

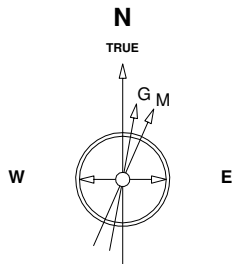
# Great Western Operating Company, LLC

**Location** Colorado  
**Field** Wattenburg  
**Installation** Land

**Slot** Land JG 31-17D  
**Well** Land JG 31-17D  
**Wellbore** Land JG 31-17D (AWB)

Created by admin  
Date plotted 14-Mar-2016

Plot reference is Land JG 31-17D (AWB).  
Ref wellpath is Land JG 31-17D (AWP#1).  
Coordinates are in Feet reference Land JG 31-17D.  
True Vertical Depths are reference Rig Datum.  
Measured Depths are reference Rig Datum.  
Rig Datum: Actual Datum #1  
Rig Datum to Mean Sea Level: 4946.60 ft.  
Plot North is aligned to TRUE North.



28-Aug-2015  
IGRF Model [1900.0-2020.0] Dip: 66.68 deg Field: 52453.1 nT  
Lat: N40 5 17.5596 Long: W104 35 57.6708 Elev: 4932.60 ft  
Magnetic North is 8.29 deg East of TRUE North  
To correct azimuth from Magnetic to TRUE add 8.29 deg

Scale 1 cm = 200 ft

East (Feet) ->

-1200 -800 -400 0 400 800 1200 1600 2000 2400 2800 3200 3600 4000 4400

W2 Sec 31, T2N, R64W

TD - 7796' MD, 2048 FSL, 1814 FWL

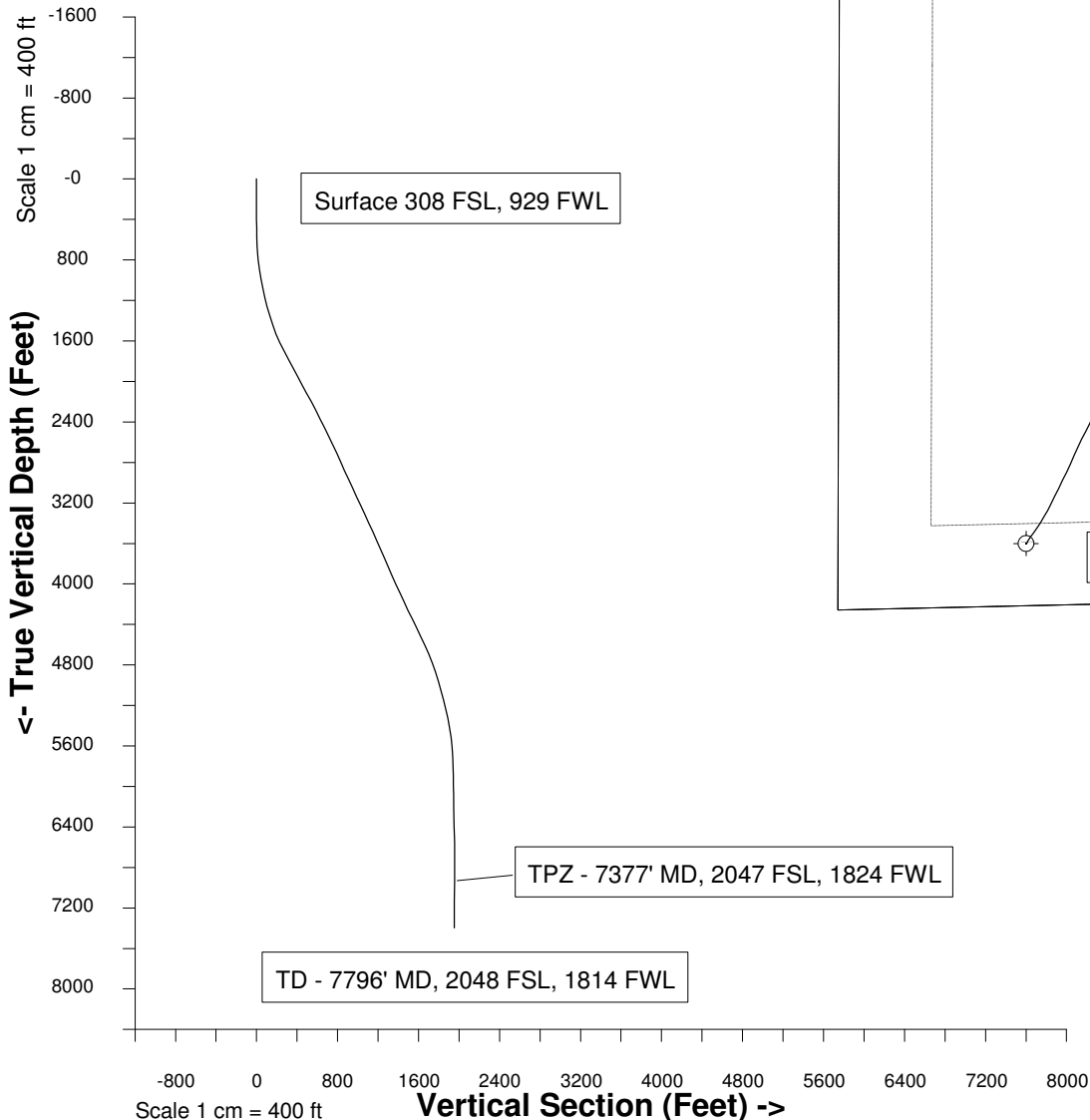
TPZ - 7377' MD, 2047 FSL, 1824 FWL

Surface 308 FSL, 929 FWL

TPZ - 7377' MD, 2047 FSL, 1824 FWL

TD - 7796' MD, 2048 FSL, 1814 FWL

Surface 308 FSL, 929 FWL



<- North(Feet)

Scale 1 cm = 200 ft

3200  
2800  
2400  
2000  
1600  
1200  
800  
400  
0  
-400  
-800



Company: GREAT WESTERN  
Field: WATTENBERG  
Cty/Blk/Par: WELD  
Well Name: Land JG 31-17D  
Rig: CADE 25

Job Number: PA-2514  
Magnetic Decl.: 8.56  
Grid Corr.:  
Total Survey Corr.: 8.56  
Target Info: 2009'FSL & 1810'FWL

Calculation Method  
Proposed Azimuth 27.25  
Depth Reference RKB  
Tie Into Drill SURFACE  
Minimum Curvature

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates N/S (ft)	E/W (ft)	DLS (°/100')	Bld Rate (°/100')	Wlk Rate (°/100')	Remarks
0	Tie In	0	0.00	0.00		0.00	0.00	0.00	0.00				SURFACE
1	MWD	121	0.40	193.00	121	121.00	-0.41	0.41	S 0.10	W 0.33	0.3	159.5	
2	MWD	212	0.40	140.70	91	212.00	-0.84	0.97	S 0.03	E 0.39	0.0	-57.5	
3	MWD	303	0.60	81.00	91	302.99	-0.69	1.14	S 0.71	E 0.58	0.2	-65.6	
4	MWD	395	0.90	53.70	92	394.99	0.24	0.64	S 1.76	E 0.50	0.3	-29.7	
5	MWD	485	1.00	49.30	90	484.97	1.60	0.30	N 2.93	E 0.14	0.1	-4.9	
6	MWD	575	1.10	34.40	90	574.96	3.19	1.52	N 4.01	E 0.32	0.1	-16.6	
7	MWD	666	3.20	26.10	91	665.89	6.60	4.52	N 5.62	E 2.33	2.3	-9.1	
8	MWD	789	4.90	23.00	123	788.58	15.27	12.44	N 9.19	E 1.39	1.4	-2.5	
9	MWD	885	8.40	33.50	96	883.92	26.33	22.07	N 14.66	E 3.84	3.6	10.9	
10	MWD	986	10.60	37.20	101	983.53	42.82	35.62	N 24.35	E 2.26	2.2	3.7	
11	MWD	1080	11.40	37.90	94	1075.80	60.46	49.84	N 35.28	E 0.86	0.9	0.7	
12	MWD	1175	13.00	34.80	95	1168.66	80.28	66.02	N 47.15	E 1.82	1.7	-3.3	
13	MWD	1270	15.70	32.80	95	1260.68	103.67	85.60	N 60.21	E 2.89	2.8	-2.1	
14	MWD	1364	16.90	31.60	94	1350.90	129.96	107.93	N 74.26	E 1.33	1.3	-1.3	
15	MWD	1458	19.30	31.80	94	1440.25	159.07	132.77	N 89.61	E 2.55	2.6	0.2	
16	MWD	1553	21.80	27.20	95	1529.20	192.37	161.81	N 105.95	E 3.13	2.6	-4.8	
17	MWD	1648	25.40	26.00	95	1616.24	230.39	195.83	N 122.95	E 3.82	3.8	-1.3	
18	MWD	1742	27.30	27.20	94	1700.47	272.10	233.12	N 141.64	E 2.10	2.0	1.3	
19	MWD	1837	27.80	26.10	95	1784.70	316.04	272.39	N 161.35	E 0.75	0.5	-1.2	
20	MWD	1932	28.70	26.10	95	1868.38	361.00	312.77	N 181.13	E 0.95	0.9	0.0	
21	MWD	2025	28.10	25.60	93	1950.19	405.22	352.58	N 200.42	E 0.69	-0.6	-0.5	
22	MWD	2120	28.60	23.90	95	2033.80	450.28	393.54	N 219.30	E 1.00	0.5	-1.8	
23	MWD	2215	28.20	24.00	95	2117.36	495.39	434.84	N 237.64	E 0.42	-0.4	0.1	
24	MWD	2309	28.40	25.30	94	2200.13	539.90	475.34	N 256.23	E 0.69	0.2	1.4	
25	MWD	2404	27.50	26.00	95	2284.05	584.41	515.48	N 275.50	E 1.01	-0.9	0.7	
26	MWD	2499	26.80	26.70	95	2368.58	627.76	554.33	N 294.74	E 0.81	-0.7	0.7	
27	MWD	2594	26.60	26.10	95	2453.45	670.44	592.56	N 313.72	E 0.35	-0.2	-0.6	
28	MWD	2688	25.90	27.20	94	2537.76	712.01	629.72	N 332.36	E 0.91	-0.7	1.2	
29	MWD	2783	25.20	26.70	95	2623.46	752.98	666.24	N 350.93	E 0.77	-0.7	-0.5	
30	MWD	2877	24.30	25.80	94	2708.83	792.33	701.53	N 368.34	E 1.04	-1.0	-1.0	
31	MWD	2972	23.90	26.70	95	2795.55	831.11	736.32	N 385.49	E 0.57	-0.4	0.9	
32	MWD	3066	24.40	26.10	94	2881.32	869.56	770.77	N 402.59	E 0.59	0.5	-0.6	
33	MWD	3161	25.00	27.40	95	2967.63	909.26	806.21	N 420.46	E 0.85	0.6	1.4	
34	MWD	3257	24.90	27.20	96	3054.67	949.75	842.20	N 439.04	E 0.14	-0.1	-0.2	
35	MWD	3352	24.90	26.80	95	3140.84	989.75	877.84	N 457.19	E 0.18	0.0	-0.4	
36	MWD	3447	24.40	26.80	95	3227.18	1029.37	913.20	N 475.06	E 0.53	-0.5	0.0	
37	MWD	3542	25.30	26.70	95	3313.39	1069.29	948.85	N 493.03	E 0.95	0.9	-0.1	
38	MWD	3637	24.90	26.80	95	3399.41	1109.59	984.84	N 511.17	E 0.42	-0.4	0.1	
