

Great Western Operating Company, LLC

Location	Colorado	Slot	N08 - Brant LE 08-082HC
Field	Wattenburg	Well	Brant LE 08-082HC
Installation	Brant	Wellbore	Brant LE 08-082HC (AWB)

Created by	mmount
Date plotted	21-Aug-2019
Plot reference is Brant LE 08-082HC (AWB).	
Ref wellpath is Brant LE 08-082HC (AWP#1).	
Coordinates are in Feet reference N08 - Brant LE 08-082HC.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum: Actual Datum #1	
Rig Datum to Mean Sea Level: 4992.80 ft.	
Plot North is aligned to TRUE North.	

Scale 1 cm = 500 ft

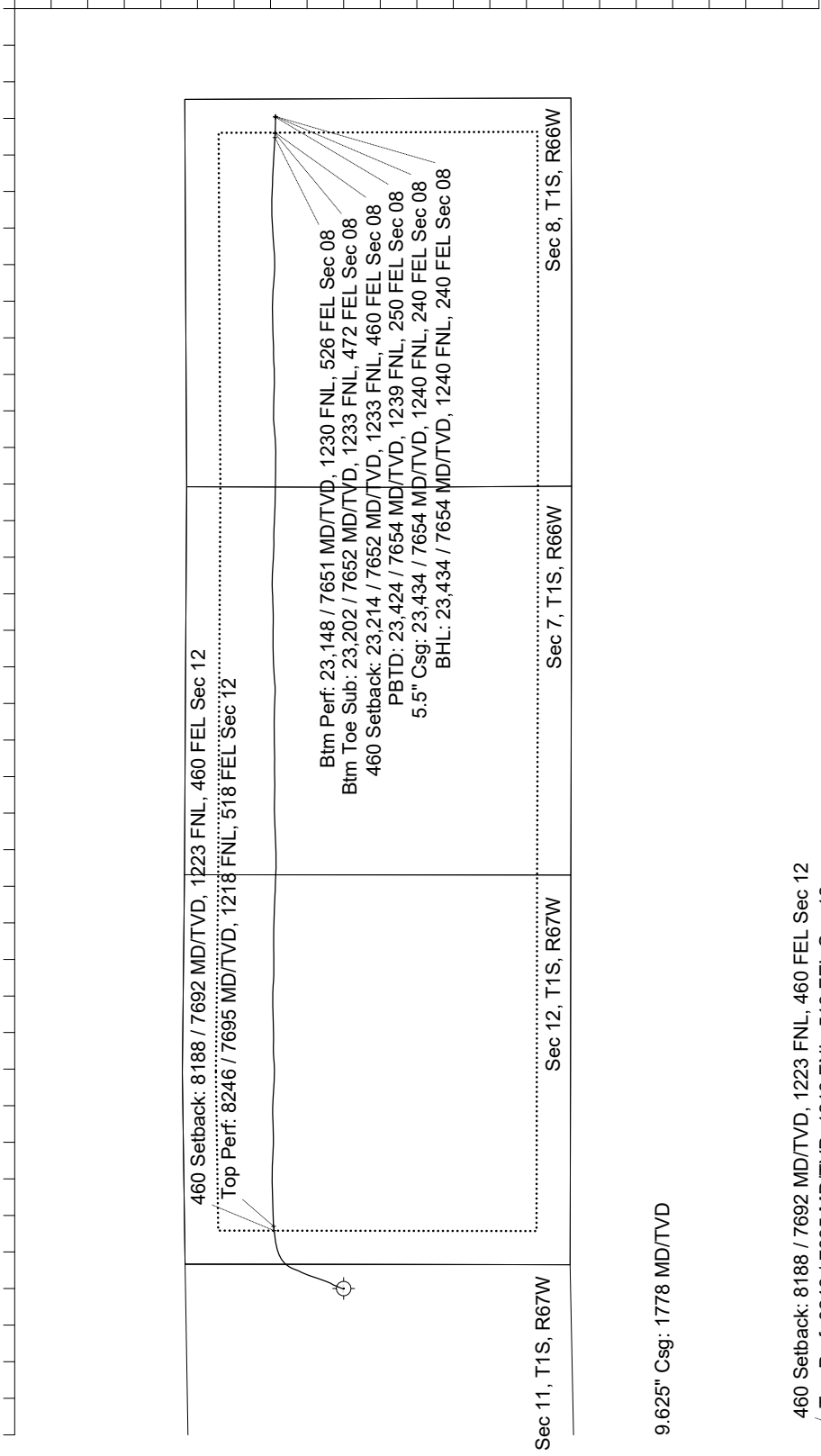
East (Feet) ->

Apr-14-2017
IGRF-12/1900.0-2020.0 Dip: 66.51 deg Field: 521.84 nT
Lat: N39 58.40 (39.98) Long: W 104 50.52 (64.88) Elev: 4972.00 ft
Magnetic North is 9.24 deg East of TRUE North
To correct azimuth from Magnetic to TRUE add 8.24 deg

-14000
-12000
-10000
-8000
-6000
-4000
-2000
0
2000
4000
6000
8000
10000
12000

Scale 1 cm = 1000 ft

<- True Vertical Depth (Feet)



460 Setback: 8188 / 7692 MD/TVDD, 1223 FNL, 460 FEL Sec 12
Top Perf: 8246 / 7695 MD/TVDD, 1218 FNL, 518 FEL Sec 12

Btm Perf: 23,148 / 7651 MD/TVDD, 1230 FNL, 526 FEL Sec 08
Btm Toe Sub: 23,202 / 7652 MD/TVDD, 1233 FNL, 472 FEL Sec 08
460 Setback: 23,214 / 7652 MD/TVDD, 1233 FNL, 460 FEL Sec 08
PBTD: 23,424 / 7654 MD/TVDD, 1239 FNL, 250 FEL Sec 08
5.5" Csg: 23,434 / 7654 MD/TVDD, 1240 FNL, 240 FEL Sec 08
BHL: 23,434 / 7654 MD/TVDD, 1240 FNL, 240 FEL Sec 08

-2000 0 2000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000

Scale 1 cm = 1000 ft

Vertical Section (Feet) ->

Azimuth 86.67 with reference 0.00 N, 0.00 E from N08 - Brant LE 08-082HC

Great Western Operating Co, LLC Directional Survey Report Wellpath: Brant LE 08-082HC MDs and TVDs are from Rig Floor 4992.8ft above Mean Sea Level									
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Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Jun-17-2019	Aug-21-2019	05-001-10345	20.00	Brant LE 08-082HC

Slot Coordinates

Latitude	Longitude
39.98087100	-104.84792200

Pad Information

Pad Name	Ground Elev.
Brant	4972.80

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	39.98087100	-104.84792200
98.00	0.40	209.46	98.00	-0.30	-0.17	0.41	-0.19	39.98087018	-104.84792260
188.00	0.22	252.70	188.00	-0.62	-0.49	0.31	-0.52	39.98086929	-104.84792374
278.00	0.35	192.49	278.00	-0.94	-0.71	0.34	-0.77	39.98086841	-104.84792454
368.00	0.26	104.16	368.00	-1.26	-0.57	0.48	-0.65	39.98086754	-104.84792405
458.00	0.18	148.99	458.00	-1.43	-0.30	0.20	-0.39	39.98086707	-104.84792308
548.00	0.13	333.38	548.00	-1.46	-0.28	0.34	-0.36	39.98086699	-104.84792298
638.00	0.53	266.06	637.99	-1.40	-0.74	0.55	-0.82	39.98086716	-104.84792463
728.00	0.26	352.28	727.99	-1.23	-1.18	0.64	-1.25	39.98086764	-104.84792621
818.00	0.62	317.91	817.99	-0.66	-1.53	0.48	-1.57	39.98086918	-104.84792747
908.00	0.35	358.96	907.99	-0.03	-1.86	0.47	-1.86	39.98087093	-104.84792865
998.00	0.31	59.25	997.99	0.37	-1.66	0.37	-1.64	39.98087203	-104.84792792
1088.00	0.40	5.72	1087.98	0.81	-1.42	0.37	-1.37	39.98087323	-104.84792707
1177.00	0.22	175.35	1176.98	0.95	-1.37	0.69	-1.32	39.98087361	-104.84792691
1267.00	0.22	89.22	1266.98	0.78	-1.19	0.33	-1.14	39.98087314	-104.84792624
1357.00	0.31	91.07	1356.98	0.78	-0.77	0.10	-0.73	39.98087313	-104.84792475
1447.00	0.31	175.88	1446.98	0.53	-0.51	0.46	-0.48	39.98087246	-104.84792382
1537.00	0.26	160.76	1536.98	0.09	-0.43	0.10	-0.42	39.98087126	-104.84792352
1627.00	0.31	218.86	1626.98	-0.29	-0.51	0.31	-0.53	39.98087021	-104.84792383
1727.00	0.48	245.75	1726.98	-0.67	-1.06	0.25	-1.10	39.98086916	-104.84792579
1778.00	0.72	247.32	1777.97	-0.88	-1.55	0.46	-1.60	39.98086858	-104.84792754
1824.00	0.93	248.05	1823.97	-1.13	-2.16	0.46	-2.23	39.98086789	-104.84792972
1849.00	0.26	212.03	1848.97	-1.26	-2.38	2.94	-2.45	39.98086755	-104.84793050
1938.00	0.13	248.46	1937.97	-1.46	-2.58	0.19	-2.66	39.98086698	-104.84793122
2028.00	0.18	277.07	2027.97	-1.48	-2.82	0.10	-2.90	39.98086693	-104.84793206
2117.00	0.34	69.98	2116.97	-1.38	-2.71	0.57	-2.78	39.98086722	-104.84793167
2207.00	0.12	350.13	2206.97	-1.19	-2.47	0.38	-2.54	39.98086773	-104.84793083
2297.00	0.07	351.71	2296.97	-1.04	-2.50	0.06	-2.55	39.98086813	-104.84793092
2386.00	0.13	45.17	2385.97	-0.92	-2.43	0.12	-2.48	39.98086848	-104.84793069
2476.00	0.25	289.94	2475.97	-0.78	-2.55	0.36	-2.59	39.98086886	-104.84793109
2566.00	0.40	122.97	2565.96	-0.88	-2.47	0.72	-2.52	39.98086857	-104.84793081
2655.00	0.44	301.74	2654.96	-0.87	-2.50	0.94	-2.54	39.98086860	-104.84793091
2745.00	1.38	286.92	2744.95	-0.38	-3.83	1.07	-3.84	39.98086997	-104.84793566
2834.00	1.45	272.58	2833.92	-0.01	-5.98	0.40	-5.97	39.98087096	-104.84794333
2924.00	0.80	91.47	2923.92	0.02	-6.49	2.50	-6.48	39.98087106	-104.84794515
3013.00	2.17	100.63	3012.89	-0.31	-4.21	1.56	-4.22	39.98087016	-104.84793703
3103.00	2.25	82.93	3102.82	-0.40	-0.78	0.76	-0.81	39.98086989	-104.84792479
3192.00	0.11	27.13	3191.80	-0.11	0.99	2.46	0.98	39.98087069	-104.84791847
3282.00	0.09	216.79	3281.80	-0.09	0.99	0.22	0.98	39.98087075	-104.84791848
3372.00	0.17	264.11	3371.80	-0.16	0.81	0.14	0.80	39.98087056	-104.84791910
3461.00	0.11	161.19	3460.80	-0.26	0.71	0.25	0.69	39.98087030	-104.84791947
3551.00	0.03	82.33	3550.80	-0.33	0.76	0.12	0.74	39.98087008	-104.84791929
3640.00	0.09	306.98	3639.80	-0.29	0.73	0.13	0.71	39.98087020	-104.84791941
3730.00	0.10	29.65	3729.80	-0.18	0.71	0.14	0.70	39.98087051	-104.84791947
3820.00	0.04	344.08	3819.80	-0.08	0.74	0.09	0.73	39.98087078	-104.84791936
3909.00	0.10	339.31	3908.80	0.02	0.70	0.07	0.70	39.98087106	-104.84791949
3999.00	0.03	271.56	3998.80	0.10	0.65	0.10	0.66	39.98087126	-104.84791967
4089.00	0.07	153.18	4088.80	0.05	0.65	0.10	0.65	39.98087113	-104.84791967
4178.00	0.07	280.81	4177.80	0.01	0.62	0.14	0.62	39.98087103	-104.84791977
4268.00	0.13	263.05	4267.79	0.01	0.47	0.07	0.47	39.98087102	-104.84792033
4358.00	0.11	294.67	4357.79	0.03	0.29	0.08	0.29	39.98087109	-104.84792097
4447.00	0.04	290.59	4446.79	0.08	0.18	0.08	0.19	39.98087121	-104.84792135
4537.00	0.15	234.52	4536.79	0.02	0.06	0.15	0.06	39.98087106	-104.84792180
4626.00	0.10	45.37	4625.79	0.01	0.02	0.28	0.02	39.98087102	-104.84792194
4716.00	0.10	134.44	4715.79	0.01	0.13	0.16	0.13	39.98087102	-104.84792154
4806.00	0.03	148.53	4805.79	-0.07	0.20	0.08	0.19	39.98087081	-104.84792130
4895.00	0.12	56.32	4894.79	-0.04	0.29	0.14	0.28	39.98087090	-104.84792097
4984.00	1.81	344.48	4983.78	1.37	-0.01	2.00	0.07	39.98087476	-104.84792204
5074.00	3.36	350.07	5073.68	5.34	-0.85	1.74	-0.54	39.98088565	-104.84792502
5164.00	3.75	355.26	5163.51	10.87	-1.54	0.56	-0.91	39.98090084	-104.84792751
5253.00	5.09	16.74	5252.25	17.55	-0.65	2.37	0.37	39.98091918	-104.84792431
5343.00	6.77	20.76	5341.77	26.34	2.38	1.92	3.91	39.98094329	-104.84791350
5433.00	7.27	24.31	5431.09	36.49	6.61	0.74	8.71	39.98097116	-104.84789842

