

Great Western Operating Company, LLC

Location	Colorado	Slot	S01 - Ottesen LE 06-370HN
Field	Wattenburg	Well	Ottesen LE 06-370HN
Installation	Ottesen	Wellbore	Ottesen LE 06-370HN (AWB)

Created by admin
Date plotted 27-Mar-2019

Plot reference is Ottesen LE 06-370HN (AWB).
Ref wellpath is Ottesen LE 06-370HN (AWP#1).
Coordinates are in Feet reference S01 - Ottesen LE 06-370HN.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Actual Datum #1
Rig Datum to Mean Sea Level: 5096.50 ft.
Plot North is aligned to TRUE North.

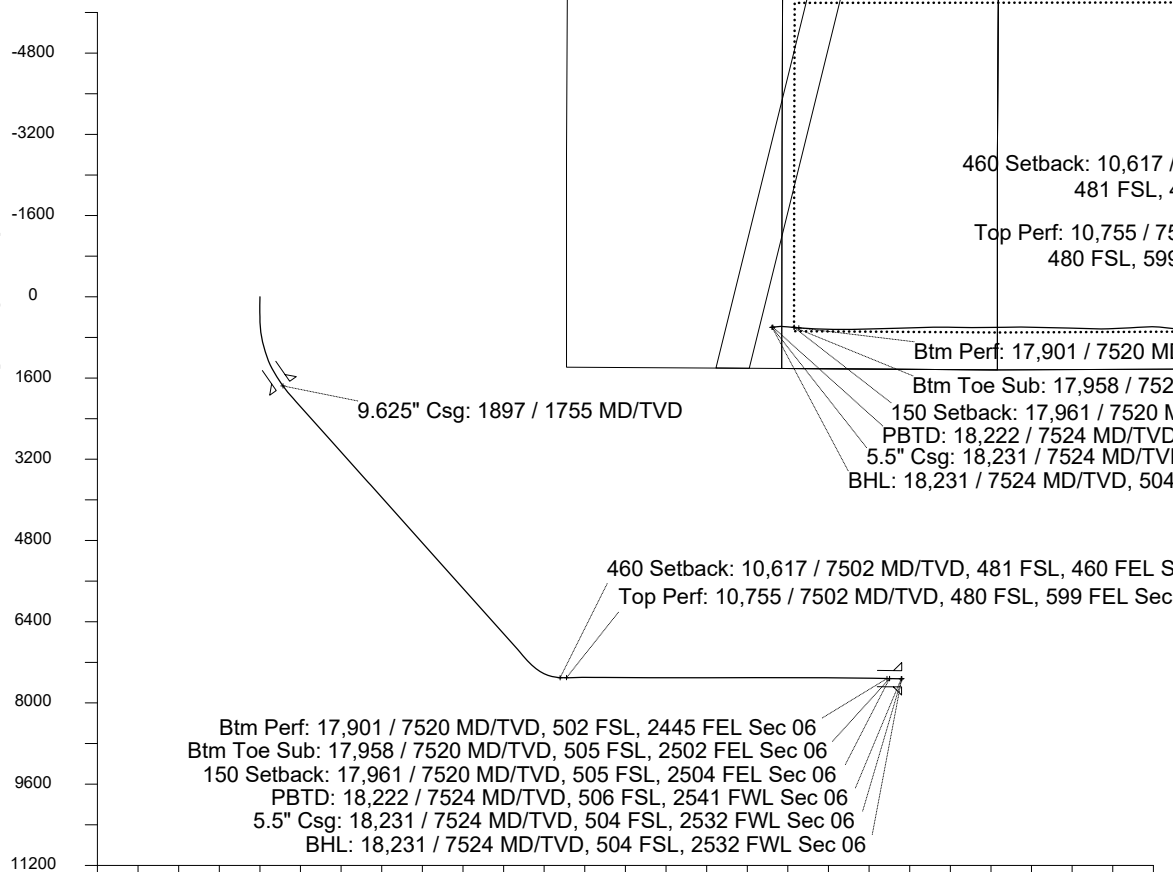
Scale 1 cm = 500 ft

East (Feet) ->

-15000 -14000 -13000 -12000 -11000 -10000 -9000 -8000 -7000 -6000 -5000 -4000 -3000 -2000 -1000 0 1000 2000

Scale 1 cm = 800 ft

<- True Vertical Depth (Feet)