39	MWD	3731	24.40	27.40	94	3484.85	1148.79	1019.74	N 529.02	E 0.59	-0.5	0.6	
40	MWD	3826	23.50	28.60	95	3571.67	1187.35	1053.79	N 547.12	E 1.08	-0.9	1.3	
41	MWD	3921	24.00	28.60	95	3658.62	1225.60	1087.39	N 565.44	E 0.53	0.5	0.0	
42	MWD	4015	23.60	25.80	94	3744.63	1263.53	1121.11	N 582.78	E 1.28	-0.4	-3.0	
43	MWD	4110	23.00	27.00	95	3831.88	1301.10	1154.77	N 599.48	E 0.81	-0.6	1.3	
44	MWD	4205	23.40	27.50	95	3919.20	1338.52	1188.04	N 616.62	E 0.47	0.4	0.5	
45	MWD	4300	24.20	26.50	95	4006.12	1376.86	1222.20	N 634.02	E 0.94	0.8	-1.1	
46	MWD	4394	25.80	25.40	94	4091.31	1416.57	1257.92	N 651.39	E 1.77	1.7	-1.2	
47	MWD	4489	25.00	25.40	95	4177.13	1457.30	1294.73	N 668.87	E 0.84	-0.8	0.0	
48	MWD	4584	25.30	24.70	95	4263.12	1497.64	1331.31	N 685.96	E 0.44	0.3	-0.7	
49	MWD	4679	26.20	25.80	95	4348.69	1538.88	1368.63	N 703.57	E 1.07	0.9	1.2	
50	MWD	4775	25.80	27.40	96	4434.97	1580.96	1406.26	N 722.41	E 0.84	-0.4	1.7	
51	MWD	4870	25.90	29.30	95	4520.47	1622.37	1442.71	N 742.08	E 0.88	0.1	2.0	
52	MWD	4964	24.20	29.50	94	4605.63	1662.14	1477.38	N 761.61	E 1.81	-1.8	0.2	
53	MWD	5058	23.40	30.00	94	4691.63	1700.04	1510.32	N 780.43	E 0.88	-0.9	0.5	
54	MWD	5154	20.80	27.90	96	4780.57	1736.13	1541.90	N 797.94	E 2.83	-2.7	-2.2	
55	MWD	5248	17.90	26.00	94	4869.25	1767.27	1569.64	N 812.09	E 3.16	-3.1	-2.0	
56	MWD	5344	16.40	22.40	96	4960.98	1795.52	1595.43	N 823.72	E 1.91	-1.6	-3.8	
57	MWD	5438	14.90	21.20	94	5051.50	1820.77	1618.97	N 833.15	E 1.63	-1.6	-1.3	
58	MWD	5533	14.20	20.50	95	5143.45	1844.48	1641.27	N 841.65	E 0.76	-0.7	-0.7	
59	MWD	5628	13.90	25.60	95	5235.61	1867.46	1662.47	N 850.66	E 1.34	-0.3	5.4	
60	MWD	5723	12.00	25.60	95	5328.19	1888.74	1681.67	N 859.86	E 2.00	-2.0	0.0	
61	MWD	5818	9.90	27.40	95	5421.46	1906.78	1697.83	N 867.88	E 2.24	-2.2	1.9	
62	MWD	5911	7.60	29.00	93	5513.37	1920.93	1710.31	N 874.54	E 2.49	-2.5	1.7	
63	MWD	6006	4.80	33.00	95	5607.80	1931.16	1719.14	N 879.76	E 2.98	-2.9	4.2	
64	MWD	6101	3.34	42.00	95	5702.56	1937.79	1724.53	N 883.77	E 1.67	-1.5	9.5	
65	MWD	6196	1.40	42.40	95	5797.48	1941.59	1727.45	N 886.41	E 2.04	-2.0	0.4	
66	MWD	6290	1.30	57.80	94	5891.45	1943.62	1728.86	N 888.09	E 0.40	-0.1	16.4	
67	MWD	6386	1.10	72.00	96	5987.43	1945.21	1729.73	N 889.88	E 0.37	-0.2	14.8	
68	MWD	6480	1.00	59.20	94	6081.41	1946.55	1730.43	N 891.45	E 0.27	-0.1	-13.6	
69	MWD	6575	1.10	49.90	95	6176.40	1948.09	1731.44	N 892.86	E 0.21	0.1	-9.8	
70	MWD	6765	1.10	36.70	190	6366.36	1951.58	1734.07	N 895.34	E 0.13	0.0	-6.9	
71	MWD	6955	1.10	31.80	190	6556.33	1955.19	1737.09	N 897.39	E 0.05	0.0	-2.6	
72	MWD	7145	0.20	285.40	190	6746.32	1956.94	1738.72	N 898.03	E 0.62	-0.5	133.5	
73	MWD	7335	1.10	267.00	190	6936.30	1955.96	1738.72	N 895.89	E 0.48	0.5	-9.7	
74	MWD	7525	1.80	258.90	190	7126.24	1953.19	1738.05	N 891.14	E 0.38	0.4	-4.3	
75	MWD	7746	1.50	310.70	221	7347.16	1951.70	1739.27	N 885.54	E 0.66	-0.1	23.4	TD SURVEY
76	PRJ	7796	1.50	310.70	50	7397.14	1952.01	1740.12	N 884.55	E 0.00	0.0	0.0	BIT PROJECTION