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5523.00	8.82	27.46	5520.20	47.80	12.13	1.79	14.89	39.98100221	-104.84787870
5612.00	10.19	19.55	5607.98	61.27	17.92	2.12	21.44	39.98103920	-104.84785807
5702.00	11.20	14.84	5696.42	77.22	22.82	1.48	27.26	39.98108299	-104.84784058
5791.00	13.05	22.86	5783.44	94.84	28.94	2.81	34.39	39.98113135	-104.84781875
5880.00	14.16	26.00	5869.94	113.89	37.61	1.50	44.16	39.98118363	-104.84778779
5970.00	15.61	27.18	5956.92	134.55	47.97	1.65	55.70	39.98124036	-104.84775083
6059.00	17.28	28.74	6042.27	156.80	59.80	1.94	68.80	39.98130142	-104.84770862
6149.00	18.54	28.27	6127.91	181.12	73.00	1.41	83.39	39.98136819	-104.84766151
6239.00	20.26	20.77	6212.81	208.30	85.31	3.36	97.25	39.98144280	-104.84761759
6328.00	21.44	21.13	6295.98	237.88	96.64	1.33	110.28	39.98152400	-104.84757717
6417.00	22.07	21.21	6378.64	268.64	108.55	0.71	123.96	39.98160844	-104.84753466
6507.00	23.74	19.81	6461.54	301.45	120.81	1.95	138.10	39.98169851	-104.84749092
6597.00	25.12	16.62	6543.49	336.80	132.41	2.12	151.73	39.98179555	-104.84744951
6686.00	26.61	20.51	6623.58	373.58	144.80	2.54	166.24	39.98189651	-104.84740530
6776.00	27.82	19.13	6703.61	412.30	158.74	1.52	182.40	39.98200280	-104.84735554
6866.00	29.79	15.93	6782.48	453.65	171.77	2.78	197.80	39.98211630	-104.84730907
6956.00	29.41	20.32	6860.74	495.87	185.58	2.45	214.04	39.98223221	-104.84725979
7045.00	30.25	26.52	6937.97	536.43	203.18	3.59	233.97	39.98234356	-104.84719697
7134.00	30.38	26.25	7014.80	576.68	223.14	0.21	256.23	39.98245403	-104.84712573
7224.00	30.21	23.69	7092.51	617.82	242.31	1.45	277.75	39.98256698	-104.84705734
7313.00	30.10	20.24	7169.47	659.27	259.03	1.95	296.85	39.98268076	-104.84699768
7403.00	30.08	19.20	7247.34	701.75	274.25	0.58	314.51	39.98279736	-104.84694335
7493.00	32.55	33.36	7324.33	743.33	295.01	8.61	337.65	39.98291151	-104.84686926
7582.00	36.72	42.48	7397.59	783.00	326.18	7.46	371.07	39.98302039	-104.84675803
7672.00	42.44	47.67	7466.95	823.33	366.85	7.34	414.01	39.98313112	-104.84661292
7762.00	50.20	58.53	7529.16	861.95	418.95	12.25	468.26	39.98323713	-104.84642701
7851.00	56.62	69.90	7582.29	892.66	483.20	12.52	534.20	39.98332144	-104.84619770
7941.00	63.62	77.42	7627.15	914.41	558.01	10.62	610.14	39.98338113	-104.84593075
8030.00	72.27	81.65	7660.55	929.28	639.04	10.67	691.90	39.98342195	-104.84564158
8119.00	78.94	80.80	7682.66	942.43	724.19	7.55	777.66	39.98345805	-104.84533774
8187.78	85.14	82.76	7692.19	952.16	791.57	9.44	845.50	39.98348474	-104.84509729
8209.00	87.05	83.35	7693.63	954.72	812.59	9.44	866.62	39.98349177	-104.84502230
8246.00	89.80	85.77	7694.65	958.23	849.40	9.90	903.58	39.98350139	-104.84489093
8254.00	90.40	86.29	7694.63	958.78	857.38	9.90	911.58	39.98350291	-104.84486245
8298.00	90.37	87.28	7694.34	961.25	901.31	2.25	955.58	39.98350968	-104.84470569
8387.00	90.22	88.02	7693.88	964.90	990.23	0.85	1044.56	39.98351969	-104.84438837
8477.00	90.15	88.56	7693.59	967.59	1080.19	0.61	1134.52	39.98352705	-104.84406735
8566.00	90.22	88.64	7693.30	969.76	1169.16	0.12	1223.47	39.98353301	-104.84374985
8656.00	90.09	87.99	7693.06	972.41	1259.12	0.74	1313.44	39.98354026	-104.84342883
8746.00	90.25	87.71	7692.79	975.78	1349.06	0.36	1403.42	39.98354952	-104.84310789
8835.00	90.12	88.87	7692.50	978.44	1438.02	1.31	1492.38	39.98355679	-104.84279044
8925.00	89.97	90.64	7692.43	978.82	1528.01	1.97	1582.25	39.98355784	-104.84246930
9014.00	90.18	92.01	7692.32	976.76	1616.99	1.56	1670.95	39.98355217	-104.84215179
9104.00	90.40	92.55	7691.86	973.18	1706.92	0.65	1760.52	39.98354233	-104.84183089
9193.00	90.18	92.81	7691.41	969.02	1795.82	0.38	1849.03	39.98353089	-104.84151365
9282.00	90.37	92.53	7690.98	964.88	1884.72	0.38	1937.54	39.98351949	-104.84119640
9372.00	90.37	90.99	7690.40	962.11	1974.67	1.71	2027.18	39.98351188	-104.84087541
9461.00	90.34	89.40	7689.85	961.81	2063.67	1.79	2116.01	39.98351103	-104.84055783
9551.00	90.31	88.77	7689.34	963.25	2153.65	0.70	2205.93	39.98351495	-104.84023672
9640.00	90.43	88.01	7688.77	965.75	2242.62	0.86	2294.88	39.98352180	-104.83991925
9730.00	89.97	86.92	7688.45	969.73	2332.53	1.31	2384.87	39.98353270	-104.83959841
9819.00	89.97	90.01	7688.50	972.11	2421.48	3.47	2473.82	39.98353922	-104.83928097
9908.00	89.82	92.71	7688.66	970.00	2510.45	3.04	2562.51	39.98353340	-104.83896349
9998.00	90.03	93.55	7688.78	965.09	2600.31	0.96	2651.94	39.98351988	-104.83864281
10087.00	90.25	94.93	7688.56	958.51	2689.07	1.57	2740.16	39.98350179	-104.83832610
10177.00	90.43	92.72	7688.03	952.50	2778.86	2.46	2829.46	39.98348529	-104.83800568
10266.00	90.34	91.83	7687.43	948.97	2867.79	1.01	2918.03	39.98347556	-104.83768834
10355.00	90.18	89.68	7687.03	947.80	2956.77	2.42	3006.80	39.98347231	-104.83737080
10445.00	90.22	87.31	7686.71	950.16	3046.74	2.63	3096.74	39.98347877	-104.83704977
10534.00	90.15	85.96	7686.42	955.38	3135.58	1.52	3185.74	39.98349308	-104.83673273
10623.00	90.15	87.31	7686.19	960.61	3224.42	1.52	3274.74	39.98350739	-104.83641569
10713.00	90.28	91.90	7685.85	961.23	3314.40	5.10	3364.60	39.98350906	-104.83609462
10802.00	90.74	90.38	7685.06	959.46	3403.37	1.78	3453.32	39.98350417	-104.83577711
10891.00	90.71	88.63	7683.93	960.23	3492.36	1.97	3542.20	39.98350624	-104.83545956
10981.00	90.62	88.61	7682.89	962.39	3582.33	0.10	3632.14	39.98351216	-104.83513851
11070.00	90.58	89.22	7681.96	964.08	3671.31	0.69	3721.07	39.98351675	-104.83482099
11160.00	90.71	89.57	7680.94	965.03	3761.30	0.41	3810.96	39.98351932	-104.83449987
11249.00	89.66	87.71	7680.66	967.14	3850.26	2.40	3899.90	39.98352508	-104.83418238
11338.00	90.40	88.38	7680.61	970.18	3939.21	1.12	3988.88	39.98353338	-104.83386497
11428.00	90.49	91.64	7679.91	970.16	4029.20	3.62	4078.71	39.98353330	-104.83354386
11517.00	90.77	93.66	7678.93	966.05	4118.09	2.29	4167.22	39.98352196	-104.83322665
11606.00	90.68	94.03	7677.81	960.08	4206.88	0.43	4255.51	39.98350554	-104.83290979
11696.00	90.62	91.18	7676.79	955.99	4296.78	3.17	4345.01	39.98349427	-104.83258902
11785.00	90.62	89.71	7675.82	955.30	4385.77	1.65	4433.81	39.98349233	-104.83227146
11874.00	90.62	90.33	7674.86	955.27	4474.76	0.70	4522.66	39.98349220	-104.83195389
11964.00	90.49	90.22	7673.99	954.84	4564.75	0.19	4612.47	39.98349097	-104.83163274
12053.00	90.58	89.61	7673.16	954.97	4653.75	0.69	4701.33	39.98349129	-104.83131516
12143.00	90.18	89.25	7672.56	955.86	4743.74	0.60	4791.22	39.98349370	-104.83099402
12232.00	90.15	89.59	7672.30	956.76	4832.74	0.38	4880.12	39.98349612	-104.83067644
12322.00	90.26	90.51	7671.98	956.69	4922.74	1.03	4969.96	39.98349586	-104.83035529
12411.00	90.28	91.34	7671.56	955.25	5011.72	0.93	5058.71	39.98349187	-104.83003774
12500.00	90.43	93.18	7671.01	951.74	5100.65	2.07	5147.29	39.98348218	-104.82972041
12590.00	90.25	92.98	7670.48	946.90	5190.52	0.30	5236.72	39.98346886	-104.82939972
12679.00	90.15	92.87	7670.17	942.36	5279.40	0.17	5325.19	39.98345634	-104.82908255
12769.00	89.94	91.56	7670.10	938.88	5369.33	1.47	5414.77	39.98344674	-104.82876163
12858.00	90.22	91.87	7669.97	936.22	5458.29	0.47	5503.42	39.98343937	-104.82844419
12947.00	90.28	91.73	7669.58	933.43	5547.25	0.17	5592.07	39.98343165	-104.82812675

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13037.00	90.18	92.95	7669.22	929.75	5637.17	1.36	5681.63	39.98342150	-104.82780587
13126.00	90.34	92.22	7668.82	925.74	5726.08	0.84	5770.15	39.98341043	-104.82748861
13216.00	90.28	89.95	7668.33	924.03	5816.05	2.52	5859.88	39.98340569	-104.82716753
13305.00	90.15	88.39	7668.00	925.32	5905.04	1.76	5948.79	39.98340917	-104.82684998
13394.00	90.28	88.44	7667.66	927.78	5994.01	0.16	6037.75	39.98341587	-104.82653250
13484.00	90.31	89.07	7667.20	929.74	6083.98	0.70	6127.69	39.98342118	-104.82621142
13573.00	91.48	89.08	7665.81	931.18	6172.96	1.31	6216.60	39.98342506	-104.82589391
13663.00	91.54	85.45	7663.44	935.47	6262.81	4.03	6306.54	39.98343679	-104.82557327
13752.00	91.48	85.91	7661.09	942.17	6351.53	0.52	6395.50	39.98345512	-104.82525669
13842.00	91.48	87.82	7658.77	947.09	6441.36	2.12	6485.47	39.98346856	-104.82493612
13931.00	91.88	90.62	7656.16	948.30	6530.30	3.18	6574.33	39.98347182	-104.82461872
14020.00	91.75	90.90	7653.34	947.12	6619.25	0.35	6663.06	39.98346852	-104.82430132
14110.00	91.66	91.48	7650.66	945.25	6709.19	0.65	6752.74	39.98346333	-104.82398037
14199.00	90.95	91.14	7648.63	943.22	6798.14	0.88	6841.42	39.98345768	-104.82366294
14288.00	90.62	89.88	7647.41	942.43	6887.13	1.46	6930.21	39.98345543	-104.82334540
14378.00	89.85	88.40	7647.04	943.78	6977.11	1.85	7020.13	39.98345907	-104.82302428
14467.00	89.73	89.52	7647.37	945.39	7066.10	1.27	7109.05	39.98346344	-104.82270675
14557.00	89.85	91.54	7647.70	944.56	7156.09	2.25	7198.85	39.98346108	-104.82238562
14646.00	90.83	89.60	7647.17	943.68	7245.08	2.44	7287.63	39.98345858	-104.82206806
14735.00	89.88	89.35	7646.62	944.49	7334.07	1.10	7376.52	39.98346075	-104.82175049
14825.00	90.43	88.24	7646.38	946.38	7424.05	1.38	7466.46	39.98346587	-104.82142940
14915.00	89.85	87.21	7646.16	949.96	7513.98	1.31	7556.44	39.98347560	-104.82110849
15004.00	90.03	89.16	7646.25	952.77	7602.93	2.20	7645.41	39.98348327	-104.82079107
15094.00	90.25	91.96	7646.03	951.89	7692.91	3.12	7735.19	39.98348078	-104.82046996
15183.00	90.25	91.64	7645.64	949.10	7781.87	0.36	7823.83	39.98347303	-104.82015253
15273.00	90.77	91.31	7644.84	946.78	7871.83	0.68	7913.51	39.98346659	-104.81983148
15362.00	90.77	91.71	7643.65	944.44	7960.80	0.45	8002.19	39.98346007	-104.81951403
15452.00	90.74	93.03	7642.46	940.72	8050.71	1.47	8091.73	39.98344978	-104.81919318
15541.00	90.55	91.41	7641.46	937.27	8139.63	1.83	8180.31	39.98344024	-104.81887586
15631.00	89.35	87.82	7641.54	937.87	8229.62	4.21	8270.17	39.98344182	-104.81855476
15710.00	89.48	85.37	7642.34	942.57	8308.47	3.11	8349.16	39.98345462	-104.81827338
15800.00	89.32	84.36	7643.29	950.62	8398.10	1.14	8439.11	39.98347665	-104.81795352
15889.00	89.26	86.44	7644.39	957.76	8486.80	2.34	8528.08	39.98349616	-104.81763698
15979.00	89.85	88.48	7645.09	961.74	8576.70	2.36	8618.06	39.98350702	-104.81731615
16068.00	90.06	88.58	7645.16	964.03	8665.67	0.26	8707.02	39.98351320	-104.81699866
16158.00	89.94	88.93	7645.16	965.98	8755.65	0.41	8796.96	39.98351849	-104.81667757
16247.00	90.12	90.70	7645.11	966.27	8844.65	2.00	8885.82	39.98351919	-104.81635999
16337.00	89.75	90.67	7645.21	965.20	8934.64	0.41	8975.60	39.98351615	-104.81603885
16426.00	89.85	90.80	7645.52	964.05	9023.63	0.18	9064.37	39.98351292	-104.81572129
16516.00	89.91	89.92	7645.71	963.49	9113.63	0.98	9154.19	39.98351128	-104.81540013
16606.00	90.15	89.48	7645.66	963.96	9203.63	0.56	9244.06	39.98351248	-104.81507897
16695.00	90.25	88.25	7645.35	965.72	9292.61	1.39	9332.99	39.98351723	-104.81476145
16785.00	90.06	87.84	7645.11	968.79	9382.56	0.50	9422.97	39.98352557	-104.81444047
16875.00	89.94	88.01	7645.11	972.05	9472.50	0.23	9512.95	39.98353442	-104.81411951
