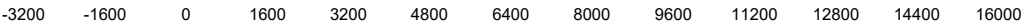
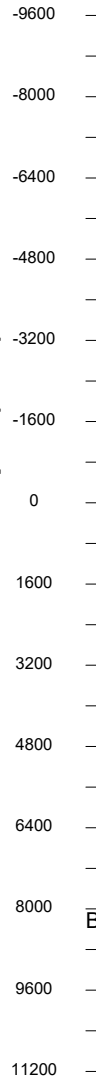


May-14-2018  
EMM-2015 Dip: 66.77 deg Field: 52300.9 nT  
Lat: N40 19 27.8796 Long: W104 49 34.3884 Elev: 4735.00 ft  
Magnetic North is 8.35 deg East of TRUE North  
To correct azimuth from Magnetic to TRUE add 8.35 deg

<- True Vertical Depth (Feet)



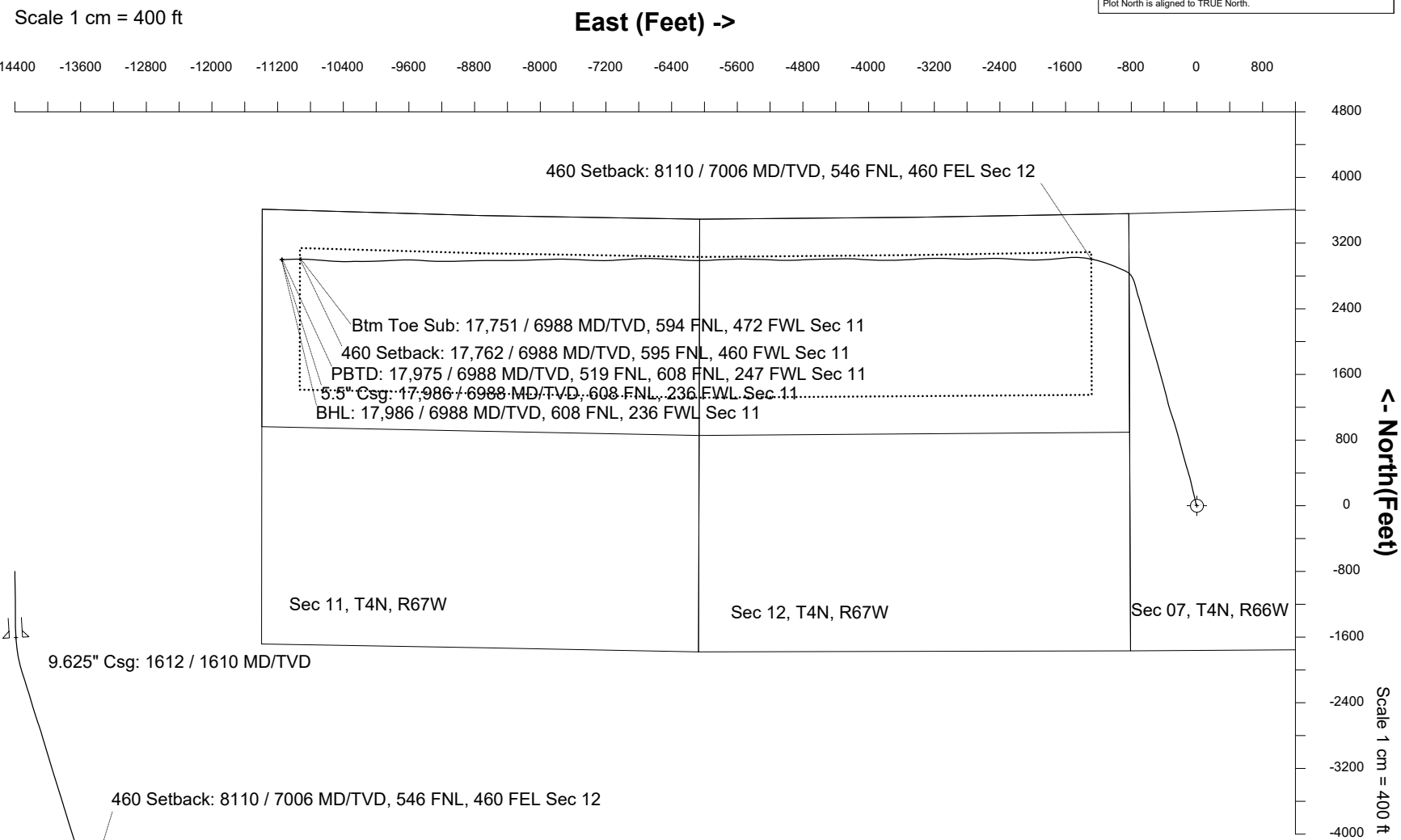
Vertical Section (Feet) ->

Azimuth 285.05 with reference 0.00 N, 0.00 E from Slot 03 - Schneider HD 11-022HN

# Great Western Operating Company, LLC

Location	Colorado	Slot	Slot 03 - Schneider HD 11-022HN
Field	Wattenburg	Well	Schneider HD 11-022HN
Installation	Schneider North	Wellbore	Schneider HD 11-022HN - Final

Created by mmount  
Date plotted 30-Oct-2019  
Plot reference is Schneider HD 11-022HN - Final.  
Ref wellpath is Schneider HD 11-022HN (AWP#1).  
Coordinates are in Feet reference Slot 03 - Schneider HD 11-022HN.  
True Vertical Depths are reference Rig Datum.  
Measured Depths are reference Rig Datum.  
Rig Datum: Actual Datum #1  
Rig Datum to Mean Sea Level: 4755.00 ft.  
Plot North is aligned to TRUE North.



<- North(Feet)

Scale 1 cm = 400 ft

Great Western Operating Co, LLC  
Directional Survey Report  
Wellpath: Schneider HD 11-022HN  
MDs and TVDs are from Rig Floor 4755.0ft above Mean Sea Level

**Wellbore Information**

Date Created	Date Revised	API #	RKB above GL	Well Name
Oct-30-2019	Oct-30-2019	05-123-46416	20.00	Schneider HD 11-022HN

**Slot Coordinates**

Latitude	Longitude
40.32405100	-104.82680900

**Pad Information**

Pad Name	Ground Elev.
Schneider North	4735.00

**Field**

Name
Wattenburg

**Wellpath Report**

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
0.00	0.00	0.00	0.00	0.00	0.00		0.00	40.32405100	-104.82680900
14.00	0.00	40.87	14.00	0.00	0.00	0.00	0.00	40.32405100	-104.82680900
96.00	0.75	40.87	96.00	0.41	0.35	0.91	-0.23	40.32405211	-104.82680774
185.00	0.70	352.44	184.99	1.39	0.66	0.67	-0.28	40.32405480	-104.82680663
273.00	0.79	310.34	272.98	2.31	0.13	0.62	0.48	40.32405734	-104.82680854
365.00	0.70	302.35	364.98	3.02	-0.83	0.15	1.59	40.32405930	-104.82681198
455.00	0.57	327.57	454.97	3.69	-1.54	0.34	2.44	40.32406114	-104.82681451
545.00	1.45	324.41	544.96	5.00	-2.44	0.98	3.65	40.32406472	-104.82681774
635.00	1.23	315.62	634.93	6.61	-3.78	0.33	5.36	40.32406916	-104.82682254
725.00	1.32	304.02	724.91	7.88	-5.31	0.30	7.18	40.32407264	-104.82682805
815.00	1.63	313.95	814.88	9.35	-7.09	0.45	9.28	40.32407667	-104.82683443
905.00	1.01	327.22	904.86	10.91	-8.44	0.76	10.99	40.32408094	-104.82683928
995.00	0.35	267.72	994.85	11.56	-9.15	0.98	11.84	40.32408274	-104.82684180
1085.00	0.44	314.47	1084.85	11.80	-9.67	0.36	12.40	40.32408338	-104.82684367
1175.00	0.35	69.70	1174.85	12.13	-9.66	0.74	12.48	40.32408430	-104.82684363
1265.00	0.09	8.70	1264.85	12.30	-9.39	0.35	12.26	40.32408476	-104.82684267
1355.00	1.14	346.99	1354.84	13.24	-9.58	1.17	12.69	40.32408734	-104.82684335
1445.00	3.96	344.53	1444.74	17.11	-10.61	3.13	14.69	40.32409796	-104.82684705
1535.00	7.95	350.25	1534.24	26.24	-12.49	4.48	18.88	40.32412303	-104.82685381
1563.00	8.66	352.18	1561.94	30.24	-13.11	2.72	20.51	40.32413400	-104.82685601
1632.00	8.83	353.48	1630.14	40.65	-14.42	0.38	24.47	40.32416257	-104.82686070
1708.00	10.72	350.55	1705.04	53.42	-16.24	2.57	29.55	40.32419762	-104.82686724
1797.00	11.97	343.68	1792.30	70.44	-20.19	2.07	37.79	40.32424435	-104.82688142
1887.00	14.54	345.32	1879.89	90.33	-25.68	2.89	48.25	40.32429895	-104.82690109
1976.00	17.36	345.95	1965.46	114.02	-31.73	3.17	60.25	40.32436398	-104.82692281
2066.00	21.25	346.92	2050.38	142.94	-38.69	4.34	74.47	40.32444337	-104.82694775
2155.00	23.49	344.95	2132.68	175.79	-46.95	2.65	90.97	40.32453352	-104.82697736
2244.00	26.05	347.81	2213.49	212.03	-55.68	3.18	108.81	40.32463300	-104.82700869
2334.00	28.72	348.65	2293.40	252.55	-64.11	3.00	127.47	40.32474423	-104.82703892
2423.00	30.98	345.83	2370.59	295.73	-73.93	2.99	148.16	40.32486277	-104.82707413
2513.00	31.45	344.63	2447.56	340.83	-85.82	0.87	171.36	40.32498656	-104.82711679
2603.00	31.17	342.42	2524.46	385.67	-99.08	1.31	195.80	40.32510965	-104.82716434
2692.00	31.95	343.48	2600.29	430.21	-112.73	1.08	220.55	40.32523189	-104.82721330
2782.00	31.33	343.38	2676.91	475.46	-126.20	0.69	245.29	40.32535611	-104.82726159
2871.00	30.97	343.92	2753.08	519.64	-139.16	0.51	269.28	40.32547736	-104.82730807
2961.00	31.57	345.80	2830.01	564.73	-151.35	1.27	292.76	40.32560114	-104.82735181
3050.00	31.39	343.22	2905.91	609.51	-163.76	1.53	316.37	40.32572405	-104.82739630
3140.00	31.44	343.20	2982.72	654.42	-177.31	0.06	341.11	40.32584733	-104.82744491
3229.00	31.14	346.40	3058.78	699.01	-189.43	1.90	364.39	40.32596973	-104.82748838
3319.00	31.78	348.51	3135.55	744.85	-199.62	1.42	386.14	40.32609557	-104.82752494
3408.00	30.96	341.49	3211.57	789.54	-211.56	4.21	409.27	40.32621825	-104.82756776
3498.00	30.89	346.17	3288.79	833.94	-224.44	2.67	433.23	40.32634010	-104.82761393
3587.00	31.01	344.75	3365.11	878.24	-235.93	0.83	455.82	40.32646170	-104.82765515
3677.00	30.82	342.31	3442.33	922.57	-249.03	1.41	479.99	40.32658340	-104.82770215
3766.00	31.07	343.00	3518.66	966.26	-262.67	0.49	504.50	40.32670331	-104.82775108
3856.00	31.10	342.18	3595.74	1010.59	-276.58	0.47	529.44	40.32682501	-104.82780095
3945.00	31.42	341.38	3671.82	1054.46	-291.02	0.59	554.77	40.32694542	-104.82785274
4034.00	31.44	341.14	3747.76	1098.41	-305.93	0.14	580.58	40.32706606	-104.82790622
4124.00	31.53	342.80	3824.51	1143.10	-320.48	0.97	606.23	40.32718874	-104.82795839
4213.00	31.32	342.54	3900.46	1187.40	-334.30	0.28	631.08	40.32731033	-104.82800797
4303.00	31.13	345.66	3977.43	1232.26	-347.08	1.81	655.07	40.32743346	-104.82805381
4392.00	31.32	346.04	4053.53	1276.99	-358.36	0.31	677.57	40.32755626	-104.82809426
4482.00	31.37	347.89	4130.40	1322.60	-368.92	1.07	699.61	40.32768144	-104.82813213
4571.00	31.34	343.90	4206.41	1367.49	-380.19	2.33	722.15	40.32780467	-104.82817259
4661.00	31.00	345.80	4283.42	1412.45	-392.37	1.16	745.58	40.32792807	-104.82821626
4750.00	30.96	344.41	4359.72	1456.72	-404.15	0.81	768.44	40.32804959	-104.82825850
4840.00	31.04	344.56	4436.87	1501.38	-416.55	0.12	792.01	40.32817219	-104.82830297
4929.00	31.05	344.78	4513.12	1545.65	-428.68	0.13	815.22	40.32829369	-104.82834649
5019.00	30.88	344.71	4590.29	1590.32	-440.86	0.19	838.59	40.32841632	-104.82839019
5109.00	31.08	345.45	4667.46	1635.09	-452.79	0.48	861.72	40.32853920	-104.82843297
5198.00	31.18	343.56	4743.64	1679.42	-465.08	1.10	885.10	40.32866089	-104.82847706
5288.00	30.94	344.51	4820.74	1724.06	-477.85	0.61	909.03	40.32878343	-104.82852287
5378.00	30.00	343.31	4898.31	1767.91	-490.50	1.24	932.62	40.32890379	-104.82856822
5467.00	30.28	344.21	4975.28	1810.82	-502.99	0.60	955.82	40.32902156	-104.82861304
5557.00	30.30	343.39	5052.99	1854.41	-515.66	0.46	979.37	40.32914121	-104.82865846

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5646.00	31.09	343.65	5129.52	1897.97	-528.54	0.90	1003.12	40.32926079	-104.82870469
5736.00	31.16	343.84	5206.56	1942.63	-541.56	0.13	1027.29	40.32938339	-104.82875139
5825.00	31.41	344.09	5282.62	1987.05	-554.33	0.32	1051.15	40.32950531	-104.82879719
5915.00	31.20	343.66	5359.52	2031.98	-567.32	0.34	1075.35	40.32962862	-104.82884377
6004.00	31.15	344.48	5435.67	2076.28	-579.96	0.48	1099.07	40.32975023	-104.82888913
6094.00	31.24	344.29	5512.65	2121.17	-592.51	0.15	1122.84	40.32987346	-104.82893413
6183.00	31.27	344.37	5588.74	2165.63	-604.98	0.06	1146.42	40.32995550	-104.82897887
6272.00	31.25	344.98	5664.82	2210.18	-617.19	0.36	1169.77	40.33011776	-104.82902265
6362.00	31.08	343.97	5741.83	2255.05	-629.65	0.61	1193.46	40.33024094	-104.82906737
6451.00	31.20	344.73	5818.00	2299.37	-642.07	0.46	1216.96	40.33036259	-104.82911190
6541.00	31.25	344.68	5894.97	2344.37	-654.38	0.06	1240.52	40.33048612	-104.82915605
6630.00	31.05	345.63	5971.14	2388.87	-666.17	0.60	1263.47	40.33060827	-104.82919836
6720.00	31.42	343.44	6048.09	2433.84	-678.62	1.33	1287.16	40.33073171	-104.82924301
6809.00	31.49	344.04	6124.01	2478.43	-691.62	0.36	1311.29	40.33085409	-104.82928965
6898.00	31.44	343.32	6199.93	2523.01	-704.68	0.43	1335.47	40.33097647	-104.82933648
6988.00	31.20	342.67	6276.81	2567.75	-718.36	0.46	1360.30	40.33109927	-104.82938555
7077.00	31.35	344.30	6352.88	2612.04	-731.49	0.97	1384.48	40.33122086	-104.82943266
7167.00	31.15	344.80	6429.82	2657.05	-743.93	0.36	1408.17	40.33134438	-104.82947727
7257.00	30.92	344.56	6506.94	2701.80	-756.19	0.29	1431.63	40.33146722	-104.82952125
7346.00	31.29	342.15	6583.15	2745.84	-769.36	1.46	1455.78	40.33158811	-104.82956850
7435.00	34.67	326.56	6657.93	2789.05	-790.44	10.23	1487.36	40.33170673	-104.82964411
7525.00	37.88	311.93	6730.61	2828.96	-825.17	10.23	1531.26	40.33181628	-104.82976871
7615.00	44.45	296.44	6798.51	2861.58	-874.13	13.43	1587.01	40.33190580	-104.82994430
7704.00	51.66	290.98	6857.98	2888.00	-934.73	9.29	1652.38	40.33197831	-104.83016165
7793.00	58.43	293.39	6908.95	2915.58	-1002.20	7.92	1724.70	40.33205402	-104.83040367
7883.00	66.46	291.30	6950.55	2945.84	-1075.95	9.16	1803.78	40.33213707	-104.83066821
7972.00	75.71	286.99	6979.39	2973.33	-1155.41	11.36	1887.65	40.33221252	-104.83095321
8062.00	78.79	282.02	6999.26	2995.28	-1240.36	6.38	1975.39	40.33227277	-104.83125791
8151.00	88.31	280.54	7009.24	3012.55	-1326.99	10.82	2063.53	40.33232015	-104.83156863
8200.00	90.10	277.83	7009.92	3020.37	-1375.35	6.63	2112.26	40.33234161	-104.83174209
8300.00	90.77	269.31	7009.16	3026.59	-1475.06	8.55	2210.17	40.33235867	-104.83209973
8400.00	89.84	264.72	7008.63	3021.39	-1574.89	4.68	2305.23	40.33234436	-104.83245782
8500.00	89.77	264.04	7008.97	3011.59	-1674.41	0.68	2398.80	40.33231747	-104.83281477
8600.00	89.84	265.53	7009.31	3002.50	-1774.00	1.49	2492.61	40.33229250	-104.83317195
8700.00	90.02	267.52	7009.43	2996.44	-1873.81	2.00	2587.42	40.33227584	-104.83352995
8800.00	89.66	269.47	7009.71	2993.82	-1973.77	1.98	2683.27	40.33226861	-104.83388848
8900.00	89.60	271.82	7010.36	2994.94	-2073.75	2.35	2780.12	40.33227168	-104.83424710
9000.00	89.63	273.13	7011.03	2999.26	-2173.65	1.31	2877.72	40.33228351	-104.83460543
9100.00	89.74	274.71	7011.58	3006.10	-2273.41	1.58	2975.84	40.33230225	-104.83496326
9200.00	90.25	272.43	7011.59	3012.32	-2373.21	2.34	3073.83	40.33231931	-104.83532122
9300.00	90.15	268.53	7011.24	3013.16	-2473.19	3.90	3170.60	40.33232158	-104.83567982
9400.00	89.93	268.48	7011.17	3010.55	-2573.16	0.23	3266.46	40.33231439	-104.83603837
9500.00	89.75	267.70	7011.45	3007.22	-2673.10	0.80	3362.11	40.33230522	-104.83639685
9600.00	90.24	268.77	7011.46	3004.14	-2773.05	1.18	3457.84	40.33229673	-104.83675535
9700.00	90.28	272.52	7011.00	3005.26	-2873.02	3.75	3554.68	40.33229979	-104.83711394
9800.00	89.83	272.73	7010.91	3009.84	-2972.92	0.50	3652.33	40.33231233	-104.83747224
9900.00	89.87	271.62	7011.17	3013.64	-3072.85	1.11	3749.82	40.33232271	-104.83783065
10000.00	89.94	269.22	7011.34	3014.37	-3172.84	2.40	3846.57	40.33232469	-104.83818930
10100.00	90.51	268.03	7010.94	3011.97	-3272.80	1.32	3942.49	40.33231807	-104.83854786
10200.00	90.60	266.63	7009.97	3007.31	-3372.69	1.40	4037.74	40.33230525	-104.83890612
10300.00	90.70	266.65	7008.84	3001.45	-3472.51	0.10	4132.62	40.33228912	-104.83926416
10400.00	90.12	266.78	7008.12	2995.72	-3572.34	0.59	4227.54	40.33227335	-104.83962224
10500.00	90.29	267.22	7007.77	2990.49	-3672.20	0.47	4322.62	40.33225895	-104.83998042
10600.00	89.86	270.21	7007.64	2988.25	-3772.17	3.02	4418.58	40.33225275	-104.84033896
10700.00	89.67	272.60	7008.05	2990.70	-3872.13	2.40	4515.75	40.33225944	-104.84069750
10800.00	89.76	272.10	7008.54	2994.80	-3972.04	0.51	4613.30	40.33227065	-104.84105588
10900.00	89.91	275.21	7008.83	3001.17	-4071.83	3.11	4711.32	40.33228810	-104.84141379
11000.00	89.80	272.27	7009.08	3007.70	-4171.60	2.94	4809.37	40.33230596	-104.84177166
11100.00	89.93	268.80	7009.32	3008.63	-4271.58	3.47	4906.16	40.33230847	-104.84213027
11200.00	89.93	269.21	7009.44	3006.89	-4371.57	0.41	5002.27	40.33230366	-104.84248890
11300.00	90.10	269.03	7009.42	3005.36	-4471.56	0.25	5098.43	40.33229939	-104.84284753
11400.00	90.11	269.27	7009.23	3003.87	-4571.54	0.24	5194.61	40.33229527	-104.84320617
11500.00	89.44	268.30	7009.63	3001.75	-4671.52	1.18	5290.60	40.33228940	-104.84356476
11600.00	89.75	267.10	7010.33	2997.74	-4771.43	1.24	5386.05	40.33227833	-104.84392313
11700.00	89.70	266.50	7010.81	2992.16	-4871.28	0.60	5481.02	40.33226296	-104.84428124
11800.00	89.69	270.38	7011.35	2989.44	-4971.22	3.88	5576.83	40.33225543	-104.84463971
11900.00	89.83	270.71	7011.76	2990.39	-5071.21	0.36	5673.65	40.33225799	-104.84499837
12000.00	89.69	273.92	7012.18	2994.43	-5171.12	3.21	5771.17	40.33226902	-104.84535671
12100.00	89.85	271.42	7012.58	2999.08	-5271.00	2.51	5868.84	40.33228174	-104.84571497
12200.00	89.99	271.18	7012.72	3001.35	-5370.98	0.28	5965.98	40.33228791	-104.84607356
12300.00	90.25	272.87	7012.52	3004.89	-5470.91	1.71	6063.40	40.33229755	-104.84643200
12400.00	90.28	268.40	7012.05	3005.99	-5570.88	4.47	6160.23	40.33230053	-104.84679056
12500.00	90.10	268.18	7011.72	3003.01	-5670.83	0.28	6255.98	40.33229228	-104.84714908
12600.00	90.07	267.75	7011.57	2999.46	-5770.77	0.43	6351.57	40.33228247	-104.84750752
12700.00	90.03	266.78	7011.49	2994.69	-5870.65	0.97	6446.79	40.33226930	-104.84786579
12800.00	90.18	266.85	7011.30	2989.13	-5970.50	0.17	6541.77	40.33225399	-104.84822391
12900.00	90.02	270.33	7011.13	2986.67	-6070.45	3.48	6637.66	40.33224717	-104.84858242
13000.00	90.01	272.51	7011.10	2989.15	-6170.42	2.18	6734.84	40.33225390	-104.84894097
13100.00	89.97	273.17	7011.12	2994.10	-6270.29	0.66	6832.58	40.33226743	-104.84929921
13200.00	89.88	272.84	7011.25	2999.35	-6370.15	0.34	6930.38	40.33228175	-104.84965740
13300.00	89.96	272.74	7011.39	3004.21	-6470.04	0.13	7028.10	40.33229504	-104.85001566
13400.00	90.45	272.96	7011.03	3009.19	-6569.91	0.54	7125.84	40.33230862	-104.85037389
13500.00	90.29	270.55	7010.39	3012.25	-6669.85	2.42	7223.16	40.33231695	-104.85073237
13600.00	90.29	267.94	7009.88	3010.93	-6769.84	2.61	7319.37	40.33231326	-104.85109098
13700.00	90.35	266.18	7009.32	3005.80	-6869.70	1.76	7414.48	40.33229911	-104.85144916
13800.00	90.24	266.47	7008.81	2999.39	-6969.49	0.31	7509.18	40.33228144	-104.85180709
13900.00	90.14	267.16	7008.47	2993.84	-7069.34	0.70	7604.16	40.33226611	-104.85216521
14000.00	90.24	268.18	7008.14	2989.77	-7169.25	1.02	7699.60	40.33225487	-104.85252358

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14100.00	90.02	269.39	7007.92	2987.65	-7269.23	1.23	7795.60	40.33224897	-104.85288217
14200.00	90.38	270.82	7007.57	2987.83	-7369.22	1.47	7892.21	40.33224939	-104.85324083
14300.00	90.26	273.92	7007.01	2991.97	-7469.12	3.10	7989.76	40.33226066	-104.85359916
14400.00	90.14	275.17	7006.66	2999.89	-7568.81	1.26	8088.08	40.33228232	-104.85395671
14500.00	90.31	271.17	7006.27	3005.42	-7668.63	4.00	8185.92	40.33229742	-104.85431477
14600.00	90.10	267.59	7005.91	3004.34	-7768.61	3.59	8282.19	40.33229436	-104.85467337
14700.00	90.19	267.95	7005.65	3000.45	-7868.53	0.37	8377.68	40.33228359	-104.85503177
14800.00	90.08	268.81	7005.42	2997.62	-7968.49	0.87	8473.48	40.33227575	-104.85539030
14900.00	90.12	268.36	7005.24	2995.15	-8068.46	0.45	8569.38	40.33226888	-104.85574886
15000.00	90.03	268.58	7005.11	2992.48	-8168.43	0.24	8665.22	40.33226146	-104.85610741
15100.00	90.32	267.98	7004.81	2989.48	-8268.38	0.67	8760.97	40.33225313	-104.85646592
15200.00	90.72	269.67	7003.90	2987.43	-8368.35	1.74	8856.98	40.33224741	-104.85682449
15300.00	90.45	269.49	7002.88	2986.70	-8468.34	0.32	8953.36	40.33224530	-104.85718314
15400.00	90.40	270.73	7002.14	2986.89	-8568.34	1.24	9049.97	40.33224574	-104.85754180
15500.00	90.40	270.41	7001.44	2987.88	-8668.33	0.32	9146.80	40.33224837	-104.85790046
15600.00	90.45	268.19	7000.70	2986.66	-8768.31	2.22	9243.04	40.33224492	-104.85825907
15700.00	90.67	268.44	6999.72	2983.72	-8868.27	0.33	9338.80	40.33223675	-104.85861758
15800.00	90.82	267.55	6998.42	2980.22	-8968.19	0.90	9434.39	40.33222705	-104.85897600
15900.00	90.94	269.38	6996.88	2977.55	-9068.14	1.83	9530.22	40.33221960	-104.85933448
16000.00	90.72	270.05	6995.44	2977.05	-9168.13	0.71	9626.65	40.33221813	-104.85969312
16100.00	90.36	270.89	6994.49	2977.87	-9268.12	0.91	9723.43	40.33222028	-104.86005177
16200.00	90.88	274.31	6993.41	2982.40	-9368.00	3.46	9821.06	40.33223263	-104.86041001
16300.00	90.80	273.81	6991.94	2989.48	-9467.74	0.51	9919.21	40.33225195	-104.86076775
16400.00	90.16	271.66	6991.11	2994.25	-9567.61	2.24	10016.90	40.33226494	-104.86112600
16500.00	90.18	268.78	6990.81	2994.64	-9667.60	2.88	10113.56	40.33226589	-104.86148463
16600.00	90.36	266.84	6990.34	2990.82	-9767.52	1.95	10209.07	40.33225530	-104.86184302
16700.00	90.28	267.30	6989.78	2985.71	-9867.39	0.47	10304.18	40.33224116	-104.86220122
16800.00	90.19	266.73	6989.37	2980.50	-9967.25	0.58	10399.27	40.33222675	-104.86255940
16900.00	90.15	269.13	6989.07	2976.89	-10067.18	2.40	10494.84	40.33221673	-104.86291781
17000.00	89.89	270.70	6989.04	2976.74	-10167.18	1.59	10591.37	40.33221621	-104.86327648
17100.00	90.07	269.41	6989.07	2976.83	-10267.17	1.30	10687.96	40.33221636	-104.86363515
17200.00	90.02	269.32	6989.00	2975.73	-10367.17	0.10	10784.24	40.33221320	-104.86399380
17300.00	89.95	271.06	6989.02	2976.06	-10467.16	1.74	10880.89	40.33221400	-104.86435247
17400.00	90.22	274.46	6988.87	2980.87	-10567.03	3.41	10978.59	40.33222709	-104.86471068
17500.00	90.09	275.80	6988.60	2989.81	-10666.63	1.35	11077.09	40.33225152	-104.86506793
17535.00	90.12	275.41	6988.54	2993.23	-10701.46	1.12	11111.62	40.33226086	-104.86519287
17638.00	90.09	273.25	6988.35	3001.01	-10804.16	2.10	11212.81	40.33228208	-104.86556124
17727.00	89.97	271.30	6988.30	3004.54	-10893.09	2.20	11299.61	40.33229167	-104.86588021
17817.00	89.97	268.53	6988.35	3004.41	-10983.08	3.08	11386.48	40.33229120	-104.86620299
17906.00	90.00	267.45	6988.37	3001.29	-11072.02	1.21	11471.56	40.33228252	-104.86652200
17986.00	90.00	267.45	6988.37	2997.73	-11151.94	0.00	11547.82	40.33227265	-104.86680866

## Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
0.00	0.00	0.00	0.00	40.32405100	-104.82680900	Surface Location
1612.00	1610.38	37.61	-14.06	40.32415423	-104.82685942	9.625" Csg: 1612 / 1610 MD/TVD
8110.13	7006.48	3004.86	-1286.95	40.33229905	-104.83142503	460 Setback: 8110 / 7006 MD/TVD, 546 FNL, 460 FEL Sec 12
17750.61	6988.32	3004.93	-10916.69	40.33229271	-104.86596488	Btm Toe Sub: 17,751 / 6988 MD/TVD, 594 FNL, 472 FWL Sec 11
17762.16	6988.32	3005.01	-10928.24	40.33229291	-104.86600631	460 Setback: 17,762 / 6988 MD/TVD, 595 FNL, 460 FWL Sec 11
17975.22	6988.37	2998.21	-11141.17	40.33227398	-104.86677003	PBTD: 17,975 / 6988 MD/TVD, 519 FNL, 608 FNL, 247 FWL Sec 11
17986.00	6988.37	2997.73	-11151.94	40.33227265	-104.86680866	5.5" Csg: 17,986 / 6988 MD/TVD, 608 FNL, 236 FWL Sec 11
17986.00	6988.37	2997.73	-11151.94	40.33227265	-104.86680866	BHL: 17,986 / 6988 MD/TVD, 608 FNL, 236 FWL Sec 11

## Hole Sections

Diameter [in]	Start MD[ft]	Start TVD[ft]	Start North[ft]	Start East[ft]	End MD[ft]	End TVD[ft]	End North[ft]	End East[ft]
13.500	0.00	0.00	0.00	0.00	1612.00	1610.38	37.61	-14.06
8.500	1612.00	1610.38	37.61	-14.06	17986.00	6988.37	2997.73	-11151.94

## Casings

Name	Top MD[ft]	Top TVD[ft]	Top North[ft]	Top East[ft]	Shoe MD[ft]	Shoe TVD[ft]	Shoe North[ft]	Shoe East[ft]
9 5/8in Casing	0.00	0.00	0.00	0.00	1612.00	1610.38	37.61	-14.06
5 1/2in Casing	0.00	0.00	0.00	0.00	17986.00	6988.37	2997.73	-11151.94

## Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
647166	MWD to 8151	8151.00	7009.24	MWD
647165	Gyro to 17,535	17535.00	6988.54	Gyro
647164	MWD to 17,986 TD	17986.00	6988.37	MWD

Coordinates are from Slot  
MD's and TVD's are from Rig 4755.0ft above Mean Sea Level  
Vertical Section is from Wellhead on azimuth 285.05 degrees  
Bottom hole distance is 11547.82 Feet on azimuth 285.05 degrees from Wellhead  
Survey calculation uses Minimum Curvature method