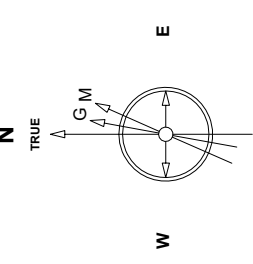


Great Western Operating Company, LLC

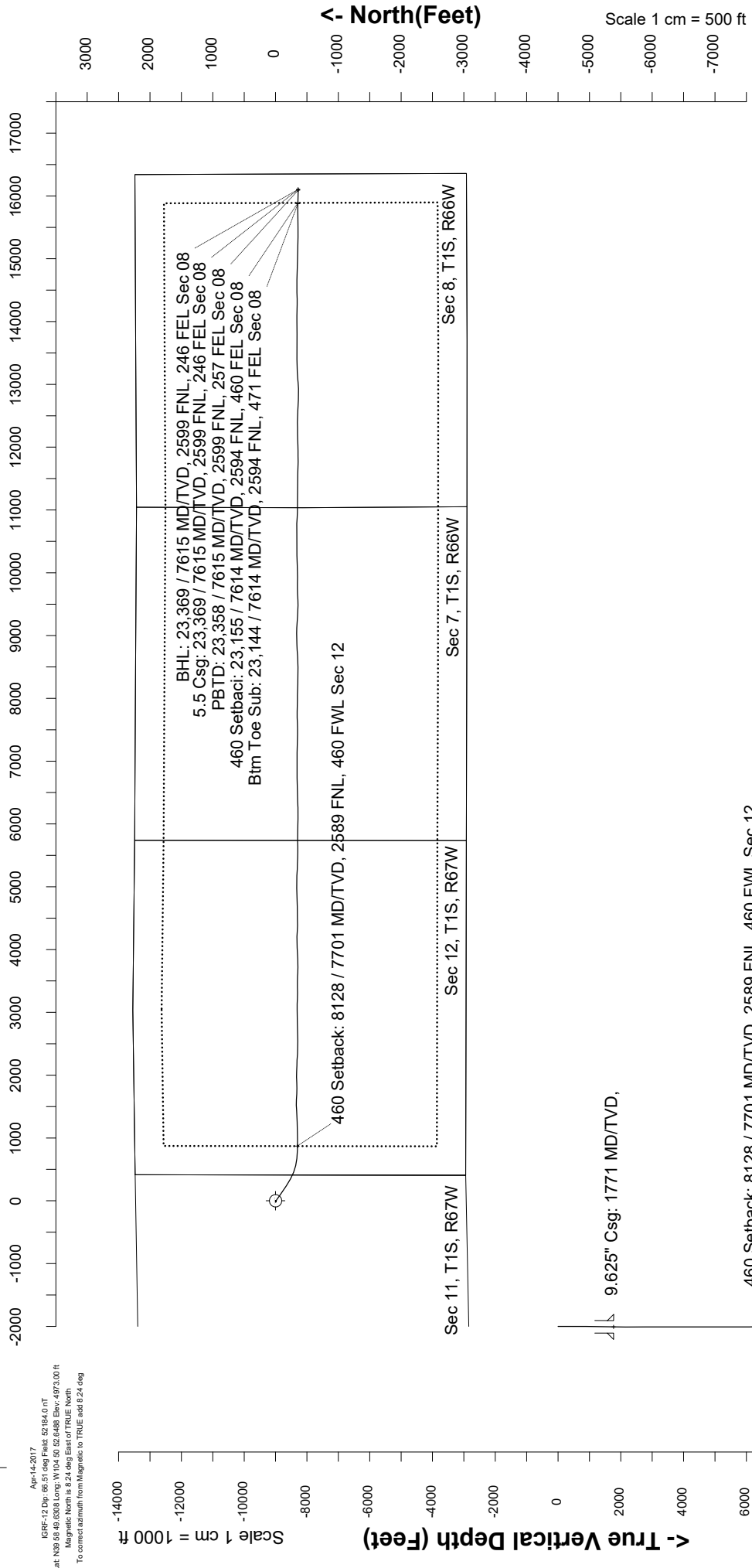
Location	Colorado	Slot	N01 - Brant LE 08-199HC
Field	Wattenburg	Well	Brant LE 08-199HC
Installation	Brant	Wellbore	Brant LE 08-199HC (AWB)

Created by	mmount
Date plotted	1-Feb-2020
Plot reference is	Brant LE 08-199HC (AWB)
Ref wellpath is	Brant LE 08-199HC (AWPH1)
Coordinates are in	Feet reference N01 - Brant LE 08-199HC
True Vertical Depths are	reference Rig Datum.
Measured Depths are	reference Rig Datum.
Rig Datum:	Actual Datum #1
Rig Datum to Mean Sea Level:	4993.00 ft.
Plot North is	aligned to TRUE North.



Scale 1 cm = 500 ft

East (Feet) ->



Apr-14-2017
KRF: 12.Dn, 66.51 deg Field: 52784.0 FT
Lat: N39 58.49 (6308 Long: W104 50 52.6488 Elev: 4973.00 ft
Magnetic North is 9.24 deg East of TRUE North
To correct azimuth from Magnetic to TRUE add 8.24 deg

460 Setback: 8128 / 7701 MD/TVD, 2589 FNL, 460 FWL Sec 12

Btm Toe Sub: 23,144 / 7614 MD/TV, 2594 FNL, 471 FEL Sec 08
460 Setback: 23,155 / 7614 MD/TV, 2594 FNL, 460 FEL Sec 08
PBTD: 23,358 / 7615 MD/TV, 2599 FNL, 257 FEL Sec 08
5.5 Csg: 23,369 / 7615 MD/TV, 2599 FNL, 246 FEL Sec 08
BHL: 23,369 / 7615 MD/TV, 2599 FNL, 246 FEL Sec 08

Scale 1 cm = 1000 ft

Vertical Section (Feet) ->

Azimuth 91.28 with reference 0.00 N, 0.00 E from N01 - Brant LE 08-199HC

North(Feet)

Scale 1 cm = 500 ft

Great Western Operating Co, LLC
 Directional Survey Report
 Wellpath: Brant LE 08-199HC
 MDs and TVDs are from Rig Floor 4993.0ft above Mean Sea Level

Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Jan-31-2020	Feb-1-2020	05-001-10332	20.00	Brant LE 08-199HC

Slot Coordinates

Latitude	Longitude
39.98068500	-104.84820900

Pad Information

Pad Name	Ground Elev.
Brant	4973.00

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	39.98068500	-104.84820900
14.00	0.00	206.07	14.00	0.00	0.00	0.00	0.00	39.98068500	-104.84820900
92.00	0.31	206.07	92.00	-0.19	-0.09	0.00	-0.09	39.98068448	-104.84820933
179.00	0.26	258.45	179.00	-0.44	-0.39	0.00	-0.38	39.98068379	-104.84821039
264.00	0.22	248.87	264.00	-0.54	-0.73	0.00	-0.72	39.98068352	-104.84821161
357.00	0.26	266.71	357.00	-0.61	-1.11	0.00	-1.09	39.98068331	-104.84821295
446.00	0.57	106.40	446.00	-0.75	-0.88	0.00	-0.87	39.98068294	-104.84821216
536.00	0.31	97.96	535.99	-0.91	-0.21	0.00	-0.19	39.98068250	-104.84820976
626.00	0.09	209.76	625.99	-1.01	-0.01	0.00	0.01	39.98068224	-104.84820903
716.00	0.00	277.96	715.99	-1.07	-0.04	0.00	-0.02	39.98068207	-104.84820915
806.00	0.09	219.86	805.99	-1.12	-0.09	0.00	-0.06	39.98068192	-104.84820932
896.00	0.88	305.73	895.99	-0.77	-0.69	0.00	-0.68	39.98068288	-104.84821148
986.00	0.40	312.41	985.98	-0.16	-1.49	0.00	-1.48	39.98068457	-104.84821431
1076.00	1.14	257.39	1075.98	-0.14	-2.59	0.00	-2.59	39.98068461	-104.84821826
1166.00	1.45	275.06	1165.95	-0.24	-4.60	0.00	-4.60	39.98068435	-104.84822542
1256.00	1.54	273.21	1255.92	-0.07	-6.94	0.00	-6.94	39.98068481	-104.84823378
1346.00	1.93	267.59	1345.88	-0.06	-9.67	0.00	-9.66	39.98068483	-104.84824349
1436.00	1.41	277.96	1435.84	0.03	-12.28	0.00	-12.27	39.98068507	-104.84825280
1526.00	0.75	254.23	1525.83	0.02	-13.94	0.00	-13.94	39.98068505	-104.84825874
1616.00	0.70	257.92	1615.82	-0.26	-15.04	0.00	-15.03	39.98068430	-104.84826268
1706.00	0.52	236.91	1705.81	-0.59	-15.92	0.00	-15.91	39.98068337	-104.84826582
1720.00	0.66	269.26	1719.81	-0.63	-16.06	0.00	-16.04	39.98068327	-104.84826630
1798.00	0.17	177.72	1797.81	-0.75	-16.50	0.00	-16.48	39.98068294	-104.84826788
1887.00	0.80	283.06	1886.81	-0.74	-17.10	0.00	-17.08	39.98068296	-104.84827003
1977.00	0.19	136.43	1976.81	-0.71	-17.61	0.00	-17.59	39.98068306	-104.84827184
2066.00	0.03	127.72	2065.81	-0.83	-17.49	0.00	-17.47	39.98068272	-104.84827141
2156.00	0.07	161.80	2155.81	-0.90	-17.46	0.00	-17.43	39.98068254	-104.84827129
2245.00	0.11	131.91	2244.81	-1.01	-17.37	0.00	-17.35	39.98068224	-104.84827100
2335.00	0.10	122.98	2334.81	-1.11	-17.24	0.00	-17.22	39.98068197	-104.84827053
2424.00	0.20	227.51	2423.81	-1.25	-17.29	0.00	-17.26	39.98068156	-104.84827071
2514.00	0.25	327.12	2513.81	-1.19	-17.52	0.00	-17.49	39.98068172	-104.84827150
2603.00	0.50	158.12	2602.80	-1.39	-17.48	0.00	-17.44	39.98068118	-104.84827136
2693.00	0.67	250.18	2692.80	-1.93	-17.83	0.00	-17.78	39.98067969	-104.84827261
2783.00	0.09	135.81	2782.80	-2.16	-18.27	0.00	-18.22	39.98067906	-104.84827420
2872.00	0.32	134.21	2871.80	-2.39	-18.04	0.00	-17.99	39.98067845	-104.84827339
2962.00	0.07	323.09	2961.80	-2.52	-17.90	0.00	-17.84	39.98067809	-104.84827286
3052.00	0.11	20.05	3051.80	-2.39	-17.90	0.00	-17.84	39.98067843	-104.84827288
3141.00	0.09	54.39	3140.80	-2.27	-17.81	0.00	-17.76	39.98067876	-104.84827257
3230.00	0.33	243.56	3229.80	-2.35	-17.99	0.00	-17.93	39.98067856	-104.84827319
3320.00	0.07	295.38	3319.80	-2.44	-18.27	0.00	-18.21	39.98067831	-104.84827419
3409.00	0.28	139.47	3408.80	-2.58	-18.18	0.00	-18.11	39.98067792	-104.84827386
3499.00	0.40	216.18	3498.80	-3.00	-18.22	0.00	-18.15	39.98067677	-104.84827401
3589.00	0.19	238.96	3588.79	-3.33	-18.53	0.00	-18.45	39.98067586	-104.84827513
3678.00	0.26	200.55	3677.79	-3.60	-18.73	0.00	-18.65	39.98067513	-104.84827584
3768.00	2.12	37.96	3767.78	-2.47	-17.78	0.00	-17.72	39.98067821	-104.84827244
3857.00	0.57	196.09	3856.76	-1.60	-16.89	0.00	-16.85	39.98068060	-104.84826926
3947.00	0.24	286.62	3946.76	-1.98	-17.19	0.00	-17.14	39.98067957	-104.84827035
4037.00	0.17	0.82	4036.76	-1.79	-17.37	0.00	-17.33	39.98068009	-104.84827099
4126.00	0.24	116.41	4125.76	-1.74	-17.20	0.00	-17.16	39.98068022	-104.84827038
4216.00	0.48	201.59	4215.75	-2.18	-17.17	0.00	-17.12	39.98067903	-104.84827028
4305.00	0.09	150.23	4304.75	-2.58	-17.27	0.00	-17.21	39.98067791	-104.84827064
4395.00	0.10	104.24	4394.75	-2.66	-17.16	0.00	-17.10	39.98067769	-104.84827025
4484.00	0.14	212.37	4483.75	-2.77	-17.15	0.00	-17.08	39.98067738	-104.84827018
4574.00	0.21	197.66	4573.75	-3.02	-17.26	0.00	-17.18	39.98067670	-104.84827057
4664.00	0.50	263.52	4663.75	-3.23	-17.70	0.00	-17.62	39.98067614	-104.84827214
4753.00	0.11	210.53	4752.75	-3.34	-18.12	0.00	-18.05	39.98067582	-104.84827368
4843.00	0.14	113.77	4842.75	-3.46	-18.07	0.00	-17.99	39.98067550	-104.84827347
4932.00	0.06	171.60	4931.75	-3.55	-17.96	0.00	-17.88	39.98067525	-104.84827309
5022.00	0.04	256.32	5021.75	-3.61	-17.99	0.00	-17.90	39.98067510	-104.84827318
5111.00	0.10	205.68	5110.75	-3.68	-18.05	0.00	-17.96	39.98067489	-104.84827341
5201.00	0.09	165.18	5200.75	-3.82	-18.07	0.00	-17.98	39.98067451	-104.84827346
5290.00	2.38	25.60	5289.72	-2.22	-17.25	0.00	-17.19	39.98067890	-104.84827055
5380.00	0.26	176.32	5379.70	-0.74	-16.43	0.00	-16.41	39.98068296	-104.84826762
5469.00	0.14	115.56	5468.70	-0.99	-16.32	0.00	-16.29	39.98068228	-104.84826722
5559.00	0.11	249.13	5558.70	-1.07	-16.30	0.00	-16.27	39.98068207	-104.84826716

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5648.00	0.09	227.50	5647.70	-1.15	-16.43	0.00	-16.40	39.98068185	-104.84826763
5737.00	0.13	335.54	5736.70	-1.10	-16.52	0.00	-16.49	39.98068198	-104.84826796
5827.00	0.18	189.01	5826.70	-1.15	-16.59	0.00	-16.56	39.98068185	-104.84826819
5916.00	0.22	103.69	5915.70	-1.33	-16.44	0.00	-16.41	39.98068136	-104.84826768
6006.00	0.17	144.38	6005.70	-1.48	-16.20	0.00	-16.16	39.98068095	-104.84826680
6096.00	0.13	98.10	6095.70	-1.60	-16.02	0.00	-15.98	39.98068061	-104.84826616
6185.00	2.47	132.15	6184.67	-2.90	-14.50	0.00	-14.43	39.98067704	-104.84826073
6275.00	4.68	117.52	6274.49	-5.90	-9.80	0.00	-9.67	39.98066881	-104.84824398
6365.00	7.01	110.12	6364.02	-9.48	-1.39	0.00	-1.18	39.98065896	-104.84821395
6454.00	10.47	119.72	6451.98	-15.36	10.74	0.00	11.08	39.98064282	-104.84817068
6544.00	13.70	123.22	6539.97	-25.26	26.76	0.00	27.32	39.98061566	-104.84811351
6633.00	16.08	124.35	6625.98	-37.99	45.76	0.00	46.59	39.98058071	-104.84804573
6723.00	19.35	132.39	6711.71	-55.08	67.07	0.00	68.28	39.98053379	-104.84796968
6812.00	20.98	123.60	6795.27	-73.85	91.24	0.00	92.86	39.98048229	-104.84788344
6902.00	23.11	125.57	6878.69	-93.04	119.03	0.00	121.08	39.98042960	-104.84778428
6991.00	26.12	122.17	6959.59	-113.63	149.83	0.00	152.33	39.98037306	-104.84767437
7081.00	29.14	121.97	7039.32	-135.79	185.19	0.00	188.18	39.98031224	-104.84754817
7170.00	29.91	121.87	7116.76	-158.98	222.42	0.00	225.92	39.98024858	-104.84741534
7260.00	30.11	121.77	7194.70	-182.71	260.67	0.00	264.69	39.98018343	-104.84727885
7349.00	29.52	122.81	7271.92	-206.35	298.08	0.00	302.61	39.98011855	-104.84714537
7438.00	29.59	122.76	7349.34	-230.12	334.98	0.00	340.04	39.98005329	-104.84701368
7528.00	34.51	115.99	7425.62	-253.34	376.63	0.00	382.19	39.97998956	-104.84686509
7617.00	42.77	113.85	7495.08	-276.65	427.01	0.00	433.09	39.97992557	-104.84668529
7707.00	49.94	110.43	7557.17	-301.06	487.33	0.00	493.93	39.97985855	-104.84647008
7796.00	60.06	103.86	7608.19	-322.26	556.91	0.00	563.97	39.97980036	-104.84622177
7886.00	67.19	97.86	7648.17	-337.30	636.02	0.00	643.40	39.97975905	-104.84593948
7975.00	73.91	91.28	7677.82	-343.88	719.58	0.00	727.09	39.97974099	-104.84564133
8064.00	83.00	90.62	7695.61	-345.32	806.68	0.00	814.19	39.97973704	-104.84533054
8154.00	90.09	90.87	7701.03	-346.48	896.45	0.00	903.97	39.97973383	-104.84501021
8243.00	90.06	90.46	7700.92	-347.52	985.44	0.00	992.96	39.97973098	-104.84469266
8333.00	90.12	89.41	7700.78	-347.41	1075.44	0.00	1082.94	39.97973125	-104.84437152
8422.00	89.97	88.55	7700.71	-345.83	1164.43	0.00	1171.86	39.97973559	-104.84405399
8512.00	89.97	88.52	7700.75	-343.53	1254.40	0.00	1261.76	39.97974189	-104.84373295
8601.00	90.28	88.09	7700.56	-340.90	1343.36	0.00	1350.64	39.97974911	-104.84341551
8691.00	90.25	85.12	7700.14	-335.57	1433.19	0.00	1440.33	39.97976372	-104.84309497
8780.00	89.78	89.17	7700.12	-331.14	1522.06	0.00	1529.08	39.97977587	-104.84277785
8870.00	89.75	92.88	7700.49	-332.74	1612.03	0.00	1619.06	39.97977144	-104.84245682
8959.00	90.22	93.25	7700.51	-337.50	1700.90	0.00	1708.02	39.97975836	-104.84213970
9049.00	90.31	89.51	7700.10	-339.67	1790.86	0.00	1798.00	39.97975239	-104.84181870
9138.00	89.82	87.31	7699.99	-337.20	1879.82	0.00	1886.88	39.97975915	-104.84150127
9228.00	89.72	89.67	7700.36	-334.83	1969.78	0.00	1976.77	39.97976564	-104.84118026
9317.00	90.06	92.42	7700.53	-336.45	2058.76	0.00	2065.76	39.97976117	-104.84086276
9407.00	90.06	91.79	7700.43	-339.76	2148.69	0.00	2155.75	39.97975207	-104.84054184
9496.00	89.85	91.51	7700.50	-342.32	2237.66	0.00	2244.75	39.97974502	-104.84022439
9586.00	89.91	93.85	7700.69	-346.53	2327.55	0.00	2334.71	39.97973344	-104.83990362
9676.00	89.91	95.12	7700.83	-353.57	2417.27	0.00	2424.57	39.97971410	-104.83958347
9765.00	90.12	88.58	7700.81	-356.44	2506.18	0.00	2513.52	39.97970619	-104.83926623
9854.00	89.88	86.88	7700.81	-352.91	2595.11	0.00	2602.34	39.97971585	-104.83894891
9944.00	89.78	88.26	7701.08	-349.10	2685.02	0.00	2692.15	39.97972629	-104.83862806
10033.00	89.85	89.77	7701.36	-347.57	2774.01	0.00	2781.08	39.97973047	-104.83831054
10123.00	90.65	90.55	7700.97	-347.82	2864.00	0.00	2871.06	39.97972975	-104.83798941
10212.00	90.37	87.53	7700.18	-346.33	2952.98	0.00	2959.98	39.97973381	-104.83767192
10302.00	90.28	89.10	7699.67	-343.68	3042.93	0.00	3049.85	39.97974105	-104.83735093
10391.00	90.65	91.64	7698.95	-344.26	3131.92	0.00	3138.83	39.97973944	-104.83703340
10481.00	90.92	92.89	7697.71	-347.81	3221.84	0.00	3228.81	39.97972965	-104.83671254
10571.00	91.69	89.24	7695.66	-349.49	3311.79	0.00	3318.77	39.97972502	-104.83639159
10660.00	90.55	88.20	7693.92	-347.50	3400.75	0.00	3407.66	39.97973045	-104.83607416
10750.00	91.02	91.65	7692.69	-347.38	3490.72	0.00	3497.61	39.97973074	-104.83575310
10839.00	91.08	92.06	7691.06	-350.26	3579.66	0.00	3586.59	39.97972279	-104.83543574
10929.00	91.05	92.37	7689.38	-353.74	3669.58	0.00	3676.57	39.97971321	-104.83511489
11018.00	90.46	90.25	7688.21	-355.77	3758.54	0.00	3765.55	39.97970759	-104.83479744
11108.00	90.46	88.50	7687.49	-354.79	3848.53	0.00	3855.50	39.97971025	-104.83447634
11197.00	90.77	85.95	7686.53	-350.48	3937.41	0.00	3944.26	39.97972203	-104.83415918
11287.00	90.15	86.84	7685.81	-344.82	4027.23	0.00	4033.93	39.97973753	-104.83383868
11376.00	90.31	88.22	7685.45	-340.99	4116.14	0.00	4122.74	39.97974802	-104.83352140
11466.00	90.12	92.20	7685.12	-341.32	4206.13	0.00	4212.70	39.97974707	-104.83320033
11555.00	90.31	94.60	7684.78	-346.60	4294.96	0.00	4301.63	39.97973254	-104.83288334
11645.00	91.20	89.32	7683.60	-349.67	4384.87	0.00	4391.59	39.97972405	-104.83256253
11735.00	90.46	89.29	7682.29	-348.58	4474.85	0.00	4481.52	39.97972700	-104.83224144
11824.00	90.22	89.57	7681.76	-347.70	4563.85	0.00	4550.48	39.97972939	-104.83192388
11913.00	90.28	89.26	7681.38	-346.79	4652.84	0.00	4659.43	39.97973184	-104.83160632
12003.00	90.18	88.06	7681.01	-344.68	4742.81	0.00	4749.33	39.97973757	-104.83128527
12092.00	90.25	87.44	7680.68	-341.19	4831.74	0.00	4838.16	39.97974711	-104.83096794
12181.00	90.18	87.49	7680.35	-337.25	4920.66	0.00	4926.96	39.97975787	-104.83065067
12271.00	89.94	90.34	7680.25	-335.55	5010.63	0.00	5016.88	39.97976250	-104.83032962
12360.00	90.52	93.35	7679.89	-338.41	5099.57	0.00	5105.86	39.97975459	-104.83001225
12450.00	90.31	92.03	7679.24	-342.64	5189.47	0.00	5195.83	39.97974294	-104.82969147
12539.00	90.40	91.34	7678.69	-345.25	5278.43	0.00	5284.83	39.97973570	-104.82937404
12629.00	90.28	92.18	7678.16	-348.02	5368.38	0.00	5374.82	39.97972806	-104.82905306
12718.00	90.46	92.13	7677.58	-351.36	5457.32	0.00	5463.81	39.97971882	-104.82873572
12808.00	90.34	90.86	7676.95	-353.71	5547.28	0.00	5553.80	39.97971232	-104.82841470
12897.00	90.46	89.55	7676.33	-354.03	5636.28	0.00	5642.78	39.97971140	-104.82809714
12987.00	90.31	88.39	7675.73	-352.41	5726.26	0.00	5732.71	39.97971578	-104.82777605
13076.00	90.25	89.81	7675.29	-351.02	5815.25	0.00	5821.64	39.97971956	-104.82745853
13166.00	90.34	91.73	7674.83	-352.22	5905.23	0.00	5911.63	39.97971618	-104.82713743
13255.00	90.06	92.04	7674.52	-355.15	5994.18	0.00	6000.62	39.97970809	-104.82682003
13345.00	90.09	90.87	7674.40	-357.44	6084.15	0.00	6090.62	39.97970175	-104.82649899
13434.00	90.62	89.43	7673.85	-357.67	6173.15	0.00	6179.60	39.97970105	-104.82618143

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13524.00	90.77	87.34	7672.76	-355.13	6263.10	0.00	6269.47	39.97970795	-104.82586045
13613.00	90.55	88.33	7671.73	-351.77	6352.03	0.00	6358.31	39.97971712	-104.82554313
13703.00	90.65	89.29	7670.79	-349.90	6442.01	0.00	6448.22	39.97972219	-104.82522207
13792.00	91.05	89.03	7669.47	-348.60	6530.99	0.00	6537.14	39.97972571	-104.82490456
13881.00	90.95	88.42	7667.92	-346.62	6619.95	0.00	6626.04	39.97973108	-104.82458711
13971.00	90.77	88.74	7666.57	-344.39	6709.91	0.00	6715.93	39.97973713	-104.82426610
14060.00	90.80	88.94	7665.35	-342.59	6798.89	0.00	6804.84	39.97974201	-104.82394861
14149.00	90.74	90.35	7664.15	-342.04	6887.87	0.00	6893.80	39.97974346	-104.82363108
14239.00	90.68	89.83	7663.03	-342.18	6977.87	0.00	6983.77	39.97974300	-104.82330996
14329.00	90.71	90.02	7661.94	-342.06	7067.86	0.00	7073.74	39.97974325	-104.82298883
14418.00	90.89	91.55	7660.70	-343.28	7156.84	0.00	7162.72	39.97973984	-104.82267133
14508.00	90.77	91.46	7659.40	-345.64	7246.80	0.00	7252.71	39.97973328	-104.82235033
14597.00	90.98	91.98	7658.04	-348.31	7335.75	0.00	7341.70	39.97972587	-104.82203294
14687.00	90.86	90.62	7656.59	-350.35	7425.71	0.00	7431.69	39.97972020	-104.82171192
14776.00	91.02	88.86	7655.13	-349.95	7514.70	0.00	7520.64	39.97972123	-104.82139440
14865.00	90.80	87.60	7653.72	-347.20	7603.64	0.00	7609.50	39.97972870	-104.82107702
14955.00	90.86	89.20	7652.41	-344.69	7693.59	0.00	7699.37	39.97973552	-104.82075604
15044.00	90.77	90.68	7651.15	-344.60	7782.58	0.00	7788.34	39.97973570	-104.82043851
15134.00	91.26	91.19	7649.55	-346.06	7872.55	0.00	7878.32	39.97973159	-104.82011746
15223.00	91.08	90.82	7647.74	-347.63	7961.52	0.00	7967.30	39.97972723	-104.81980000
15313.00	90.95	90.25	7646.14	-348.47	8051.50	0.00	8057.28	39.97972485	-104.81947892
15402.00	90.74	91.05	7644.83	-349.48	8140.49	0.00	8146.26	39.97972200	-104.81916140
15491.00	90.55	92.42	7643.83	-352.17	8229.44	0.00	8235.25	39.97971452	-104.81884400
15581.00	90.92	93.22	7642.67	-356.60	8319.32	0.00	8325.21	39.97970228	-104.81852328
15670.00	91.05	90.12	7641.14	-359.19	8408.26	0.00	8414.19	39.97969508	-104.81820592
15759.00	90.77	87.95	7639.73	-357.69	8497.23	0.00	8503.10	39.97969911	-104.81788845
15849.00	90.00	86.86	7639.13	-353.62	8587.13	0.00	8592.89	39.97971021	-104.81756764
15938.00	89.88	86.07	7639.22	-348.13	8675.96	0.00	8681.58	39.97972519	-104.81725066
16028.00	90.03	87.62	7639.29	-343.18	8765.82	0.00	8771.30	39.97973870	-104.81693001
16117.00	90.09	88.35	7639.20	-340.05	8854.77	0.00	8860.16	39.97974721	-104.81661262
16207.00	89.85	89.05	7639.24	-338.00	8944.74	0.00	8950.06	39.97975272	-104.81629156
16296.00	90.25	89.49	7639.17	-336.87	9033.74	0.00	9039.01	39.97975575	-104.81597401
16386.00	90.46	92.45	7638.61	-338.39	9123.71	0.00	9129.00	39.97975148	-104.81565295
16475.00	90.95	93.85	7637.51	-343.28	9212.57	0.00	9217.94	39.97973796	-104.81533589
16565.00	90.58	93.82	7636.31	-349.30	9302.36	0.00	9307.84	39.97972135	-104.81501551
16654.00	90.74	93.38	7635.29	-354.89	9391.18	0.00	9396.76	39.97970592	-104.81469858
16743.00	90.77	90.01	7634.11	-357.52	9480.12	0.00	9485.74	39.97969860	-104.81438122
16833.00	90.49	87.15	7633.12	-355.29	9570.08	0.00	9575.62	39.97970463	-104.81406022
16923.00	90.37	86.95	7632.45	-350.66	9659.95	0.00	9665.38	39.97971725	-104.81373951
17012.00	90.06	89.05	7632.11	-347.56	9748.89	0.00	9754.23	39.97972568	-104.81342214
17102.00	90.06	91.64	7632.02	-348.10	9838.88	0.00	9844.21	39.97972409	-104.81310103
17191.00	90.12	89.77	7631.88	-349.19	9927.87	0.00	9933.20	39.97972099	-104.81278349
17281.00	89.88	88.76	7631.88	-348.04	10017.86	0.00	10023.14	39.97972406	-104.81246237
17370.00	89.11	87.85	7632.66	-345.41	10106.82	0.00	10112.02	39.97973119	-104.81214495
17460.00	89.17	88.31	7634.01	-342.39	10196.76	0.00	10201.86	39.97973936	-104.81182402
17549.00	89.66	89.17	7634.92	-340.43	10285.73	0.00	10290.77	39.97974463	-104.81150653
17600.00	89.26	88.77	7635.40	-339.52	10376.72	0.00	10341.73	39.97974709	-104.81132459
17689.00	89.45	90.94	7636.41	-339.29	10465.71	0.00	10430.69	39.97974761	-104.81100705
17779.00	89.66	90.07	7637.11	-340.09	10555.70	0.00	10520.68	39.97974532	-104.81068593
17868.00	89.88	88.34	7637.46	-338.85	10646.69	0.00	10609.61	39.97974861	-104.81036840
17957.00	90.06	90.01	7637.51	-337.57	10693.68	0.00	10698.55	39.97975202	-104.81005086
18047.00	90.03	91.90	7637.44	-339.07	10783.66	0.00	10788.55	39.97974780	-104.80972978
18136.00	89.91	93.39	7637.48	-343.18	10872.56	0.00	10877.52	39.97973642	-104.80941255
18226.00	90.12	92.81	7637.46	-348.04	10962.43	0.00	10967.47	39.97972295	-104.80909188
18315.00	90.00	90.07	7637.37	-350.28	11051.40	0.00	11056.46	39.97971670	-104.80877444
18405.00	89.91	89.59	7637.44	-350.01	11141.39	0.00	11146.43	39.97971733	-104.80845330
18494.00	90.00	90.39	7637.51	-350.00	11230.39	0.00	11235.41	39.97971726	-104.80813572
18584.00	89.94	90.43	7637.56	-350.64	11320.39	0.00	11325.40	39.97971538	-104.80781459
18673.00	90.86	89.89	7636.93	-350.89	11409.39	0.00	11414.38	39.97971458	-104.80749702
18762.00	90.77	91.64	7636.67	-352.08	11498.37	0.00	11503.36	39.97971121	-104.80717952
18852.00	90.74	92.84	7634.48	-355.59	11588.29	0.00	11593.34	39.97970144	-104.80685866
18941.00	90.98	91.01	7633.15	-358.58	11677.23	0.00	11682.32	39.97969312	-104.80654132
19031.00	90.68	89.59	7631.84	-359.06	11767.21	0.00	11772.30	39.97969171	-104.80622022
19120.00	90.71	89.61	7630.76	-358.43	11856.20	0.00	11861.25	39.97969330	-104.80590267
19210.00	90.00	89.50	7630.21	-357.73	11946.20	0.00	11951.21	39.97969510	-104.80558154
19299.00	90.06	87.41	7630.16	-355.34	12035.16	0.00	12040.10	39.97970157	-104.80526409
19389.00	89.75	88.80	7630.31	-352.36	12125.11	0.00	12129.96	39.97970962	-104.80494313
19479.00	89.94	89.23	7630.55	-350.81	12215.10	0.00	12219.88	39.97971374	-104.80462203
19568.00	89.88	89.81	7630.69	-350.07	12304.09	0.00	12308.84	39.97971567	-104.80430446
19658.00	89.78	90.32	7630.96	-350.17	12394.09	0.00	12398.82	39.97971527	-104.80398332
19747.00	90.03	90.71	7631.11	-350.97	12483.09	0.00	12487.81	39.97971295	-104.80366576
19837.00	89.97	91.93	7631.11	-353.04	12573.06	0.00	12577.81	39.97970713	-104.80334471
19926.00	90.06	94.12	7631.08	-357.74	12661.93	0.00	12666.76	39.97969412	-104.80302760
20015.00	90.37	93.35	7630.75	-363.54	12750.74	0.00	12755.68	39.97967808	-104.80271071
20105.00	90.68	90.64	7629.92	-366.67	12840.67	0.00	12845.66	39.97966935	-104.80238981
20194.00	90.18	87.91	7629.26	-365.54	12929.66	0.00	12934.60	39.97967232	-104.80207230
20284.00	89.57	85.33	7629.45	-360.24	13019.49	0.00	13024.29	39.97968675	-104.80175173
20373.00	89.63	84.86	7630.07	-352.63	13108.16	0.00	13112.77	39.97970751	-104.80143531
20463.00	89.88	86.83	7630.46	-346.11	13197.92	0.00	13202.36	39.97972528	-104.80111501
20553.00	89.82	87.62	7630.69	-341.75	13287.81	0.00	13292.13	39.97973711	-104.80079424
20642.00	90.03	89.58	7630.81	-339.58	13376.78	0.00	13381.03	39.97974295	-104.80047677
20732.00	90.00	91.55	7630.79	-340.46	13466.78	0.00	13471.02	39.97974038	-104.80015565
20821.00	90.00	90.47	7630.79	-342.03	13555.76	0.00	13560.02	39.97973594	-104.79983813
20911.00	90.18	91.17	7630.65	-343.32	13645.75	0.00	13650.01	39.97973227	-104.79951703
21000.00	90.15	88.39	7630.39	-342.98	13734.74	0.00	13738.97	39.97973307	-104.79919948
21090.00	90.06	88.33	7630.22	-340.40	13824.70	0.00	13828.86	39.97974001	-104.79887846
21179.00	90.09	89.85	7630.11	-338.99	13913.69	0.00	13917.79	39.97974375	-104.79856093
21269.00	89.94	90.43	7630.08	-339.21	14003.69	0.00	14007.77	39.97974301	-104.79823979

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
21358.00	90.00	91.54	7630.13	-340.74	14092.67	0.00	14096.77	39.97973867	-104.79792227
21447.00	90.15	91.11	7630.01	-342.80	14181.65	0.00	14185.77	39.97973288	-104.79760478
21537.00	90.40	90.33	7629.58	-343.93	14271.64	0.00	14275.76	39.97972964	-104.79728367
21626.00	90.37	89.65	7628.98	-343.91	14360.64	0.00	14364.74	39.97972954	-104.79696610
21716.00	90.25	88.02	7628.50	-342.08	14450.62	0.00	14454.65	39.97973442	-104.79664503
21805.00	90.52	89.30	7627.90	-340.00	14539.59	0.00	14543.55	39.97973999	-104.79632755
21895.00	90.37	89.89	7627.20	-339.36	14629.58	0.00	14633.51	39.97974159	-104.79600642
21984.00	90.55	91.83	7626.49	-340.70	14718.56	0.00	14722.50	39.97973778	-104.79568891
22074.00	90.49	92.04	7625.67	-343.74	14808.51	0.00	14812.49	39.97972929	-104.79536797
22163.00	90.49	92.29	7624.91	-347.10	14897.44	0.00	14901.48	39.97971992	-104.79505063
22252.00	90.46	91.79	7624.17	-350.27	14986.38	0.00	14990.47	39.97971107	-104.79473328
22342.00	90.46	91.38	7623.45	-352.76	15076.35	0.00	15080.46	39.97970409	-104.79441227
22432.00	90.58	91.09	7622.63	-354.70	15166.32	0.00	15170.46	39.97969861	-104.79409122
22521.00	90.95	91.38	7621.44	-356.62	15255.29	0.00	15259.45	39.97969320	-104.79377375
22611.00	91.52	91.14	7619.50	-358.59	15345.25	0.00	15349.43	39.97968762	-104.79345276
22700.00	91.14	89.28	7617.44	-358.92	15434.22	0.00	15438.39	39.97968657	-104.79313528
22790.00	91.29	88.63	7615.53	-357.28	15524.18	0.00	15528.29	39.97969092	-104.79281426
22879.00	90.71	88.19	7613.98	-354.81	15613.14	0.00	15617.17	39.97969755	-104.79249685
22969.00	89.85	90.63	7613.54	-353.88	15703.12	0.00	15707.11	39.97969993	-104.79217575
23058.00	89.78	91.16	7613.82	-355.27	15792.11	0.00	15796.11	39.97969596	-104.79185822
23147.00	89.75	90.12	7614.19	-356.27	15881.10	0.00	15885.10	39.97969308	-104.79154067
23237.00	89.97	91.14	7614.41	-357.26	15971.10	0.00	15975.09	39.97969020	-104.79121955
23327.00	89.82	91.13	7614.57	-359.04	16061.08	0.00	16065.09	39.97968515	-104.79089848
23345.00	89.57	91.20	7614.67	-359.41	16079.07	0.00	16083.09	39.97968411	-104.79083426
23369.00	89.57	91.20	7614.85	-359.91	16103.07	0.00	16107.09	39.97968269	-104.79074864

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1771.00	1770.81	-0.68	-16.45	39.98068312	-104.84826770	9.625" Csg: 1771 MD/TVD.
8127.75	7700.60	-346.10	870.21	39.97973488	-104.84510385	460 Setback: 8128 / 7701 MD/TVD, 2589 FNL, 460 FWL Sec 12
23144.11	7614.17	-356.26	15878.21	39.97969310	-104.79155098	Btm Toe Sub: 23,144 / 7614 MD/TVD, 2594 FNL, 471 FEL Sec 08
23155.37	7614.22	-356.29	15889.47	39.97969300	-104.79151081	460 Setback: 23,155 / 7614 MD/TVD, 2594 FNL, 460 FEL Sec 08
23358.15	7614.77	-359.68	16092.22	39.97968333	-104.79078735	PBTD: 23,358 / 7615 MD/TVD, 2599 FNL, 257 FEL Sec 08
23369.00	7614.85	-359.91	16103.07	39.97968269	-104.79074864	5.5 Csg: 23,369 / 7615 MD/TVD, 2599 FNL, 246 FEL Sec 08
23369.00	7614.85	-359.91	16103.07	39.97968269	-104.79074864	BHL: 23,369 / 7615 MD/TVD, 2599 FNL, 246 FEL Sec 08

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	1771.00	1770.81	-0.68	-16.45
5.500	1771.00	1770.81	-0.68	-16.45	23369.00	7614.85	-359.91	16103.07

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	1771.00	1770.81	-0.68	-16.45
5 1/2in Casing	0.00	0.00	0.00	0.00	23369.00	7614.85	-359.91	16103.07

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
775769	As Drilled - 20200131	23370.00	7614.86	MWD

Coordinates are from Slot

MD's and TVD's are from Rig Floor 4993.0ft above Mean Sea Level
Vertical Section is from Wellhead on azimuth 91.28 degrees
Bottom hole distance is 16107.09 Feet on azimuth 91.28 degrees from Wellhead
Survey calculation uses Minimum Curvature method