

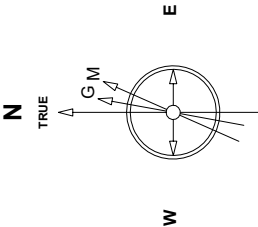
Great Western Operating Company, LLC

Created by	admin
Date plotted	27-Mar-2019
Plot reference is	Ottesen LE 06-351HN (AWB).
Ref wellpath is	Ottesen LE 06-351HN (AWP#1).
Coordinates are in	Feet reference S04 - Ottesen LE 06-351HN.
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.

Location	Colorado	Slot	S04 - Ottesen LE 06-351HN
Field	Wattenburg	Well	Ottesen LE 06-351HN
Installation	Ottesen	Wellbore	Ottesen LE 06-351HN (AWB)

Scale 1 cm = 500 ft

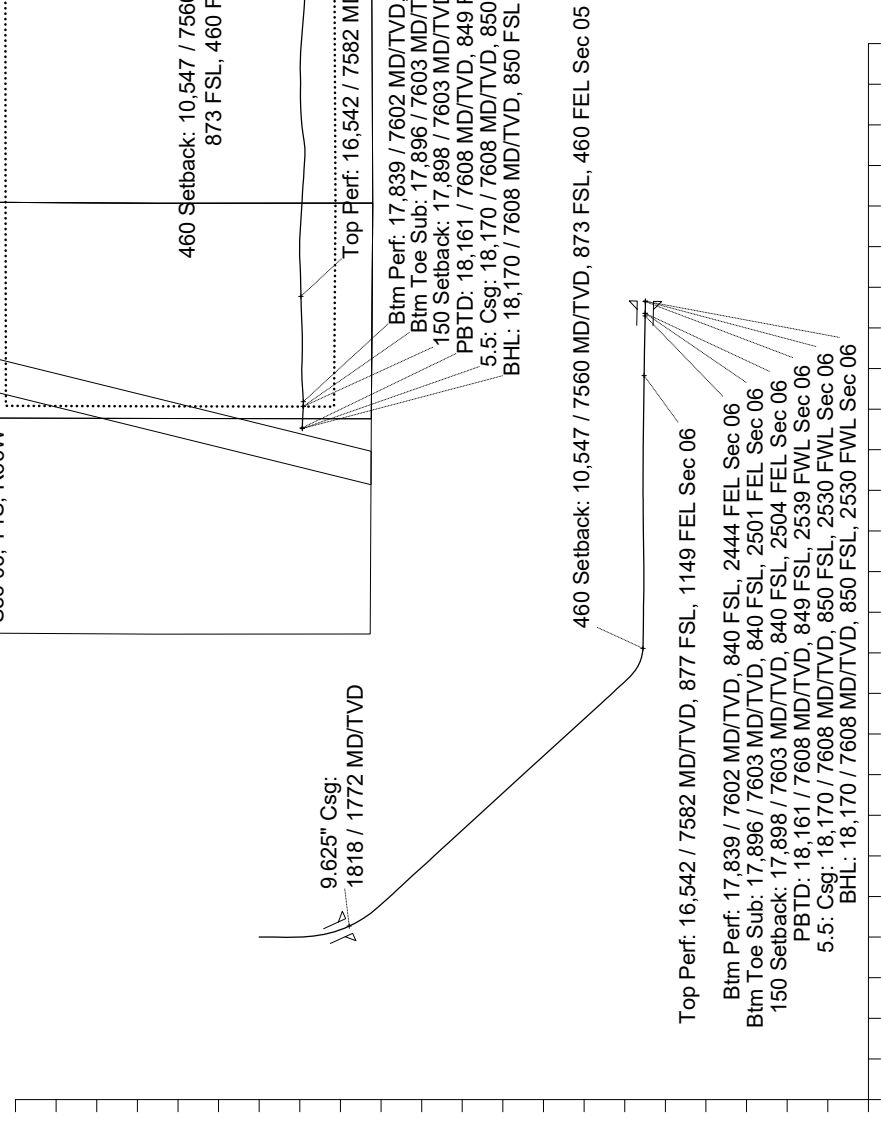
East (Feet) ->



Aug-8-2016
Dep: 66.56 deg Field: 52260.9 nT
Lat: N40.0 16.5000 Long: W104.46 43.1184 Elev: 5073.60 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 = 800 ft

<- True Vertical Depth (Feet)



Scale 1 cm = 800 ft

Vertical Section (Feet) ->

Azimuth 243.80 with reference 0.00 N, 0.00 E from S04 - Ottesen LE 06-351HN

Great Western Operating Co, LLC
Directional Survey Report
Wellpath: Ottesen LE 06-351HN
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-2-2019	Mar-27-2019	05-123-44347	20.00	Ottesen LE 06-351HN

Slot Coordinates

Latitude	Longitude
40.00432700	-104.77859200

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	40.00432700	-104.77859200
20.00	0.00	313.900	20.00	0.00	0.00	==>	0.00	40.00432700	-104.77859200
159.00	0.53	313.900	159.00	0.45	-0.46	0.38	0.22	40.00432822	-104.77859365
244.00	0.26	183.730	244.00	0.53	-0.76	0.85	0.45	40.00432844	-104.77859471
305.00	0.18	167.560	305.00	0.29	-0.75	0.16	0.54	40.00432781	-104.77859467
395.00	0.13	174.590	395.00	0.05	-0.71	0.06	0.61	40.00432715	-104.77859452
484.00	0.13	156.750	484.00	-0.14	-0.66	0.05	0.65	40.00432662	-104.77859435
574.00	0.00	278.040	574.00	-0.23	-0.62	0.14	0.66	40.00432636	-104.77859420
664.00	0.35	136.890	664.00	-0.43	-0.43	0.39	0.58	40.00432581	-104.77859353
754.00	1.14	179.780	753.99	-1.53	-0.24	1.02	0.89	40.00432280	-104.77859285
844.00	1.58	196.570	843.96	-3.61	-0.59	0.65	2.12	40.00431708	-104.77859410
934.00	3.52	215.110	933.87	-7.06	-2.53	2.31	5.39	40.00430761	-104.77860104
1024.00	5.32	218.800	1023.60	-12.58	-6.74	2.02	11.60	40.00429248	-104.77861604
1114.00	9.98	219.940	1112.77	-21.81	-14.36	5.18	22.52	40.00426712	-104.77864326
1204.00	12.61	215.370	1201.02	-35.80	-25.06	3.08	38.29	40.00422871	-104.77868144
1294.00	14.28	207.550	1288.56	-53.66	-35.88	2.74	55.89	40.00417970	-104.77872007
1384.00	15.95	208.170	1375.45	-74.40	-46.85	1.86	74.89	40.00412276	-104.77875924
1474.00	20.26	209.840	1460.97	-98.83	-60.45	4.82	97.88	40.00405569	-104.77880778
1564.00	22.81	209.840	1544.68	-127.49	-76.89	2.83	125.28	40.00397704	-104.77886645
1654.00	24.83	210.540	1627.01	-158.90	-95.17	2.27	155.55	40.00389081	-104.77893172
1744.00	28.65	209.660	1707.37	-193.94	-115.46	4.27	189.22	40.00379463	-104.77900413
1767.00	29.14	209.750	1727.51	-203.59	-120.96	2.14	198.43	40.00376813	-104.77902379
1818.00	28.80	210.110	1772.13	-225.00	-133.29	0.75	218.94	40.00370937	-104.77906778
1843.00	28.63	210.290	1794.05	-235.38	-139.33	0.75	228.94	40.00368087	-104.77908934
1888.00	29.09	210.110	1833.46	-254.15	-150.26	1.04	247.03	40.00362934	-104.77912834
1978.00	32.40	211.800	1910.80	-293.58	-173.94	3.80	285.70	40.00352110	-104.77921290
2067.00	35.22	211.000	1984.75	-335.85	-199.73	3.21	327.50	40.00340506	-104.77930495
2157.00	37.54	209.900	2057.20	-381.87	-226.77	2.68	372.08	40.00327872	-104.77940146
2247.00	40.37	210.070	2127.18	-430.88	-255.05	3.15	419.09	40.00314420	-104.77950240
2337.00	42.82	210.070	2194.48	-482.58	-284.98	2.72	468.78	40.00300227	-104.77960925
2426.00	45.07	208.830	2258.56	-536.36	-315.34	2.71	519.76	40.00285463	-104.77971759
2516.00	46.83	210.150	2321.14	-592.66	-347.19	2.22	573.19	40.00270010	-104.77983127
2606.00	47.05	209.020	2382.59	-649.84	-379.65	0.95	627.57	40.00254312	-104.77994715
2696.00	47.85	206.780	2443.45	-708.43	-410.66	2.04	681.27	40.00238228	-104.78005785
2785.00	47.55	206.350	2503.35	-767.31	-440.10	0.49	733.68	40.00222066	-104.78016292
2875.00	47.44	211.120	2564.18	-825.46	-471.98	3.91	787.95	40.00206103	-104.78027671
2965.00	47.65	212.240	2624.93	-881.96	-506.85	0.95	844.19	40.00190592	-104.78040118
3055.00	47.48	211.880	2685.66	-938.26	-542.11	0.35	900.68	40.00175139	-104.78052703
3144.00	47.52	212.630	2745.78	-993.75	-577.13	0.62	956.61	40.00159906	-104.78065202
3234.00	47.53	213.200	2806.56	-1049.47	-613.20	0.47	1013.58	40.00144608	-104.78078077
3324.00	47.54	213.210	2867.32	-1105.02	-649.56	==>	1070.73	40.00129359	-104.78091055
3413.00	47.56	210.970	2927.40	-1160.65	-684.44	1.86	1126.59	40.00114088	-104.78103505
3503.00	47.57	209.110	2988.13	-1218.15	-717.69	1.53	1181.81	40.00098304	-104.78115373
3593.00	47.34	209.820	3048.98	-1275.88	-750.31	0.63	1236.56	40.00082456	-104.78127013
3682.00	46.87	212.740	3109.57	-1331.60	-784.15	2.46	1291.53	40.00067162	-104.78139092
3772.00	47.61	211.420	3170.67	-1387.59	-819.24	1.35	1347.73	40.00051792	-104.78151616
3862.00	47.67	206.970	3231.33	-1445.61	-851.66	3.65	1402.44	40.00035862	-104.78163188
3952.00	47.87	206.840	3291.82	-1505.04	-881.82	0.25	1455.74	40.00019549	-104.78173951
4041.00	47.84	211.740	3351.56	-1562.56	-914.08	4.08	1510.09	40.00003759	-104.78185467
4131.00	47.94	212.320	3411.91	-1619.16	-949.49	0.49	1566.85	39.99988221	-104.78198105
4221.00	47.87	211.470	3472.24	-1675.86	-984.78	0.71	1623.55	39.99972656	-104.78210699
4310.00	47.82	211.030	3531.97	-1732.27	-1019.00	0.37	1679.16	39.99957172	-104.78222915
4400.00	47.50	210.130	3592.59	-1789.54	-1052.85	0.82	1734.82	39.99941450	-104.78234994
4490.00	47.46	209.180	3653.42	-1847.18	-1085.67	0.78	1789.72	39.99925626	-104.78246708
4579.00	47.44	208.760	3713.60	-1904.54	-1117.42	0.35	1843.54	39.99909879	-104.78258042
4669.00	47.13	209.800	3774.66	-1962.22	-1149.76	0.92	1898.02	39.99894046	-104.78269583
4759.00	47.77	211.430	3835.52	-2019.27	-1183.53	1.51	1953.51	39.99878384	-104.78281635
4848.00	47.84	211.460	3895.30	-2075.53	-1217.93	0.08	2009.21	39.99862941	-104.78293912
4938.00	47.67	210.810	3955.80	-2132.55	-1252.38	0.57	2065.30	39.99847287	-104.78306206
5028.00	47.64	209.830	4016.43	-2189.97	-1285.96	0.81	2120.78	39.99831524	-104.78318191
5118.00	47.78	209.500	4076.99	-2247.82	-1318.91	0.31	2175.89	39.99815643	-104.78329951
5207.00	47.69	209.630	4136.85	-2305.11	-1351.41	0.15	2230.34	39.99799916	-104.78341549
5297.00	47.45	211.740	4197.57	-2362.24	-1385.30	1.75	2285.98	39.99784235	-104.78353645
5387.00	47.84	212.560	4258.21	-2418.54	-1420.69	0.80	2342.59	39.99768777	-104.78366277
5476.00	47.72	211.360	4318.01	-2474.46	-1455.58	1.01	2398.59	39.99753427	-104.78378728
5566.00	47.76	209.600	4378.54	-2531.86	-1489.36	1.45	2454.24	39.99737669	-104.78390785
5656.00	47.71	208.460	4439.07	-2590.10	-1521.68	0.94	2508.95	39.99721683	-104.78402319
5746.00	47.80	207.630	4499.58	-2648.90	-1553.01	0.69	2563.02	39.99705541	-104.78413498
5836.00	47.69	207.230	4560.10	-2708.02	-1583.69	0.35	2616.66	39.99689310	-104.78424449

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5926.00	47.58	210.740	4620.76	-2766.17	-1615.91	2.88	2671.24	39.99673347	-104.78435945
6015.00	47.27	213.640	4680.98	-2821.63	-1650.81	2.42	2727.04	39.99658123	-104.78448401
6105.00	47.41	213.880	4741.97	-2876.65	-1687.59	0.25	2784.34	39.99643018	-104.78461527
6195.00	47.51	212.320	4802.82	-2932.20	-1723.80	1.28	2841.36	39.99627768	-104.78474450
6284.00	47.55	209.840	4862.92	-2988.42	-1757.69	2.06	2896.58	39.99612336	-104.78486543
6374.00	47.42	209.690	4923.74	-3046.01	-1790.62	0.19	2951.56	39.99596527	-104.78498296
6464.00	47.52	211.150	4984.58	-3103.19	-1824.20	1.20	3006.94	39.99580827	-104.78510280
6554.00	47.59	211.440	5045.31	-3159.94	-1858.70	0.25	3062.95	39.99565248	-104.78522591
6643.00	47.53	209.080	5105.38	-3216.67	-1891.79	1.96	3117.69	39.99549676	-104.78534401
6733.00	47.48	206.580	5166.18	-3275.34	-1922.77	2.05	3171.39	39.99533569	-104.78545455
6823.00	47.39	206.920	5227.06	-3334.54	-1952.60	0.30	3224.30	39.99517319	-104.78556102
6913.00	47.34	210.640	5288.03	-3392.55	-1984.47	3.04	3278.50	39.99501393	-104.78567473
7002.00	47.46	213.560	5348.28	-3448.03	-2019.28	2.42	3334.23	39.99486162	-104.78579895
7092.00	47.75	212.990	5408.96	-3503.60	-2055.74	0.57	3391.49	39.99470907	-104.78592908
7182.00	47.63	212.030	5469.54	-3559.73	-2091.51	0.80	3448.36	39.99455499	-104.78605673
7271.00	47.79	211.380	5529.43	-3615.74	-2126.11	0.57	3504.14	39.99440122	-104.78618020
7361.00	47.76	210.180	5589.92	-3673.00	-2160.22	0.99	3560.02	39.99424404	-104.78630191
7451.00	47.80	208.630	5650.40	-3731.06	-2192.94	1.28	3615.02	39.99408465	-104.78641868
7540.00	47.71	207.830	5710.23	-3789.10	-2224.10	0.67	3668.61	39.99392530	-104.78652988
7630.00	47.74	208.470	5770.77	-3847.82	-2255.52	0.53	3722.72	39.99376411	-104.78664199
7720.00	47.22	211.730	5831.61	-3905.20	-2288.77	2.73	3777.89	39.99360659	-104.78676065
7810.00	47.65	213.950	5892.49	-3960.88	-2324.72	1.88	3834.73	39.99345373	-104.78688892
7899.00	47.82	213.040	5952.35	-4015.81	-2361.07	0.78	3891.60	39.99330295	-104.78701862
7989.00	47.71	209.240	6012.86	-4072.82	-2395.51	3.13	3947.68	39.99314643	-104.78714155
8079.00	47.72	207.280	6073.41	-4131.46	-2427.04	1.61	4001.85	39.99298545	-104.78725403
8168.00	47.74	209.450	6133.28	-4189.41	-2458.32	1.80	4055.51	39.99282638	-104.78736567
8258.00	46.05	212.960	6194.79	-4245.60	-2492.33	3.41	4110.84	39.99267210	-104.78748702
8348.00	47.85	213.280	6256.23	-4300.68	-2528.27	2.02	4167.40	39.99252089	-104.78761526
8438.00	47.68	209.250	6316.73	-4357.62	-2562.84	3.32	4223.56	39.99236459	-104.78773863
8527.00	47.72	210.990	6376.64	-4414.55	-2595.87	1.45	4278.33	39.99220829	-104.78785649
8617.00	47.76	209.470	6437.16	-4472.10	-2629.40	1.25	4333.83	39.99205031	-104.78797615
8707.00	47.82	207.570	6497.63	-4530.67	-2661.23	1.57	4388.25	39.99188953	-104.78809711
8797.00	47.33	208.510	6558.35	-4589.30	-2692.46	0.94	4442.16	39.99172855	-104.78820113
8886.00	47.64	209.390	6618.49	-4646.71	-2724.21	0.81	4495.99	39.99157097	-104.78831444
8976.00	47.52	210.230	6679.20	-4704.35	-2757.24	0.70	4551.08	39.99141271	-104.78843229
9066.00	47.83	210.260	6739.80	-4761.84	-2790.76	0.35	4606.53	39.99125491	-104.78855189
9155.00	47.70	209.290	6799.63	-4819.03	-2823.48	0.82	4661.15	39.99109789	-104.78866865
9245.00	47.59	208.490	6860.26	-4877.26	-2855.61	0.67	4715.69	39.99093803	-104.78878330
9335.00	47.70	210.530	6920.90	-4935.13	-2888.37	1.68	4770.64	39.99077915	-104.78890018
9425.00	47.65	214.880	6981.52	-4991.10	-2924.30	3.57	4827.59	39.99062551	-104.78902841
9514.00	47.85	214.420	7041.36	-5045.30	-2961.76	0.44	4885.13	39.99047673	-104.78916206
9604.00	47.73	212.630	7101.83	-5100.86	-2998.58	1.48	4942.69	39.99032418	-104.78929342
9694.00	47.82	210.680	7162.32	-5157.59	-3033.55	1.61	4999.12	39.99016845	-104.78941821
9784.00	47.78	208.190	7222.78	-5215.65	-3066.31	2.05	5054.15	39.99000907	-104.78953510
9873.00	46.72	211.830	7283.20	-5272.23	-3098.97	3.23	5108.44	39.98985373	-104.78965164
9963.00	49.75	223.950	7343.26	-5324.91	-3140.18	10.58	5168.67	39.98970910	-104.78979868
10053.00	55.29	234.620	7398.11	-5371.18	-3194.32	11.23	5237.68	39.98958208	-104.78999187
10143.00	60.39	242.910	7446.06	-5410.49	-3259.43	9.63	5313.46	39.98947415	-104.79022424
10232.00	66.37	250.990	7485.97	-5441.45	-3332.59	10.53	5392.77	39.98938911	-104.79048529
10322.00	72.07	256.690	7517.91	-5464.77	-3413.35	8.67	5475.53	39.98932506	-104.79077352
10412.00	76.93	258.650	7541.96	-5483.27	-3498.05	5.79	5559.69	39.98927425	-104.79107579
10502.00	84.02	260.040	7556.84	-5499.66	-3585.23	8.02	5645.15	39.98922923	-104.79138688
10546.71	86.61	262.000	7560.49	-5506.61	-3629.24	7.25	5687.70	39.98921013	-104.79154393
10591.00	89.17	263.930	7562.13	-5512.03	-3673.16	7.25	5729.50	39.98919523	-104.79170067
10681.00	89.17	267.410	7563.43	-5518.83	-3762.88	3.87	5813.00	39.98917655	-104.79202086
10771.00	89.29	266.900	7564.64	-5523.29	-3852.76	0.58	5895.62	39.98916425	-104.79234162
10861.00	89.60	266.530	7565.51	-5528.45	-3942.60	0.54	5978.51	39.98915005	-104.79266227
10950.00	89.57	268.530	7566.16	-5532.29	-4031.51	2.25	6059.98	39.98913948	-104.79297956
11040.00	89.45	270.940	7566.93	-5532.70	-4121.50	2.68	6140.91	39.98913830	-104.79330072
11130.00	89.42	272.060	7567.81	-5530.35	-4211.47	1.24	6220.58	39.98914473	-104.79362178
11219.00	89.48	274.780	7568.67	-5525.04	-4300.30	3.06	6297.94	39.98915926	-104.79393879
11309.00	89.42	271.740	7569.53	-5519.92	-4390.14	3.38	6376.29	39.98917326	-104.79425941
11399.00	89.60	268.860	7570.30	-5519.45	-4480.12	3.21	6456.82	39.98917451	-104.79458055
11488.00	89.29	271.530	7571.16	-5519.15	-4569.11	3.02	6536.53	39.98917530	-104.79489813
11578.00	88.86	271.430	7572.62	-5516.82	-4659.07	0.49	6616.22	39.98918163	-104.79521917
11668.00	89.05	269.490	7574.26	-5516.10	-4749.04	2.17	6696.63	39.98918357	-104.79554028
11757.00	89.11	267.640	7575.69	-5518.33	-4838.00	2.08	6777.43	39.98917740	-104.79585774
11847.00	89.08	265.910	7577.11	-5523.39	-4927.84	1.92	6860.27	39.98916346	-104.79617837
11937.00	89.17	265.080	7578.48	-5530.46	-5017.56	0.93	6943.89	39.98914401	-104.79649852
12027.00	90.12	262.720	7579.04	-5540.02	-5107.04	2.83	7028.40	39.98911770	-104.79681785
12116.00	90.46	263.610	7578.59	-5550.61	-5195.40	1.07	7112.36	39.98908858	-104.79713320
12206.00	90.31	267.040	7577.99	-5557.95	-5285.09	3.81	7196.07	39.98906839	-104.79745326
12296.00	90.58	269.160	7577.29	-5560.93	-5375.03	2.37	7278.08	39.98906015	-104.79777424
12385.00	90.68	267.580	7576.31	-5563.46	-5463.99	1.78	7359.02	39.98905315	-104.79809170
12475.00	90.58	269.050	7575.32	-5566.11	-5553.94	1.64	7440.89	39.98904583	-104.79841272
12565.00	90.92	270.020	7574.14	-5566.84	-5643.93	1.14	7521.96	39.98904377	-104.79873387
12655.00	90.58	271.120	7572.96	-5565.94	-5733.91	1.28	7602.30	39.98904617	-104.79905501
12744.00	90.74	271.570	7571.94	-5563.85	-5822.88	0.54	7681.21	39.98905185	-104.79937252
12834.00	90.74	271.940	7570.77	-5561.10	-5912.83	0.41	7760.70	39.98905936	-104.79969354
12924.00	89.94	272.860	7570.24	-5557.33	-6002.75	1.35	7839.71	39.98906964	-104.80001444
13013.00	90.55	275.430	7569.86	-5550.90	-6091.51	2.97	7916.51	39.98908724	-104.80033120
13103.00	90.71	275.760	7568.87	-5542.12	-6181.07	0.41	7992.99	39.98911126	-104.80065085
13193.00	91.20	273.450	7567.37	-5534.90	-6270.76	2.62	8070.28	39.98913103	-104.80097094
13283.00	90.77	273.810	7565.82	-5529.20	-6360.57	0.62	8148.34	39.98914661	-104.80129144
13372.00	91.08	275.190	7564.39	-5522.22	-6449.28	1.59	8224.85	39.98916571	-104.80160804
13462.00	90.37	273.700	7563.25	-5515.25	-6539.00	1.83	8302.27	39.98918479	-104.80192823
13552.00	89.94	274.030	7563.00	-5509.18	-6628.80	0.60	8380.16	39.98920138	-104.80224870
13641.00	89.69	271.810	7563.29	-5504.65	-6717.67	2.51	8457.91	39.98921376	-104.80256589
13731.00	90.12	268.180	7563.44	-5504.65	-6807.66	4.06	8538.65	39.98921367	-104.80288702
13821.00	90.89	267.380	7562.65	-5508.14	-6897.59	1.23	8620.87	39.98920404	-104.80320795
13911.00	90.74	271.380	7561.37	-5509.11	-6987.55	4.45	8702.02	39.98920129	-104.80352902
14000.00	89.85	270.670	7560.91	-5507.52	-7076.54	1.28	8781.16	39.98920560	-104.80384659
14090.00	90.15	269.820	7560.91	-5507.14	-7166.54	1.00	8861.74	39.98920658	-104.80416777

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14180.00	89.57	267.870	7561.13	-5508.95	-7256.51	2.26	8943.27	39.98920153	-104.80448888
14270.00	90.12	267.030	7561.37	-5512.95	-7346.42	1.12	9025.71	39.98919047	-104.80480974
14359.00	90.12	265.810	7561.19	-5518.51	-7435.25	1.37	9107.86	39.98917514	-104.80512673
14449.00	90.03	262.880	7561.07	-5527.38	-7524.80	3.26	9192.13	39.98915072	-104.80544631
14539.00	89.78	261.230	7561.22	-5539.82	-7613.93	1.85	9277.59	39.98911650	-104.80576439
14629.00	89.88	261.530	7561.48	-5553.31	-7702.91	0.35	9363.39	39.98907940	-104.80608193
14718.00	89.45	266.650	7562.00	-5562.47	-7791.41	5.77	9446.83	39.98905417	-104.80639775
14808.00	89.35	273.590	7562.95	-5562.28	-7881.35	7.71	9527.45	39.98905461	-104.80671872
14898.00	89.54	274.140	7563.82	-5556.21	-7971.14	0.65	9605.33	39.98907118	-104.80703917
14988.00	89.42	271.390	7564.64	-5551.87	-8061.02	3.06	9684.06	39.98908302	-104.80735995
15077.00	89.45	274.720	7565.51	-5547.13	-8149.88	3.74	9761.70	39.98909596	-104.80767706
15167.00	89.32	275.140	7566.48	-5539.40	-8239.54	0.49	9838.73	39.98911711	-104.80799705
15257.00	89.38	272.720	7567.50	-5533.23	-8329.32	2.69	9916.56	39.98913396	-104.80831745
15347.00	89.42	271.790	7568.44	-5529.69	-8419.24	1.03	9995.68	39.98914359	-104.80863837
15436.00	89.35	273.190	7569.40	-5525.82	-8508.15	1.57	10073.74	39.98915413	-104.80895567
15526.00	89.23	275.560	7570.51	-5518.96	-8597.87	2.64	10151.22	39.98917288	-104.80927589
15616.00	89.45	274.960	7571.55	-5510.71	-8687.49	0.71	10227.98	39.98919545	-104.80959571
15706.00	89.32	273.420	7572.52	-5504.13	-8777.24	1.72	10305.60	39.98921341	-104.80991602
15795.00	89.48	272.060	7573.45	-5499.88	-8866.13	1.54	10383.48	39.98922500	-104.81023326
15885.00	89.48	270.920	7574.27	-5497.54	-8956.10	1.27	10463.17	39.98923134	-104.81055433
15975.00	89.51	269.330	7575.06	-5497.34	-9046.09	1.77	10543.83	39.98923178	-104.81087549
16065.00	89.45	268.090	7575.88	-5499.37	-9136.06	1.38	10625.45	39.98922613	-104.81119658
16154.00	89.42	267.070	7576.75	-5503.13	-9224.98	1.15	10706.89	39.98921573	-104.81151389
16244.00	89.26	267.440	7577.79	-5507.44	-9314.87	0.45	10789.44	39.98920380	-104.81183469
16334.00	89.11	268.670	7579.07	-5510.49	-9404.80	1.38	10871.49	39.98919533	-104.81215565
16424.00	89.42	269.040	7580.23	-5512.29	-9494.78	0.54	10953.01	39.98919030	-104.81247675
16513.00	89.32	269.280	7581.20	-5513.59	-9583.76	0.29	11033.43	39.98918662	-104.81279431
16542.00	89.32	268.850	7581.55	-5514.07	-9612.76	1.49	11059.65	39.98918529	-104.81289778
16558.00	89.32	268.610	7581.74	-5514.42	-9628.75	1.49	11074.16	39.98918430	-104.81295487
16648.00	89.32	268.690	7582.81	-5516.54	-9718.72	0.09	11155.82	39.98917838	-104.81327594
16737.00	89.14	268.280	7584.00	-5518.89	-9807.68	0.50	11236.68	39.98917183	-104.81359342
16827.00	89.42	267.100	7585.13	-5522.52	-9897.60	1.35	11318.95	39.98916177	-104.81391431
16917.00	88.77	267.370	7586.56	-5526.86	-9987.48	0.78	11401.52	39.98914976	-104.81423508
17007.00	88.99	268.540	7588.31	-5530.07	-10077.41	1.32	11483.62	39.98914084	-104.81455599
17096.00	89.08	269.310	7589.81	-5531.74	-10166.38	0.87	11564.19	39.98913616	-104.81487351
17186.00	89.02	270.580	7591.31	-5531.83	-10256.36	1.41	11644.96	39.98913582	-104.81519465
17276.00	88.95	271.730	7592.90	-5530.02	-10346.33	1.28	11724.88	39.98914070	-104.81551572
17366.00	89.05	271.780	7594.47	-5527.26	-10436.27	0.12	11804.37	39.98914816	-104.81583671
17455.00	89.29	271.290	7595.76	-5524.88	-10525.23	0.61	11883.13	39.98915460	-104.81615419
17545.00	88.98	267.770	7597.12	-5525.61	-10615.21	3.93	11964.18	39.98915247	-104.81647528
17635.00	88.92	266.270	7598.77	-5530.29	-10705.07	1.67	12046.88	39.98913952	-104.81679596
17724.00	89.05	265.090	7600.34	-5536.99	-10793.80	1.33	12129.45	39.98912102	-104.81711261
17814.00	88.95	268.370	7601.92	-5542.13	-10883.63	3.65	12212.31	39.98910682	-104.81743318
17839.00	88.99	269.260	7602.36	-5542.64	-10908.62	3.55	12234.96	39.98910537	-104.81752236
17895.60	89.09	271.260	7603.31	-5542.39	-10965.20	3.55	12285.62	39.98910601	-104.81772432
17898.35	89.10	271.360	7603.35	-5542.33	-10967.95	3.55	12288.06	39.98910618	-104.81773413
17904.00	89.11	271.560	7603.44	-5542.18	-10973.60	3.55	12293.07	39.98910656	-104.81775428
17994.00	89.02	273.680	7604.91	-5538.07	-11063.49	2.36	12371.90	39.98911775	-104.81807508
18083.00	89.08	272.340	7606.38	-5533.40	-11152.35	1.51	12449.57	39.98913046	-104.81839222
18146.00	88.92	271.140	7607.48	-5531.48	-11215.31	1.92	12505.22	39.98913564	-104.81861691
18170.00	88.92	271.140	7607.94	-5531.01	-11239.30	==>	12526.53	39.98913692	-104.81870253

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1818.00	1772.13	-225.00	-133.29	40.00370937	-104.77906778	9,625' Csg: 1818 / 1772 MD/TVD
10546.71	7560.49	-5506.61	-3629.24	39.98921013	-104.79154393	460 Setback: 10,547 / 7560 MD/TVD, 873 FSL, 460 FEL Sec 05
16542.00	7581.55	-5514.07	-9612.76	39.98918529	-104.81289778	Top Perf: 16,542 / 7582 MD/TVD, 877 FSL, 1149 FEL Sec 06
17839.00	7602.36	-5542.64	-10908.62	39.98910537	-104.81752236	Btm Perf: 17,839 / 7602 MD/TVD, 840 FSL, 2444 FEL Sec 06
17895.60	7603.31	-5542.39	-10965.20	39.98910601	-104.81772432	Btm Toe Sub: 17,896 / 7603 MD/TVD, 840 FSL, 2501 FEL Sec 06
17898.35	7603.35	-5542.33	-10967.95	39.98910618	-104.81773413	150 Setback: 17,898 / 7603 MD/TVD, 840 FSL, 2504 FEL Sec 06
18160.55	7607.76	-5531.19	-11229.86	39.98913641	-104.81866882	PBTD: 18,161 / 7608 MD/TVD, 849 FSL, 2539 FWL Sec 06
18170.00	7607.94	-5531.01	-11239.30	39.98913692	-104.81870253	5.5: Csg: 18,170 / 7608 MD/TVD, 850 FSL, 2530 FWL Sec 06
18170.00	7607.94	-5531.01	-11239.30	39.98913692	-104.81870253	BHL: 18,170 / 7608 MD/TVD, 850 FSL, 2530 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	1772.13	-225.00	-133.29
8.500	1818.00	1772.13	-225.00	-133.29	18170.00	7607.94	-5531.01	-11239.30

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	1772.13	-225.00	-133.29
5 1/2in Casing	0.00	0.00	0.00	0.00	18170.00	7607.94	-5531.01	-11239.30

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
505957	As Drilled - 20190102	18170.00	7607.94	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 243.800 degrees

Bottom hole distance is 12526.53 Feet on azimuth 243.80 degrees from Wellhead

Calculation method uses Minimum Curvature method

Prepared by Great Western Operating Co.

Date Printed: