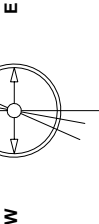


Great Western Operating Company, LLC

Location	Colorado	Slot	S05 - Ottesen LE 06-311HN
Field	Wattenburg	Well	Ottesen LE 06-311HN
Installation	Ottesen	Wellbore	Ottesen LE 06-311HN (AWB)

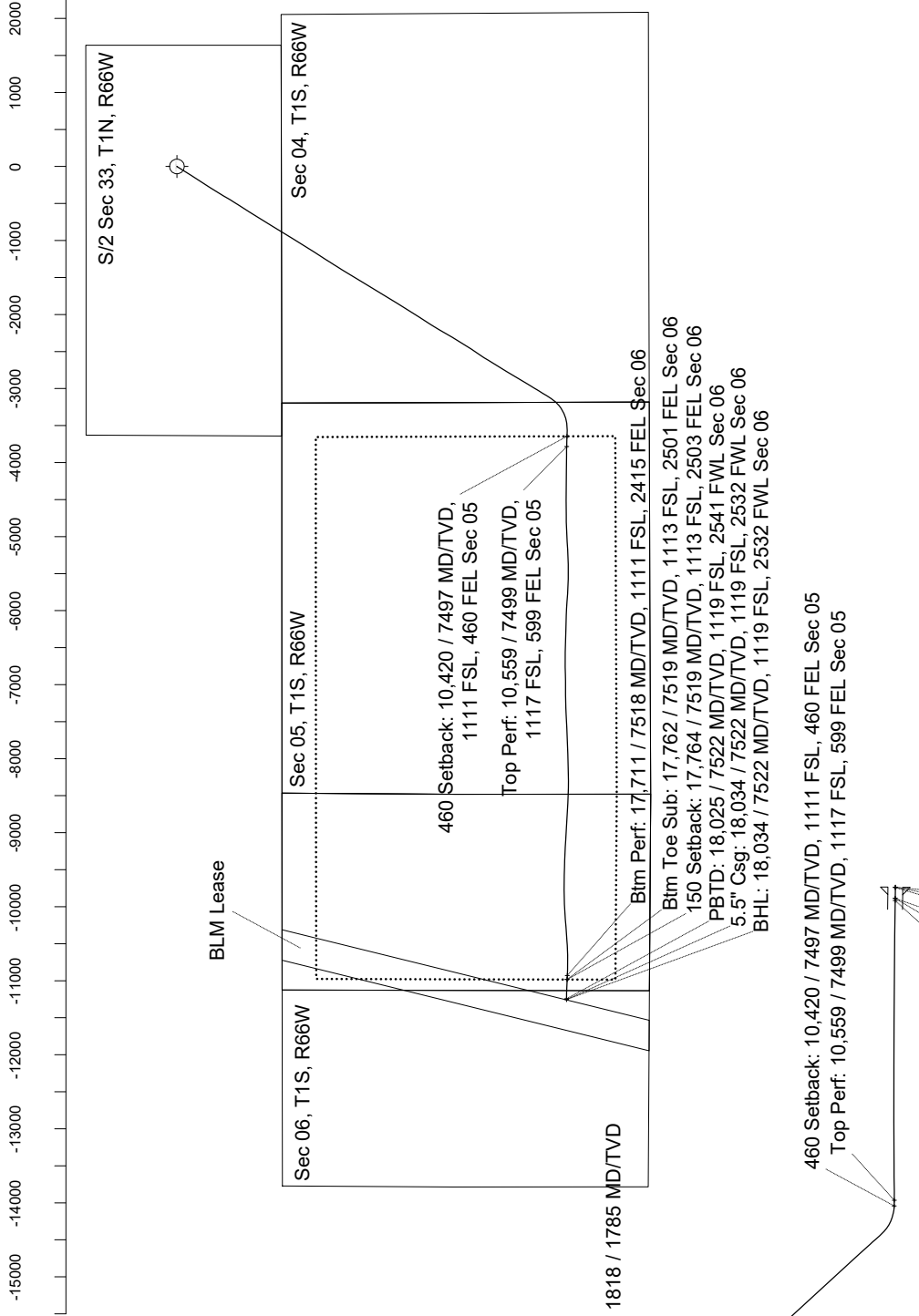
Created by	admin
Date plotted	28-Mar-2019
Plot reference is	Ottesen LE 06-311HN (AWB).
Ref wellpath is	Ottesen LE 06-311HN (AWP#1).
Coordinates are in Feet reference S05 - Ottesen LE 06-311HN.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum:	Actual Datum #1
Rig Datum to Mean Sea Level:	5096.50 ft.
Plot North is aligned to TRUE North.	



Aug-9-2018
Dip: 66.56 deg Field: 52263.9 mT
Lat: N40.0 16.5000 Long: W104.49 43.1184 Elev: 5073.80 ft
Magnetic North is 8.28 deg East of TRUE North
To correct azimuth from Magnetic to TRUE add 8.28 deg

Scale 1 cm = 500 ft

East (Feet) ->



<- True Vertical Depth (Feet)

Scale 1 cm = 800 ft

-4800

-3200

-1600

0

1600

3200

4800

6400

8000

9600

11200

Scale 1 cm = 800 ft

Vertical Section (Feet) ->

Azimuth 244.94 with reference 0.00 N, 0.00 E from S05 - Ottesen LE 06-311HN

-3200 -1600 0 1600 3200 4800 6400 8000 9600 11200 12800 14400 16000 17600

Great Western Operating Co, LLC
 Directional Survey Report
 Wellpath: Ottesen LE 06-311HN
 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
Jan-5-2019	Mar-28-2019	05-123-44345	20.00	Ottesen LE 06-311HN

Slot Coordinates

Latitude	Longitude
40.00432600	-104.77853600

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	40.00432600	-104.77853600
20.00	0.00	46.710	20.00	0.00	0.00	==>	0.00	40.00432600	-104.77853600
159.00	0.75	46.710	159.00	0.62	0.66	0.54	-0.86	40.00432771	-104.77853364
244.00	0.79	353.800	243.99	1.59	1.00	0.81	-1.58	40.00433036	-104.77853242
305.00	0.44	245.340	304.99	1.91	0.75	1.67	-1.48	40.00433124	-104.77853334
395.00	1.01	238.050	394.98	1.34	-0.24	0.64	-0.35	40.00432969	-104.77853686
484.00	0.92	219.420	483.97	0.38	-1.36	0.36	1.07	40.00432704	-104.77854086
574.00	0.44	178.020	573.96	-0.53	-1.81	0.73	1.86	40.00432456	-104.77854245
664.00	0.35	110.350	663.96	-0.97	-1.54	0.50	1.80	40.00432334	-104.77854149
754.00	0.40	98.040	753.96	-1.11	-0.97	0.11	1.35	40.00432296	-104.77853946
844.00	0.18	98.040	843.96	-1.17	-0.52	0.24	0.97	40.00432279	-104.77853785
934.00	0.83	233.300	933.95	-1.58	-0.90	1.07	1.49	40.00432166	-104.77853922
1024.00	3.69	218.540	1023.87	-4.24	-3.23	3.22	4.72	40.00431437	-104.77854752
1114.00	6.20	212.910	1113.53	-10.58	-7.67	2.84	11.43	40.00429695	-104.77856339
1204.00	8.00	211.590	1202.84	-20.00	-13.60	2.01	20.79	40.00427111	-104.77858453
1294.00	11.38	211.950	1291.54	-32.87	-21.58	3.76	33.47	40.00423577	-104.77861302
1384.00	14.19	213.180	1379.30	-49.64	-32.32	3.14	50.30	40.00418973	-104.77865135
1474.00	18.28	207.900	1465.70	-71.36	-44.96	4.83	70.95	40.00413012	-104.77869650
1564.00	20.26	207.820	1550.65	-97.62	-58.84	2.20	94.65	40.00405804	-104.77874604
1654.00	21.36	213.790	1634.79	-125.02	-75.23	2.65	121.10	40.00398280	-104.77880454
1744.00	23.95	214.670	1717.84	-153.67	-94.74	2.90	150.91	40.00390415	-104.77887419
1767.00	23.95	214.670	1738.86	-161.35	-100.05	==>	158.97	40.00388307	-104.77889314
1818.00	24.28	215.090	1785.41	-178.44	-111.97	0.73	177.01	40.00383616	-104.77893568
1888.00	24.73	215.660	1849.10	-202.12	-128.78	0.73	202.26	40.00377118	-104.77899568
1977.00	27.96	214.670	1928.85	-234.41	-151.51	3.66	236.52	40.00368253	-104.77907681
2067.00	29.41	211.270	2007.81	-270.65	-174.98	2.43	273.14	40.00358303	-104.77916060
2157.00	31.04	210.510	2085.57	-309.53	-198.23	1.86	310.67	40.00347630	-104.77924360
2247.00	34.91	211.020	2161.06	-351.61	-223.29	4.31	351.19	40.00336079	-104.77933305
2336.00	37.58	213.440	2232.83	-396.09	-251.38	3.40	395.47	40.00323869	-104.77943331
2426.00	40.38	213.680	2302.79	-443.26	-282.68	3.12	443.80	40.00310920	-104.77954502
2516.00	42.79	212.100	2370.10	-493.43	-315.09	2.92	494.41	40.00297149	-104.77966073
2605.00	45.05	211.030	2434.21	-546.03	-347.40	2.67	545.96	40.00282709	-104.77977603
2695.00	47.67	210.950	2496.31	-601.86	-380.93	2.91	599.98	40.00267383	-104.77989572
2785.00	47.73	210.140	2556.88	-659.19	-414.76	0.67	654.90	40.00251646	-104.78001647
2875.00	47.81	211.480	2617.38	-716.42	-448.89	1.11	710.06	40.00235935	-104.78013830
2964.00	47.77	211.820	2677.17	-772.54	-483.48	0.29	765.16	40.00220530	-104.78026177
3054.00	47.72	212.650	2737.69	-828.88	-519.01	0.68	821.21	40.00205062	-104.78038859
3144.00	47.74	212.500	2798.23	-885.01	-554.87	0.13	877.46	40.00189656	-104.78051657
3234.00	47.59	212.270	2858.84	-941.19	-590.50	0.25	933.54	40.00174234	-104.78064376
3323.00	47.68	212.190	2918.81	-996.82	-625.57	0.12	988.87	40.00158963	-104.78076894
3413.00	47.57	212.480	2979.47	-1052.99	-661.14	0.27	1044.87	40.00143542	-104.78089587
3503.00	47.60	212.680	3040.17	-1108.98	-696.91	0.17	1101.00	40.00128172	-104.78102357
3592.00	47.77	212.240	3100.09	-1164.51	-732.24	0.41	1156.51	40.00112928	-104.78114964
3682.00	47.65	211.830	3160.65	-1220.95	-767.55	0.36	1212.41	40.00097435	-104.78127569
3772.00	47.62	211.660	3221.30	-1277.50	-802.54	0.14	1268.05	40.00081911	-104.78140057
3861.00	47.59	210.580	3281.30	-1333.77	-836.51	0.90	1322.65	40.00066465	-104.78152181
3951.00	47.22	210.720	3342.22	-1390.77	-870.28	0.43	1377.39	40.00050819	-104.78164236
4041.00	47.55	210.490	3403.15	-1447.77	-904.00	0.41	1432.08	40.00035169	-104.78176271
4131.00	46.95	210.420	3464.24	-1504.74	-937.50	0.67	1486.55	40.00019530	-104.78188227
4220.00	47.59	210.450	3524.63	-1561.11	-970.62	0.72	1540.42	40.00004057	-104.78200047
4310.00	47.54	212.180	3585.37	-1617.85	-1005.14	1.42	1595.73	39.99988480	-104.78212368
4400.00	47.74	214.000	3646.01	-1673.56	-1041.44	1.51	1652.21	39.99973186	-104.78225326
4489.00	47.63	213.940	3705.92	-1728.14	-1078.22	0.13	1708.64	39.99958203	-104.78238450
4579.00	47.72	212.810	3766.53	-1783.71	-1114.82	0.93	1765.33	39.99942949	-104.78251514
4669.00	47.61	212.550	3827.14	-1839.71	-1150.74	0.25	1821.59	39.99927577	-104.78264335
4758.00	47.62	211.830	3887.13	-1895.34	-1185.76	0.60	1876.87	39.99912305	-104.78276834
4848.00	47.56	212.090	3947.83	-1951.72	-1220.94	0.22	1932.61	39.99896828	-104.78289388
4938.00	47.52	212.070	4008.59	-2007.98	-1256.20	0.05	1988.39	39.99881384	-104.78301974
5027.00	47.60	212.170	4068.65	-2063.60	-1291.12	0.12	2043.58	39.99866113	-104.78314437
5117.00	47.60	211.920	4129.34	-2119.94	-1326.39	0.21	2099.38	39.99850649	-104.78327022
5207.00	47.56	212.050	4190.05	-2176.29	-1361.58	0.12	2155.13	39.99835179	-104.78339583
5297.00	47.55	211.950	4250.78	-2232.61	-1396.77	0.08	2210.87	39.99819717	-104.78352143
5386.00	47.60	211.560	4310.83	-2288.48	-1431.35	0.33	2265.85	39.99804382	-104.78364483
5476.00	47.61	211.510	4371.51	-2345.13	-1466.11	0.04	2321.33	39.99788830	-104.78376889
5566.00	47.60	211.970	4432.19	-2401.65	-1501.08	0.38	2376.94	39.99773313	-104.78389368
5656.00	47.58	211.890	4492.89	-2458.05	-1536.22	0.07	2432.66	39.99757831	-104.78401910
5746.00	47.68	211.090	4553.54	-2514.75	-1570.95	0.67	2488.14	39.99742266	-104.78414306
5835.00	47.73	210.280	4613.43	-2571.36	-1604.55	0.68	2542.55	39.99726724	-104.78426295

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5925.00	47.43	209.750	4674.14	-2628.89	-1637.78	0.55	2597.02	39.99710932	-104.78438156
6015.00	47.65	210.900	4734.90	-2686.20	-1671.31	0.97	2651.66	39.99695199	-104.78450120
6104.00	46.99	211.740	4795.24	-2742.09	-1705.32	1.02	2706.14	39.99679855	-104.78462257
6194.00	47.68	211.650	4856.23	-2798.40	-1740.09	0.77	2761.49	39.99664397	-104.78474665
6284.00	47.54	211.500	4916.91	-2855.03	-1774.89	0.20	2817.00	39.99648850	-104.78487087
6374.00	47.62	212.000	4977.62	-2911.53	-1809.85	0.42	2872.60	39.99633341	-104.78499563
6464.00	47.74	212.300	5038.21	-2967.87	-1845.26	0.28	2928.54	39.99617874	-104.78512201
6553.00	47.69	211.910	5098.09	-3023.65	-1880.26	0.33	2983.86	39.99602563	-104.78524689
6643.00	47.66	211.650	5158.69	-3080.21	-1915.30	0.22	3039.56	39.99587035	-104.78537195
6733.00	47.53	211.350	5219.38	-3136.87	-1950.02	0.29	3095.02	39.99571480	-104.78549587
6822.00	47.66	212.230	5279.40	-3192.73	-1984.64	0.74	3150.04	39.99556146	-104.78561942
6912.00	47.62	212.850	5340.05	-3248.79	-2020.42	0.51	3206.18	39.99540755	-104.78574707
7002.00	47.68	213.360	5400.67	-3304.51	-2056.74	0.42	3262.69	39.99525459	-104.78587671
7091.00	47.51	212.930	5460.69	-3359.53	-2092.68	0.40	3318.54	39.99510354	-104.78600494
7181.00	47.69	212.560	5521.38	-3415.43	-2128.62	0.36	3374.78	39.99495008	-104.78613322
7271.00	47.56	211.380	5582.04	-3471.83	-2163.83	0.98	3430.56	39.99479525	-104.78625885
7361.00	47.60	210.930	5642.75	-3528.69	-2198.20	0.37	3485.78	39.99463916	-104.78638151
7450.00	47.54	210.400	5702.80	-3585.20	-2231.70	0.44	3540.06	39.99448405	-104.78650107
7540.00	47.48	209.500	5763.59	-3642.70	-2264.84	0.74	3594.42	39.99432619	-104.78661930
7630.00	46.86	209.430	5824.77	-3700.16	-2297.30	0.69	3648.17	39.99416843	-104.78673516
7719.00	47.70	210.540	5885.15	-3756.79	-2329.98	1.32	3701.76	39.99401297	-104.78685178
7809.00	47.25	212.100	5945.99	-3813.45	-2364.46	1.37	3756.99	39.99385742	-104.78697479
7899.00	47.72	212.530	6006.81	-3869.52	-2399.92	0.63	3812.86	39.99370351	-104.78710134
7989.00	47.62	212.810	6067.41	-3925.53	-2435.84	0.26	3869.11	39.99354975	-104.78722951
8078.00	47.65	214.040	6127.39	-3980.41	-2472.06	1.02	3925.17	39.99339909	-104.78735876
8168.00	47.86	214.280	6187.90	-4035.54	-2509.47	0.31	3982.41	39.99324774	-104.78749226
8258.00	47.78	213.450	6248.33	-4090.92	-2546.63	0.69	4039.53	39.99309571	-104.78762488
8347.00	47.78	212.800	6308.13	-4146.11	-2582.65	0.54	4095.53	39.99294418	-104.78775341
8437.00	47.83	211.100	6368.59	-4202.69	-2617.93	1.40	4151.45	39.99278887	-104.78787930
8527.00	47.82	210.850	6429.01	-4259.87	-2652.26	0.21	4206.77	39.99263188	-104.78800179
8617.00	47.75	211.830	6489.48	-4316.80	-2686.93	0.81	4262.29	39.99247559	-104.78812550
8706.00	47.74	210.840	6549.33	-4373.07	-2721.18	0.82	4317.15	39.99232113	-104.78824774
8796.00	47.54	211.620	6609.97	-4429.94	-2755.66	0.68	4372.47	39.99216501	-104.78837077
8886.00	47.05	211.920	6671.01	-4486.16	-2790.48	0.60	4427.82	39.99201065	-104.78849502
8976.00	47.66	211.490	6731.98	-4542.48	-2825.27	0.76	4483.19	39.99185604	-104.78861916
9065.00	47.64	210.530	6791.94	-4598.86	-2859.16	0.80	4537.76	39.99170128	-104.78874008
9155.00	47.47	210.370	6852.68	-4656.11	-2892.82	0.23	4592.50	39.99154410	-104.78886017
9245.00	47.45	210.670	6913.53	-4713.23	-2926.49	0.25	4647.20	39.99138728	-104.78898033
9334.00	46.72	211.170	6974.13	-4769.15	-2959.98	0.92	4701.22	39.99123377	-104.78909983
9424.00	47.64	211.630	7035.30	-4825.50	-2994.38	1.09	4756.24	39.99107909	-104.78922256
9514.00	47.79	211.300	7095.86	-4882.29	-3029.13	0.32	4811.78	39.99092317	-104.78934657
9604.00	47.71	211.470	7156.37	-4939.16	-3063.83	0.17	4867.29	39.99076704	-104.78947037
9693.00	47.75	210.840	7216.23	-4995.52	-3097.90	0.53	4922.03	39.99061232	-104.78959194
9783.00	50.16	213.870	7275.34	-5052.83	-3134.24	3.69	4979.22	39.99045500	-104.78972162
9873.00	55.91	221.230	7329.48	-5109.64	-3178.14	9.13	5043.04	39.99029902	-104.78987824
9963.00	60.46	231.280	7377.00	-5162.28	-3233.37	10.74	5115.38	39.99015450	-104.79007535
10052.00	66.11	240.950	7417.07	-5206.37	-3299.33	11.59	5193.80	39.99003343	-104.79031071
10142.00	71.49	250.520	7449.67	-5240.68	-3375.74	11.57	5277.55	39.98993924	-104.79058338
10232.00	77.00	260.090	7474.15	-5262.52	-3459.40	11.92	5362.59	39.98987926	-104.79088196
10322.00	83.09	270.250	7489.74	-5269.90	-3547.57	13.01	5445.59	39.98985897	-104.79119663
10411.00	87.81	271.970	7496.80	-5268.17	-3636.25	5.64	5525.19	39.98986366	-104.79151309
10420.30	88.03	272.020	7497.14	-5267.85	-3645.54	2.39	5533.46	39.98986455	-104.79154624
10501.00	89.91	272.440	7498.59	-5264.71	-3726.16	2.39	5605.17	39.98987313	-104.79183396
10559.00	89.87	271.590	7498.70	-5262.67	-3784.12	1.47	5656.81	39.98987871	-104.79204083
10591.00	89.85	271.120	7498.78	-5261.92	-3816.11	1.47	5685.47	39.98988077	-104.79215500
10681.00	89.94	270.160	7498.95	-5260.91	-3906.11	1.07	5766.57	39.98988349	-104.79247617
10770.00	90.58	271.160	7498.54	-5259.88	-3995.10	1.33	5846.75	39.98988626	-104.79279376
10860.00	90.43	270.100	7497.75	-5258.90	-4085.09	1.19	5927.86	39.98988894	-104.79311492
10950.00	90.55	270.620	7496.98	-5258.33	-4175.08	0.59	6009.14	39.98989045	-104.79343609
11039.00	90.52	270.240	7496.15	-5257.66	-4264.08	0.43	6089.48	39.98989224	-104.79375369
11129.00	90.65	271.080	7495.23	-5256.63	-4354.07	0.94	6170.56	39.98989505	-104.79407485
11219.00	90.37	270.120	7494.43	-5255.68	-4444.06	1.11	6251.68	39.98989759	-104.79439601
11309.00	90.55	269.600	7493.70	-5255.90	-4534.05	0.61	6333.30	39.98989694	-104.79471719
11398.00	90.55	269.910	7492.85	-5256.28	-4623.05	0.35	6414.08	39.98989585	-104.79503479
11488.00	90.31	269.350	7492.18	-5256.86	-4713.04	0.68	6495.85	39.98989421	-104.79535597
11578.00	90.25	268.750	7491.74	-5258.36	-4803.03	0.67	6578.00	39.98989007	-104.79567711
11667.00	90.15	267.570	7491.42	-5261.21	-4891.98	1.33	6659.79	39.98988217	-104.79599456
11757.00	90.06	267.310	7491.26	-5265.23	-4981.89	0.31	6742.94	39.98987109	-104.79631543
11847.00	90.37	267.230	7490.92	-5269.52	-5071.79	0.36	6826.20	39.98985927	-104.79663625
11936.00	90.03	266.030	7490.61	-5274.75	-5160.63	1.40	6908.89	39.98984486	-104.79695332
12026.00	90.12	267.200	7490.49	-5280.07	-5250.47	1.30	6992.53	39.98983022	-104.79727394
12116.00	89.88	268.990	7490.49	-5283.06	-5340.42	2.01	7075.28	39.98982196	-104.79759494
12206.00	89.78	269.190	7490.76	-5284.49	-5430.41	0.25	7157.40	39.98981798	-104.79791609
12295.00	89.82	270.270	7491.07	-5284.91	-5519.40	1.21	7238.20	39.98981678	-104.79823370
12385.00	89.88	271.280	7491.31	-5283.69	-5609.39	1.12	7319.21	39.98982006	-104.79855486
12475.00	89.97	273.740	7491.42	-5279.75	-5699.30	2.74	7398.99	39.98983082	-104.79887572
12564.00	89.78	274.190	7491.62	-5273.59	-5788.09	0.55	7476.81	39.98984766	-104.79919259
12654.00	90.00	274.360	7491.79	-5266.89	-5877.84	0.31	7555.27	39.98986602	-104.79951289
12744.00	90.22	272.360	7491.62	-5261.61	-5967.68	2.24	7634.42	39.98988044	-104.79983352
12833.00	90.00	272.180	7491.45	-5258.09	-6056.61	0.32	7713.49	39.98989006	-104.80015090
12923.00	89.97	271.270	7491.47	-5255.38	-6146.57	1.01	7793.84	39.98989744	-104.80047195
13013.00	89.97	271.560	7491.52	-5253.15	-6236.54	0.32	7874.40	39.98990347	-104.80079304
13103.00	90.09	271.930	7491.47	-5250.41	-6326.50	0.43	7954.73	39.98991094	-104.80111409
13192.00	90.06	272.170	7491.35	-5247.23	-6415.44	0.27	8033.96	39.98991961	-104.80143151
13282.00	90.12	272.080	7491.21	-5243.89	-6505.38	0.12	8114.02	39.98992871	-104.80175249
13372.00	90.18	269.880	7490.98	-5242.35	-6595.36	2.45	8194.88	39.98993287	-104.80207362
13461.00	90.31	269.440	7490.60	-5242.88	-6684.36	0.52	8275.72	39.98993135	-104.80239123
13551.00	90.22	268.850	7490.18	-5244.22	-6774.34	0.66	8357.81	39.98992760	-104.80271238
13641.00	90.18	268.930	7489.87	-5245.97	-6864.33	0.10	8440.06	39.98992275	-104.80303351
13731.00	90.22	269.370	7489.55	-5247.30	-6954.32	0.49	8522.15	39.98991901	-104.80335467
13820.00	89.82	269.540	7489.52	-5248.15	-7043.31	0.49	8603.13	39.98991662	-104.80367227

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13910.00	89.85	270.100	7489.78	-5248.43	-7133.31	0.62	8684.78	39.98991577	-104.80399346
14000.00	89.75	269.340	7490.10	-5248.87	-7223.31	0.85	8766.49	39.98991449	-104.80431465
14090.00	89.63	268.020	7490.58	-5250.95	-7313.28	1.47	8848.87	39.98990873	-104.80463574
14180.00	89.75	266.980	7491.07	-5254.87	-7403.19	1.16	8931.99	39.98989788	-104.80495662
14269.00	89.51	267.070	7491.64	-5259.49	-7492.07	0.29	9014.46	39.98988513	-104.80527380
14359.00	89.85	267.220	7492.15	-5263.97	-7581.96	0.41	9097.78	39.98987275	-104.80559458
14449.00	89.54	266.080	7492.63	-5269.23	-7671.80	1.31	9181.40	39.98985824	-104.80591521
14538.00	89.66	268.120	7493.25	-5273.73	-7760.68	2.30	9263.82	39.98984580	-104.80623240
14628.00	89.66	268.880	7493.78	-5276.09	-7850.65	0.84	9346.32	39.98983926	-104.80655347
14718.00	89.88	268.480	7494.14	-5278.16	-7940.62	0.51	9428.70	39.98983349	-104.80687457
14808.00	89.48	268.340	7494.64	-5280.66	-8030.59	0.47	9511.26	39.98982655	-104.80719563
14897.00	89.75	268.810	7495.24	-5282.87	-8119.56	0.61	9592.79	39.98982040	-104.80751315
14987.00	89.78	268.170	7495.61	-5285.25	-8209.52	0.71	9675.30	39.98981381	-104.80783422
15077.00	89.69	268.590	7496.03	-5287.79	-8299.49	0.48	9757.87	39.98980674	-104.80815528
15167.00	89.29	270.910	7496.83	-5288.18	-8389.48	2.62	9839.56	39.98980558	-104.80847643
15256.00	89.78	273.350	7497.55	-5284.87	-8478.40	2.80	9918.72	39.98981458	-104.80879381
15346.00	89.60	273.700	7498.04	-5279.34	-8568.23	0.44	9997.75	39.98982968	-104.80911439
15436.00	90.00	273.210	7498.35	-5273.92	-8658.07	0.70	10076.83	39.98984448	-104.80943501
15526.00	89.69	272.820	7498.60	-5269.18	-8747.94	0.55	10156.24	39.98985739	-104.80975576
15615.00	89.72	272.500	7499.05	-5265.05	-8836.85	0.36	10235.03	39.98986864	-104.81007304
15705.00	89.82	273.260	7499.42	-5260.53	-8926.73	0.85	10314.54	39.98988097	-104.81039383
15795.00	89.66	273.200	7499.82	-5255.46	-9016.59	0.19	10393.79	39.98989480	-104.81071452
15885.00	89.78	273.580	7500.26	-5250.14	-9106.43	0.44	10472.93	39.98990932	-104.81103515
15974.00	89.78	273.510	7500.61	-5244.64	-9195.26	0.08	10551.06	39.98992434	-104.81135217
16064.00	89.72	272.880	7501.00	-5239.62	-9285.12	0.70	10630.34	39.98983801	-104.81167287
16154.00	89.75	272.010	7501.41	-5235.78	-9375.03	0.97	10710.17	39.98994846	-104.81199377
16244.00	89.66	271.250	7501.88	-5233.22	-9464.99	0.85	10790.58	39.98995539	-104.81231483
16334.00	89.26	271.300	7502.73	-5231.22	-9554.97	0.45	10871.24	39.98996080	-104.81263593
16423.00	89.35	271.520	7503.81	-5229.03	-9643.93	0.27	10950.91	39.98996671	-104.81295344
16513.00	89.29	270.030	7504.87	-5227.81	-9733.92	1.66	11031.90	39.98996996	-104.81327457
16603.00	89.29	269.510	7505.99	-5228.17	-9823.91	0.58	11113.58	39.98996887	-104.81359574
16692.00	89.23	268.300	7507.14	-5229.87	-9912.88	1.36	11194.90	39.98996410	-104.81391327
16782.00	89.32	266.460	7508.28	-5233.99	-10002.78	2.05	11278.08	39.98995271	-104.81423408
16872.00	89.29	265.390	7509.37	-5240.38	-10092.54	1.19	11362.10	39.98993506	-104.81455442
16962.00	89.42	265.560	7510.38	-5247.48	-10182.26	0.24	11446.38	39.98991547	-104.81487459
17051.00	89.57	266.400	7511.17	-5253.72	-10271.03	0.96	11529.45	39.98989824	-104.81519140
17141.00	89.35	266.290	7512.02	-5259.46	-10360.85	0.27	11613.24	39.98988239	-104.81551192
17231.00	89.38	265.570	7513.01	-5265.84	-10450.61	0.80	11697.26	39.98986475	-104.81583227
17321.00	89.29	266.850	7514.06	-5271.79	-10540.41	1.43	11781.12	39.98984832	-104.81615273
17410.00	89.42	268.520	7515.06	-5275.39	-10629.33	1.88	11863.20	39.98983835	-104.81647005
17500.00	89.29	269.700	7516.07	-5276.79	-10719.31	1.32	11945.30	39.98983440	-104.81679118
17590.00	89.38	271.510	7517.12	-5275.84	-10809.29	2.01	12026.42	39.98983691	-104.81711232
17680.00	89.42	272.830	7518.06	-5272.43	-10899.22	1.47	12106.44	39.98984615	-104.81743326
17711.00	89.42	272.630	7518.37	-5270.95	-10930.19	0.63	12133.86	39.98985017	-104.81754377
17762.16	89.42	272.310	7518.89	-5268.74	-10981.30	0.63	12179.23	39.98985617	-104.81772617
17764.16	89.42	272.300	7518.91	-5268.66	-10983.29	0.63	12181.00	39.98985639	-104.81773330
17769.00	89.42	272.270	7518.96	-5268.47	-10988.13	0.63	12185.30	39.98985691	-104.81775056
17859.00	89.45	272.110	7519.85	-5265.03	-11078.06	0.18	12265.31	39.98986625	-104.81807151
17949.00	89.38	271.370	7520.77	-5262.30	-11168.01	0.83	12345.64	39.98987364	-104.81839254
18010.00	89.32	270.690	7521.46	-5261.20	-11229.00	1.12	12400.42	39.98987657	-104.81861019
18034.00	89.32	270.690	7521.74	-5260.91	-11252.99	==>	12422.04	39.98987733	-104.81869583

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1818.00	1785.41	-178.44	-111.97	40.00383616	-104.77893568	9.625" Csg: 1818 / 1785 MD/TVD
10420.30	7497.14	-5267.85	-3645.54	39.98986455	-104.79154624	460 Setback: 10,420 / 7497 MD/TVD, 1111 FSL, 460 FEL Sec 05
10559.00	7498.70	-5262.67	-3784.12	39.98987871	-104.79204083	Top Perf: 10,559 / 7499 MD/TVD, 1117 FSL, 599 FEL Sec 05
17711.00	7518.37	-5270.95	-10930.19	39.98985017	-104.81754377	Btm Perf: 17,711 / 7518 MD/TVD, 1111 FSL, 2415 FEL Sec 06
17762.16	7518.89	-5268.74	-10981.30	39.98985617	-104.81772617	Btm Toe Sub: 17,762 / 7519 MD/TVD, 1113 FSL, 2501 FEL Sec 06
17764.16	7518.91	-5268.66	-10983.29	39.98985639	-104.81773330	150 Setback: 17,764 / 7519 MD/TVD, 1113 FSL, 2503 FEL Sec 06
18024.71	7521.63	-5261.02	-11243.71	39.98987704	-104.81866268	PBTD: 18,025 / 7522 MD/TVD, 1119 FSL, 2541 FWL Sec 06
18034.00	7521.74	-5260.91	-11252.99	39.98987733	-104.81869583	5.5" Csg: 18,034 / 7522 MD/TVD, 1119 FSL, 2532 FWL Sec 06
18034.00	7521.74	-5260.91	-11252.99	39.98987733	-104.81869583	BHL: 18,034 / 7522 MD/TVD, 1119 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	1818.00	1785.41	-178.44	-111.97
8.500	1818.00	1785.41	-178.44	-111.97	18034.00	7521.74	-5260.91	-11252.99

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	1818.00	1785.41	-178.44	-111.97
5 1/2in Casing	0.00	0.00	0.00	0.00	18034.00	7521.74	-5260.91	-11252.99

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
508493	As Drilled - 20190107	18034.00	7521.74	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 244.940 degrees
Bottom hole distance is 12422.04 Feet on azimuth 244.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Great Western Operating Co.
Date Printed: