



K.P. KAUFMAN

SURVEY REPORT

RONALD GRABRIAN #2

3/4/2015



The **Ultimate Partner** In Wellbore Placement

CUSTOMER K.P. Kaufman
PROJECT RONALD GRABRIAN #2
FIELD SPINDLE

SDI JOB NO. 260711
SDI DISTRICT Casper
SDI KIT/UNIT

SITE INFORMATION

Site Name WELD
Lat/Long 40.092713° N, 104.855186° W
Northing
Easting

Section 35
Township 2N
Range 67W

MAP INFORMATION

North Reference True North
Grid Correction
System
Datum
Map Zone



WELL INFORMATION

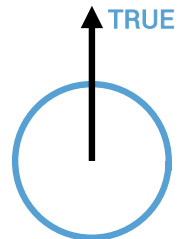
Lat/Long 40.092713° N, 104.855186° W
Northing
Easting
UWI 05-123-08922 UWBI 05-123-08922

DEPTH AND ELEVATION REFERENCE

Ground Level 4918 ft above Mean Sea Level
Reference Datum GL
Reference Height 0 ft above G.L.
Reference Elevation 4918 ft

VERTICAL SECTION REFERENCE

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



LOCAL GRAVITY REFERENCE INFORMATION

Local Gravity 999.046 mG [computed]

WELL NOTES

Keeper gyro wireline survey run in 4.5" casing from surface to 4764' measured depth. All depths reference ground level.

OPERATORS

C KIRBY

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	CLOSURE DISTANCE	CLOSURE DIRECTION	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
87.79	0.93	8.24	87.79	0.32	0.70	0.10	0.71	8.24	1.06
122.13	0.61	7.54	122.12	0.52	1.16	0.17	1.17	8.13	0.94
147.81	0.67	12.07	147.80	0.64	1.44	0.21	1.46	8.48	0.30
173.81	0.60	345.11	173.80	0.80	1.72	0.21	1.73	7.01	1.16
197.64	0.60	340.73	197.63	1.00	1.96	0.14	1.97	4.04	0.19
223.08	0.69	325.58	223.07	1.25	2.21	0.01	2.21	0.21	0.75
247.15	0.78	311.15	247.14	1.54	2.44	-0.20	2.45	355.38	0.85
272.43	0.77	312.84	272.41	1.88	2.67	-0.45	2.71	350.41	0.10
296.99	0.71	296.63	296.97	2.20	2.85	-0.71	2.93	346.04	0.88
323.14	0.58	288.96	323.11	2.49	2.96	-0.98	3.12	341.73	0.62
346.87	0.45	303.28	346.85	2.69	3.05	-1.17	3.27	339.03	0.76
370.66	0.46	308.82	370.64	2.88	3.17	-1.32	3.43	337.31	0.19
395.39	0.55	306.61	395.36	3.10	3.30	-1.50	3.62	335.59	0.38
424.76	0.61	305.73	424.73	3.40	3.48	-1.74	3.89	333.42	0.20
448.66	0.59	304.37	448.63	3.65	3.62	-1.94	4.11	331.76	0.10
473.20	0.60	296.66	473.17	3.91	3.75	-2.17	4.33	330.00	0.33
496.96	0.50	294.03	496.93	4.13	3.85	-2.37	4.52	328.36	0.46
521.63	0.45	290.82	521.60	4.33	3.93	-2.56	4.69	326.91	0.24
545.36	0.31	294.46	545.33	4.49	3.99	-2.70	4.82	325.86	0.60
574.70	0.20	308.57	574.67	4.61	4.05	-2.81	4.93	325.20	0.41
599.21	0.30	311.18	599.18	4.72	4.12	-2.90	5.03	324.89	0.40
622.94	0.28	312.15	622.91	4.84	4.20	-2.99	5.15	324.58	0.08
645.87	0.34	292.85	645.84	4.96	4.26	-3.09	5.26	324.06	0.52
670.50	0.38	284.10	670.47	5.11	4.31	-3.24	5.39	323.10	0.28
699.69	0.33	271.20	699.66	5.27	4.34	-3.41	5.52	321.78	0.33
723.53	0.24	271.00	723.49	5.37	4.34	-3.53	5.59	320.85	0.37
748.01	0.14	259.91	747.98	5.43	4.33	-3.61	5.64	320.18	0.44
770.81	0.18	313.81	770.77	5.49	4.35	-3.66	5.69	319.90	0.64
799.78	0.25	279.02	799.75	5.59	4.39	-3.76	5.78	319.44	0.51
822.92	0.28	313.00	822.88	5.69	4.44	-3.85	5.88	319.06	0.67
847.50	0.34	307.40	847.47	5.82	4.52	-3.95	6.01	318.85	0.30

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	CLOSURE DISTANCE	CLOSURE DIRECTION	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
870.93	0.45	277.03	870.90	5.97	4.58	-4.10	6.15	318.15	0.99
898.72	0.33	277.12	898.69	6.14	4.60	-4.29	6.29	317.01	0.42
921.88	0.30	273.92	921.85	6.25	4.61	-4.42	6.39	316.25	0.16
945.49	0.17	270.34	945.46	6.34	4.62	-4.51	6.46	315.66	0.55
973.63	0.29	247.52	973.60	6.41	4.59	-4.62	6.52	314.82	0.52
996.56	0.34	258.59	996.53	6.49	4.56	-4.74	6.58	313.87	0.33
1024.66	0.22	267.01	1024.62	6.59	4.54	-4.88	6.66	312.94	0.43
1047.57	0.31	274.93	1047.54	6.68	4.54	-4.98	6.74	312.35	0.42
1071.11	0.35	280.73	1071.07	6.80	4.56	-5.12	6.85	311.71	0.22
1099.30	0.43	272.08	1099.26	6.97	4.58	-5.31	7.01	310.80	0.35
1122.06	0.49	266.69	1122.02	7.12	4.58	-5.49	7.15	309.83	0.34
1145.53	0.54	261.29	1145.49	7.28	4.55	-5.70	7.29	308.64	0.28
1172.75	0.57	255.98	1172.71	7.46	4.50	-5.95	7.46	307.10	0.22
1196.10	0.53	252.40	1196.06	7.60	4.44	-6.17	7.60	305.75	0.20
1223.94	0.48	250.64	1223.89	7.75	4.36	-6.40	7.75	304.27	0.19
1246.65	0.56	236.37	1246.61	7.85	4.27	-6.59	7.85	302.95	0.67
1274.48	0.57	239.37	1274.43	7.96	4.12	-6.82	7.97	301.17	0.11
1297.16	0.51	239.14	1297.11	8.04	4.02	-7.00	8.07	299.84	0.26
1324.95	0.47	243.00	1324.91	8.15	3.90	-7.21	8.20	298.43	0.18
1348.25	0.45	249.89	1348.21	8.25	3.83	-7.38	8.31	297.41	0.25
1370.91	0.45	255.12	1370.86	8.36	3.77	-7.55	8.44	296.56	0.18
1398.77	0.56	258.81	1398.72	8.52	3.72	-7.79	8.63	295.52	0.39
1421.43	0.52	253.37	1421.38	8.67	3.67	-8.00	8.80	294.64	0.27
1449.18	0.55	253.67	1449.12	8.83	3.59	-8.24	8.99	293.55	0.08
1472.42	0.53	246.35	1472.36	8.96	3.52	-8.45	9.15	292.61	0.30
1499.61	0.54	245.73	1499.56	9.09	3.42	-8.68	9.33	291.48	0.03
1522.82	0.47	237.06	1522.76	9.18	3.32	-8.86	9.46	290.54	0.45
1549.90	0.44	235.71	1549.85	9.26	3.20	-9.04	9.59	289.51	0.12
1572.86	0.47	229.56	1572.81	9.32	3.09	-9.18	9.69	288.61	0.25
1596.47	0.40	227.53	1596.42	9.36	2.97	-9.32	9.78	287.70	0.28
1623.31	0.40	225.09	1623.25	9.40	2.84	-9.45	9.87	286.74	0.06
1646.78	0.31	229.25	1646.72	9.43	2.74	-9.56	9.94	286.02	0.42

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg	DLS °/100ft
1674.49	0.30	232.32	1674.43	9.47	2.65	-9.67	10.03	285.34	0.07
1697.11	0.17	243.37	1697.06	9.51	2.60	-9.75	10.09	284.94	0.59
1724.67	0.30	238.36	1724.61	9.56	2.54	-9.85	10.17	284.49	0.48
1747.48	0.21	244.29	1747.42	9.60	2.49	-9.94	10.24	284.09	0.42
1770.81	0.23	251.20	1770.75	9.65	2.46	-10.02	10.32	283.80	0.14
1798.31	0.34	255.92	1798.25	9.74	2.42	-10.15	10.43	283.43	0.41
1821.63	0.32	262.40	1821.57	9.83	2.40	-10.28	10.56	283.13	0.17
1845.18	0.28	270.42	1845.12	9.93	2.39	-10.40	10.68	282.94	0.25
1874.23	0.37	257.21	1874.16	10.05	2.37	-10.57	10.83	282.64	0.40
1896.70	0.33	258.99	1896.64	10.14	2.34	-10.70	10.95	282.34	0.19
1924.27	0.37	268.18	1924.20	10.27	2.32	-10.87	11.11	282.07	0.25
1946.75	0.38	260.54	1946.69	10.38	2.31	-11.01	11.25	281.84	0.23
1974.29	0.39	260.81	1974.23	10.52	2.28	-11.20	11.42	281.51	0.05
1997.27	0.37	259.86	1997.20	10.63	2.25	-11.35	11.57	281.23	0.09
2024.30	0.45	262.87	2024.23	10.77	2.22	-11.54	11.75	280.91	0.30
2047.41	0.41	266.95	2047.35	10.90	2.21	-11.71	11.92	280.68	0.24
2070.63	0.48	255.45	2070.57	11.03	2.18	-11.89	12.09	280.39	0.48
2097.58	0.52	285.76	2097.52	11.22	2.19	-12.12	12.31	280.22	0.98
2120.66	0.51	290.53	2120.60	11.42	2.25	-12.31	12.52	280.35	0.19
2147.57	0.45	282.59	2147.50	11.63	2.31	-12.53	12.74	280.47	0.33
2174.36	0.55	288.06	2174.29	11.86	2.38	-12.75	12.97	280.56	0.43
2196.70	0.51	284.18	2196.63	12.05	2.44	-12.95	13.18	280.65	0.27
2224.32	0.53	285.54	2224.25	12.29	2.50	-13.19	13.43	280.73	0.10
2245.91	0.53	295.56	2245.83	12.48	2.57	-13.38	13.62	280.87	0.43
2273.52	0.60	302.65	2273.45	12.75	2.70	-13.62	13.88	281.22	0.35
2296.60	0.61	303.14	2296.52	12.99	2.83	-13.82	14.11	281.59	0.07
2323.48	0.61	304.62	2323.41	13.28	2.99	-14.06	14.37	282.02	0.06
2346.32	0.57	294.63	2346.24	13.51	3.11	-14.26	14.59	282.30	0.49
2373.44	0.58	304.91	2373.36	13.78	3.24	-14.49	14.85	282.61	0.38
2396.41	0.49	303.28	2396.33	13.99	3.36	-14.67	15.05	282.91	0.36
2424.12	0.56	299.55	2424.04	14.25	3.50	-14.89	15.29	283.21	0.26
2446.66	0.50	299.83	2446.57	14.45	3.60	-15.07	15.49	283.43	0.28

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	CLOSURE DISTANCE ft	CLOSURE DIRECTION deg	DLS °/100ft
2474.38	0.54	315.32	2474.29	14.70	3.75	-15.26	15.72	283.81	0.53
2497.51	0.58	310.11	2497.43	14.93	3.90	-15.43	15.92	284.20	0.26
2524.50	0.57	312.65	2524.41	15.19	4.08	-15.63	16.16	284.63	0.10
2547.54	0.79	325.45	2547.45	15.46	4.29	-15.81	16.38	285.18	1.14
2574.34	0.81	326.30	2574.25	15.80	4.60	-16.02	16.66	286.02	0.09
2597.34	1.07	331.66	2597.25	16.14	4.92	-16.21	16.94	286.89	1.19
2624.88	1.24	335.09	2624.79	16.63	5.42	-16.46	17.32	288.23	0.68
2647.13	1.32	338.60	2647.03	17.05	5.87	-16.65	17.66	289.44	0.49
2674.38	1.52	343.90	2674.26	17.59	6.51	-16.86	18.08	291.12	0.88
2696.66	1.56	349.08	2696.54	18.03	7.09	-17.00	18.42	292.65	0.66
2724.63	1.58	347.41	2724.50	18.58	7.85	-17.16	18.87	294.57	0.17
2748.24	1.84	351.73	2748.09	19.08	8.54	-17.28	19.28	296.28	1.22
2771.07	1.90	358.36	2770.92	19.55	9.28	-17.35	19.67	298.14	0.99
2798.64	1.76	358.98	2798.47	20.07	10.16	-17.37	20.12	300.32	0.52
2821.15	1.75	2.52	2820.97	20.45	10.85	-17.36	20.47	302.00	0.49
2848.72	1.75	359.93	2848.53	20.91	11.69	-17.34	20.91	303.98	0.29
2871.91	1.64	357.43	2871.71	21.31	12.37	-17.36	21.32	305.49	0.55
2898.60	1.53	354.28	2898.39	21.77	13.11	-17.41	21.79	306.98	0.54
2921.77	1.51	349.81	2921.55	22.19	13.72	-17.49	22.23	308.10	0.52
2948.54	1.47	351.43	2948.31	22.67	14.40	-17.61	22.75	309.28	0.21
2971.72	1.43	355.72	2971.48	23.05	14.98	-17.67	23.17	310.29	0.50
2999.30	1.42	358.21	2999.06	23.47	15.67	-17.71	23.65	311.50	0.23
3021.61	1.24	359.67	3021.36	23.77	16.18	-17.72	24.00	312.41	0.80
3049.17	1.09	4.92	3048.92	24.07	16.74	-17.70	24.36	313.41	0.66
3072.19	1.04	358.70	3071.93	24.30	17.17	-17.69	24.65	314.16	0.54
3099.01	0.95	348.43	3098.74	24.61	17.63	-17.74	25.01	314.84	0.75
3121.28	0.87	339.45	3121.01	24.88	17.97	-17.83	25.32	315.23	0.73
3148.08	0.79	329.65	3147.81	25.21	18.33	-18.00	25.68	315.52	0.61
3171.07	0.93	330.47	3170.79	25.52	18.62	-18.17	26.02	315.71	0.62
3197.79	0.90	325.94	3197.51	25.92	18.99	-18.39	26.44	315.91	0.29
3220.92	0.84	338.95	3220.64	26.22	19.30	-18.56	26.77	316.12	0.90
3248.10	0.40	333.46	3247.82	26.47	19.57	-18.67	27.05	316.34	1.60

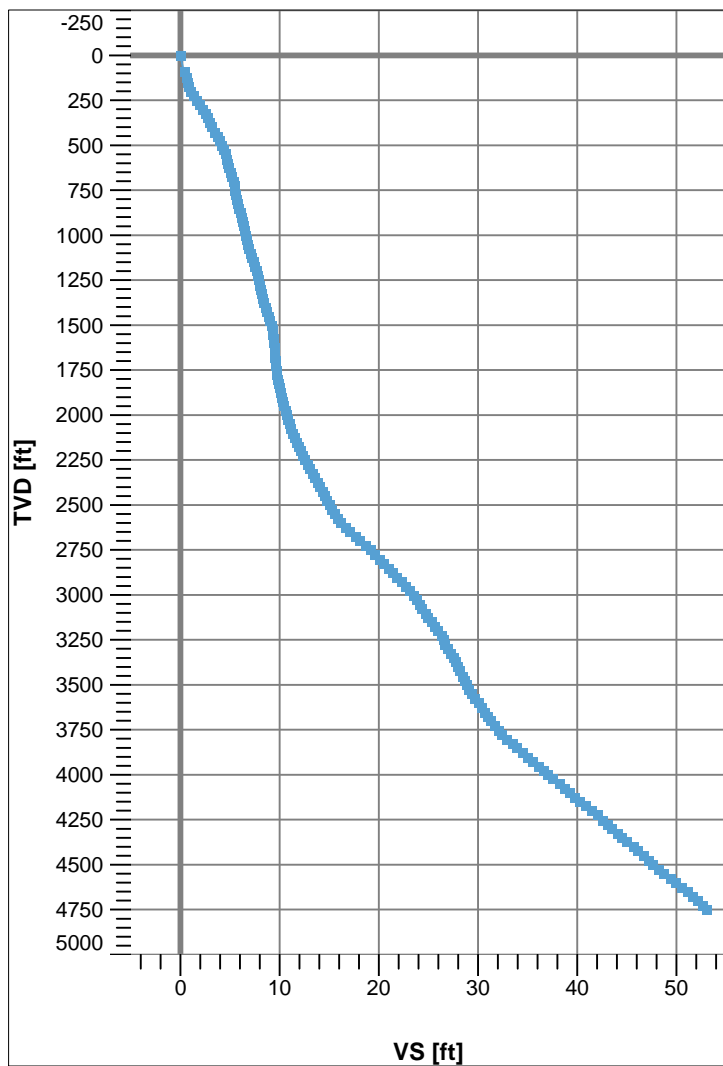
MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	CLOSURE DISTANCE	CLOSURE DIRECTION	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
3270.46	0.43	289.18	3270.18	26.62	19.66	-18.78	27.19	316.31	1.40
3297.97	0.69	289.83	3297.69	26.88	19.75	-19.04	27.43	316.06	0.95
3324.90	0.67	306.23	3324.61	27.19	19.90	-19.31	27.73	315.86	0.72
3347.87	0.59	312.97	3347.59	27.44	20.06	-19.51	27.98	315.80	0.47
3370.98	0.48	287.47	3370.69	27.65	20.17	-19.69	28.19	315.69	1.13
3397.51	0.57	275.51	3397.22	27.87	20.22	-19.93	28.39	315.42	0.55
3420.71	0.70	294.15	3420.42	28.11	20.29	-20.17	28.61	315.17	1.03
3448.10	0.61	321.12	3447.81	28.42	20.47	-20.41	28.91	315.08	1.15
3474.76	0.28	293.02	3474.47	28.62	20.61	-20.56	29.11	315.06	1.45
3497.83	0.50	272.92	3497.54	28.76	20.63	-20.72	29.24	314.88	1.10
3524.45	0.85	283.49	3524.15	29.05	20.69	-21.03	29.49	314.53	1.39
3547.33	0.65	317.37	3547.03	29.33	20.82	-21.28	29.77	314.38	2.09
3574.73	0.82	341.00	3574.43	29.64	21.12	-21.45	30.10	314.56	1.27
3597.08	0.94	311.83	3596.78	29.95	21.40	-21.64	30.43	314.68	2.06
3621.42	0.76	284.66	3621.11	30.30	21.57	-21.94	30.77	314.51	1.80
3649.54	0.46	292.34	3649.23	30.59	21.66	-22.23	31.04	314.26	1.08
3673.72	0.94	329.08	3673.42	30.86	21.87	-22.42	31.32	314.29	2.62
3697.60	0.95	324.64	3697.29	31.23	22.20	-22.63	31.70	314.44	0.31
3720.80	0.83	316.61	3720.49	31.57	22.48	-22.86	32.06	314.51	0.74
3749.23	0.75	313.77	3748.91	31.96	22.75	-23.14	32.45	314.52	0.33
3772.43	1.06	313.30	3772.11	32.32	23.01	-23.40	32.82	314.51	1.35
3799.81	1.34	314.87	3799.49	32.88	23.41	-23.81	33.39	314.51	1.04
3823.24	1.20	322.27	3822.91	33.39	23.79	-24.16	33.91	314.56	0.93
3847.04	1.19	320.56	3846.71	33.86	24.18	-24.47	34.40	314.66	0.15
3874.66	1.16	313.90	3874.32	34.41	24.60	-24.85	34.97	314.71	0.51
3898.51	1.19	306.25	3898.16	34.90	24.91	-25.23	35.45	314.64	0.67
3922.42	1.35	306.49	3922.07	35.43	25.23	-25.65	35.98	314.52	0.65
3949.99	1.22	309.23	3949.64	36.05	25.61	-26.14	36.59	314.41	0.50
3973.89	1.12	303.18	3973.52	36.54	25.89	-26.53	37.08	314.30	0.68
3996.87	1.11	296.85	3996.50	36.98	26.12	-26.92	37.51	314.13	0.54
4020.50	1.28	294.50	4020.13	37.47	26.33	-27.37	37.98	313.90	0.76
4048.90	1.41	291.54	4048.51	38.12	26.59	-27.98	38.60	313.54	0.50

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	CLOSURE DISTANCE	CLOSURE DIRECTION	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
4071.95	1.26	293.65	4071.56	38.65	26.80	-28.48	39.10	313.26	0.68
4095.77	1.25	287.73	4095.37	39.16	26.98	-28.97	39.59	312.97	0.55
4123.25	1.25	281.67	4122.85	39.72	27.13	-29.54	40.11	312.56	0.48
4147.05	1.41	278.20	4146.64	40.22	27.23	-30.09	40.58	312.14	0.75
4170.70	1.48	283.49	4170.28	40.76	27.34	-30.67	41.09	311.71	0.65
4198.26	1.44	285.99	4197.83	41.42	27.52	-31.35	41.71	311.28	0.28
4221.90	1.28	290.43	4221.47	41.96	27.69	-31.88	42.23	310.98	0.80
4249.46	1.23	286.62	4249.02	42.54	27.88	-32.46	42.79	310.67	0.35
4273.10	1.20	280.90	4272.66	43.01	28.00	-32.94	43.24	310.37	0.54
4295.98	1.14	278.31	4295.53	43.43	28.08	-33.40	43.64	310.06	0.32
4324.29	1.26	277.41	4323.84	43.96	28.16	-33.99	44.14	309.64	0.40
4347.92	1.30	284.83	4347.47	44.45	28.27	-34.51	44.60	309.32	0.72
4370.90	1.35	286.19	4370.44	44.95	28.41	-35.02	45.09	309.05	0.26
4399.09	1.30	286.52	4398.62	45.57	28.59	-35.64	45.69	308.74	0.15
4421.32	1.31	284.35	4420.84	46.05	28.73	-36.13	46.16	308.49	0.23
4449.48	1.31	279.20	4449.00	46.64	28.86	-36.76	46.73	308.13	0.42
4473.20	1.25	279.08	4472.71	47.12	28.94	-37.28	47.20	307.82	0.23
4496.03	1.32	277.68	4495.54	47.58	29.02	-37.79	47.64	307.52	0.33
4524.26	1.31	277.96	4523.76	48.16	29.10	-38.43	48.21	307.14	0.03
4546.39	1.55	277.20	4545.87	48.65	29.18	-38.98	48.69	306.81	1.07
4574.57	1.41	282.97	4574.05	49.31	29.30	-39.70	49.34	306.43	0.71
4597.13	1.54	281.07	4596.60	49.85	29.42	-40.27	49.87	306.16	0.61
4624.35	1.35	283.70	4623.81	50.49	29.57	-40.94	50.50	305.84	0.73
4648.52	1.46	286.07	4647.98	51.05	29.72	-41.51	51.05	305.60	0.49
4672.62	1.36	278.66	4672.07	51.59	29.85	-42.09	51.60	305.35	0.86
4698.35	1.18	276.28	4697.79	52.10	29.92	-42.65	52.10	305.05	0.71
4724.74	1.19	272.99	4724.17	52.57	29.97	-43.20	52.57	304.75	0.26
4746.63	1.07	276.20	4746.06	52.95	30.00	-43.63	52.95	304.52	0.63



Name : Keeper Gyro Wireline Survey: Outrun
Generated : 3/9/2015 16:16:41 Mountain Daylight Time

VS View



Plan View

