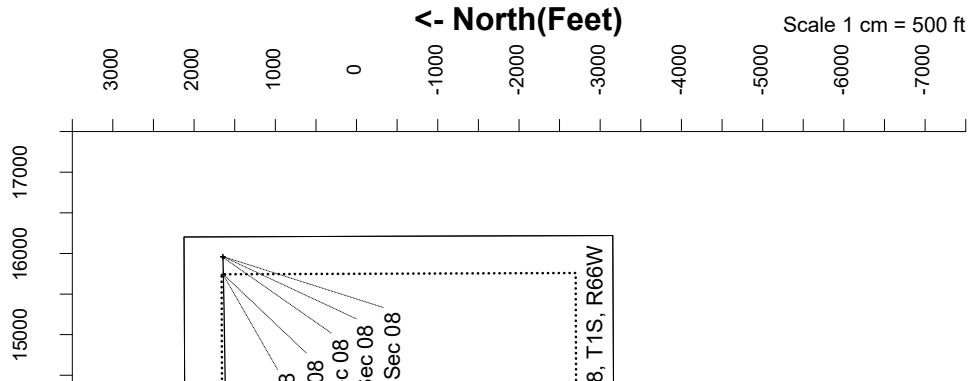


Great Western Operating Company, LLC

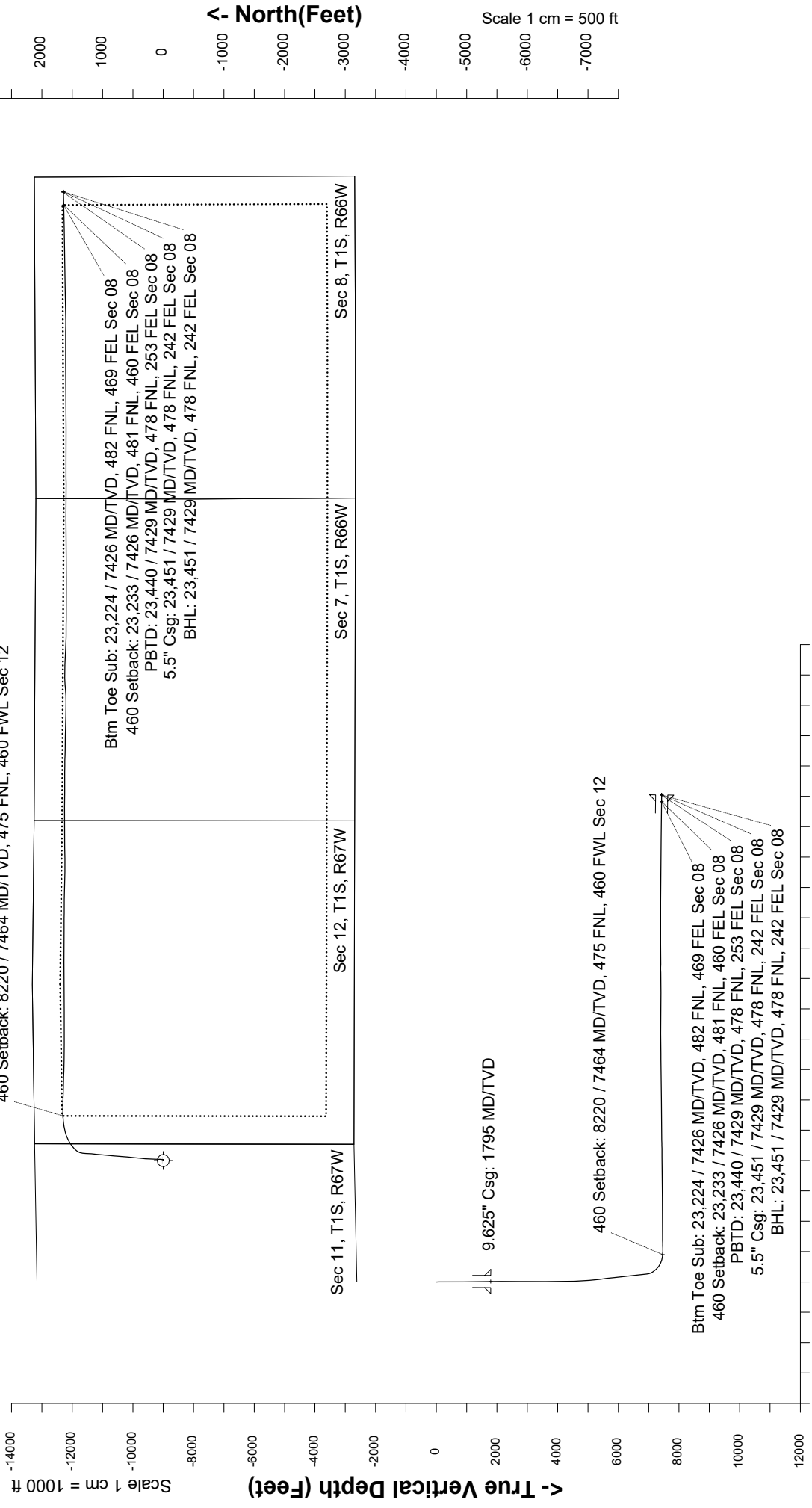
Location Colorado	Slot N13 - Brant LE 08-039HN
Field Wattenburg	Well Brant LE 08-039HN
Installation Brant	Wellbore Brant LE 08-039HN (AWB)

Scale 1 cm = 500 ft

East (Feet) ->



Apr-14-2017
 KBRF-12.Dwg 66.51 deg Field 52784.0 FT
 Lat: N39 58.49 (8308 Long: W 104 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



Scale 1 cm = 1000 ft

Vertical Section (Feet) ->

Azimuth 84.12 with reference 0.00 N, 0.00 E from N13 - Brant LE 08-039HN

Created by: mmcount
 Date plotted: 1-Feb-2020
 Plot reference is Brant LE 08-039HN (AWB)
 Ref wellpath is Brant LE 08-039HN (AWPH1).
 Coordinates are in Feet reference N13 - Brant LE 08-039HN.
 True Vertical Depths are reference Rig Datum.
 Measured Depths are reference Rig Datum.
 Rig Datum: Actual Datum #1
 Rig Datum to Mean Sea Level: 4983.00 ft.
 Plot North is aligned to TRUE North.

Great Western Operating Co, LLC
 Directional Survey Report
 Wellpath: Brant LE 08-039HN
 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	05-001-10343	20.00	Brant LE 08-039HN

Slot Coordinates

Latitude	Longitude
39.98100300	-104.84771600

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	39.98100300	-104.84771600
14.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00	39.98100300	-104.84771600
92.00	0.48	55.51	92.00	0.19	0.27	0.00	0.29	39.98100351	-104.84771504
179.00	0.44	55.16	179.00	0.58	0.84	0.00	0.90	39.98100460	-104.84771299
264.00	0.13	37.93	264.00	0.84	1.17	0.00	1.25	39.98100532	-104.84771182
357.00	0.40	253.88	356.99	0.84	0.92	0.00	1.00	39.98100530	-104.84771270
446.00	0.18	241.22	445.99	0.68	0.50	0.00	0.57	39.98100488	-104.84771421
536.00	0.79	189.45	535.99	0.00	0.28	0.00	0.28	39.98100301	-104.84771501
626.00	0.40	282.00	625.99	-0.54	-0.13	0.00	-0.19	39.98100151	-104.84771647
716.00	0.09	176.80	715.99	-0.55	-0.44	0.00	-0.49	39.98100150	-104.84771755
806.00	0.83	93.83	805.98	-0.66	0.22	0.00	0.15	39.98100118	-104.84771522
896.00	0.79	89.17	895.97	-0.70	1.49	0.00	1.41	39.98100109	-104.84771068
986.00	1.01	91.90	985.96	-0.71	2.90	0.00	2.81	39.98100104	-104.84770564
1076.00	1.23	76.78	1075.95	-0.52	4.64	0.00	4.56	39.98100157	-104.84769946
1166.00	0.97	64.83	1165.93	0.03	6.27	0.00	6.24	39.98100307	-104.84769364
1256.00	1.58	73.70	1255.91	0.70	8.15	0.00	8.17	39.98100492	-104.84768693
1346.00	1.80	79.68	1345.87	1.30	10.73	0.00	10.80	39.98100657	-104.84767772
1436.00	1.10	106.31	1435.84	1.31	12.95	0.00	13.01	39.98100660	-104.84766980
1526.00	1.10	127.14	1525.82	0.55	14.47	0.00	14.45	39.98100450	-104.84766438
1616.00	0.44	207.65	1615.82	-0.28	14.99	0.00	14.89	39.98100223	-104.84766250
1706.00	0.22	264.60	1705.81	-0.60	14.66	0.00	14.52	39.98100134	-104.84766368
1744.00	0.18	328.41	1743.81	-0.56	14.56	0.00	14.42	39.98100146	-104.84766405
1844.00	0.14	262.15	1843.81	-0.44	14.35	0.00	14.23	39.98100178	-104.84766478
1873.00	0.06	284.18	1872.81	-0.44	14.30	0.00	14.18	39.98100178	-104.84766496
1963.00	0.12	210.20	1962.81	-0.51	14.21	0.00	14.08	39.98100159	-104.84766529
2052.00	0.11	0.65	2051.81	-0.51	14.17	0.00	14.04	39.98100160	-104.84766545
2142.00	0.11	32.58	2141.81	-0.35	14.21	0.00	14.10	39.98100204	-104.84766528
2232.00	0.07	39.47	2231.81	-0.23	14.29	0.00	14.19	39.98100236	-104.84766499
2321.00	0.04	3.53	2320.81	-0.16	14.33	0.00	14.24	39.98100256	-104.84766486
2411.00	0.13	96.92	2410.81	-0.14	14.43	0.00	14.34	39.98100261	-104.84766449
2501.00	0.06	10.01	2500.81	-0.11	14.54	0.00	14.46	39.98100270	-104.84766410
2590.00	0.05	60.49	2589.81	-0.04	14.59	0.00	14.50	39.98100288	-104.84766395
2680.00	0.03	84.54	2679.81	-0.02	14.64	0.00	14.56	39.98100294	-104.84766375
2770.00	0.06	212.25	2769.81	-0.06	14.64	0.00	14.56	39.98100284	-104.84766375
2859.00	0.05	114.45	2858.81	-0.12	14.65	0.00	14.56	39.98100268	-104.84766372
2949.00	0.06	276.06	2948.81	-0.13	14.64	0.00	14.55	39.98100265	-104.84766376
3039.00	0.10	21.12	3038.81	-0.05	14.62	0.00	14.54	39.98100287	-104.84766382
3128.00	0.12	250.61	3127.81	-0.01	14.56	0.00	14.48	39.98100298	-104.84766404
3218.00	0.06	197.37	3217.81	-0.08	14.46	0.00	14.37	39.98100277	-104.84766440
3308.00	0.08	339.39	3307.81	-0.07	14.42	0.00	14.34	39.98100281	-104.84766453
3398.00	0.11	173.49	3397.81	-0.10	14.41	0.00	14.33	39.98100274	-104.84766458
3487.00	0.06	173.24	3486.81	-0.23	14.43	0.00	14.33	39.98100238	-104.84766452
3577.00	0.10	232.92	3576.81	-0.32	14.37	0.00	14.26	39.98100212	-104.84766473
3667.00	0.07	209.26	3666.81	-0.42	14.28	0.00	14.16	39.98100186	-104.84766505
3757.00	0.01	39.29	3756.81	-0.46	14.26	0.00	14.14	39.98100174	-104.84766512
3846.00	0.05	339.31	3845.81	-0.42	14.25	0.00	14.13	39.98100186	-104.84766516
3936.00	0.06	249.77	3935.81	-0.40	14.19	0.00	14.08	39.98100191	-104.84766536
4026.00	0.07	162.46	4025.81	-0.46	14.16	0.00	14.04	39.98100172	-104.84766546
4115.00	0.43	355.85	4114.81	-0.18	14.16	0.00	14.06	39.98100250	-104.84766549
4205.00	3.46	358.85	4204.75	2.87	14.08	0.00	14.30	39.98101088	-104.84766577
4295.00	5.76	8.83	4294.45	10.05	14.72	0.00	15.67	39.98103058	-104.84766349
4384.00	8.01	13.92	4382.81	20.48	16.89	0.00	18.90	39.98105922	-104.84765572
4474.00	11.35	12.60	4471.51	35.22	20.33	0.00	23.84	39.98109967	-104.84764344
4564.00	13.85	3.92	4559.35	54.61	23.00	0.00	28.48	39.98115291	-104.84763392
4653.00	15.21	357.47	4645.50	76.90	23.22	0.00	30.98	39.98121411	-104.84763316
4743.00	19.28	358.08	4731.44	103.56	22.20	0.00	32.70	39.98128728	-104.84763679
4833.00	22.72	359.24	4815.45	135.80	21.47	0.00	35.28	39.98137578	-104.84763939
4922.00	26.72	1.58	4896.28	173.00	21.79	0.00	39.41	39.98147790	-104.84763824
5012.00	28.06	5.06	4976.19	214.32	24.22	0.00	46.06	39.98159132	-104.84762958
5102.00	29.16	3.99	5055.20	257.28	27.61	0.00	53.84	39.98170925	-104.84761748
5192.00	29.44	5.34	5133.69	301.17	31.19	0.00	61.90	39.98182975	-104.84760469
5281.00	29.38	6.15	5211.22	344.69	35.19	0.00	70.34	39.98194922	-104.84759043
5371.00	29.86	6.25	5289.46	388.95	39.61	0.00	79.27	39.98207071	-104.84757466
5461.00	29.69	4.86	5367.58	433.43	43.94	0.00	88.14	39.98219282	-104.84755921
5550.00	30.06	6.17	5444.75	477.56	48.20	0.00	96.90	39.98231394	-104.84754400

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5640.00	30.02	5.34	5522.66	522.38	52.72	0.00	105.99	39.98243699	-104.84752788
5730.00	30.00	4.85	5600.60	567.22	56.72	0.00	114.56	39.98256007	-104.84751361
5820.00	29.71	5.13	5678.66	611.85	60.61	0.00	123.01	39.98268259	-104.84749971
5909.00	29.50	4.86	5756.04	655.65	64.44	0.00	131.31	39.98280283	-104.84748604
5999.00	30.01	5.00	5834.17	700.15	68.28	0.00	139.69	39.98292499	-104.84747235
6089.00	29.48	5.22	5912.31	744.63	72.26	0.00	148.21	39.98304708	-104.84745816
6178.00	29.89	4.63	5989.63	788.54	76.04	0.00	156.47	39.98316762	-104.84744466
6268.00	29.71	5.17	6067.73	833.10	79.86	0.00	164.84	39.98328995	-104.84743103
6358.00	30.04	4.80	6145.77	877.76	83.75	0.00	173.29	39.98341255	-104.84741713
6448.00	30.01	5.33	6223.69	922.62	87.73	0.00	181.84	39.98353569	-104.84740294
6537.00	30.23	4.96	6300.68	967.10	91.73	0.00	190.39	39.98365779	-104.84738865
6627.00	29.85	5.72	6378.59	1011.96	95.93	0.00	199.15	39.98378093	-104.84737369
6716.00	30.33	4.38	6455.59	1056.41	99.85	0.00	207.61	39.98390294	-104.84735969
6806.00	30.58	5.26	6533.18	1101.86	103.68	0.00	216.09	39.98402772	-104.84734600
6896.00	30.41	5.12	6610.73	1147.35	107.81	0.00	224.86	39.98415258	-104.84733126
6986.00	30.18	4.41	6688.44	1192.59	111.59	0.00	233.25	39.98427677	-104.84731780
7075.00	30.41	4.53	6765.28	1237.35	115.09	0.00	241.32	39.98439964	-104.84730531
7165.00	30.05	4.03	6843.04	1282.53	118.47	0.00	249.32	39.98452368	-104.84729324
7255.00	30.62	5.44	6920.72	1327.83	122.23	0.00	257.70	39.98464802	-104.84727983
7344.00	31.00	15.76	6997.22	1372.48	130.61	0.00	270.61	39.98477060	-104.84724993
7434.00	33.07	34.68	7073.70	1415.09	150.93	0.00	295.19	39.98488757	-104.84717741
7524.00	39.03	46.35	7146.52	1454.93	185.47	0.00	333.64	39.98499692	-104.84705412
7614.00	47.34	50.09	7212.10	1495.80	231.45	0.00	383.56	39.98510912	-104.84689005
7703.00	52.17	56.98	7269.62	1536.00	286.09	0.00	442.04	39.98521947	-104.84669506
7793.00	55.33	64.47	7322.88	1571.36	349.37	0.00	508.60	39.98531654	-104.84646926
7883.00	60.48	70.94	7370.72	1600.14	419.87	0.00	581.69	39.98539553	-104.84621764
7972.00	67.58	76.75	7409.70	1622.26	496.67	0.00	660.35	39.98545625	-104.84594360
8062.00	74.56	82.02	7438.89	1637.84	580.27	0.00	745.11	39.98549902	-104.84564525
8152.00	81.61	84.90	7457.47	1647.84	667.70	0.00	833.10	39.98552645	-104.84533326
8241.00	89.62	87.26	7464.27	1653.89	756.15	0.00	921.70	39.98554306	-104.84501761
8331.00	90.66	91.35	7464.05	1654.98	846.12	0.00	1011.32	39.98554604	-104.84469653
8421.00	90.79	91.78	7462.91	1652.52	936.08	0.00	1100.55	39.98553929	-104.84437550
8510.00	90.57	91.01	7461.85	1650.36	1025.05	0.00	1188.82	39.98553333	-104.84405802
8600.00	90.42	91.34	7461.07	1648.51	1115.03	0.00	1278.14	39.98552826	-104.84373693
8690.00	90.81	91.73	7460.11	1646.10	1204.99	0.00	1367.38	39.98552163	-104.84341589
8780.00	90.52	91.69	7459.06	1643.41	1294.94	0.00	1456.58	39.98551424	-104.84309488
8869.00	90.45	91.97	7458.31	1640.57	1383.89	0.00	1544.78	39.98550643	-104.84277745
8959.00	90.38	91.53	7457.66	1637.82	1473.85	0.00	1633.98	39.98549887	-104.84245644
9049.00	90.51	91.92	7456.96	1635.12	1563.81	0.00	1723.18	39.98549142	-104.84213542
9138.00	90.65	90.58	7456.06	1633.17	1652.78	0.00	1811.49	39.98548607	-104.84181791
9228.00	90.58	89.66	7455.09	1632.99	1742.77	0.00	1900.99	39.98548554	-104.84149676
9318.00	90.70	90.11	7454.09	1633.17	1832.77	0.00	1990.52	39.98548601	-104.84117561
9408.00	90.39	90.30	7453.23	1632.84	1922.76	0.00	2080.01	39.98548511	-104.84085446
9497.00	90.05	90.31	7452.89	1632.37	2011.76	0.00	2168.49	39.98548379	-104.84053686
9587.00	89.93	90.36	7452.90	1631.84	2101.76	0.00	2257.96	39.98548233	-104.84021569
9677.00	90.14	90.35	7452.85	1631.29	2191.76	0.00	2347.43	39.98548078	-104.83989453
9766.00	89.99	90.38	7452.75	1630.72	2280.75	0.00	2435.90	39.98547920	-104.83957693
9856.00	89.52	90.37	7453.13	1630.13	2370.75	0.00	2525.36	39.98547756	-104.83925577
9946.00	89.92	89.00	7453.57	1630.63	2460.75	0.00	2614.94	39.98547889	-104.83893461
10036.00	90.43	89.96	7453.30	1631.44	2550.74	0.00	2704.54	39.98548111	-104.83861346
10126.00	90.18	89.31	7452.82	1632.02	2640.74	0.00	2794.12	39.98548266	-104.83829230
10215.00	90.48	90.02	7452.31	1632.54	2729.73	0.00	2882.70	39.98548406	-104.83797470
10305.00	90.19	89.09	7451.78	1633.23	2819.73	0.00	2972.29	39.98548595	-104.83765355
10395.00	90.25	89.44	7451.43	1634.39	2909.72	0.00	3061.93	39.98548909	-104.83733241
10485.00	91.10	89.69	7450.37	1635.07	2999.71	0.00	3151.52	39.98549094	-104.83701127
10574.00	90.84	90.04	7448.87	1635.28	3088.70	0.00	3240.06	39.98549148	-104.83669371
10664.00	90.73	90.57	7447.63	1634.80	3178.69	0.00	3329.52	39.98549014	-104.83637257
10754.00	90.94	89.86	7446.32	1634.47	3268.68	0.00	3419.00	39.98548918	-104.83605144
10843.00	90.44	89.31	7445.25	1635.11	3357.67	0.00	3507.59	39.98549091	-104.83573387
10933.00	90.32	89.36	7444.65	1636.15	3447.66	0.00	3597.22	39.98549375	-104.83541272
11023.00	90.35	90.01	7444.13	1636.65	3537.65	0.00	3686.79	39.98549507	-104.83509156
11113.00	90.81	91.12	7443.22	1635.76	3627.64	0.00	3776.21	39.98549260	-104.83477043
11202.00	90.61	91.01	7442.11	1634.11	3716.62	0.00	3864.55	39.98548802	-104.83445290
11292.00	90.52	90.23	7441.23	1633.13	3806.61	0.00	3953.97	39.98548531	-104.83413177
11382.00	90.20	90.17	7440.66	1632.82	3896.61	0.00	4043.46	39.98548441	-104.83381060
11471.00	90.61	89.60	7440.03	1633.00	3986.61	0.00	4132.01	39.98548486	-104.83349301
11561.00	90.93	91.02	7438.82	1632.51	4075.59	0.00	4221.47	39.98548349	-104.83317188
11651.00	90.32	89.97	7437.84	1631.73	4165.58	0.00	4310.91	39.98548131	-104.83285074
11741.00	90.41	91.33	7437.27	1630.71	4255.57	0.00	4400.32	39.98547847	-104.83252961
11830.00	91.11	90.94	7436.09	1628.95	4344.55	0.00	4488.64	39.98547359	-104.83221210
11920.00	91.10	91.40	7434.35	1627.11	4434.51	0.00	4577.94	39.98546850	-104.83189105
12010.00	91.28	91.09	7432.48	1625.16	4524.47	0.00	4667.23	39.98546309	-104.83157003
12100.00	91.17	90.85	7430.56	1623.63	4614.44	0.00	4756.57	39.98545886	-104.83124897
12189.00	90.63	91.58	7429.16	1621.75	4703.41	0.00	4844.87	39.98545363	-104.83093148
12279.00	90.60	91.30	7428.19	1619.49	4793.37	0.00	4934.13	39.98544738	-104.83061043
12369.00	90.69	89.03	7427.18	1619.23	4883.36	0.00	5023.62	39.98544662	-104.83028930
12458.00	90.37	89.09	7426.36	1620.69	4972.34	0.00	5112.28	39.98545058	-104.82997175
12548.00	90.17	88.97	7425.93	1622.21	5062.33	0.00	5201.95	39.98545471	-104.82965063
12638.00	90.18	90.22	7425.66	1622.85	5152.33	0.00	5291.54	39.98545641	-104.82932947
12728.00	90.21	88.59	7425.35	1623.78	5242.32	0.00	5381.15	39.98545892	-104.82900833
12817.00	90.38	89.26	7424.89	1625.45	5331.30	0.00	5469.84	39.98546345	-104.82869079
12907.00	90.09	90.07	7424.53	1625.98	5421.30	0.00	5559.41	39.98546484	-104.82836962
12997.00	90.22	90.49	7424.28	1625.54	5511.30	0.00	5648.89	39.98546358	-104.82804846
13086.00	90.27	89.04	7423.90	1625.90	5600.29	0.00	5737.46	39.98546453	-104.82773087
13176.00	90.92	90.39	7422.97	1626.35	5690.28	0.00	5827.02	39.98546570	-104.82740972
13266.00	90.82	89.10	7421.60	1626.75	5780.27	0.00	5916.58	39.98546674	-104.82708860
13356.00	90.69	89.98	7420.41	1627.47	5870.26	0.00	6006.16	39.98546867	-104.82676746
13445.00	90.58	91.75	7419.43	1626.13	5959.24	0.00	6094.54	39.98546492	-104.82644993

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13535.00	90.64	90.24	7418.47	1624.57	6049.22	0.00	6183.88	39.98546057	-104.82612883
13625.00	90.79	90.51	7417.35	1623.98	6139.21	0.00	6273.34	39.98545890	-104.82580769
13714.00	90.84	90.14	7416.08	1623.47	6228.20	0.00	6361.81	39.98545745	-104.82549013
13804.00	91.01	90.17	7414.63	1623.23	6318.19	0.00	6451.30	39.98545672	-104.82516900
13893.00	90.97	90.06	7413.09	1623.05	6407.17	0.00	6539.80	39.98545617	-104.82485144
13983.00	90.97	90.55	7411.57	1622.57	6497.16	0.00	6629.26	39.98545479	-104.82453032
14073.00	90.81	91.50	7410.17	1620.96	6587.13	0.00	6718.59	39.98545030	-104.82420924
14162.00	90.72	91.53	7408.98	1618.61	6676.09	0.00	6806.84	39.98544378	-104.82389178
14251.00	90.73	91.76	7407.85	1616.05	6765.05	0.00	6895.07	39.98543670	-104.82357434
14341.00	90.85	90.23	7406.61	1614.49	6855.02	0.00	6984.41	39.98543234	-104.82325325
14430.00	90.90	91.54	7405.25	1613.12	6944.00	0.00	7072.78	39.98542850	-104.82293573
14520.00	90.66	90.18	7404.03	1611.77	7033.98	0.00	7162.15	39.98542473	-104.82261464
14609.00	90.15	91.50	7403.40	1610.46	7122.97	0.00	7250.53	39.98542107	-104.82229708
14699.00	89.91	91.43	7403.35	1608.16	7212.94	0.00	7339.79	39.98541469	-104.82197602
14788.00	90.03	91.21	7403.40	1606.11	7301.91	0.00	7428.09	39.98540899	-104.82165850
14878.00	90.20	91.47	7403.22	1604.01	7391.89	0.00	7517.37	39.98540314	-104.82133742
14967.00	90.29	90.27	7402.84	1602.66	7480.88	0.00	7605.75	39.98539935	-104.82101986
15058.00	91.94	89.89	7401.07	1602.53	7571.85	0.00	7696.24	39.98539893	-104.82069519
15148.00	90.69	88.12	7399.00	1604.09	7661.81	0.00	7785.88	39.98540314	-104.82037417
15237.00	93.42	83.32	7395.81	1610.72	7750.47	0.00	7874.76	39.98542127	-104.82005777
15327.00	87.44	87.12	7395.13	1618.22	7840.10	0.00	7964.68	39.98544177	-104.81973792
15417.00	88.76	89.21	7398.12	1621.10	7930.00	0.00	8054.40	39.98544959	-104.81941711
15506.00	89.51	89.68	7399.46	1621.96	8018.98	0.00	8143.00	39.98545188	-104.81909956
15596.00	90.01	90.96	7399.84	1621.46	8108.98	0.00	8232.47	39.98545042	-104.81877840
15686.00	89.94	92.20	7399.88	1618.97	8198.94	0.00	8321.71	39.98544353	-104.81845736
15776.00	90.18	92.93	7399.78	1614.95	8288.85	0.00	8410.73	39.98543239	-104.81813652
15865.00	90.35	92.75	7399.37	1610.54	8377.74	0.00	8498.70	39.98542020	-104.81781931
15955.00	90.04	92.43	7399.06	1606.47	8467.65	0.00	8587.72	39.98540896	-104.81749847
16045.00	90.16	91.95	7398.91	1603.03	8557.58	0.00	8676.83	39.98539943	-104.81717754
16135.00	89.20	91.33	7399.41	1600.45	8647.54	0.00	8766.05	39.98539227	-104.81685651
16224.00	89.45	89.90	7400.46	1599.50	8736.53	0.00	8854.47	39.98538957	-104.81653896
16314.00	89.16	90.44	7401.55	1599.23	8826.52	0.00	8943.96	39.98538875	-104.81621782
16404.00	89.36	89.90	7402.71	1598.97	8916.51	0.00	9033.45	39.98538792	-104.81589667
16493.00	89.29	90.56	7403.76	1598.61	9005.51	0.00	9121.94	39.98538666	-104.81557910
16583.00	89.46	90.60	7404.74	1597.70	9095.50	0.00	9211.36	39.98538427	-104.81525796
16673.00	90.17	90.00	7405.03	1597.23	9185.49	0.00	9300.83	39.98538288	-104.81493680
16763.00	90.85	90.30	7404.23	1596.99	9275.49	0.00	9390.33	39.98538214	-104.81461564
16852.00	90.60	89.49	7403.11	1597.15	9364.48	0.00	9478.87	39.98538250	-104.81429807
16942.00	90.20	90.01	7402.48	1597.55	9454.48	0.00	9568.43	39.98538348	-104.81397691
17032.00	88.97	90.51	7403.13	1597.14	9544.47	0.00	9657.91	39.98538227	-104.81365575
17122.00	90.45	90.21	7403.59	1596.57	9634.47	0.00	9747.37	39.98538062	-104.81333460
17211.00	90.28	89.53	7403.02	1596.77	9723.46	0.00	9835.92	39.98538108	-104.81301701
17301.00	90.83	88.37	7402.15	1598.42	9813.44	0.00	9925.60	39.98538551	-104.81269591
17391.00	90.06	89.79	7401.45	1599.87	9903.42	0.00	10015.25	39.98538938	-104.81237479
17480.00	90.24	90.01	7401.21	1600.02	9992.42	0.00	10103.80	39.98538971	-104.81205719
17570.00	90.77	89.08	7400.42	1600.74	10082.42	0.00	10193.39	39.98539157	-104.81173605
17660.00	92.72	87.87	7397.68	1603.13	10172.34	0.00	10283.08	39.98539804	-104.81141515
17750.00	88.78	90.17	7396.50	1604.67	10262.29	0.00	10372.72	39.98540216	-104.81109414
17839.00	88.91	90.84	7398.30	1603.89	10351.27	0.00	10461.15	39.98539990	-104.81077661
17929.00	88.90	91.37	7400.22	1602.15	10441.24	0.00	10550.47	39.98539504	-104.81045556
18019.00	90.92	89.77	7400.16	1601.25	10531.22	0.00	10639.89	39.98539247	-104.81013443
18108.00	90.37	90.94	7399.16	1600.70	10620.22	0.00	10728.36	39.98539086	-104.80981686
18198.00	90.52	90.57	7398.46	1599.52	10710.20	0.00	10817.75	39.98538750	-104.80949573
18288.00	90.77	89.39	7397.44	1599.55	10800.20	0.00	10907.27	39.98538748	-104.80917459
18377.00	90.56	90.16	7396.41	1599.90	10889.19	0.00	10995.83	39.98538833	-104.80885701
18467.00	89.96	89.78	7396.00	1599.95	10979.19	0.00	11085.36	39.98538835	-104.80853584
18557.00	90.02	89.76	7396.02	1600.31	11069.19	0.00	11174.92	39.98538923	-104.80821467
18646.00	90.00	89.72	7396.00	1600.71	11158.19	0.00	11263.49	39.98539023	-104.80789707
18736.00	89.95	89.62	7396.04	1601.23	11248.19	0.00	11353.07	39.98539154	-104.80757590
18825.00	89.97	89.91	7396.10	1601.59	11337.18	0.00	11441.64	39.98539243	-104.80725830
18914.00	90.01	90.11	7396.12	1601.58	11426.18	0.00	11530.17	39.98539228	-104.80694070
19004.00	89.94	90.08	7396.16	1601.43	11516.18	0.00	11619.68	39.98539175	-104.80661952
19093.00	90.12	90.16	7396.11	1601.24	11605.18	0.00	11708.19	39.98539113	-104.80630192
19183.00	90.10	89.74	7395.94	1601.32	11695.18	0.00	11797.72	39.98539123	-104.80598075
19272.00	89.94	91.27	7395.91	1600.54	11784.18	0.00	11886.17	39.98538896	-104.80566317
19362.00	90.07	89.84	7395.90	1599.67	11874.17	0.00	11975.60	39.98538645	-104.80534202
19451.00	89.86	89.99	7395.95	1599.80	11963.17	0.00	12064.14	39.98538669	-104.80502442
19541.00	89.93	89.10	7396.12	1600.51	12053.17	0.00	12153.74	39.98538854	-104.80470326
19631.00	89.94	89.02	7396.22	1601.99	12143.15	0.00	12243.40	39.98539247	-104.80438213
19720.00	90.01	89.07	7396.26	1603.47	12232.14	0.00	12332.07	39.98539642	-104.80406456
19810.00	89.83	90.51	7396.39	1603.80	12322.14	0.00	12421.63	39.98539721	-104.80374340
19899.00	89.81	90.21	7396.67	1603.24	12411.14	0.00	12510.10	39.98539555	-104.80342581
19989.00	89.97	89.79	7396.84	1603.24	12501.14	0.00	12599.63	39.98539543	-104.80310464
20078.00	90.06	89.45	7396.82	1603.83	12590.13	0.00	12688.22	39.98539692	-104.80278704
20168.00	89.85	90.46	7396.89	1603.90	12680.13	0.00	12777.75	39.98539699	-104.80246587
20257.00	90.07	89.26	7396.95	1604.12	12769.13	0.00	12866.30	39.98539746	-104.80214827
20347.00	90.00	89.48	7396.89	1605.11	12859.13	0.00	12955.92	39.98540005	-104.80182712
20437.00	90.04	89.09	7396.86	1606.23	12949.12	0.00	13045.56	39.98540301	-104.80150597
20526.00	90.03	89.73	7396.81	1607.15	13038.11	0.00	13134.18	39.98540539	-104.80118838
20616.00	89.94	89.13	7396.83	1608.05	13128.11	0.00	13223.79	39.98540772	-104.80086723
20706.00	89.74	90.62	7397.08	1608.24	13218.11	0.00	13313.33	39.98540813	-104.80054606
20795.00	90.02	89.46	7397.27	1608.18	13307.10	0.00	13402.86	39.98540783	-104.80022847
20885.00	89.57	90.99	7397.59	1607.83	13397.10	0.00	13491.34	39.98540673	-104.79990731
20974.00	90.19	89.33	7397.78	1607.58	13486.10	0.00	13579.84	39.98540591	-104.79958972
21063.00	88.73	90.21	7398.62	1607.93	13575.09	0.00	13668.40	39.98540676	-104.79927214
21153.00	88.79	90.61	7400.56	1607.29	13665.06	0.00	13757.84	39.98540486	-104.79895106
21242.00	88.78	90.74	7402.45	1606.24	13754.04	0.00	13846.24	39.98540184	-104.79863355
21332.00	89.29	90.30	7403.97	1605.43	13844.02	0.00	13935.66	39.98539947	-104.79831244

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
21422.00	89.45	88.19	7404.96	1606.61	13934.00	0.00	14025.29	39.98540258	-104.79799133
21512.00	89.54	89.53	7405.75	1608.40	14023.98	0.00	14114.98	39.98540736	-104.79767024
21601.00	88.77	88.67	7407.06	1609.80	14112.96	0.00	14203.63	39.98541106	-104.79735271
21691.00	88.87	88.19	7408.92	1612.27	14202.90	0.00	14293.36	39.98541768	-104.79703172
21781.00	89.03	89.85	7410.57	1613.80	14292.87	0.00	14383.01	39.98542177	-104.79671066
21870.00	88.86	88.50	7412.20	1615.09	14381.85	0.00	14471.64	39.98542514	-104.79639314
21960.00	89.45	88.70	7413.53	1617.28	14471.81	0.00	14561.36	39.98543104	-104.79607210
22050.00	89.78	88.64	7414.14	1619.37	14561.78	0.00	14651.07	39.98543663	-104.79575102
22140.00	89.37	88.42	7414.80	1621.68	14651.75	0.00	14740.80	39.98544282	-104.79542995
22229.00	89.27	89.36	7415.86	1623.41	14740.73	0.00	14829.49	39.98544741	-104.79511243
22319.00	88.94	89.52	7417.27	1624.29	14830.71	0.00	14919.09	39.98544967	-104.79479131
22409.00	89.35	88.44	7418.61	1625.89	14920.68	0.00	15008.75	39.98545392	-104.79447023
22499.00	89.01	89.61	7419.90	1627.42	15010.66	0.00	15098.41	39.98545798	-104.79414914
22588.00	89.16	89.48	7421.32	1628.13	15099.65	0.00	15187.00	39.98545977	-104.79383158
22678.00	88.67	90.05	7423.02	1628.49	15189.63	0.00	15276.55	39.98546063	-104.79351047
22768.00	89.26	89.40	7424.65	1628.93	15279.61	0.00	15366.10	39.98546167	-104.79318936
22857.00	90.24	88.53	7425.04	1630.53	15368.59	0.00	15454.78	39.98546593	-104.79287181
22947.00	90.21	88.49	7424.68	1632.87	15458.56	0.00	15544.51	39.98547220	-104.79255074
23037.00	90.30	88.25	7424.28	1635.43	15548.53	0.00	15634.26	39.98547907	-104.79222970
23127.00	89.18	88.47	7424.69	1638.01	15638.49	0.00	15724.02	39.98548599	-104.79190866
23217.00	89.28	88.75	7425.90	1640.19	15728.45	0.00	15813.73	39.98549183	-104.79158761
23306.00	89.08	89.31	7427.17	1641.70	15817.43	0.00	15902.39	39.98549581	-104.79127008
23396.00	89.29	88.39	7428.45	1643.51	15907.40	0.00	15992.08	39.98550061	-104.79094900
23408.00	89.31	88.52	7428.60	1643.83	15919.40	0.00	16004.04	39.98550147	-104.79090620
23451.00	89.31	88.52	7429.12	1644.94	15962.38	0.00	16046.91	39.98550445	-104.79075281

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1795.00	1794.81	-0.46	14.46	39.98100173	-104.84766439	9.625" Csg: 1795 MD/TVD
8219.65	7463.77	1652.76	734.84	39.98553997	-104.84509367	460 Setback: 8220 / 7464 MD/TVD, 475 FNL, 460 FWL Sec 12
23224.06	7425.99	1640.34	15735.51	39.98549223	-104.79156242	Btm Toe Sub: 23,224 / 7426 MD/TVD, 482 FNL, 469 FEL Sec 08
23232.88	7426.10	1640.53	15744.33	39.98549271	-104.79153095	460 Setback: 23,233 / 7426 MD/TVD, 481 FNL, 460 FEL Sec 08
23440.17	7428.99	1644.66	15951.55	39.98550370	-104.79079144	PBTD: 23,440 / 7429 MD/TVD, 478 FNL, 253 FEL Sec 08
23451.00	7429.12	1644.94	15962.38	39.98550445	-104.79075281	5.5" Csg: 23,451 / 7429 MD/TVD, 478 FNL, 242 FEL Sec 08
23451.00	7429.12	1644.94	15962.38	39.98550445	-104.79075281	BHL: 23,451 / 7429 MD/TVD, 478 FNL, 242 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	1795.00	1794.81	-0.46	14.46
8.500	1795.00	1794.81	-0.46	14.46	23451.00	7429.12	1644.94	15962.38

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	1795.00	1794.81	-0.46	14.46
5 1/2in Casing	0.00	0.00	0.00	0.00	23451.00	7429.12	1644.94	15962.38

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
774706	As Drilled - 20200131	23451.00	7429.12	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 84.12 degrees
Bottom hole distance is 16046.91 Feet on azimuth 84.12 degrees from Wellhead
Survey calculation uses Minimum Curvature method