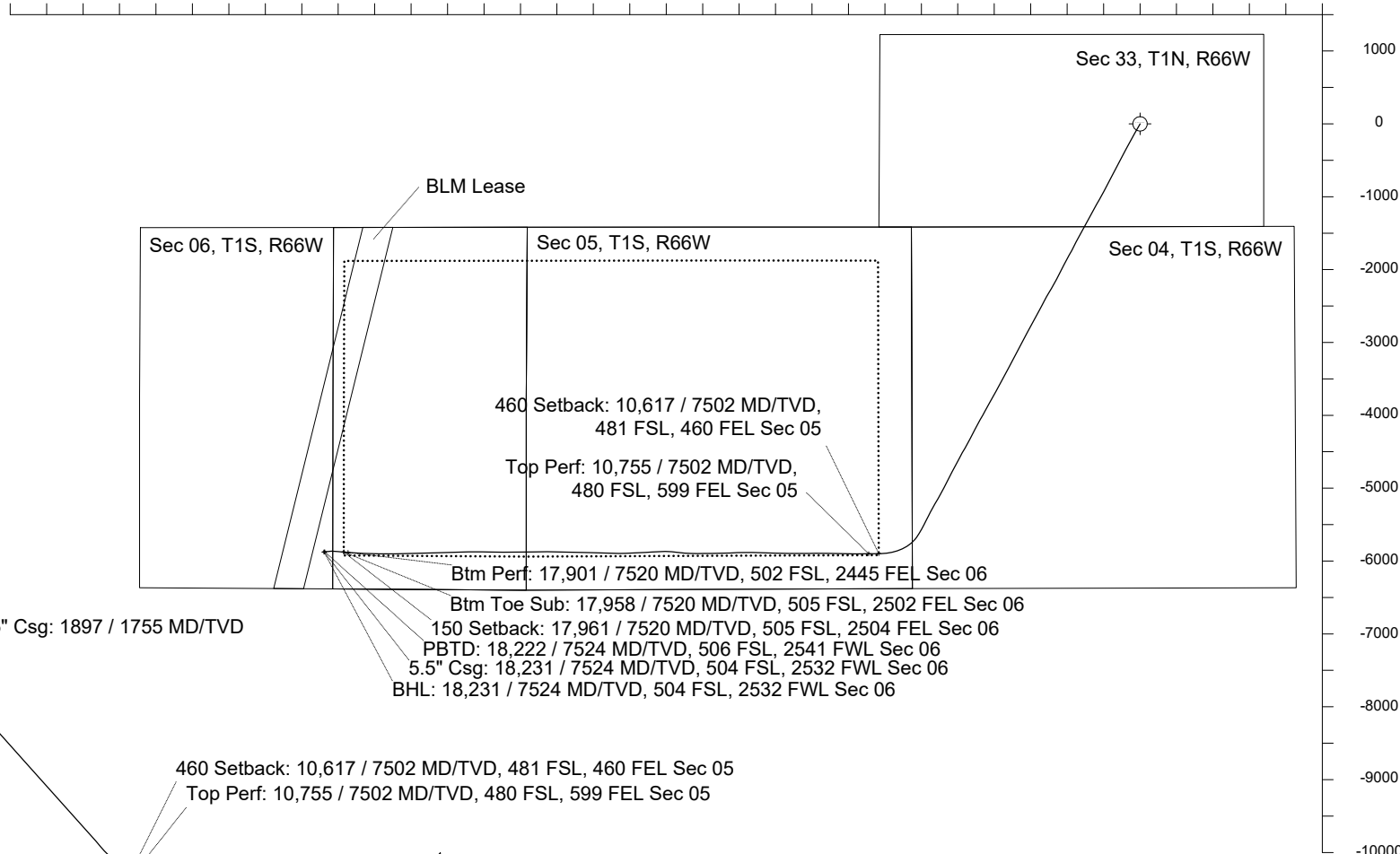
Scale 1 cm = 800 ft

Vertical Section (Feet) ->

Azimuth 242.30 with reference 0.00 N, 0.00 E from S01 - Ottesen LE 06-370HN

<- North(Feet)

Scale 1 cm = 500 ft



Great Western Operating Co, LLC
Directional Survey Report
Wellpath: Ottesen LE 06-370HN
MDs and TVDs are from Rig Floor 5096.5ft above Mean Sea Level

Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Dec-18-2018	Mar-27-2019	05-123-48288	20.00	Ottesen LE 06-370HN

Slot Coordinates

Latitude	Longitude
40.00432800	-104.77875000

Pad Information

Pad Name	Ground Elev.
Ottesen	5076.50

Field

Name
Wattenburg

Wellpath Report

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
0.00	0.00	0.000	0.00	0.00	0.00		0.00	40.00432800	-104.77875000
20.00	0.00	119.660	20.00	0.00	0.00	==>	0.00	40.00432800	-104.77875000
159.00	0.62	119.660	159.00	-0.37	0.65	0.45	-0.41	40.00432698	-104.77874767
244.00	0.44	100.200	243.99	-0.66	1.37	0.30	-0.91	40.00432620	-104.77874509
305.00	0.26	189.010	304.99	-0.84	1.58	0.83	-1.01	40.00432571	-104.77874435
395.00	0.79	252.820	394.99	-1.22	0.96	0.79	-0.28	40.00432465	-104.77874658
484.00	2.55	215.550	483.95	-3.01	-0.78	2.22	2.09	40.00431973	-104.77875278
574.00	5.63	206.060	573.71	-8.61	-3.88	3.49	7.44	40.00430437	-104.77876386
664.00	6.59	208.080	663.20	-17.13	-8.25	1.09	15.27	40.00428097	-104.77877946
754.00	9.10	213.440	752.35	-27.63	-14.61	2.90	25.78	40.00425216	-104.77880214
844.00	13.40	214.500	840.60	-42.17	-24.44	4.78	41.24	40.00421224	-104.77883724
934.00	16.96	212.210	927.45	-61.88	-37.35	4.01	61.83	40.00415814	-104.77888332
1024.00	20.04	209.310	1012.79	-86.44	-51.90	3.57	86.13	40.00409073	-104.77893525
1114.00	20.39	207.820	1097.24	-113.75	-66.76	0.69	111.99	40.00401575	-104.77898832
1204.00	21.97	206.580	1181.16	-142.67	-81.62	1.82	138.58	40.00393635	-104.77904133
1294.00	25.88	205.790	1263.41	-175.43	-97.70	4.36	168.05	40.00384644	-104.77909875
1384.00	28.78	207.640	1343.36	-212.31	-116.30	3.36	201.66	40.00374518	-104.77916514
1474.00	33.22	210.890	1420.49	-252.69	-139.02	5.27	240.54	40.00363435	-104.77924624
1564.00	34.84	210.450	1495.08	-296.01	-164.71	1.82	283.42	40.00351543	-104.77933793
1654.00	39.24	208.080	1566.90	-343.31	-191.15	5.14	328.82	40.00338558	-104.77943232
1744.00	38.76	207.290	1636.85	-393.46	-217.47	0.77	375.43	40.00324791	-104.77952625
1834.00	39.64	206.940	1706.59	-444.09	-243.39	1.01	421.92	40.00310892	-104.77961879
1897.00	40.26	207.370	1754.89	-480.09	-261.86	1.08	455.00	40.00301011	-104.77968469
1976.00	41.04	207.900	1814.82	-525.68	-285.73	1.08	497.33	40.00288496	-104.77976991
2066.00	45.80	208.990	1880.17	-580.04	-315.21	5.35	548.70	40.00273573	-104.77987513
2156.00	47.26	209.080	1942.09	-637.15	-346.91	1.62	603.31	40.00257897	-104.77998828
2245.00	47.44	207.070	2002.39	-694.90	-377.71	1.67	657.43	40.00242043	-104.78009823
2335.00	47.10	205.220	2063.47	-754.24	-406.84	1.56	710.80	40.00225754	-104.78020221
2425.00	47.15	205.580	2124.70	-813.82	-435.13	0.30	763.54	40.00209399	-104.78030318
2514.00	47.13	208.110	2185.25	-872.02	-464.59	2.08	816.67	40.00193422	-104.78040832
2604.00	47.24	209.900	2246.41	-929.75	-496.60	1.46	871.85	40.00177574	-104.78052257
2694.00	47.22	209.130	2307.53	-987.25	-529.15	0.63	927.39	40.00161791	-104.78063875
2784.00	46.96	209.170	2368.81	-1044.81	-561.25	0.29	982.58	40.00145987	-104.78075335
2873.00	47.03	209.410	2429.51	-1101.58	-593.10	0.21	1037.16	40.00130405	-104.78086700
2963.00	47.17	208.580	2490.78	-1159.24	-625.05	0.69	1092.26	40.00114575	-104.78098107
3053.00	47.10	208.780	2552.00	-1217.12	-656.71	0.18	1147.19	40.00098688	-104.78109406
3143.00	47.04	208.090	2613.30	-1275.06	-688.09	0.57	1201.90	40.00082781	-104.78120605
3232.00	47.26	208.680	2673.83	-1332.47	-719.11	0.55	1256.05	40.00067023	-104.78131677
3322.00	47.20	209.140	2734.94	-1390.30	-751.05	0.38	1311.21	40.00051147	-104.78143076
3412.00	47.21	208.040	2796.09	-1448.29	-782.65	0.90	1366.15	40.00035229	-104.78154356
3501.00	47.14	208.930	2856.59	-1505.66	-813.78	0.74	1420.38	40.00019480	-104.78165467
3591.00	47.31	208.660	2917.71	-1563.55	-845.60	0.29	1475.46	40.00003587	-104.78176824
3681.00	47.26	207.660	2978.76	-1621.85	-876.81	0.82	1530.19	39.99987583	-104.78187962
3770.00	47.28	207.280	3039.15	-1679.86	-906.96	0.31	1583.85	39.99971660	-104.78198725
3860.00	47.17	207.980	3100.27	-1738.38	-937.60	0.58	1638.18	39.99955594	-104.78209660
3950.00	47.22	209.200	3161.43	-1796.36	-969.20	1.00	1693.11	39.99939678	-104.78220937
4040.00	47.23	208.650	3222.55	-1854.18	-1001.15	0.45	1748.27	39.99923805	-104.78232341
4129.00	47.24	207.910	3282.98	-1911.72	-1032.11	0.61	1802.43	39.99908010	-104.78243389
4219.00	47.25	207.420	3344.08	-1970.25	-1062.79	0.40	1856.80	39.99891943	-104.78254339
4309.00	47.16	206.850	3405.22	-2029.02	-1092.91	0.48	1910.78	39.99875809	-104.78265089
4398.00	47.35	207.040	3465.63	-2087.29	-1122.53	0.26	1964.09	39.99859815	-104.78275660
4488.00	47.30	207.080	3526.64	-2146.21	-1152.63	0.06	2018.13	39.99843639	-104.78286403
4578.00	47.22	208.670	3587.72	-2204.64	-1183.53	1.30	2072.65	39.99827600	-104.78297431
4667.00	47.03	211.330	3648.28	-2261.11	-1216.13	2.20	2127.77	39.99812096	-104.78309068
4757.00	47.16	211.320	3709.55	-2317.43	-1250.41	0.14	2184.29	39.99796637	-104.78321299
4847.00	47.19	209.630	3770.73	-2374.31	-1283.88	1.38	2240.37	39.99781021	-104.78333246
4936.00	47.21	206.630	3831.21	-2431.89	-1314.66	2.47	2294.38	39.99765215	-104.78344232
5026.00	47.07	207.400	3892.43	-2490.66	-1344.63	0.65	2348.23	39.99749081	-104.78354926
5116.00	47.15	209.010	3953.69	-2548.77	-1375.79	1.31	2402.84	39.99733130	-104.78366047
5206.00	47.12	209.610	4014.91	-2606.29	-1408.08	0.49	2458.16	39.99717340	-104.78377572
5295.00	47.18	209.080	4075.44	-2663.17	-1440.06	0.44	2512.91	39.99701726	-104.78388984
5385.00	47.18	208.050	4136.61	-2721.14	-1471.62	0.84	2567.81	39.99685810	-104.78400249
5475.00	47.15	206.730	4197.80	-2779.74	-1501.98	1.08	2621.93	39.99669724	-104.78411084
5565.00	47.17	206.240	4259.00	-2838.81	-1531.41	0.40	2675.44	39.99653509	-104.78421587
5655.00	47.04	207.550	4320.26	-2897.61	-1561.24	1.08	2729.18	39.99637368	-104.78432230
5744.00	47.20	209.000	4380.82	-2955.04	-1592.13	1.21	2783.23	39.99621601	-104.78443255
5834.00	47.19	208.590	4441.98	-3012.91	-1623.94	0.33	2838.28	39.99605716	-104.78454605
5924.00	47.14	208.480	4503.17	-3070.89	-1655.46	0.11	2893.15	39.99589799	-104.78465856
6014.00	47.22	208.470	4564.34	-3128.91	-1686.94	0.09	2947.99	39.99573870	-104.78477088