16965.00	90.03	89.09	7645.13	974.33	9562.47	1.20	9602.90	39.98354058	-104.81379845
17054.00	89.82	87.97	7645.25	976.61	9651.44	1.28	9691.85	39.98354675	-104.81348096
17143.00	90.18	91.54	7645.25	976.99	9740.42	4.03	9780.70	39.98354770	-104.81316342
17233.00	90.22	94.35	7644.94	972.37	9830.29	3.12	9870.16	39.98353491	-104.81284272
17322.00	90.49	94.14	7644.39	965.78	9919.05	0.38	9958.38	39.98351673	-104.81252601
17412.00	90.86	93.30	7643.32	959.94	10008.85	1.02	10047.69	39.98350060	-104.81220556
17501.00	90.92	91.75	7641.94	956.02	10097.75	1.74	10136.21	39.98348974	-104.81188833
17591.00	90.00	89.86	7641.22	954.76	10187.73	2.34	10225.97	39.98348617	-104.81156723
17680.00	89.91	90.00	7641.29	954.87	10276.73	0.19	10314.83	39.98348637	-104.81124963
17769.00	89.94	91.62	7641.41	953.61	10365.72	1.82	10403.59	39.98348281	-104.81093208
17859.00	90.31	93.83	7641.21	949.33	10455.61	2.49	10493.09	39.98347096	-104.81061131
17948.00	90.12	92.17	7640.88	944.67	10544.49	1.88	10581.54	39.98345808	-104.81029417
18038.00	90.18	91.72	7640.64	941.62	10634.44	0.50	10671.16	39.98344959	-104.80997320
18127.00	90.15	91.78	7640.38	938.90	10723.39	0.08	10759.81	39.98344202	-104.80965576
18217.00	90.15	91.16	7640.15	936.59	10813.36	0.69	10849.49	39.98343557	-104.80933470
18307.00	90.22	91.49	7639.86	934.51	10903.34	0.37	10939.20	39.98342975	-104.80901363
18396.00	90.25	91.94	7639.49	931.85	10992.30	0.51	11027.85	39.98342233	-104.80869619
18485.00	90.18	89.34	7639.16	930.85	11081.28	2.92	11116.63	39.98341950	-104.80837864
18575.00	90.03	89.17	7638.99	932.02	11171.28	0.25	11206.54	39.98342260	-104.80805751
18664.00	90.03	91.51	7638.95	931.49	11260.27	2.63	11295.35	39.98342104	-104.80773994
18753.00	90.09	91.22	7638.85	929.37	11349.24	0.33	11384.05	39.98341511	-104.80742244
18843.00	90.25	89.75	7638.59	928.61	11439.24	1.64	11473.85	39.98341290	-104.80710130
18932.00	90.15	87.40	7638.28	930.83	11528.20	2.64	11562.79	39.98341887	-104.80678382
19021.00	89.66	86.35	7638.42	935.68	11617.07	1.30	11651.79	39.98343207	-104.80646670
19111.00	89.82	83.93	7638.83	943.30	11706.74	2.69	11741.75	39.98345288	-104.80614670
19200.00	89.75	84.43	7639.17	952.33	11795.28	0.57	11830.67	39.98347754	-104.80583073
19290.00	89.66	87.14	7639.63	958.94	11885.03	3.01	11920.65	39.98349558	-104.80551046
19379.00	90.12	89.45	7639.80	961.59	11973.98	2.65	12009.60	39.98350273	-104.80519303
19468.00	90.15	93.25	7639.59	959.49	12062.94	4.27	12098.29	39.98349686	-104.80487558
19558.00	89.85	93.37	7639.59	954.30	12152.79	0.36	12187.69	39.98348248	-104.80455496
19647.00	89.78	92.35	7639.88	949.85	12241.68	1.15	12276.17	39.98347017	-104.80423778
19737.00	90.49	90.72	7639.67	947.44	12331.64	1.98	12365.84	39.98346343	-104.80391675
19826.00	91.20	89.17	7638.35	947.53	12420.63	1.92	12454.68	39.98346354	-104.80359920
19915.00	90.52	88.03	7637.02	949.70	12509.59	1.49	12543.62	39.98346939	-104.80328174
20005.00	90.55	87.58	7636.18	953.15	12599.52	0.50	12633.60	39.98347872	-104.80296082
20094.00	90.40	88.21	7635.44	956.42	12688.45	0.73	12722.57	39.98348757	-104.80264344
20184.00	90.68	89.39	7634.59	958.30	12778.43	1.35	12812.51	39.98349262	-104.80232237
20274.00	90.95	89.82	7633.31	958.92	12868.42	0.56	12902.38	39.98349419	-104.80200124
20363.00	90.31	87.87	7632.33	960.72	12957.39	2.31	12991.30	39.98349899	-104.80168375
20453.00	90.25	87.11	7631.89	964.66	13047.30	0.85	13081.29	39.98350968	-104.80136289
20542.00	90.40	87.01	7631.39	969.22	13136.18	0.20	13170.29	39.98352208	-104.80104571
20631.00	90.37	88.16	7630.79	972.97	13225.10	1.29	13259.28	39.98353225	-104.80072840
20721.00	90.31	89.32	7630.26	974.95	13315.07	1.29	13349.21	39.98353755	-104.80040732

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
20810.00	90.06	90.57	7629.97	975.04	13404.07	1.43	13438.07	39.98353765	-104.80008974
20900.00	90.06	92.83	7629.87	972.37	13494.03	2.51	13527.71	39.98353019	-104.79976874
20990.00	90.06	93.28	7629.78	967.57	13583.90	0.50	13617.16	39.98351689	-104.79944804
21079.00	89.97	93.51	7629.76	962.30	13672.74	0.28	13705.54	39.98350229	-104.79913101
21169.00	89.97	94.81	7629.80	955.77	13762.50	1.44	13794.78	39.98348423	-104.79881072
21258.00	90.28	94.14	7629.61	948.83	13851.23	0.83	13882.95	39.98346503	-104.79849411
21348.00	90.37	91.88	7629.10	944.10	13941.10	2.51	13972.39	39.98345192	-104.79817342
21437.00	89.63	89.68	7629.10	942.89	14030.09	2.61	14061.16	39.98344846	-104.79785588
21527.00	89.75	88.15	7629.59	944.60	14120.07	1.71	14151.09	39.98345300	-104.79753479
21616.00	89.60	85.63	7630.09	949.42	14208.93	2.84	14240.08	39.98346611	-104.79721768
21705.00	89.91	84.91	7630.47	956.76	14297.62	0.88	14329.05	39.98348612	-104.79690116
21795.00	89.94	84.98	7630.59	964.69	14387.27	0.08	14419.01	39.98350774	-104.79658123
21884.00	89.39	85.03	7631.11	972.44	14475.93	0.62	14507.97	39.98352887	-104.79626483
21974.00	89.35	86.78	7632.10	978.87	14565.69	1.94	14597.95	39.98354637	-104.79594450
22063.00	88.98	88.74	7633.40	982.35	14654.61	2.24	14686.92	39.98355578	-104.79562719
22153.00	88.92	90.58	7635.05	982.88	14744.59	2.05	14776.78	39.98355710	-104.79530610
22242.00	88.95	91.91	7636.70	980.95	14833.55	1.49	14865.48	39.98355164	-104.79498865
22331.00	88.98	91.74	7638.31	978.11	14922.49	0.19	14954.11	39.98354372	-104.79467127
22421.00	88.95	90.88	7639.93	976.06	15012.45	0.96	15043.80	39.98353792	-104.79435025
22511.00	89.88	91.91	7640.85	973.87	15102.42	1.54	15133.48	39.98353176	-104.79402921
22600.00	89.05	92.69	7641.68	970.29	15191.34	1.28	15222.05	39.98352180	-104.79371190
22689.00	89.23	93.00	7643.02	965.88	15280.22	0.40	15310.52	39.98350953	-104.79339474
22779.00	88.68	92.85	7644.66	961.28	15370.09	0.63	15399.97	39.98349677	-104.79307406
22868.00	88.68	93.22	7646.71	956.57	15458.94	0.42	15488.40	39.98348369	-104.79275700
22957.00	88.62	93.80	7648.81	951.13	15547.75	0.65	15576.74	39.98346858	-104.79244011
23047.00	89.57	93.80	7650.23	945.16	15637.54	1.06	15666.03	39.98345206	-104.79211971
23137.00	89.48	92.77	7650.97	940.01	15727.39	1.15	15755.43	39.98343775	-104.79179910
23148.00	89.47	92.65	7651.08	939.49	15738.37	1.11	15766.37	39.98343630	-104.79175989
23202.32	89.44	92.04	7651.59	937.26	15792.65	1.11	15820.42	39.98343010	-104.79156623
23214.22	89.43	91.91	7651.71	936.85	15804.54	1.11	15832.27	39.98342896	-104.79152379
23226.00	89.42	91.78	7651.83	936.47	15816.31	1.11	15844.00	39.98342789	-104.79148178
23315.00	89.32	91.56	7652.81	933.88	15905.27	0.27	15932.66	39.98342062	-104.79116435
23405.00	89.51	90.87	7653.73	931.97	15995.24	0.80	16022.37	39.98341522	-104.79084328
23424.15	89.51	90.87	7653.89	931.68	16014.39	0.00	16041.47	39.98341439	-104.79077495
23434.00	89.51	90.87	7653.97	931.53	16024.24	0.00	16051.29	39.98341396	-104.79073981

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1778.00	1777.97	-0.88	-1.55	39.98086858	-104.84792754	9.625" Csg: 1778 MD/TVD
8187.78	7692.19	952.16	791.57	39.98348474	-104.84509729	460 Setback: 8188 / 7692 MD/TVD, 1223 FNL, 460 FEL Sec 12
8246.00	7694.65	958.23	849.40	39.98350139	-104.84489093	Top Perf: 8246 / 7695 MD/TVD, 1218 FNL, 518 FEL Sec 12
23148.00	7651.08	939.49	15738.37	39.98343630	-104.79175989	Btm Perf: 23,148 / 7651 MD/TVD, 1230 FNL, 526 FEL Sec 08
23202.32	7651.59	937.26	15792.65	39.98343010	-104.79156623	Btm Toe Sub: 23,202 / 7652 MD/TVD, 1233 FNL, 472 FEL Sec 08
23214.22	7651.71	936.85	15804.54	39.98342896	-104.79152379	460 Setback: 23,214 / 7652 MD/TVD, 1233 FNL, 460 FEL Sec 08
23424.15	7653.89	931.68	16014.39	39.98341439	-104.79077495	PBTD: 23,424 / 7654 MD/TVD, 1239 FNL, 250 FEL Sec 08
23434.00	7653.97	931.53	16024.24	39.98341396	-104.79073981	5.5" Csg: 23,434 / 7654 MD/TVD, 1240 FNL, 240 FEL Sec 08
23434.00	7653.97	931.53	16024.24	39.98341396	-104.79073981	BHL: 23,434 / 7654 MD/TVD, 1240 FNL, 240 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	1778.00	1777.97	-0.88	-1.55
8.500	1778.00	1777.97	-0.88	-1.55	23434.00	7653.97	931.53	16024.24

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	1778.00	1777.97	-0.88	-1.55
5 1/2in Casing	0.00	0.00	0.00	0.00	23434.00	7653.97	931.53	16024.24

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
571158	As Drilled - 20190627	23434.00	7653.97	MWD

Coordinates are from Slot MD's and TVD's are from Rig Floor 4992.8ft above Mean Sea Level Vertical Section is from 0.00 0.00 on azimuth 86.67 degrees Bottom hole distance is 16051.29 Feet on azimuth 86.67 degrees from Wellhead Calculation method uses Minimum Curvature method Prepared by Date Printed:
