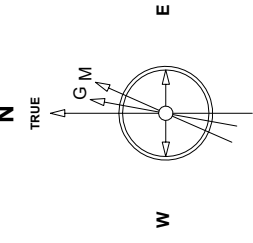


Great Western Operating Company, LLC

Location Colorado
 Field Wattenburg
 Installation Brant

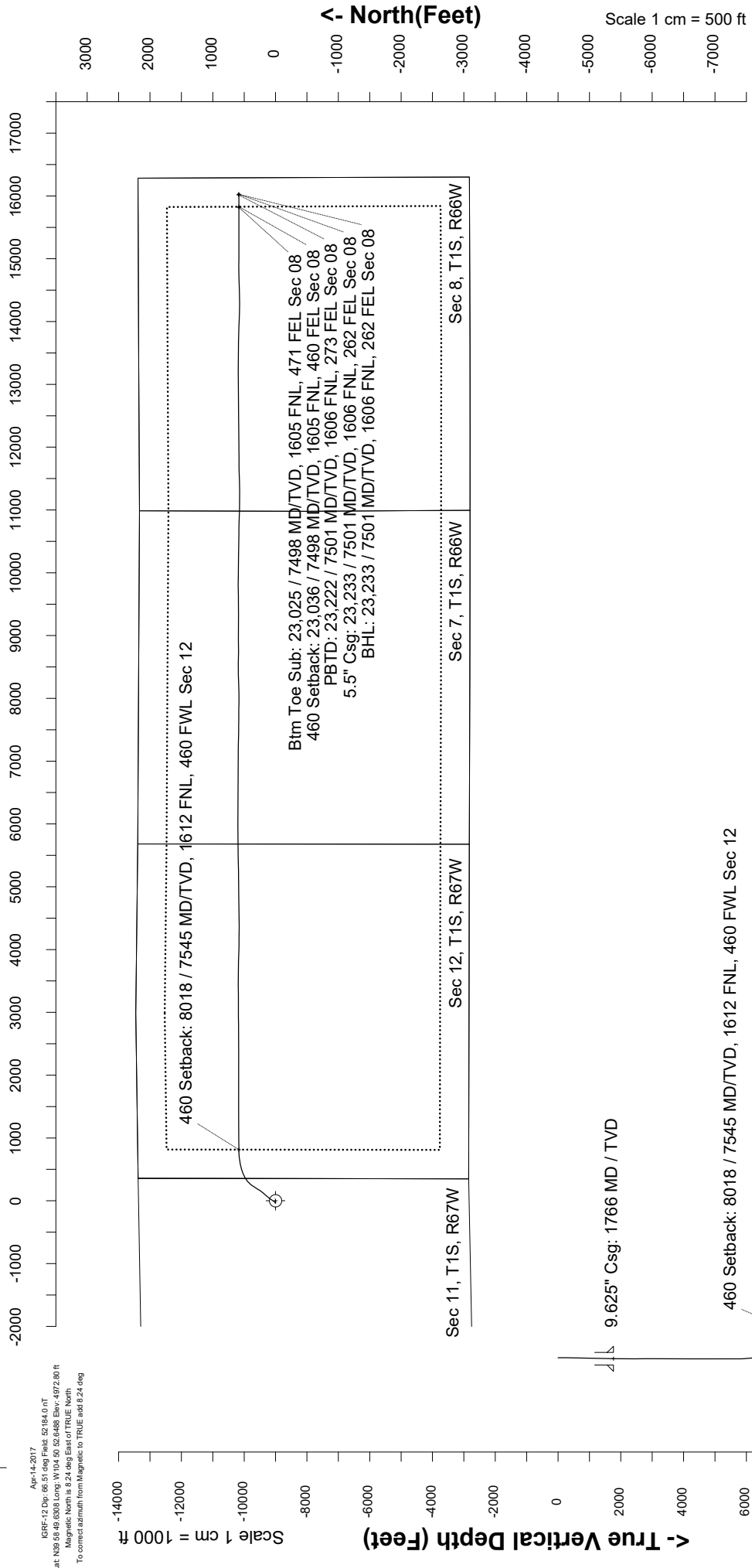
Slot N06 - Brant LE 08-119HN
 Well Brant LE 08-119HN
 Wellbore Brant LE 08-119HN (AWB)

Created by mmount
 Date plotted 27-Dec-2019
 Plot reference is Brant LE 08-119HN (AWB).
 Ref wellpath is Brant LE 08-119HN (AWPH1).
 Coordinates are in Feet reference N06 - Brant LE 08-119HN.
 True Vertical Depths are reference Rig Datum.
 Measured Depths are reference Rig Datum.
 Rig Datum: Actual Datum #1
 Rig Datum to Mean Sea Level: 4993.0 ft.
 Plot North is aligned to TRUE North.



Scale 1 cm = 500 ft

East (Feet) ->



Apr-14-2017
 KRF:12.Dwg, 66.51 deg Field, 52784.0 FT
 Lat: N39 58.49 (308) Long: W 104 50 52.648 Elev: 4972.86 ft
 Magnetic North is 9.24 deg East of TRUE North
 To correct azimuth from Magnetic to TRUE add 8.24 deg

Scale 1 cm = 1000 ft

Vertical Section (Feet) ->

Azimuth 87.91 with reference 0.00 N, 0.00 E from N06 - Brant LE 08-119HN

Great Western Operating Co, LLC
 Directional Survey Report
 Wellpath: Brant LE 08-119HN
 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
Dec-17-2019	Dec-17-2019	05-001-10337	20.00	Brant LE 08-119HN

Slot Coordinates

Latitude	Longitude
39.98081700	-104.84800500

Pad Information

Pad Name	Ground Elev.
Brant	4973.0

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	39.98081700	-104.84800500
14.00	0.00	62.01	14.00	0.00	0.00	0.00	0.00	39.98081700	-104.84800500
92.00	0.40	62.01	92.00	0.13	0.24	0.51	0.24	39.98081735	-104.84800414
179.00	0.13	342.56	179.00	0.36	0.48	0.46	0.49	39.98081800	-104.84800329
264.00	0.18	157.02	264.00	0.33	0.50	0.36	0.51	39.98081792	-104.84800321
357.00	0.22	186.64	357.00	0.02	0.54	0.12	0.54	39.98081706	-104.84800308
446.00	0.44	301.95	446.00	0.03	0.23	0.64	0.23	39.98081709	-104.84800418
536.00	0.31	238.67	536.00	0.09	-0.27	0.45	-0.27	39.98081724	-104.84800597
626.00	0.79	267.41	625.99	-0.07	-1.10	0.60	-1.10	39.98081682	-104.84800893
716.00	1.32	284.99	715.98	0.17	-2.72	0.68	-2.71	39.98081748	-104.84801471
806.00	2.33	280.86	805.93	0.79	-5.52	1.13	-5.49	39.98081916	-104.84802470
896.00	2.68	277.96	895.84	1.42	-9.40	0.41	-9.34	39.98082091	-104.84803854
986.00	2.15	282.00	985.76	2.07	-13.14	0.62	-13.05	39.98082267	-104.84805187
1076.00	1.89	263.90	1075.71	2.26	-16.26	0.76	-16.17	39.98082320	-104.84806303
1166.00	2.24	251.33	1165.65	1.54	-19.40	0.63	-19.34	39.98082122	-104.84807424
1256.00	2.02	258.01	1255.59	0.65	-22.62	0.37	-22.58	39.98081877	-104.84808572
1346.00	1.45	256.87	1345.55	0.06	-25.28	0.63	-25.26	39.98081716	-104.84809522
1436.00	1.10	272.86	1435.52	-0.16	-27.25	0.55	-27.24	39.98081657	-104.84810225
1526.00	0.83	280.95	1525.51	0.01	-28.76	0.34	-28.74	39.98081702	-104.84810762
1616.00	0.62	271.10	1615.50	0.14	-29.88	0.27	-29.86	39.98081739	-104.84811164
1715.00	0.31	149.38	1714.50	-0.08	-30.28	0.83	-30.27	39.98081679	-104.84811306
1795.00	0.22	215.31	1794.50	-0.39	-30.26	0.37	-30.26	39.98081593	-104.84811298
1884.00	0.09	66.07	1883.50	-0.50	-30.30	0.34	-30.29	39.98081563	-104.84811311
1974.00	0.13	251.42	1973.50	-0.50	-30.33	0.24	-30.33	39.98081561	-104.84811322
2063.00	0.10	130.37	2062.50	-0.59	-30.37	0.23	-30.37	39.98081539	-104.84811335
2153.00	0.11	244.03	2152.50	-0.68	-30.38	0.20	-30.39	39.98081515	-104.84811342
2242.00	0.04	354.39	2241.50	-0.68	-30.46	0.15	-30.47	39.98081513	-104.84811370
2332.00	0.10	282.34	2331.50	-0.63	-30.54	0.11	-30.55	39.98081526	-104.84811399
2421.00	0.10	152.16	2420.50	-0.69	-30.58	0.20	-30.59	39.98081512	-104.84811413
2511.00	0.09	243.52	2510.50	-0.79	-30.61	0.15	-30.62	39.98081484	-104.84811422
2601.00	0.17	318.70	2600.50	-0.72	-30.76	0.19	-30.77	39.98081503	-104.84811476
2690.00	0.19	242.76	2689.50	-0.69	-30.98	0.25	-30.98	39.98081511	-104.84811554
2780.00	0.17	349.41	2779.50	-0.62	-31.14	0.32	-31.14	39.98081529	-104.84811610
2869.00	0.13	167.21	2868.50	-0.59	-31.14	0.34	-31.14	39.98081537	-104.84811611
2959.00	0.11	180.46	2958.50	-0.78	-31.12	0.04	-31.12	39.98081486	-104.84811603
3048.00	0.12	21.52	3047.50	-0.78	-31.08	0.25	-31.09	39.98081487	-104.84811591
3138.00	0.12	321.95	3137.50	-0.62	-31.11	0.13	-31.11	39.98081531	-104.84811600
3228.00	0.11	329.23	3227.50	-0.47	-31.21	0.02	-31.20	39.98081572	-104.84811636
3317.00	0.25	221.59	3316.50	-0.54	-31.38	0.34	-31.38	39.98081552	-104.84811698
3406.00	0.22	263.78	3405.50	-0.70	-31.68	0.19	-31.68	39.98081507	-104.84811804
3496.00	0.14	315.97	3495.50	-0.64	-31.93	0.19	-31.93	39.98081524	-104.84811893
3586.00	0.12	272.91	3585.50	-0.56	-32.10	0.11	-32.10	39.98081547	-104.84811954
3675.00	0.15	184.29	3674.50	-0.67	-32.20	0.21	-32.20	39.98081516	-104.84811990
3765.00	0.18	272.92	3764.50	-0.78	-32.35	0.26	-32.36	39.98081486	-104.84812044
3855.00	0.19	155.37	3854.50	-0.91	-32.43	0.35	-32.44	39.98081451	-104.84812072
3944.00	0.10	276.44	3943.50	-1.03	-32.44	0.29	-32.46	39.98081416	-104.84812077
4034.00	0.17	290.05	4033.50	-0.98	-32.65	0.09	-32.66	39.98081431	-104.84812150
4123.00	0.09	60.98	4122.50	-0.90	-32.71	0.27	-32.72	39.98081453	-104.84812172
4213.00	0.17	233.79	4212.50	-0.94	-32.76	0.29	-32.77	39.98081441	-104.84812189
4302.00	0.10	148.29	4301.50	-1.09	-32.82	0.21	-32.84	39.98081401	-104.84812212
4392.00	0.19	135.16	4391.50	-1.26	-32.68	0.11	-32.70	39.98081354	-104.84812160
4481.00	0.22	269.31	4480.50	-1.37	-32.74	0.42	-32.77	39.98081324	-104.84812184
4571.00	0.30	294.97	4570.49	-1.27	-33.13	0.15	-33.15	39.98081351	-104.84812322
4661.00	0.13	70.15	4660.49	-1.14	-33.25	0.45	-33.27	39.98081388	-104.84812364
4750.00	0.22	191.35	4749.49	-1.27	-33.19	0.35	-33.21	39.98081351	-104.84812342
4840.00	0.09	287.14	4839.49	-1.42	-33.29	0.27	-33.32	39.98081311	-104.84812378
4929.00	0.15	128.98	4928.49	-1.47	-33.26	0.27	-33.29	39.98081296	-104.84812370
5019.00	0.24	248.57	5018.49	-1.61	-33.35	0.38	-33.38	39.98081257	-104.84812399
5108.00	0.19	296.83	5107.49	-1.62	-33.65	0.20	-33.69	39.98081257	-104.84812508
5198.00	0.22	242.11	5197.49	-1.63	-33.94	0.21	-33.98	39.98081253	-104.84812610
5287.00	0.03	237.70	5286.49	-1.72	-34.11	0.21	-34.15	39.98081227	-104.84812671
5377.00	0.90	34.91	5376.49	-1.15	-33.72	1.03	-33.74	39.98081383	-104.84812534
5466.00	0.15	232.39	5465.48	-0.65	-33.42	1.17	-33.42	39.98081521	-104.84812424
5556.00	0.09	13.51	5555.48	-0.66	-33.49	0.25	-33.50	39.98081520	-104.84812452

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5645.00	0.19	342.59	5644.48	-0.45	-33.52	0.14	-33.52	39.98081577	-104.84812462
5735.00	0.09	20.22	5734.48	-0.24	-33.54	0.15	-33.53	39.98081635	-104.84812469
5824.00	1.96	58.33	5823.47	0.63	-32.22	2.12	-32.18	39.98081872	-104.84811998
5914.00	4.06	48.31	5913.34	3.55	-28.53	2.40	-28.38	39.98082676	-104.84810681
6003.00	5.80	34.24	6002.01	9.37	-23.65	2.37	-23.29	39.98084272	-104.84808939
6093.00	8.79	39.50	6091.27	18.44	-16.71	3.40	-16.03	39.98086761	-104.84806464
6183.00	12.63	34.39	6179.69	31.87	-6.78	4.39	-5.61	39.98090448	-104.84802919
6272.00	15.48	35.24	6266.01	49.60	5.57	3.21	7.38	39.98095316	-104.84798512
6362.00	18.52	34.19	6352.07	71.24	20.54	3.39	23.12	39.98101256	-104.84793171
6452.00	20.93	37.03	6436.79	95.90	38.25	2.88	41.73	39.98108025	-104.84786849
6541.00	23.03	35.92	6519.31	122.69	58.04	2.41	62.48	39.98115380	-104.84779788
6630.00	24.98	46.18	6600.65	149.82	81.83	5.17	87.24	39.98122826	-104.84771301
6720.00	27.30	40.59	6681.45	178.66	108.98	3.76	115.42	39.98130743	-104.84761613
6809.00	30.04	36.71	6759.54	212.02	135.58	3.72	143.22	39.98139902	-104.84752120
6899.00	29.72	33.17	6837.58	248.76	161.25	1.99	170.22	39.98149987	-104.84742959
6988.00	30.04	33.08	6914.75	285.89	185.48	0.36	195.79	39.98160180	-104.84734312
7078.00	30.08	33.05	6992.64	323.67	210.08	0.05	221.74	39.98170551	-104.84725536
7167.00	29.66	34.03	7069.82	360.62	234.57	0.72	247.56	39.98180693	-104.84716797
7257.00	30.06	34.95	7147.87	397.55	259.94	0.68	274.27	39.98190831	-104.84707742
7346.00	33.07	48.26	7223.79	432.03	290.87	8.51	306.44	39.98200297	-104.84696704
7436.00	38.39	59.10	7296.90	462.79	333.25	9.17	349.91	39.98208739	-104.84681583
7525.00	44.83	60.62	7363.41	492.40	384.35	7.32	402.06	39.98216868	-104.84663346
7614.00	52.48	66.49	7422.19	521.93	444.18	9.91	462.92	39.98224974	-104.84642000
7704.00	61.62	75.70	7471.16	546.03	515.53	13.28	535.10	39.98231591	-104.84616538
7793.00	71.64	79.49	7506.43	563.46	595.22	11.92	615.37	39.98236373	-104.84588100
7883.00	77.69	83.05	7530.23	576.59	680.96	7.73	701.54	39.98239976	-104.84557504
7972.00	85.50	88.37	7543.24	583.12	768.66	10.58	789.42	39.98241770	-104.84526209
8017.00	89.51	90.87	7545.19	583.42	813.60	10.50	834.34	39.98241851	-104.84510171
8061.00	90.37	89.61	7545.24	583.24	857.60	3.47	878.30	39.98241800	-104.84494471
8151.00	90.74	87.12	7544.37	585.80	947.55	2.80	968.29	39.98242504	-104.84462372
8240.00	90.55	91.23	7543.37	587.08	1036.52	4.62	1057.24	39.98242854	-104.84430625
8330.00	90.83	90.23	7542.28	585.94	1126.51	1.15	1147.13	39.98242539	-104.84398514
8419.00	90.55	89.83	7541.21	585.89	1215.50	0.55	1236.06	39.98242525	-104.84366758
8509.00	90.31	88.28	7540.54	587.38	1305.48	1.74	1326.03	39.98242931	-104.84334648
8598.00	90.68	90.34	7539.77	588.45	1394.47	2.35	1415.00	39.98243224	-104.84302894
8688.00	90.58	90.16	7538.78	588.05	1484.46	0.23	1504.92	39.98243114	-104.84270781
8777.00	90.55	90.23	7537.90	587.75	1573.46	0.09	1593.84	39.98243030	-104.84239024
8867.00	90.65	89.53	7536.96	587.94	1663.45	0.79	1683.79	39.98243080	-104.84206910
8956.00	90.40	89.76	7536.14	588.49	1752.44	0.38	1772.74	39.98243230	-104.84175153
9046.00	90.74	89.50	7535.25	589.07	1842.44	0.48	1862.70	39.98243387	-104.84143039
9135.00	91.02	90.95	7533.88	588.72	1931.42	1.66	1951.61	39.98243290	-104.84111285
9225.00	90.37	90.61	7532.79	587.50	2021.41	0.82	2041.49	39.98242951	-104.84079175
9314.00	90.37	89.54	7532.21	587.38	2110.41	1.20	2130.42	39.98242917	-104.84047417
9404.00	90.77	90.09	7531.32	587.67	2200.40	0.76	2220.37	39.98242995	-104.84015303
9494.00	90.62	89.48	7530.23	588.01	2290.39	0.70	2310.31	39.98243085	-104.83983190
9583.00	90.00	90.26	7529.74	588.21	2379.39	1.12	2399.26	39.98243139	-104.83951432
9672.00	89.78	90.37	7529.91	587.72	2468.39	0.28	2488.18	39.98243002	-104.83919673
9762.00	89.91	90.42	7530.16	587.10	2558.39	0.15	2578.10	39.98242829	-104.83887558
9851.00	90.09	89.37	7530.16	587.26	2647.38	1.20	2667.04	39.98242871	-104.83855800
9941.00	89.88	89.12	7530.18	588.45	2737.38	0.36	2757.02	39.98243194	-104.83823687
10031.00	89.38	88.62	7530.76	590.23	2827.36	0.79	2847.00	39.98243679	-104.83791578
10120.00	89.91	89.44	7531.31	591.73	2916.34	1.10	2935.98	39.98244089	-104.83759824
10209.00	90.68	90.07	7530.86	592.11	3005.34	1.12	3024.93	39.98244191	-104.83728066
10299.00	91.35	91.14	7529.26	591.16	3095.32	1.40	3114.82	39.98243927	-104.83695958
10388.00	89.72	89.47	7528.43	590.69	3184.30	2.62	3203.73	39.98243794	-104.83664203
10478.00	88.89	89.29	7529.52	591.66	3274.29	0.94	3293.69	39.98244058	-104.83632092
10567.00	89.94	89.20	7530.43	592.84	3363.28	1.18	3382.66	39.98244377	-104.83600337
10656.00	89.54	89.83	7530.83	593.59	3452.27	0.84	3471.63	39.98244580	-104.83568580
10746.00	89.82	89.63	7531.34	594.01	3542.27	0.38	3561.58	39.98244693	-104.83536465
10836.00	90.00	90.94	7531.48	593.57	3632.27	1.47	3651.50	39.98244567	-104.83504350
10925.00	89.72	91.24	7531.70	591.87	3721.25	0.46	3740.36	39.98244098	-104.83472597
11014.00	90.37	91.40	7531.63	589.82	3810.23	0.75	3829.20	39.98243532	-104.83440847
11104.00	90.46	91.61	7530.97	587.46	3900.19	0.25	3919.02	39.98242879	-104.83408743
11193.00	90.49	92.30	7530.24	584.42	3989.14	0.78	4007.80	39.98242042	-104.83377004
11283.00	89.97	90.46	7529.88	582.26	4079.11	2.12	4097.63	39.98241443	-104.83344900
11372.00	89.69	89.45	7530.14	582.32	4168.11	1.18	4186.57	39.98241458	-104.83313141
11462.00	90.52	91.02	7529.97	581.96	4258.10	1.97	4276.49	39.98241352	-104.83281027
11551.00	90.74	91.22	7529.00	580.22	4347.08	0.33	4365.35	39.98240871	-104.83249276
11641.00	89.88	89.63	7528.51	579.55	4437.07	2.01	4455.26	39.98240683	-104.83217163
11730.00	90.55	89.65	7528.18	580.11	4526.07	0.75	4544.21	39.98240832	-104.83185405
11820.00	90.25	88.95	7527.55	581.21	4616.06	0.85	4634.19	39.98241129	-104.83153292
11909.00	89.97	88.73	7527.38	583.01	4705.04	0.40	4723.17	39.98241620	-104.83121540
11999.00	89.26	88.84	7527.98	584.92	4795.02	0.80	4813.16	39.98242139	-104.83089432
12088.00	89.75	88.77	7528.75	586.77	4883.99	0.56	4902.15	39.98242643	-104.83057681
12178.00	89.38	89.34	7529.43	588.26	4973.98	0.76	4992.12	39.98243046	-104.83025571
12267.00	90.83	90.21	7529.27	588.61	5062.98	1.90	5081.07	39.98243137	-104.82993813
12357.00	90.28	89.20	7528.40	589.07	5152.97	1.28	5171.02	39.98243259	-104.82961700
12446.00	90.18	89.37	7528.04	590.18	5241.96	0.22	5260.00	39.98243559	-104.82929943
12536.00	90.28	88.68	7527.68	591.71	5331.95	0.77	5349.98	39.98243974	-104.82897832
12625.00	90.31	89.14	7527.22	593.41	5420.93	0.52	5438.96	39.98244433	-104.82866079
12715.00	89.85	89.04	7527.10	594.84	5510.92	0.52	5528.94	39.98244820	-104.82833968
12804.00	90.25	88.76	7527.02	596.54	5599.90	0.55	5617.93	39.98245284	-104.82802214
12894.00	90.15	88.92	7526.70	598.37	5689.88	0.21	5707.92	39.98245778	-104.82770105
12983.00	90.28	89.80	7526.37	599.36	5778.87	1.00	5796.89	39.98246046	-104.82738349
13073.00	90.28	90.38	7525.93	599.22	5868.87	0.64	5886.82	39.98246001	-104.82706233
13163.00	89.94	89.47	7525.76	599.34	5958.87	1.08	5976.77	39.98246028	-104.82674118
13252.00	90.06	90.06	7525.76	599.70	6047.87	0.68	6065.72	39.98246122	-104.82642359

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13342.00	90.28	90.04	7525.49	599.62	6137.87	0.25	6155.65	39.98246094	-104.82610243
13431.00	90.00	89.63	7525.27	599.88	6226.87	0.56	6244.60	39.98246159	-104.82578485
13521.00	90.28	89.30	7525.05	600.72	6316.86	0.48	6334.57	39.98246383	-104.82546370
13610.00	90.12	91.49	7524.74	600.11	6405.86	2.47	6423.48	39.98246208	-104.82514614
13700.00	90.28	90.56	7524.43	598.50	6495.84	1.05	6513.35	39.98245760	-104.82482504
13789.00	90.18	91.05	7524.07	597.25	6584.83	0.56	6602.23	39.98245410	-104.82450749
13879.00	89.85	90.54	7524.05	596.00	6674.82	0.67	6692.12	39.98245061	-104.82418636
13968.00	90.58	90.28	7523.71	595.36	6763.82	0.87	6781.03	39.98244879	-104.82386879
14058.00	90.06	90.53	7523.21	594.72	6853.81	0.64	6870.94	39.98244698	-104.82354764
14147.00	90.71	90.26	7522.61	594.11	6942.81	0.79	6959.86	39.98244523	-104.82323007
14237.00	90.34	90.22	7521.79	593.73	7032.80	0.41	7049.78	39.98244412	-104.82290893
14326.00	90.43	89.32	7521.19	594.09	7121.80	1.02	7138.73	39.98244504	-104.82259135
14415.00	91.01	91.00	7520.07	593.84	7210.79	2.00	7227.65	39.98244428	-104.82227380
14505.00	91.69	91.91	7517.95	591.56	7300.73	1.26	7317.45	39.98243794	-104.82195284
14594.00	91.51	91.29	7515.47	589.07	7389.66	0.73	7406.23	39.98243105	-104.82163550
14683.00	91.20	90.23	7513.36	587.89	7478.63	1.24	7495.10	39.98242774	-104.82131804
14773.00	91.88	90.87	7510.94	587.03	7568.59	1.04	7584.97	39.98242529	-104.82099701
14862.00	90.92	90.18	7508.77	586.21	7657.56	1.33	7673.85	39.98242298	-104.82067954
14952.00	91.51	90.32	7506.86	585.82	7747.54	0.67	7763.75	39.98242182	-104.82035846
15042.00	91.39	90.92	7504.58	584.85	7837.50	0.68	7853.62	39.98241907	-104.82003742
15131.00	91.48	91.64	7502.35	582.86	7926.45	0.82	7942.44	39.98241354	-104.81972001
15221.00	90.83	89.18	7500.54	582.22	8016.43	2.83	8032.33	39.98241170	-104.81939896
15310.00	91.26	88.63	7498.92	583.92	8105.39	0.78	8121.30	39.98241628	-104.81908148
15400.00	90.98	88.63	7497.16	586.07	8195.35	0.31	8211.27	39.98242211	-104.81876047
15489.00	90.95	87.84	7495.66	588.81	8284.30	0.89	8300.26	39.98242955	-104.81844307
15579.00	90.46	88.48	7494.55	591.70	8374.24	0.90	8390.25	39.98243740	-104.81812210
15668.00	89.88	89.94	7494.29	592.93	8463.23	1.77	8479.22	39.98244069	-104.81780455
15758.00	90.37	90.30	7494.09	592.74	8553.23	0.68	8569.16	39.98244008	-104.81748340
15847.00	90.49	91.60	7493.42	591.26	8642.21	1.47	8658.03	39.98243595	-104.81716587
15937.00	90.28	89.72	7492.82	590.23	8732.20	2.10	8747.92	39.98243302	-104.81684476
16026.00	90.52	88.94	7492.20	591.27	8821.19	0.92	8836.89	39.98243579	-104.81652720
16115.00	89.66	90.42	7492.06	591.76	8910.19	1.92	8925.84	39.98243707	-104.81620962
16205.00	90.25	90.36	7492.13	591.15	9000.18	0.66	9015.76	39.98243529	-104.81588847
16294.00	90.09	90.15	7491.86	590.76	9089.18	0.30	9104.68	39.98243412	-104.81557089
16383.00	90.22	90.43	7491.62	590.30	9178.18	0.35	9193.60	39.98243279	-104.81525330
16473.00	90.46	89.30	7491.09	590.52	9268.18	1.28	9283.55	39.98243328	-104.81493216
16562.00	90.37	89.91	7490.44	591.13	9357.17	0.69	9372.51	39.98243487	-104.81461458
16652.00	90.52	89.95	7489.74	591.24	9447.17	0.17	9462.45	39.98243508	-104.81429344
16742.00	90.62	89.74	7488.85	591.48	9537.17	0.26	9552.39	39.98243566	-104.81397229
16831.00	91.29	89.79	7487.37	591.85	9626.15	0.75	9641.33	39.98243656	-104.81365475
16920.00	90.77	88.36	7485.77	593.29	9715.12	1.71	9730.30	39.98244041	-104.81333726
17010.00	91.66	89.39	7483.86	595.05	9805.08	1.51	9820.26	39.98244517	-104.81301624
17099.00	91.69	91.29	7481.26	594.52	9894.04	2.13	9909.14	39.98244362	-104.81269881
17189.00	91.78	90.63	7478.53	593.02	9983.99	0.74	9998.97	39.98243938	-104.81237785
17278.00	91.82	90.47	7475.73	592.16	10072.94	0.19	10087.83	39.98243694	-104.81206043
17368.00	90.83	90.52	7473.65	591.39	10162.91	1.10	10177.72	39.98243471	-104.81173937
17457.00	90.15	91.04	7472.89	590.17	10251.90	0.96	10266.60	39.98243128	-104.81142183
17547.00	89.97	91.29	7472.80	588.34	10341.88	0.34	10356.46	39.98242616	-104.81110074
17636.00	90.22	90.89	7472.65	586.65	10430.86	0.53	10445.32	39.98242141	-104.81078321
17725.00	90.68	90.95	7471.95	585.22	10519.85	0.52	10534.19	39.98241738	-104.81046567
17815.00	90.03	90.62	7471.39	583.99	10609.84	0.81	10624.08	39.98241389	-104.81014456
17904.00	90.03	90.61	7471.35	583.03	10698.83	0.00	10712.98	39.98241116	-104.80982699
17993.00	89.88	91.09	7471.42	581.71	10787.82	0.57	10801.86	39.98240743	-104.80950943
18083.00	89.66	90.89	7471.78	580.16	10877.81	0.33	10891.73	39.98240306	-104.80918833
18172.00	89.82	91.47	7472.18	578.33	10966.79	0.68	10980.58	39.98239792	-104.80887081
18262.00	91.38	93.55	7471.24	574.39	11056.69	2.89	11070.28	39.98238699	-104.80855001
18351.00	90.09	92.19	7470.10	569.93	11145.56	2.11	11158.94	39.98237465	-104.80823287
18441.00	89.82	88.96	7470.17	569.03	11235.55	3.60	11248.83	39.98237206	-104.80791177
18530.00	88.68	87.55	7471.33	571.74	11324.50	2.04	11337.81	39.98237939	-104.80759437
18620.00	88.22	88.34	7473.77	574.96	11414.40	1.02	11427.78	39.98238813	-104.80727353
18709.00	88.55	88.56	7476.28	577.37	11503.34	0.45	11516.74	39.98239463	-104.80695618
18798.00	88.59	88.24	7478.50	579.85	11592.27	0.36	11605.71	39.98240133	-104.80663881
18888.00	90.25	90.03	7479.41	581.21	11682.25	2.71	11695.68	39.98240494	-104.80631772
18978.00	90.28	89.31	7478.99	581.73	11772.25	0.80	11785.63	39.98240625	-104.80599658
19067.00	90.40	89.58	7478.46	582.59	11861.24	0.33	11874.60	39.98240850	-104.80567900
19157.00	90.65	89.73	7477.64	583.13	11951.24	0.32	11964.55	39.98240987	-104.80535786
19246.00	90.09	89.90	7477.07	583.42	12040.23	0.66	12053.50	39.98241054	-104.80504028
19336.00	90.09	89.68	7476.92	583.75	12130.23	0.24	12143.45	39.98241133	-104.80471913
19425.00	90.25	89.56	7476.66	584.34	12219.23	0.22	12232.41	39.98241283	-104.80440154
19515.00	89.91	87.42	7476.53	586.71	12309.19	2.41	12322.40	39.98241922	-104.80408051
19604.00	90.15	89.21	7476.49	589.33	12398.15	2.03	12411.40	39.98242628	-104.80376307
19694.00	90.06	89.81	7476.32	590.10	12488.15	0.67	12501.36	39.98242827	-104.80344192
19783.00	90.31	90.34	7476.04	589.98	12577.15	0.66	12590.30	39.98242782	-104.80312434
19873.00	90.68	90.38	7475.26	589.42	12667.14	0.41	12680.21	39.98242615	-104.80280320
19962.00	89.75	88.68	7474.92	590.15	12756.13	2.18	12769.17	39.98242803	-104.80248563
20051.00	89.82	89.04	7475.26	591.92	12845.12	0.41	12858.16	39.98243276	-104.80216811
20141.00	90.03	89.57	7475.38	593.01	12935.11	0.63	12948.13	39.98243563	-104.80184697
20231.00	89.69	90.10	7475.60	593.27	13025.11	0.70	13038.08	39.98243621	-104.80152582
20320.00	89.72	89.42	7476.05	593.64	13114.11	0.76	13127.03	39.98243711	-104.80120823
20410.00	89.14	89.78	7476.95	594.27	13204.10	0.76	13216.99	39.98243870	-104.80088710
20499.00	89.94	90.19	7477.66	594.29	13293.09	1.01	13305.93	39.98243863	-104.80056952
20589.00	90.18	91.78	7477.57	592.75	13383.08	1.79	13395.79	39.98243425	-104.80024842
20678.00	89.63	90.55	7477.72	590.94	13472.06	1.51	13484.65	39.98242916	-104.79993091
20768.00	88.92	88.58	7478.86	591.62	13562.04	2.33	13574.60	39.98243090	-104.79960980
20857.00	90.03	91.82	7479.67	591.31	13651.03	3.85	13663.51	39.98242991	-104.79929228
20947.00	89.88	90.95	7479.74	589.13	13741.00	0.98	13753.34	39.98242380	-104.79897122
21036.00	89.82	91.42	7479.97	587.29	13829.98	0.53	13842.20	39.98241861	-104.79865370

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
21126.00	89.85	93.14	7480.23	583.71	13919.90	1.91	13931.93	39.98240865	-104.79833282
21215.00	89.88	92.70	7480.44	579.18	14008.79	0.50	14020.59	39.98239606	-104.79801565
21305.00	89.35	90.94	7481.05	576.32	14098.74	2.04	14110.38	39.98238808	-104.79769468
21394.00	89.02	91.81	7482.31	574.19	14187.70	1.05	14199.20	39.98238208	-104.79737722
21484.00	89.60	90.52	7483.40	572.36	14277.67	1.57	14289.05	39.98237691	-104.79705617
21573.00	88.25	88.26	7485.07	573.30	14366.64	2.96	14378.00	39.98237937	-104.79673868
21663.00	89.29	88.95	7487.00	575.49	14456.60	1.39	14467.97	39.98238524	-104.79641769
21752.00	89.88	88.32	7487.64	577.61	14545.57	0.97	14556.96	39.98239092	-104.79610020
21841.00	89.02	87.67	7488.50	580.73	14634.51	1.21	14645.95	39.98239932	-104.79578281
21931.00	89.85	88.96	7489.39	583.37	14724.46	1.70	14735.94	39.98240644	-104.79546181
22020.00	89.66	88.66	7489.77	585.22	14813.44	0.40	14824.93	39.98241137	-104.79514429
22110.00	89.60	90.63	7490.35	585.78	14903.43	2.19	14914.88	39.98241275	-104.79482316
22199.00	90.15	91.51	7490.54	584.12	14992.42	1.17	15003.74	39.98240804	-104.79450564
22289.00	89.14	89.71	7491.10	583.16	15082.40	2.29	15093.64	39.98240526	-104.79418452
22378.00	89.23	89.55	7492.37	583.73	15171.39	0.21	15182.59	39.98240669	-104.79386697
22468.00	89.23	90.69	7493.58	583.54	15261.38	1.27	15272.51	39.98240602	-104.79354585
22557.00	89.63	89.92	7494.46	583.07	15350.38	0.97	15361.43	39.98240457	-104.79322828
22647.00	89.60	89.79	7495.07	583.30	15440.37	0.15	15451.38	39.98240505	-104.79290713
22736.00	89.35	89.78	7495.88	583.63	15529.37	0.28	15540.32	39.98240581	-104.79258955
22826.00	90.09	89.73	7496.32	584.02	15619.37	0.82	15630.28	39.98240671	-104.79226840
22915.00	89.75	89.99	7496.45	584.24	15708.37	0.48	15719.22	39.98240715	-104.79195082
23005.00	89.20	89.84	7497.27	584.37	15798.36	0.63	15809.16	39.98240736	-104.79162967
23094.00	89.11	89.94	7498.58	584.54	15887.35	0.15	15898.10	39.98240768	-104.79131212
23184.00	88.92	89.97	7500.13	584.61	15977.34	0.21	15988.03	39.98240771	-104.79099101
23208.00	89.23	89.59	7500.52	584.70	16001.34	2.04	16012.02	39.98240792	-104.79090538
23233.00	89.23	89.59	7500.85	584.88	16026.33	0.00	16037.00	39.98240837	-104.79081617

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
0.00	0.00	0.00	0.00	39.98081700	-104.84800500	Surface Location
1766.00	1765.50	-0.29	-30.22	39.98081620	-104.84811285	9.625" Csg: 1766 MD / TVD
8017.72	7545.20	583.41	814.32	39.98241848	-104.84509914	460 Setback: 8018 / 7545 MD/TVD, 1612 FNL, 460 FWL Sec 12
23024.58	7497.55	584.42	15817.94	39.98240747	-104.79155981	Btm Toe Sub: 23,025 / 7498 MD/TVD, 1605 FNL, 471 FEL Sec 08
23035.67	7497.71	584.45	15829.03	39.98240752	-104.79152024	460 Setback: 23,036 / 7498 MD/TVD, 1605 FNL, 460 FEL Sec 08
23222.23	7500.71	584.80	16015.56	39.98240818	-104.79085460	PBTD: 23,222 / 7501 MD/TVD, 1606 FNL, 273 FEL Sec 08
23233.00	7500.85	584.88	16026.33	39.98240837	-104.79081617	5.5" Csg: 23,233 / 7501 MD/TVD, 1606 FNL, 262 FEL Sec 08
23233.00	7500.85	584.88	16026.33	39.98240837	-104.79081617	BHL: 23,233 / 7501 MD/TVD, 1606 FNL, 262 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	1766.00	1765.50	-0.29	-30.22
8.500	1766.00	1765.50	-0.29	-30.22	23233.00	7500.85	584.88	16026.33

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	1766.00	1765.50	-0.29	-30.22
5 1/2in Casing	0.00	0.00	0.00	0.00	23233.00	7500.85	584.88	16026.33

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
664256	As Drilled - 20191217	23233.00	7500.85	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 87.91 degrees

Bottom hole distance is 16037.00 Feet on azimuth 87.91 degrees from Wellhead

Survey calculation uses Minimum Curvature method