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6103.00	47.16	208.360	4624.82	-3186.34	-1718.01	0.11	3002.19	39.99558105	-104.78488176
6193.00	47.12	207.920	4686.04	-3244.51	-1749.12	0.36	3056.78	39.99542135	-104.78492729
6283.00	47.00	207.850	4747.35	-3302.75	-1779.94	0.14	3111.13	39.99526149	-104.78510276
6373.00	47.17	207.990	4808.63	-3360.99	-1810.80	0.22	3165.53	39.99510160	-104.78521290
6462.00	47.18	207.830	4869.13	-3418.67	-1841.35	0.13	3219.39	39.99494325	-104.78532193
6552.00	47.19	207.720	4930.30	-3477.09	-1872.12	0.09	3273.78	39.99478290	-104.78543172
6642.00	47.05	207.630	4991.54	-3535.49	-1902.75	0.17	3328.05	39.99462256	-104.78554103
6731.00	47.47	207.690	5051.94	-3593.39	-1933.09	0.47	3381.83	39.99446363	-104.78564931
6821.00	47.10	206.840	5113.00	-3652.16	-1963.39	0.81	3435.97	39.99430227	-104.78575742
6911.00	47.27	208.710	5174.17	-3710.57	-1994.15	1.54	3490.36	39.99414193	-104.78586720
7001.00	47.12	211.290	5235.33	-3767.75	-2027.16	2.11	3546.16	39.99398497	-104.78598499
7090.00	47.18	210.770	5295.85	-3823.66	-2060.79	0.43	3601.93	39.99383148	-104.78610501
7180.00	47.15	209.600	5357.05	-3880.71	-2093.98	0.95	3657.82	39.99367488	-104.78622343
7270.00	47.09	207.500	5418.29	-3938.63	-2125.49	1.71	3712.65	39.99351586	-104.78633589
7359.00	46.55	208.480	5479.19	-3995.94	-2155.95	1.01	3766.26	39.99335854	-104.78644457
7449.00	46.82	210.020	5540.94	-4053.07	-2187.94	1.28	3821.14	39.99320171	-104.78655875
7539.00	47.21	209.540	5602.30	-4110.21	-2220.64	0.58	3876.65	39.99304483	-104.78667543
7628.00	47.15	207.670	5662.80	-4167.52	-2251.90	1.54	3930.96	39.99288751	-104.78678695
7718.00	47.06	206.510	5724.06	-4226.22	-2281.92	0.95	3984.83	39.99272637	-104.78689409
7808.00	47.00	206.900	5785.40	-4285.05	-2311.52	0.32	4038.38	39.99256487	-104.78699969
7898.00	46.99	208.430	5846.79	-4343.33	-2342.07	1.24	4092.53	39.99240486	-104.78710873
7987.00	47.15	209.650	5907.41	-4400.30	-2373.70	1.02	4147.01	39.99224846	-104.78722160
8077.00	47.22	210.760	5968.58	-4457.36	-2406.92	0.91	4202.94	39.99209183	-104.78734012
8167.00	47.19	208.090	6029.73	-4514.87	-2439.36	2.18	4258.39	39.99193395	-104.78745587
8256.00	47.16	207.050	6090.23	-4572.73	-2469.57	0.86	4312.04	39.99177511	-104.78756367
8346.00	47.13	208.050	6151.44	-4631.23	-2500.08	0.82	4366.25	39.99161453	-104.78767255
8436.00	47.27	209.050	6212.59	-4689.23	-2531.64	0.83	4421.15	39.99145529	-104.78778517
8526.00	47.31	208.290	6273.64	-4747.25	-2563.37	0.62	4476.21	39.99129600	-104.78789838
8615.00	47.27	207.030	6334.01	-4805.17	-2593.73	1.04	4530.01	39.99113700	-104.78800670
8705.00	47.26	206.440	6395.08	-4864.21	-2623.47	0.48	4583.78	39.99097492	-104.78811281
8795.00	47.32	206.320	6456.13	-4923.46	-2652.85	0.12	4637.34	39.99081228	-104.78821765
8885.00	47.29	207.530	6517.16	-4982.43	-2682.80	0.99	4691.27	39.99065038	-104.78832452
8974.00	47.24	209.080	6577.55	-5039.98	-2713.80	1.28	4745.46	39.99049239	-104.78843512
9064.00	47.10	209.830	6638.74	-5097.46	-2746.25	0.63	4800.91	39.99033461	-104.78855092
9154.00	47.10	209.750	6700.00	-5154.67	-2779.01	0.07	4856.51	39.99017754	-104.78866780
9243.00	47.16	209.640	6760.55	-5211.33	-2811.32	0.11	4911.46	39.99002199	-104.78878309
9333.00	47.13	209.120	6821.77	-5268.82	-2843.69	0.42	4966.84	39.98986416	-104.78889859
9423.00	47.06	207.910	6883.04	-5326.75	-2875.16	0.99	5021.63	39.98970514	-104.78901087
9513.00	47.02	206.840	6944.37	-5385.24	-2905.44	0.87	5075.63	39.98954458	-104.78911893
9602.00	47.15	206.600	7004.98	-5443.46	-2934.75	0.25	5128.64	39.98938475	-104.78922350
9692.00	47.10	207.210	7066.21	-5502.27	-2964.59	0.50	5182.40	39.98922329	-104.78932998
9782.00	47.12	209.140	7127.47	-5560.39	-2995.73	1.57	5236.98	39.98906373	-104.78944106
9872.00	47.14	210.660	7188.70	-5617.57	-3028.61	1.24	5292.67	39.98890676	-104.78955837
9961.00	49.10	214.130	7248.12	-5673.49	-3064.12	3.64	5350.10	39.98875325	-104.78968509
10051.00	52.18	223.900	7305.27	-5727.35	-3107.93	9.06	5413.93	39.98860539	-104.78984140
10141.00	55.12	236.700	7358.76	-5773.36	-3163.59	11.90	5484.60	39.98847905	-104.79004004
10231.00	61.60	240.470	7405.96	-5813.19	-3228.98	8.03	5561.01	39.98836969	-104.79027336
10320.00	67.72	246.200	7444.06	-5849.16	-3300.83	9.00	5641.34	39.98827092	-104.79052976
10410.00	74.73	257.970	7473.10	-5875.13	-3381.74	14.62	5725.05	39.98819961	-104.79081851
10500.00	80.91	263.660	7492.09	-5889.11	-3468.52	9.24	5808.38	39.98816121	-104.79112817
10590.00	87.17	266.580	7501.43	-5896.71	-3557.65	7.67	5890.84	39.98814032	-104.79144627
10616.37	88.24	267.390	7502.49	-5898.09	-3583.96	5.08	5914.78	39.98813650	-104.79154016
10679.00	90.77	269.320	7503.03	-5899.89	-3646.56	5.08	5971.03	39.98813155	-104.79176354
10755.00	90.51	269.790	7502.18	-5900.47	-3722.55	0.71	6038.59	39.98812990	-104.79203474
10769.00	90.46	269.880	7502.07	-5900.51	-3736.55	0.71	6051.00	39.98812979	-104.79208470
10859.00	89.85	269.900	7501.82	-5900.69	-3826.55	0.68	6130.77	39.98812928	-104.79240588
10948.00	90.62	269.850	7501.46	-5900.88	-3915.55	0.87	6209.66	39.98812871	-104.79272349
11038.00	90.58	270.940	7500.52	-5900.26	-4005.54	1.21	6289.05	39.98813037	-104.79304465
11128.00	90.55	271.110	7499.63	-5898.65	-4095.52	0.19	6367.97	39.98813475	-104.79336577
11218.00	90.49	270.830	7498.81	-5897.13	-4185.50	0.32	6446.94	39.98813889	-104.79368689
11307.00	90.86	270.870	7497.76	-5895.81	-4274.49	0.42	6525.11	39.98814247	-104.79400445
11397.00	90.58	270.630	7496.63	-5894.63	-4364.47	0.41	6604.24	39.98814566	-104.79432558
11487.00	89.66	269.780	7496.44	-5894.31	-4454.47	1.39	6683.77	39.98814650	-104.79464676
11576.00	90.06	269.430	7496.66	-5894.92	-4543.47	0.60	6762.86	39.98814477	-104.79496437
11666.00	89.88	270.190	7496.71	-5895.22	-4633.46	0.87	6842.68	39.98814391	-104.79528555
11756.00	89.54	269.750	7497.16	-5895.27	-4723.46	0.62	6922.39	39.98814373	-104.79560673
11845.00	89.51	270.380	7497.90	-5895.17	-4812.46	0.71	7001.14	39.98814396	-104.79592433
11935.00	89.45	271.030	7498.72	-5894.06	-4902.45	0.73	7080.30	39.98814695	-104.79624548
12025.00	89.60	271.840	7499.46	-5891.80	-4992.42	0.92	7158.91	39.98815309	-104.79656655
12115.00	89.45	271.260	7500.21	-5889.37	-5082.38	0.67	7237.44	39.98815972	-104.79688761
12204.00	90.18	272.240	7500.50	-5886.65	-5171.34	1.37	7314.94	39.98816714	-104.79720507
12294.00	89.60	271.450	7500.67	-5883.75	-5261.29	1.09	7393.23	39.98817504	-104.79752608
12384.00	89.54	270.470	7501.35	-5882.25	-5351.27	1.09	7472.20	39.98817912	-104.79784721
12473.00	89.60	269.490	7502.01	-5882.28	-5440.27	1.10	7551.02	39.98817899	-104.79816482
12563.00	89.63	266.970	7502.62	-5885.06	-5530.22	2.80	7631.95	39.98817130	-104.79848581
12653.00	90.03	267.980	7502.89	-5889.02	-5620.13	1.21	7713.40	39.98816036	-104.79880668
12742.00	89.66	268.940	7503.13	-5891.41	-5709.09	1.16	7793.28	39.98815374	-104.79912417
12832.00	89.63	268.560	7503.68	-5893.38	-5799.07	0.42	7873.86	39.98814829	-104.79944527
12922.00	89.97	269.280	7504.00	-5895.07	-5889.05	0.88	7954.32	39.98814358	-104.79976639
13012.00	90.00	269.110	7504.02	-5896.34	-5979.04	0.19	8034.59	39.98814005	-104.80008754
13101.00	89.91	270.070	7504.09	-5896.98	-6068.04	1.08	8113.68	39.98813824	-104.80040515
13191.00	90.09	270.760	7504.09	-5896.32	-6158.04	0.79	8193.07	39.98813997	-104.80072632
13281.00	90.40	274.810	7503.71	-5891.95	-6247.91	4.51	8270.61	39.98815191	-104.80104706
13371.00	89.94	277.960	7503.44	-5881.94	-6337.34	3.54	8345.14	39.98817932	-104.80136622
13460.00	89.97	274.620	7503.51	-5872.19	-6425.79	3.75	8418.92	39.98820602	-104.80168189
13550.00	90.00	270.030	7503.53	-5868.54	-6515.70	5.10	8496.83	39.98821598	-104.80200273
13640.00	90.12	266.710	7503.44	-5871.10	-6605.65	3.69	8577.66	39.98820888	-104.80232374
13729.00	90.12	266.860	7503.25	-5876.10	-6694.51	0.17	8658.66	39.98819512	-104.80264085
13819.00	89.97	266.830	7503.18	-5881.05	-6784.37	0.17	8740.53	39.98818145	-104.80296154
13909.00	90.03	267.050	7503.18	-5885.85	-6874.24	0.25	8822.33	39.98816820	-104.80328226
13999.00	90.09	267.230	7503.09	-5890.34	-6964.13	0.21	8904.01	39.98815580	-104.80360304
14089.00	90.03	268.370	7502.99	-5893.80	-7054.06	1.27	8985.24	39.98814625	-104.80392398
14178.00	90.00	270.260	7502.97	-5894.86	-7143.05	2.12	9064.53	39.98814326	-104.80424156

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14268.00	89.91	271.610	7503.04	-5893.39	-7233.04	1.50	9143.52	39.98814722	-104.80456270
14358.00	90.00	271.750	7503.11	-5890.76	-7323.00	0.18	9221.94	39.98815439	-104.80488375
14447.00	90.06	271.580	7503.06	-5888.17	-7411.96	0.20	9299.51	39.98816141	-104.80520123
14537.00	90.43	270.940	7502.68	-5886.19	-7501.94	0.82	9378.26	39.98816677	-104.80552234
14627.00	90.52	271.140	7501.93	-5884.56	-7591.92	0.24	9457.17	39.98817118	-104.80584346
14717.00	90.62	271.650	7501.04	-5882.37	-7681.89	0.58	9535.81	39.98817712	-104.80616453
14806.00	90.06	271.730	7500.51	-5879.74	-7770.85	0.64	9613.35	39.98818425	-104.80648201
14896.00	90.15	271.000	7500.35	-5877.60	-7860.82	0.82	9692.02	39.98819006	-104.80680310
14986.00	90.03	270.880	7500.20	-5876.12	-7950.81	0.19	9771.01	39.98819403	-104.80712424
15076.00	90.00	271.430	7500.18	-5874.31	-8040.79	0.61	9849.84	39.98819893	-104.80744537
15165.00	89.75	270.240	7500.37	-5873.01	-8129.78	1.37	9928.03	39.98820241	-104.80776294
15255.00	89.75	269.310	7500.77	-5873.36	-8219.78	1.03	10007.88	39.98820346	-104.80808412
15345.00	89.72	268.930	7501.18	-5874.75	-8309.76	0.42	10088.19	39.98819748	-104.80840526
15435.00	89.72	269.080	7501.62	-5876.31	-8399.75	0.17	10168.59	39.98819311	-104.80872639
15524.00	89.72	269.470	7502.06	-5877.43	-8488.74	0.44	10247.91	39.98818994	-104.80904398
15614.00	89.78	269.780	7502.45	-5878.02	-8578.74	0.35	10327.87	39.98818823	-104.80936515
15704.00	89.88	269.990	7502.72	-5878.20	-8668.74	0.26	10407.64	39.98818765	-104.80968633
15794.00	89.88	270.380	7502.91	-5877.91	-8758.74	0.43	10487.19	39.98818836	-104.81000752
15883.00	89.97	270.590	7503.02	-5877.16	-8847.73	0.26	10565.64	39.98819035	-104.81032512
15973.00	89.88	270.850	7503.14	-5876.03	-8937.73	0.31	10644.79	39.98819336	-104.81064628
16063.00	89.91	271.150	7503.31	-5874.46	-9027.71	0.33	10723.74	39.98819758	-104.81096742
16153.00	89.97	270.270	7503.40	-5873.34	-9117.70	0.98	10802.90	39.98820056	-104.81128858
16243.00	89.97	269.330	7503.45	-5873.66	-9207.70	1.04	10882.73	39.98819960	-104.81160976
16332.00	89.97	268.870	7503.49	-5875.06	-9296.69	0.52	10962.17	39.98819567	-104.81192733
16422.00	90.00	268.080	7503.52	-5877.45	-9386.66	0.88	11042.94	39.98818901	-104.81224840
16512.00	89.97	268.080	7503.54	-5880.47	-9476.61	0.03	11123.99	39.98818063	-104.81256940
16601.00	90.00	267.990	7503.56	-5883.52	-9565.56	0.11	11204.16	39.98817216	-104.81288682
16691.00	90.00	267.540	7503.56	-5887.03	-9655.49	0.50	11285.42	39.98816243	-104.81320776
16781.00	90.00	267.770	7503.56	-5890.71	-9745.41	0.26	11366.75	39.98815223	-104.81352867
16871.00	89.66	268.260	7503.83	-5893.83	-9835.36	0.66	11447.84	39.98814357	-104.81384965
16960.00	89.01	268.980	7504.86	-5895.97	-9924.32	1.09	11527.61	39.98813759	-104.81416715
17050.00	89.05	269.140	7506.39	-5897.45	-10014.30	0.18	11607.96	39.98813344	-104.81448824
17140.00	89.45	269.170	7507.57	-5898.77	-10104.28	0.45	11688.25	39.98812970	-104.81480936
17230.00	88.89	269.390	7508.87	-5899.90	-10194.26	0.67	11768.44	39.98812649	-104.81513049
17319.00	89.08	269.100	7510.45	-5901.08	-10283.24	0.39	11847.77	39.98812317	-104.81544802
17409.00	88.99	269.990	7511.96	-5901.79	-10373.23	0.99	11927.78	39.98812111	-104.81576915
17499.00	88.92	270.720	7513.60	-5901.23	-10463.21	0.81	12007.19	39.98812254	-104.81609027
17589.00	89.38	271.520	7514.94	-5899.48	-10553.18	1.03	12086.03	39.98812726	-104.81641136
17678.00	88.98	272.350	7516.21	-5896.47	-10642.12	1.04	12163.38	39.98813540	-104.81672876
17768.00	89.32	273.550	7517.55	-5891.84	-10731.99	1.39	12240.80	39.98814801	-104.81704949
17858.00	89.05	275.330	7518.83	-5884.87	-10821.71	2.00	12317.00	39.98816703	-104.81736967
17901.00	89.14	274.600	7519.51	-5881.15	-10864.54	1.70	12353.19	39.98817719	-104.81752254
17948.00	89.23	273.810	7520.18	-5877.70	-10911.41	1.70	12393.09	39.98818660	-104.81768980
17958.23	89.20	274.180	7520.32	-5876.99	-10921.61	3.66	12401.79	39.98818855	-104.81772622
17960.74	89.19	274.280	7520.35	-5876.81	-10924.11	3.66	12403.92	39.98818905	-104.81773515
18037.00	88.95	277.060	7521.59	-5869.28	-10999.98	3.66	12467.60	39.98820963	-104.81800592
18127.00	89.17	269.690	7523.07	-5863.98	-11089.75	8.19	12544.62	39.98822405	-104.81832629
18207.00	89.54	259.480	7523.97	-5871.52	-11169.29	12.77	12618.54	39.98820326	-104.81861011
18231.00	89.54	259.480	7524.17	-5875.90	-11192.88	==>	12641.47	39.98819120	-104.81869431

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1897.00	1754.89	-480.09	-261.86	40.00301011	-104.77968469	9.625" Csg: 1897 / 1755 MD/TVD
10616.37	7502.49	-5898.09	-3583.96	39.98813650	-104.79154016	460 Setback: 10,617 / 7502 MD/TVD, 481 FSL, 460 FEL Sec 05
10755.00	7502.18	-5900.47	-3722.55	39.98812990	-104.79203474	Top Perf: 10,755 / 7502 MD/TVD, 480 FSL, 599 FEL Sec 05
17901.00	7519.51	-5881.15	-10864.54	39.98817719	-104.81752254	Btm Perf: 17,901 / 7520 MD/TVD, 502 FSL, 2445 FEL Sec 06
17958.23	7520.32	-5876.99	-10921.61	39.98818855	-104.81772622	Btm Toe Sub: 17,958 / 7520 MD/TVD, 505 FSL, 2502 FEL Sec 06
17960.74	7520.35	-5876.81	-10924.11	39.98818905	-104.81773515	150 Setback: 17,961 / 7520 MD/TVD, 505 FSL, 2504 FEL Sec 06
18222.01	7524.09	-5874.26	-11184.04	39.98819572	-104.81866277	PBTD: 18,222 / 7524 MD/TVD, 506 FSL, 2541 FWL Sec 06
18231.00	7524.17	-5875.90	-11192.88	39.98819120	-104.81869431	5.5" Csg: 18,231 / 7524 MD/TVD, 504 FSL, 2532 FWL Sec 06
18231.00	7524.17	-5875.90	-11192.88	39.98819120	-104.81869431	BHL: 18,231 / 7524 MD/TVD, 504 FSL, 2532 FWL Sec 06

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	1897.00	1754.89	-480.09	-261.86
8.500	1897.00	1754.89	-480.09	-261.86	18231.00	7524.17	-5875.90	-11192.88

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	1897.00	1754.89	-480.09	-261.86
5 1/2in Casing	0.00	0.00	0.00	0.00	18231.00	7524.17	-5875.90	-11192.88

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
503475	As Drilled - 20181219	18231.00	7524.17	MWD

Coordinates are from Slot

MD's and TVD's are from Rig Floor 5096.5ft above Mean Sea Level

Vertical Section is from 0.00 0.00 on azimuth 242.300 degrees

Bottom hole distance is 12641.47 Feet on azimuth 242.30 degrees from Wellhead

Calculation method uses Minimum Curvature method

Prepared by Great Western Operating Co.

Date Printed: