



K.P. KAUFFMAN

SURVEY REPORT

FOREMAN UNIT #2

2/5/2018



The **Ultimate Partner** In Wellbore Placement

CUSTOMER
PROJECT
FIELD

K.P. Kauffman
Foreman Unit #2
Spindle

SDI JOB NO.
SDI DISTRICT
SDI KIT/UNIT

OP.007876
Casper

SITE INFORMATION

Site Name **Foreman Unit #2**
Lat/Long **40.06398° N, 104.94477° W**
Northing
Easting

Section **12**
Township **1**
Range **68W**

MAP INFORMATION

North Reference **True North**
Grid Correction
System **US State Plane 1983**
Datum **North American Datum 1983 (GRS 1980)**
Map Zone **Colorado North: 0501**



WELL INFORMATION

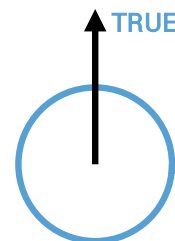
Lat/Long **40.06398° N, 104.94477° W**
Northing
Easting
UWI **05-123-08483 UWBI 05-123-08483**

DEPTH AND ELEVATION REFERENCE

Ground Level **5107 ft above Mean Sea Level**
Reference Datum **GL**
Reference Height **0 ft above G.L.**
Reference Elevation **5107 ft**

VERTICAL SECTION REFERENCE

+N/-S **0 ft**
+E/-W **0 ft**
Proposal Direction **293.86°**
Calculation Method **Minimum Curvature**



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity **999.025 mG [computed]**

WELL NOTES

Keeper gyro wireline survey in 4.5" casing. All depths reference ground level

OPERATORS

P Holbrook

SDI Operator Name (Printed)

SIGNATURE

DATE

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
99.68	0.25	183.98	99.68	-0.07	-0.21	-0.01	0.25	0.21	183.98
100.00	0.25	184.27	100.00	-0.07	-0.22	-0.02	0.40	0.22	183.98
125.00	0.24	201.90	125.00	-0.09	-0.32	-0.04	0.30	0.32	186.90
150.00	0.19	223.33	150.00	-0.08	-0.40	-0.09	0.37	0.41	192.29
175.00	0.27	274.54	175.00	-0.01	-0.42	-0.17	0.86	0.46	202.49
200.00	0.41	282.69	200.00	0.13	-0.40	-0.32	0.58	0.51	219.04
225.00	0.42	286.07	225.00	0.31	-0.35	-0.50	0.10	0.61	234.74
250.00	0.41	295.86	250.00	0.49	-0.29	-0.67	0.29	0.73	246.66
275.00	0.38	302.28	275.00	0.66	-0.20	-0.82	0.22	0.84	255.95
300.00	0.34	299.82	300.00	0.82	-0.12	-0.95	0.15	0.96	262.65
325.00	0.38	291.71	325.00	0.98	-0.05	-1.09	0.24	1.09	267.12
350.00	0.46	286.43	350.00	1.16	0.00	-1.27	0.36	1.27	270.16
375.00	0.42	282.12	374.99	1.35	0.05	-1.45	0.20	1.45	272.01
400.00	0.31	273.47	399.99	1.50	0.07	-1.61	0.50	1.61	272.65
425.00	0.29	278.39	424.99	1.62	0.09	-1.73	0.13	1.74	272.88
450.00	0.28	271.30	449.99	1.74	0.10	-1.86	0.14	1.86	273.01
475.00	0.33	260.95	474.99	1.85	0.09	-1.99	0.28	1.99	272.53
500.00	0.36	259.71	499.99	1.98	0.06	-2.14	0.14	2.14	271.68
525.00	0.42	267.33	524.99	2.13	0.04	-2.31	0.30	2.31	271.10
550.00	0.41	278.74	549.99	2.29	0.05	-2.48	0.33	2.48	271.24
575.00	0.32	283.42	574.99	2.45	0.08	-2.64	0.38	2.64	271.80
600.00	0.40	282.52	599.99	2.60	0.12	-2.79	0.34	2.79	272.42
625.00	0.52	286.15	624.99	2.80	0.17	-2.99	0.50	2.99	273.24
650.00	0.55	276.99	649.99	3.03	0.22	-3.22	0.36	3.22	273.83
675.00	0.55	277.34	674.99	3.26	0.25	-3.45	0.02	3.46	274.06
700.00	0.52	273.85	699.99	3.48	0.27	-3.69	0.19	3.70	274.16
725.00	0.59	278.66	724.98	3.71	0.30	-3.93	0.33	3.94	274.30
750.00	0.71	284.24	749.98	3.99	0.35	-4.20	0.54	4.22	274.80
775.00	0.86	289.93	774.98	4.33	0.45	-4.53	0.68	4.55	275.73
800.00	0.91	291.99	799.98	4.71	0.59	-4.89	0.23	4.92	276.91
825.00	0.95	294.97	824.97	5.12	0.75	-5.26	0.27	5.31	278.16

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
850.00	1.12	295.64	849.97	5.57	0.95	-5.67	0.67	5.75	279.49
875.00	1.24	295.44	874.97	6.08	1.17	-6.13	0.46	6.24	280.80
900.00	1.29	294.66	899.96	6.63	1.40	-6.63	0.21	6.78	281.94
925.00	1.42	295.25	924.95	7.22	1.65	-7.17	0.53	7.35	282.98
950.00	1.43	295.56	949.94	7.84	1.92	-7.73	0.06	7.96	283.94
975.00	1.37	294.64	974.94	8.45	2.18	-8.28	0.28	8.56	284.73
1000.00	1.40	293.67	999.93	9.06	2.42	-8.83	0.15	9.16	285.35
1025.00	1.41	293.90	1024.92	9.67	2.67	-9.39	0.07	9.76	285.88
1050.00	1.26	294.70	1049.92	10.25	2.91	-9.92	0.61	10.34	286.35
1075.00	1.30	295.75	1074.91	10.81	3.15	-10.43	0.17	10.89	286.80
1100.00	1.34	294.86	1099.90	11.39	3.39	-10.95	0.19	11.46	287.23
1125.00	1.37	294.56	1124.90	11.98	3.64	-11.49	0.11	12.05	287.59
1150.00	1.28	294.91	1149.89	12.55	3.88	-12.01	0.36	12.62	287.92
1175.00	1.32	295.37	1174.88	13.12	4.12	-12.52	0.18	13.18	288.23
1200.00	1.33	295.77	1199.88	13.70	4.37	-13.04	0.04	13.76	288.53
1225.00	1.36	296.34	1224.87	14.28	4.63	-13.57	0.17	14.34	288.84
1250.00	1.34	294.08	1249.86	14.87	4.88	-14.10	0.24	14.92	289.09
1275.00	1.25	295.92	1274.86	15.44	5.12	-14.62	0.40	15.49	289.31
1300.00	1.27	294.50	1299.85	15.99	5.35	-15.11	0.16	16.03	289.51
1325.00	1.30	294.05	1324.84	16.55	5.58	-15.62	0.12	16.59	289.67
1350.00	1.32	293.59	1349.84	17.12	5.82	-16.15	0.10	17.16	289.81
1375.00	1.30	293.13	1374.83	17.69	6.04	-16.67	0.11	17.73	289.92
1400.00	1.27	291.60	1399.82	18.25	6.26	-17.19	0.17	18.29	290.00
1425.00	1.24	291.15	1424.82	18.80	6.46	-17.70	0.14	18.84	290.04
1450.00	1.17	290.28	1449.81	19.32	6.64	-18.19	0.30	19.37	290.06
1475.00	1.13	287.69	1474.81	19.82	6.80	-18.66	0.25	19.87	290.03
1500.00	1.07	286.07	1499.80	20.30	6.94	-19.12	0.27	20.35	289.96
1525.00	0.97	285.93	1524.80	20.74	7.07	-19.55	0.40	20.79	289.87
1550.00	0.89	283.62	1549.80	21.14	7.17	-19.95	0.35	21.20	289.77
1575.00	0.89	283.13	1574.79	21.53	7.26	-20.33	0.03	21.58	289.66
1600.00	0.86	282.43	1599.79	21.90	7.35	-20.70	0.13	21.96	289.54
1625.00	0.83	280.56	1624.79	22.26	7.42	-21.06	0.19	22.33	289.41

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
1650.00	0.71	279.41	1649.78	22.59	7.48	-21.39	0.47	22.66	289.27
1675.00	0.72	277.98	1674.78	22.89	7.52	-21.70	0.08	22.97	289.13
1700.00	0.75	277.94	1699.78	23.19	7.57	-22.01	0.13	23.28	288.97
1725.00	0.71	274.56	1724.78	23.50	7.60	-22.33	0.23	23.59	288.81
1750.00	0.74	275.10	1749.78	23.80	7.63	-22.64	0.11	23.90	288.62
1775.00	0.73	275.10	1774.77	24.10	7.66	-22.96	0.02	24.21	288.44
1800.00	0.75	275.21	1799.77	24.41	7.69	-23.29	0.05	24.52	288.27
1825.00	0.69	272.14	1824.77	24.70	7.71	-23.60	0.28	24.83	288.09
1850.00	0.74	276.13	1849.77	24.99	7.73	-23.91	0.30	25.13	287.92
1875.00	0.87	277.98	1874.77	25.33	7.78	-24.26	0.53	25.48	287.77
1900.00	0.66	271.54	1899.76	25.65	7.81	-24.59	0.94	25.80	287.61
1925.00	0.83	273.94	1924.76	25.95	7.82	-24.92	0.70	26.12	287.43
1950.00	0.65	268.82	1949.76	26.25	7.83	-25.24	0.76	26.43	287.24
1975.00	0.75	270.97	1974.76	26.53	7.83	-25.54	0.40	26.72	287.04
2000.00	0.76	267.89	1999.76	26.83	7.83	-25.87	0.17	27.03	286.83
2025.00	0.74	266.39	2024.75	27.12	7.81	-26.20	0.12	27.34	286.60
2050.00	0.81	272.67	2049.75	27.43	7.81	-26.53	0.44	27.66	286.40
2075.00	0.77	272.51	2074.75	27.75	7.83	-26.88	0.15	27.99	286.23
2100.00	0.71	275.43	2099.75	28.05	7.85	-27.20	0.27	28.31	286.09
2125.00	0.79	277.21	2124.74	28.36	7.88	-27.53	0.32	28.63	285.98
2150.00	0.88	265.06	2149.74	28.69	7.89	-27.89	0.79	28.98	285.80
2175.00	0.96	266.58	2174.74	29.05	7.86	-28.29	0.35	29.36	285.53
2200.00	0.96	271.34	2199.74	29.43	7.85	-28.70	0.32	29.76	285.30
2225.00	0.98	273.75	2224.73	29.82	7.87	-29.13	0.18	30.17	285.12
2250.00	1.00	272.11	2249.73	30.23	7.89	-29.56	0.15	30.59	284.95
2275.00	0.88	272.14	2274.72	30.61	7.91	-29.97	0.49	31.00	284.78
2300.00	0.97	273.78	2299.72	30.99	7.93	-30.37	0.38	31.39	284.63
2325.00	1.08	277.86	2324.72	31.41	7.98	-30.82	0.51	31.83	284.51
2350.00	1.08	277.48	2349.71	31.87	8.04	-31.29	0.04	32.30	284.41
2375.00	1.12	281.76	2374.71	32.33	8.12	-31.76	0.37	32.78	284.34
2400.00	1.21	281.99	2399.70	32.83	8.22	-32.26	0.35	33.29	284.30
2425.00	1.01	279.74	2424.70	33.30	8.32	-32.74	0.82	33.78	284.26

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
2450.00	1.07	282.57	2449.69	33.74	8.40	-33.18	0.31	34.23	284.21
2475.00	1.14	283.44	2474.69	34.22	8.51	-33.65	0.30	34.71	284.20
2500.00	1.08	280.07	2499.68	34.69	8.61	-34.12	0.35	35.19	284.16
2525.00	1.06	277.12	2524.68	35.14	8.68	-34.59	0.25	35.66	284.09
2550.00	1.06	278.61	2549.68	35.59	8.75	-35.04	0.12	36.12	284.01
2575.00	1.09	279.35	2574.67	36.04	8.82	-35.51	0.12	36.59	283.95
2600.00	1.10	282.77	2599.67	36.51	8.91	-35.98	0.27	37.07	283.91
2625.00	1.09	287.26	2624.66	36.98	9.03	-36.44	0.35	37.54	283.92
2650.00	1.12	284.23	2649.66	37.46	9.17	-36.90	0.27	38.02	283.95
2675.00	1.12	284.48	2674.65	37.94	9.29	-37.38	0.02	38.51	283.95
2700.00	1.17	280.59	2699.65	38.43	9.39	-37.87	0.37	39.01	283.93
2725.00	1.19	286.85	2724.64	38.94	9.52	-38.37	0.52	39.53	283.93
2750.00	1.22	292.48	2749.64	39.46	9.69	-38.86	0.48	40.05	284.01
2775.00	1.26	295.07	2774.63	40.00	9.91	-39.36	0.29	40.59	284.14
2800.00	1.32	296.04	2799.63	40.57	10.16	-39.87	0.25	41.14	284.29
2825.00	1.32	300.22	2824.62	41.14	10.43	-40.37	0.39	41.70	284.48
2850.00	1.31	303.82	2849.61	41.71	10.73	-40.86	0.33	42.25	284.72
2875.00	1.33	307.08	2874.61	42.27	11.07	-41.33	0.31	42.78	284.99
2900.00	1.34	306.87	2899.60	42.84	11.42	-41.79	0.06	43.33	285.28
2925.00	1.35	305.87	2924.59	43.42	11.77	-42.27	0.10	43.88	285.55
2950.00	1.33	307.00	2949.58	43.99	12.11	-42.74	0.14	44.42	285.82
2975.00	1.34	306.26	2974.58	44.56	12.46	-43.21	0.08	44.97	286.09
3000.00	1.34	306.56	2999.57	45.13	12.81	-43.68	0.04	45.52	286.34
3025.00	1.26	307.69	3024.56	45.68	13.15	-44.13	0.32	46.05	286.59
3050.00	1.22	306.86	3049.56	46.21	13.48	-44.56	0.16	46.56	286.83
3075.00	1.21	311.63	3074.55	46.72	13.81	-44.97	0.41	47.05	287.07
3100.00	1.14	324.33	3099.55	47.18	14.19	-45.31	1.07	47.48	287.39
3125.00	1.22	344.78	3124.54	47.56	14.65	-45.53	1.71	47.83	287.84
3150.00	1.39	357.48	3149.54	47.87	15.21	-45.61	1.33	48.08	288.44
3175.00	1.52	9.24	3174.53	48.08	15.84	-45.57	1.29	48.25	289.17
3200.00	1.61	19.08	3199.52	48.20	16.50	-45.40	1.13	48.31	289.97
3225.00	1.69	24.76	3224.51	48.22	17.17	-45.13	0.74	48.29	290.82

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
3250.00	1.73	27.24	3249.50	48.19	17.84	-44.81	0.32	48.23	291.71
3275.00	1.66	26.19	3274.49	48.16	18.50	-44.48	0.29	48.17	292.58
3300.00	1.60	28.14	3299.48	48.11	19.13	-44.15	0.32	48.12	293.43
3325.00	1.57	27.61	3324.47	48.07	19.74	-43.83	0.15	48.07	294.25
3350.00	1.45	29.14	3349.46	48.01	20.32	-43.51	0.49	48.02	295.03
3375.00	1.29	26.52	3374.45	47.97	20.85	-43.23	0.70	48.00	295.75
3400.00	1.20	25.11	3399.45	47.95	21.34	-43.00	0.39	48.00	296.39
3425.00	1.07	21.39	3424.44	47.96	21.79	-42.80	0.60	48.03	296.98
3450.00	0.95	20.29	3449.44	47.98	22.20	-42.65	0.48	48.08	297.50
3475.00	0.89	18.04	3474.43	48.01	22.58	-42.51	0.29	48.14	297.97
3500.00	0.77	17.30	3499.43	48.05	22.92	-42.40	0.46	48.20	298.39
3525.00	0.66	7.94	3524.43	48.11	23.23	-42.33	0.65	48.29	298.75
3550.00	0.59	2.99	3549.43	48.20	23.50	-42.31	0.36	48.39	299.05
3575.00	0.51	358.40	3574.43	48.29	23.74	-42.30	0.35	48.51	299.30
3600.00	0.43	347.55	3599.43	48.39	23.94	-42.33	0.49	48.63	299.49
3625.00	0.44	344.01	3624.42	48.51	24.12	-42.37	0.12	48.76	299.65
3650.00	0.36	353.18	3649.42	48.61	24.29	-42.41	0.41	48.87	299.80
3675.00	0.34	347.25	3674.42	48.69	24.44	-42.44	0.18	48.97	299.94
3700.00	0.35	324.92	3699.42	48.80	24.58	-42.49	0.53	49.09	300.04
3725.00	0.40	309.52	3724.42	48.95	24.69	-42.61	0.46	49.24	300.10
3750.00	0.37	299.54	3749.42	49.12	24.79	-42.74	0.29	49.41	300.11
3775.00	0.42	295.82	3774.42	49.29	24.87	-42.90	0.23	49.59	300.10
3800.00	0.45	287.74	3799.42	49.48	24.94	-43.08	0.27	49.77	300.07
3825.00	0.43	290.75	3824.42	49.67	25.00	-43.26	0.14	49.96	300.03
3850.00	0.39	294.03	3849.42	49.85	25.07	-43.42	0.16	50.14	300.00
3875.00	0.26	269.71	3874.42	49.99	25.11	-43.56	0.76	50.27	299.96
3900.00	0.23	258.98	3899.42	50.08	25.10	-43.66	0.22	50.36	299.89
3925.00	0.25	259.63	3924.42	50.17	25.08	-43.77	0.06	50.44	299.81
3950.00	0.27	252.24	3949.42	50.26	25.05	-43.88	0.16	50.52	299.72
3975.00	0.23	229.12	3974.42	50.32	25.00	-43.97	0.43	50.58	299.62
4000.00	0.29	217.16	3999.42	50.36	24.91	-44.05	0.31	50.61	299.49
4025.00	0.35	218.09	4024.42	50.39	24.80	-44.13	0.25	50.63	299.34

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS %/100ft	CLOSURE DIST ft	CLOSURE DIR deg
4050.00	0.42	213.92	4049.42	50.43	24.67	-44.23	0.29	50.64	299.15
4075.00	0.46	212.67	4074.42	50.46	24.51	-44.34	0.18	50.66	298.93
4100.00	0.52	203.37	4099.41	50.47	24.32	-44.43	0.40	50.65	298.69
4125.00	0.57	197.18	4124.41	50.46	24.10	-44.52	0.32	50.62	298.43
4150.00	0.63	192.29	4149.41	50.42	23.84	-44.58	0.30	50.56	298.14
4175.00	0.72	186.61	4174.41	50.34	23.55	-44.63	0.46	50.46	297.82
4200.00	0.72	189.34	4199.41	50.26	23.24	-44.67	0.14	50.36	297.49
4225.00	0.67	193.99	4224.41	50.19	22.94	-44.73	0.30	50.28	297.15
4250.00	0.64	196.76	4249.41	50.15	22.67	-44.81	0.16	50.22	296.83
4275.00	0.70	198.50	4274.40	50.12	22.39	-44.90	0.24	50.17	296.50
4300.00	0.79	203.30	4299.40	50.10	22.08	-45.02	0.42	50.14	296.13
4325.00	0.81	209.54	4324.40	50.12	21.77	-45.17	0.37	50.14	295.73
4350.00	0.83	211.87	4349.40	50.16	21.46	-45.36	0.15	50.18	295.32
4375.00	0.79	210.49	4374.39	50.21	21.16	-45.54	0.21	50.21	294.92
4400.00	0.68	214.49	4399.39	50.25	20.89	-45.71	0.47	50.26	294.56
4425.00	0.65	210.08	4424.39	50.30	20.65	-45.86	0.24	50.30	294.24
4450.00	0.63	201.40	4449.39	50.31	20.40	-45.98	0.40	50.31	293.92
4475.00	0.54	190.91	4474.39	50.27	20.15	-46.06	0.54	50.27	293.63
4500.00	0.49	188.72	4499.39	50.22	19.93	-46.10	0.24	50.22	293.38
4525.00	0.37	196.96	4524.39	50.18	19.75	-46.13	0.54	50.18	293.18
4550.00	0.22	210.69	4549.39	50.18	19.63	-46.18	0.64	50.18	293.03
4575.00	0.15	240.45	4574.39	50.20	19.57	-46.24	0.48	50.21	292.94
4600.00	0.17	297.95	4599.38	50.26	19.57	-46.30	0.63	50.27	292.92
4625.00	0.23	339.36	4624.38	50.33	19.64	-46.35	0.61	50.34	292.96
4650.00	0.25	354.08	4649.38	50.40	19.74	-46.37	0.26	50.40	293.06
4675.00	0.26	340.24	4674.38	50.46	19.85	-46.40	0.25	50.46	293.16
4700.00	0.30	329.25	4699.38	50.55	19.96	-46.45	0.28	50.56	293.25
4725.00	0.28	337.96	4724.38	50.65	20.07	-46.51	0.19	50.65	293.34
4750.00	0.41	359.85	4749.38	50.73	20.22	-46.53	0.73	50.73	293.49
4775.00	0.61	335.43	4774.38	50.87	20.43	-46.59	1.17	50.87	293.68
4800.00	0.61	318.72	4799.38	51.09	20.65	-46.73	0.71	51.09	293.84
4825.00	0.23	320.80	4824.38	51.26	20.79	-46.85	1.53	51.26	293.93

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
4850.00	0.47	279.85	4849.38	51.40	20.85	-46.98	1.32	51.40	293.93
4871.49	0.44	259.70	4870.87	51.55	20.85	-47.15	0.75	51.55	293.86

