0.19	24.72	228.72
2475.00	0.49	288.00	2474.83	24.33	-16.22	-18.77	0.37	24.81	229.16
2500.00	0.51	295.98	2499.83	24.39	-16.14	-18.97	0.28	24.91	229.60
2525.00	0.41	277.29	2524.83	24.46	-16.08	-19.16	0.70	25.01	229.99
2550.00	0.26	292.35	2549.83	24.52	-16.05	-19.30	0.71	25.10	230.25
2575.00	0.32	302.64	2574.83	24.54	-15.99	-19.41	0.32	25.15	230.51
2600.00	0.41	298.64	2599.83	24.56	-15.91	-19.54	0.40	25.20	230.85
2625.00	0.26	311.30	2624.83	24.57	-15.83	-19.67	0.67	25.24	231.17
2650.00	0.20	308.35	2649.83	24.57	-15.76	-19.74	0.26	25.26	231.39
2675.00	0.22	267.89	2674.83	24.60	-15.74	-19.82	0.58	25.31	231.55
2700.00	0.17	270.76	2699.83	24.65	-15.74	-19.91	0.19	25.38	231.67
2725.00	0.18	166.32	2724.83	24.70	-15.78	-19.94	1.10	25.42	231.64
2750.00	0.13	201.25	2749.83	24.75	-15.84	-19.94	0.40	25.47	231.53
2775.00	0.13	125.97	2774.83	24.77	-15.88	-19.93	0.64	25.48	231.44
2800.00	0.06	132.00	2799.83	24.78	-15.91	-19.89	0.27	25.47	231.35
2825.00	0.01	223.12	2824.83	24.78	-15.92	-19.88	0.26	25.47	231.32
2850.00	0.10	264.82	2849.83	24.80	-15.93	-19.91	0.37	25.50	231.34
2875.00	0.18	223.60	2874.83	24.85	-15.96	-19.96	0.48	25.55	231.36
2900.00	0.13	175.17	2899.83	24.91	-16.01	-19.98	0.53	25.61	231.29
2925.00	0.14	180.42	2924.83	24.96	-16.07	-19.98	0.06	25.64	231.18
2950.00	0.11	184.23	2949.83	25.00	-16.13	-19.98	0.12	25.68	231.09
2975.00	0.04	214.55	2974.83	25.03	-16.16	-19.99	0.31	25.71	231.04
3000.00	0.08	243.03	2999.83	25.06	-16.18	-20.01	0.19	25.73	231.05
3025.00	0.12	254.11	3024.83	25.09	-16.19	-20.05	0.17	25.77	231.08
3050.00	0.18	242.79	3049.83	25.15	-16.22	-20.11	0.27	25.84	231.12
3075.00	0.22	217.59	3074.83	25.24	-16.27	-20.18	0.38	25.92	231.11
3100.00	0.23	221.65	3099.83	25.33	-16.35	-20.24	0.07	26.02	231.07
3125.00	0.21	227.71	3124.83	25.43	-16.42	-20.30	0.11	26.11	231.05
3150.00	0.29	243.67	3149.83	25.53	-16.48	-20.40	0.41	26.22	231.07
3175.00	0.36	251.42	3174.83	25.65	-16.53	-20.53	0.33	26.35	231.16

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
3200.00	0.46	243.00	3199.83	25.81	-16.60	-20.69	0.45	26.52	231.26
3225.00	0.44	229.63	3224.83	25.99	-16.70	-20.85	0.42	26.72	231.30
3250.00	0.40	237.17	3249.83	26.16	-16.81	-20.99	0.27	26.90	231.31
3275.00	0.40	220.80	3274.83	26.33	-16.93	-21.12	0.45	27.07	231.30
3300.00	0.46	221.35	3299.82	26.52	-17.07	-21.25	0.25	27.25	231.23
3325.00	0.45	211.41	3324.82	26.72	-17.23	-21.37	0.32	27.45	231.12
3350.00	0.60	201.69	3349.82	26.94	-17.43	-21.47	0.71	27.65	230.92
3375.00	0.79	202.49	3374.82	27.23	-17.71	-21.58	0.76	27.92	230.62
3400.00	0.90	188.48	3399.82	27.57	-18.07	-21.67	0.93	28.22	230.19
3425.00	0.88	185.91	3424.81	27.91	-18.45	-21.72	0.18	28.50	229.65
3450.00	0.81	187.58	3449.81	28.22	-18.82	-21.77	0.31	28.77	229.15
3475.00	0.76	187.40	3474.81	28.52	-19.16	-21.81	0.21	29.03	228.71
3500.00	0.64	188.67	3499.81	28.78	-19.46	-21.85	0.45	29.26	228.32
3525.00	0.69	187.11	3524.81	29.03	-19.75	-21.89	0.18	29.48	227.95
3550.00	0.72	183.24	3549.80	29.29	-20.05	-21.92	0.22	29.71	227.55
3575.00	0.85	187.74	3574.80	29.58	-20.39	-21.95	0.57	29.96	227.11
3600.00	0.75	182.67	3599.80	29.87	-20.74	-21.99	0.47	30.22	226.67
3625.00	0.68	177.55	3624.80	30.12	-21.05	-21.99	0.39	30.44	226.25
3650.00	0.55	190.37	3649.80	30.34	-21.32	-22.00	0.74	30.64	225.91
3675.00	0.65	198.94	3674.79	30.58	-21.57	-22.07	0.54	30.86	225.66
3700.00	0.66	203.61	3699.79	30.85	-21.84	-22.18	0.22	31.12	225.44
3725.00	0.78	185.80	3724.79	31.14	-22.14	-22.25	1.00	31.39	225.14
3750.00	0.70	184.92	3749.79	31.41	-22.46	-22.28	0.32	31.63	224.77
3775.00	0.65	232.80	3774.79	31.67	-22.69	-22.41	2.19	31.89	224.63
3800.00	0.89	210.31	3799.79	32.00	-22.95	-22.62	1.54	32.22	224.58
3825.00	0.69	183.12	3824.78	32.32	-23.27	-22.72	1.68	32.52	224.32
3850.00	0.27	208.11	3849.78	32.50	-23.47	-22.76	1.83	32.69	224.12
3875.00	0.66	225.89	3874.78	32.70	-23.62	-22.89	1.65	32.90	224.10
3900.00	0.69	202.91	3899.78	32.99	-23.86	-23.05	1.08	33.18	224.01
3925.00	0.60	201.11	3924.78	33.26	-24.12	-23.16	0.34	33.44	223.83
3950.00	0.73	211.10	3949.78	33.55	-24.38	-23.29	0.67	33.72	223.69
3975.00	0.66	221.00	3974.77	33.85	-24.63	-23.46	0.55	34.02	223.62

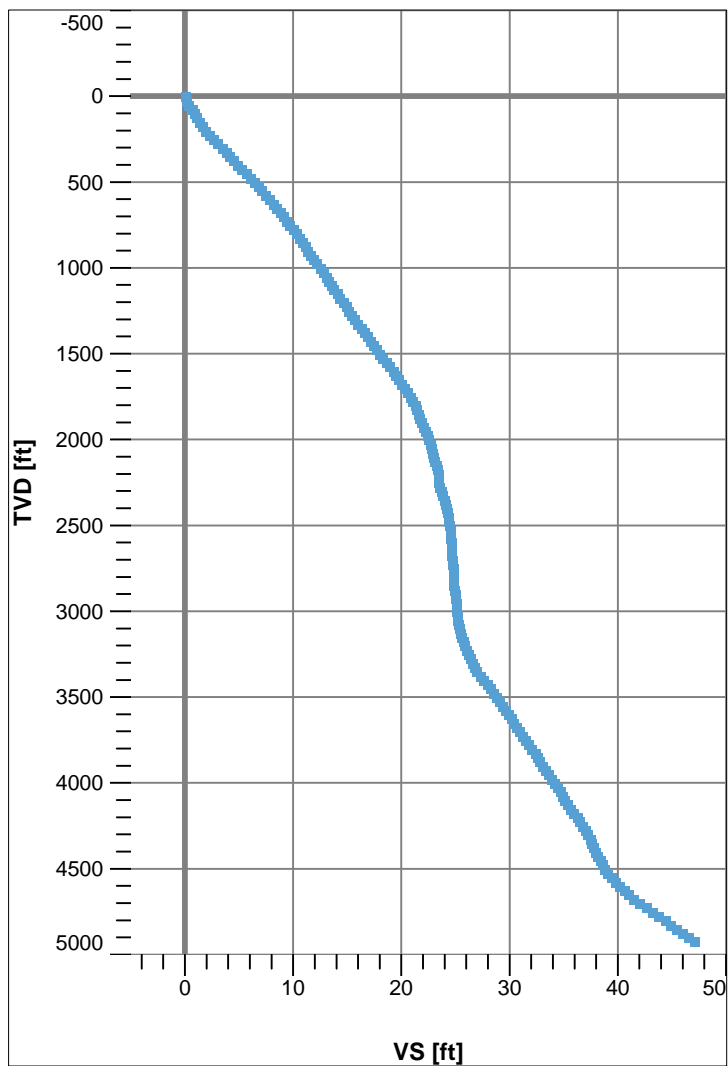
MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg
4000.00	0.66	208.52	3999.77	34.13	-24.86	-23.63	0.57	34.30	223.54
4025.00	0.59	218.73	4024.77	34.40	-25.09	-23.78	0.53	34.57	223.46
4050.00	0.58	206.54	4049.77	34.66	-25.30	-23.91	0.50	34.81	223.39
4075.00	0.34	222.54	4074.77	34.85	-25.47	-24.02	1.06	35.01	223.32
4100.00	0.51	225.06	4099.77	35.04	-25.60	-24.15	0.67	35.20	223.33
4125.00	0.63	232.30	4124.77	35.28	-25.77	-24.34	0.55	35.44	223.37
4150.00	0.69	224.61	4149.77	35.57	-25.96	-24.55	0.44	35.73	223.41
4175.00	0.81	206.38	4174.76	35.89	-26.22	-24.74	1.05	36.05	223.33
4200.00	0.62	207.15	4199.76	36.19	-26.50	-24.88	0.77	36.35	223.19
4225.00	0.66	192.21	4224.76	36.45	-26.76	-24.97	0.68	36.60	223.02
4250.00	0.56	194.34	4249.76	36.69	-27.02	-25.03	0.38	36.83	222.81
4275.00	0.66	188.25	4274.76	36.93	-27.28	-25.08	0.48	37.06	222.59
4300.00	0.66	185.77	4299.76	37.18	-27.57	-25.12	0.12	37.29	222.34
4325.00	0.60	171.47	4324.75	37.39	-27.84	-25.11	0.68	37.49	222.05
4350.00	0.65	149.16	4349.75	37.54	-28.09	-25.02	0.99	37.62	221.69
4375.00	0.59	174.67	4374.75	37.68	-28.34	-24.93	1.12	37.75	221.34
4400.00	0.60	181.06	4399.75	37.88	-28.60	-24.92	0.27	37.94	221.07
4425.00	0.76	170.52	4424.75	38.09	-28.89	-24.90	0.80	38.14	220.76
4450.00	0.87	170.46	4449.75	38.33	-29.24	-24.84	0.46	38.37	220.35
4475.00	0.84	156.46	4474.74	38.55	-29.60	-24.74	0.84	38.57	219.89
4500.00	0.84	167.08	4499.74	38.75	-29.94	-24.62	0.62	38.77	219.43
4525.00	0.83	179.11	4524.74	39.01	-30.30	-24.58	0.70	39.02	219.05
4550.00	0.95	195.18	4549.73	39.34	-30.69	-24.63	1.11	39.35	218.75
4575.00	0.93	193.74	4574.73	39.72	-31.08	-24.73	0.14	39.72	218.51
4600.00	1.00	192.00	4599.73	40.10	-31.49	-24.83	0.31	40.10	218.25
4625.00	1.23	197.19	4624.72	40.55	-31.96	-24.95	0.99	40.55	217.98
4650.00	0.86	208.86	4649.72	40.99	-32.38	-25.12	1.68	40.99	217.80
4675.00	1.18	215.01	4674.71	41.43	-32.76	-25.36	1.33	41.43	217.74
4700.00	1.37	212.57	4699.71	41.98	-33.22	-25.67	0.82	41.98	217.69
4725.00	1.35	205.15	4724.70	42.57	-33.74	-25.96	0.71	42.57	217.57
4750.00	1.40	211.86	4749.69	43.16	-34.27	-26.24	0.67	43.16	217.44
4775.00	1.41	221.62	4774.69	43.77	-34.76	-26.61	0.96	43.77	217.43

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DISTANCE	CLOSURE DIRECTION
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
4800.00	1.13	228.82	4799.68	44.32	-35.15	-27.00	1.28	44.32	217.53
4825.00	1.38	218.62	4824.67	44.86	-35.55	-27.37	1.34	44.86	217.60
4850.00	1.17	215.32	4849.67	45.42	-35.99	-27.71	0.89	45.42	217.59
4875.00	1.18	230.46	4874.66	45.93	-36.36	-28.05	1.24	45.93	217.65
4900.00	1.62	227.68	4899.66	46.52	-36.76	-28.51	1.78	46.52	217.79
4923.89	1.06	226.34	4923.54	47.07	-37.14	-28.92	2.34	47.07	217.90



Name : Keeper Gyro Survey Moser #1-A
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VS View



Plan View

