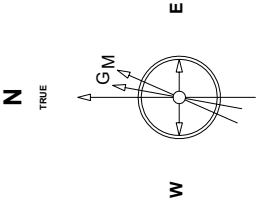


Great Western Operating Company, LLC

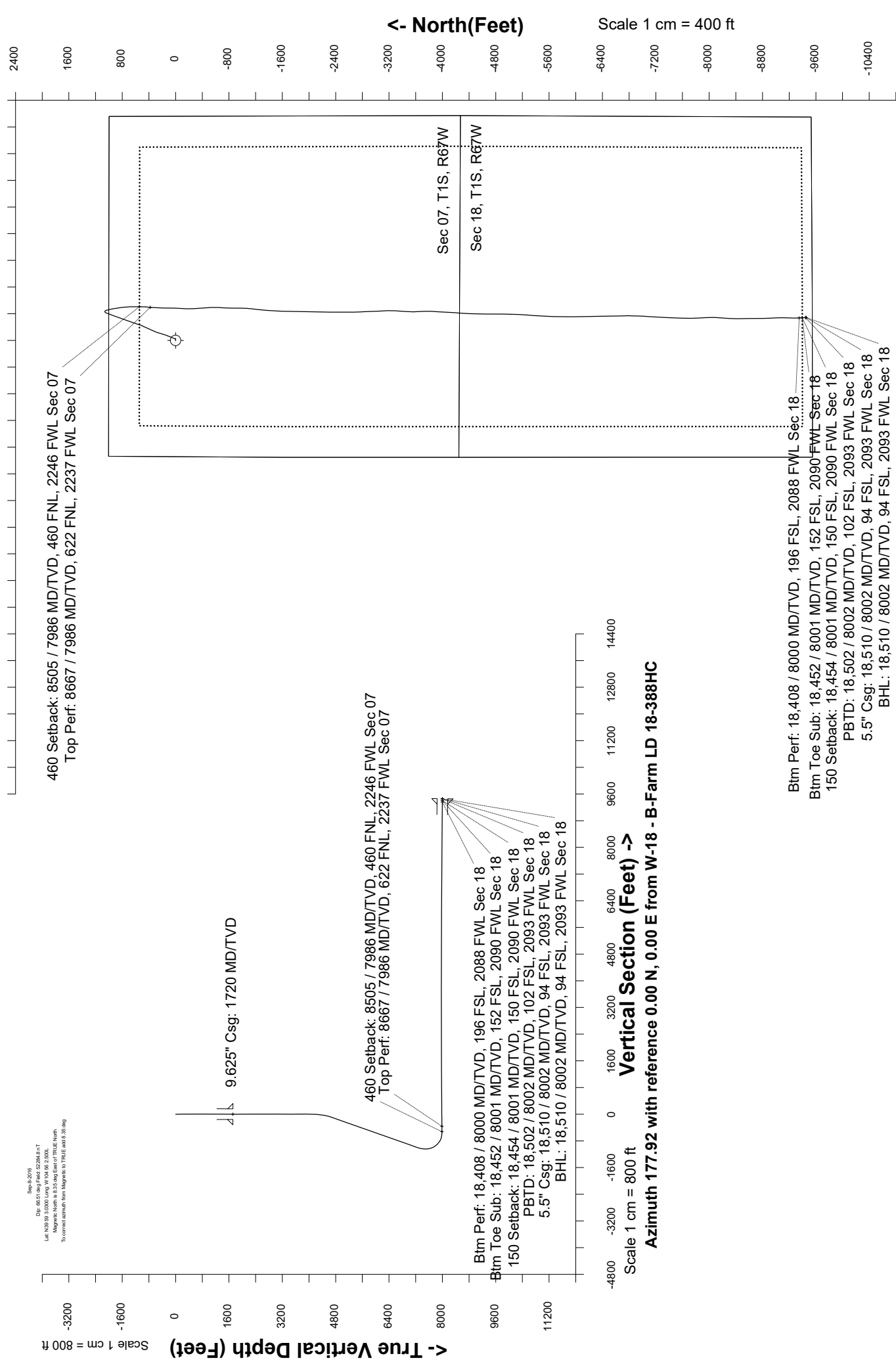
Created by	admin
Date plotted	4-Jun-2019
Plot reference is	B-Farm LD 18-388HC (AWB).
Ref wellpath is	B-Farm LD 18-388HC (AWP#1).
Coordinates are in	Feet reference W-18 - B-Farm LD 18-388HC.
True Vertical Depths are	reference Rig Datum.
Measured Depths are	reference Rig Datum.
Rig Datum:	Actual Datum #1
Rig Datum to Mean Sea Level:	5144.50 ft.
Plot North is aligned to	TRUE North.



Step-2-2016  
Dip: 48.51 deg / Field: 52.294 deg / T  
Lat: 43.02 deg / 33.000 Long: 104.00 / 2.000  
To convert azimuth from Magnetic to TRUE add 0.35 deg

Scale 1 cm = 400 ft

East (Feet) ->



<- North(Feet)

Scale 1 cm = 400 ft

Great Western Operating Co, LLC  
Directional Survey Report  
Wellpath: B-Farm LD 18-388HC  
MDs and TVDs are from Rig Floor 5144.5ft above Mean Sea Level

**Wellbore Information**

Date Created	Date Revised	API #	RKB above GL	Well Name
Nov-8-2018	Jun-4-2019	05-001-10099	20.00	B-Farm LD 18-388HC

**Slot Coordinates**

Latitude	Longitude
39.98360100	-104.93402700

**Pad Information**

Pad Name	Ground Elev.
B-Farm	5124.50

**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	39.98360100	-104.93402700
12.00	0.00	173.180	12.00	0.00	0.00	==>	0.00	39.98360100	-104.93402700
121.00	0.44	173.180	121.00	-0.42	0.05	0.40	0.42	39.98359986	-104.93402682
217.00	0.92	121.850	216.99	-1.19	0.75	0.76	1.21	39.98359774	-104.93402433
313.00	0.53	88.980	312.99	-1.59	1.85	0.58	1.65	39.98359664	-104.93402041
407.00	0.26	60.420	406.98	-1.47	2.47	0.35	1.56	39.98359695	-104.93401820
500.00	0.57	94.430	499.98	-1.41	3.11	0.41	1.52	39.98359714	-104.93401590
596.00	1.36	115.350	595.97	-1.93	4.62	0.89	2.10	39.98359570	-104.93401052
692.00	1.23	85.640	691.94	-2.34	6.67	0.70	2.58	39.98359458	-104.93400318
788.00	1.58	71.130	787.91	-1.83	8.95	0.52	2.16	39.98359597	-104.93399505
883.00	1.19	65.780	882.89	-1.01	11.09	0.43	1.41	39.98359824	-104.93398741
979.00	1.32	78.350	978.86	-0.37	13.09	0.32	0.85	39.98359998	-104.93398031
1075.00	1.10	98.210	1074.84	-0.28	15.08	0.49	0.83	39.98360023	-104.93397319
1171.00	0.44	179.950	1170.84	-0.78	15.99	1.17	1.36	39.98359886	-104.93396993
1266.00	0.31	98.210	1265.83	-1.18	16.25	0.53	1.77	39.98359775	-104.93396902
1362.00	0.79	83.530	1361.83	-1.15	17.16	0.52	1.77	39.98359786	-104.93396576
1456.00	0.79	75.970	1455.82	-0.92	18.43	0.11	1.58	39.98359849	-104.93396122
1552.00	0.88	70.960	1551.81	-0.51	19.77	0.12	1.23	39.98359959	-104.93395644
1647.00	1.32	81.510	1646.79	-0.11	21.55	0.51	0.89	39.98360069	-104.93395012
1670.00	1.49	77.640	1669.79	-0.01	22.10	0.85	0.81	39.98360097	-104.93394814
1720.00	0.90	78.240	1719.77	0.21	23.12	1.19	0.63	39.98360157	-104.93394451
1801.00	0.07	236.910	1800.77	0.31	23.70	1.19	0.55	39.98360185	-104.93394244
1890.00	0.03	231.790	1889.77	0.27	23.63	0.05	0.59	39.98360173	-104.93394267
1979.00	0.06	178.970	1978.77	0.20	23.61	0.05	0.65	39.98360156	-104.93394273
2069.00	0.03	270.380	2068.77	0.16	23.59	0.08	0.70	39.98360143	-104.93394281
2158.00	0.03	263.680	2157.77	0.15	23.55	==>	0.70	39.98360143	-104.93394298
2248.00	0.06	239.320	2247.77	0.13	23.48	0.04	0.72	39.98360135	-104.93394321
2337.00	0.03	130.980	2336.77	0.09	23.46	0.08	0.76	39.98360124	-104.93394329
2426.00	0.03	225.590	2425.77	0.06	23.46	0.05	0.79	39.98360116	-104.93394328
2516.00	0.03	228.860	2515.77	0.03	23.43	==>	0.82	39.98360107	-104.93394341
2605.00	0.03	3.710	2604.77	0.03	23.41	0.06	0.81	39.98360109	-104.93394346
2695.00	0.03	87.150	2694.77	0.06	23.43	0.04	0.79	39.98360116	-104.93394337
2784.00	0.04	215.040	2783.77	0.03	23.44	0.07	0.82	39.98360109	-104.93394336
2873.00	0.06	207.700	2872.77	-0.03	23.40	0.02	0.88	39.98360091	-104.93394350
2962.00	0.07	290.540	2961.77	-0.05	23.33	0.10	0.90	39.98360085	-104.93394375
3052.00	0.03	352.760	3051.77	-0.01	23.27	0.07	0.86	39.98360097	-104.93394395
3141.00	0.03	77.860	3140.77	0.02	23.29	0.05	0.83	39.98360104	-104.93394388
3230.00	0.03	163.350	3229.77	0.00	23.32	0.05	0.85	39.98360100	-104.93394377
3320.00	0.11	73.290	3319.77	0.00	23.41	0.13	0.85	39.98360100	-104.93394345
3409.00	0.14	1.160	3408.77	0.13	23.50	0.17	0.72	39.98360137	-104.93394315
3498.00	0.07	216.140	3497.77	0.20	23.47	0.23	0.65	39.98360155	-104.93394326
3588.00	0.13	188.600	3587.77	0.05	23.42	0.08	0.79	39.98360115	-104.93394343
3677.00	0.07	311.290	3676.77	-0.01	23.36	0.20	0.86	39.98360097	-104.93394363
3767.00	0.03	114.550	3766.77	0.02	23.34	0.11	0.83	39.98360104	-104.93394370
3856.00	0.04	183.700	3855.77	-0.02	23.36	0.05	0.87	39.98360093	-104.93394363
3946.00	0.00	8.410	3945.77	-0.06	23.36	0.04	0.90	39.98360085	-104.93394364
4035.00	0.00	8.410	4034.77	-0.06	23.36	==>	0.90	39.98360085	-104.93394364
4125.00	1.97	13.410	4124.75	1.45	23.72	2.19	-0.59	39.98360498	-104.93394236
4214.00	4.64	14.310	4213.60	6.43	24.96	3.00	-5.52	39.98361864	-104.93393792
4304.00	6.51	13.770	4303.17	14.91	27.08	2.08	-13.92	39.98364193	-104.93393037
4393.00	8.53	19.000	4391.40	26.05	30.43	2.39	-24.93	39.98367251	-104.93391842
4482.00	11.97	26.070	4478.97	40.59	36.64	4.11	-39.23	39.98371242	-104.93389627
4572.00	15.99	24.920	4566.28	60.22	45.96	4.48	-58.52	39.98376631	-104.93386298
4661.00	19.88	20.460	4650.95	85.53	56.42	4.63	-83.43	39.98383578	-104.93382566
4751.00	20.69	19.390	4735.36	114.86	67.05	0.99	-112.36	39.98391631	-104.93378773
4840.00	20.92	19.000	4818.56	144.72	77.44	0.30	-141.82	39.98399826	-104.93375064
4929.00	20.82	17.910	4901.72	174.79	87.48	0.45	-171.51	39.98408082	-104.93371482
5019.00	20.88	18.370	4985.83	205.23	97.45	0.19	-201.57	39.98416438	-104.93367923
5108.00	21.05	16.630	5068.94	235.60	107.03	0.73	-231.57	39.98424774	-104.93364507
5198.00	21.03	17.790	5152.94	266.46	116.59	0.46	-262.06	39.98433246	-104.93361096
5287.00	20.94	19.690	5236.04	296.64	126.82	0.77	-291.85	39.98441531	-104.93357443
5377.00	21.02	23.140	5320.07	326.63	138.59	1.38	-321.39	39.98449762	-104.93353245
5466.00	20.92	25.740	5403.18	355.62	151.76	1.05	-349.89	39.98457721	-104.93348544
5555.00	20.99	26.610	5486.29	384.18	165.80	0.36	-377.93	39.98465562	-104.93343533
5645.00	21.12	24.870	5570.29	413.31	179.84	0.71	-406.52	39.98473556	-104.93338523
5734.00	21.17	21.790	5653.30	442.78	192.55	1.25	-435.51	39.98481646	-104.93333988
5823.00	20.86	24.710	5736.38	472.10	205.14	1.23	-464.36	39.98489694	-104.93329495
5913.00	21.03	24.240	5820.43	501.38	218.47	0.27	-493.14	39.98497732	-104.93324739
6002.00	20.97	18.780	5903.53	531.02	230.15	2.20	-522.33	39.98505869	-104.93320569
6091.00	20.98	16.280	5986.63	561.39	239.75	1.01	-552.34	39.98514207	-104.93317145
6181.00	20.91	17.060	6070.69	592.21	248.97	0.32	-582.80	39.98522667	-104.93313852
6271.00	20.90	20.060	6154.76	622.64	259.19	1.19	-612.85	39.98531022	-104.93310205
6360.00	20.86	20.330	6237.92	652.42	270.14	0.12	-642.20	39.98539194	-104.93306297

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6449.00	20.78	20.470	6321.11	682.06	281.17	0.11	-671.43	39.98547333	-104.93302362
6538.00	20.67	21.710	6404.35	711.45	292.50	0.51	-700.39	39.98555399	-104.93298319
6628.00	20.79	21.160	6488.52	741.10	304.14	0.25	-729.60	39.98563539	-104.93294164
6717.00	20.67	18.220	6571.76	770.75	314.76	1.18	-758.85	39.98571679	-104.93290376
6806.00	20.72	16.510	6655.02	800.77	324.14	0.68	-788.50	39.98579918	-104.93287027
6896.00	20.78	17.230	6739.18	831.28	333.39	0.29	-818.66	39.98588295	-104.93283725
6985.00	20.76	19.000	6822.40	861.28	343.21	0.71	-848.28	39.98596528	-104.93280223
7075.00	20.85	22.340	6906.53	891.17	354.49	1.32	-877.75	39.98604735	-104.93276197
7164.00	20.91	22.540	6989.69	920.49	366.60	0.10	-906.61	39.98612783	-104.93271876
7253.00	20.84	21.390	7072.85	949.90	378.46	0.47	-935.57	39.98620856	-104.93267643
7343.00	20.83	19.710	7156.96	979.87	389.69	0.66	-965.12	39.98629084	-104.93263633
7432.00	20.95	17.900	7240.11	1009.91	399.92	0.74	-994.76	39.98637329	-104.93259983
7522.00	18.75	21.250	7324.76	1038.71	410.11	2.75	-1023.17	39.98645234	-104.93256347
7611.00	10.33	52.720	7410.96	1056.93	421.68	12.65	-1040.97	39.98650237	-104.93252217
7701.00	7.81	97.220	7499.93	1061.06	434.18	8.03	-1044.63	39.98651369	-104.93247755
7790.00	12.24	148.910	7587.71	1052.20	445.08	10.76	-1035.39	39.98648937	-104.93243867
7835.00	15.45	159.550	7631.40	1042.49	449.64	9.08	-1025.52	39.98646273	-104.93242240
7880.00	20.59	163.840	7674.19	1029.26	453.94	11.79	-1012.15	39.98642642	-104.93240705
7969.00	31.48	171.430	7754.06	991.13	461.78	12.77	-973.75	39.98632174	-104.93237906
8059.00	42.07	167.790	7826.05	938.27	471.69	12.01	-920.57	39.98617662	-104.93234371
8103.00	47.04	167.960	7857.39	908.09	478.17	11.30	-890.18	39.98609379	-104.93232058
8148.00	51.53	169.190	7886.74	874.67	484.91	10.19	-856.53	39.98600204	-104.93229653
8192.00	56.46	170.310	7912.60	839.65	491.24	11.39	-821.31	39.98590591	-104.93227397
8237.00	61.96	173.150	7935.63	801.41	496.77	13.37	-782.90	39.98580095	-104.93225424
8282.00	67.81	176.470	7954.72	760.86	500.42	14.61	-742.23	39.98568962	-104.93224120
8327.00	73.98	179.330	7969.45	718.39	501.96	14.97	-699.74	39.98557304	-104.93223571
8416.00	87.20	177.920	7983.97	630.81	504.08	14.94	-612.14	39.98533262	-104.93222814
8504.71	89.93	180.020	7986.19	542.16	505.67	3.88	-523.49	39.98508926	-104.93222247
8505.00	89.94	180.030	7986.19	541.87	505.67	4.88	-523.20	39.98508846	-104.93222247
8505.07	89.94	180.030	7986.19	541.80	505.67	5.73	-523.13	39.98508827	-104.93222247
8595.00	90.03	185.190	7986.21	451.99	501.58	5.73	-433.53	39.98484174	-104.93223709
8667.00	90.13	184.380	7986.12	380.24	495.57	1.13	-362.04	39.98464479	-104.93225853
8684.00	90.15	184.190	7986.07	363.29	494.30	1.13	-345.15	39.98459825	-104.93226307
8774.00	90.09	182.570	7985.89	273.45	488.99	1.80	-255.56	39.98435163	-104.93228201
8864.00	90.74	181.550	7985.23	183.51	485.76	1.34	-165.80	39.98410474	-104.93229356
8953.00	90.80	179.730	7984.04	94.53	484.77	2.05	-76.91	39.98386048	-104.93229711
9043.00	90.77	182.580	7982.80	4.56	482.95	3.17	12.93	39.98361352	-104.93230359
9132.00	90.68	183.170	7981.68	-84.32	478.49	0.67	101.59	39.98336953	-104.93231953
9222.00	89.20	181.700	7981.77	-174.23	474.66	2.32	191.31	39.98312271	-104.93233318
9311.00	90.49	177.680	7982.01	-263.21	475.15	4.74	280.24	39.98287846	-104.93233146
9400.00	90.31	176.530	7981.39	-352.09	479.64	1.31	369.23	39.98263446	-104.93231543
9490.00	91.54	172.850	7979.94	-441.68	487.97	4.31	459.06	39.98238854	-104.93228573
9579.00	91.51	178.940	7977.57	-530.37	494.33	6.84	547.93	39.98214506	-104.93226302
9668.00	90.77	182.820	7975.80	-619.33	492.97	4.44	636.78	39.98190087	-104.93226790
9758.00	90.52	183.470	7974.78	-709.19	488.03	0.77	726.40	39.98165420	-104.93228553
9847.00	90.18	180.810	7974.24	-798.11	484.71	3.01	815.15	39.98141009	-104.93229739
9937.00	90.18	180.460	7973.96	-888.11	483.71	0.39	905.04	39.98116304	-104.93230096
10026.00	90.09	180.440	7973.75	-977.11	483.01	0.10	993.96	39.98091874	-104.93230346
10116.00	90.09	183.070	7973.61	-1067.06	480.25	2.92	1083.75	39.98067182	-104.93231330
10205.00	90.15	186.350	7973.42	-1155.74	472.95	3.69	1172.11	39.98042836	-104.93233938
10295.00	90.12	187.120	7973.21	-1245.12	462.39	0.86	1261.05	39.98018301	-104.93237705
10384.00	90.00	186.020	7973.11	-1333.53	452.21	1.24	1349.04	39.97994031	-104.93241339
10474.00	89.97	183.650	7973.14	-1423.21	444.62	2.63	1438.38	39.97969414	-104.93244046
10563.00	90.25	182.070	7972.97	-1512.09	440.18	1.80	1527.04	39.97945014	-104.93245631
10653.00	89.91	181.300	7972.84	-1602.05	437.54	0.94	1616.85	39.97920319	-104.93246576
10742.00	90.12	181.470	7972.82	-1691.03	435.38	0.30	1705.69	39.97895895	-104.93247344
10831.00	90.06	181.020	7972.68	-1780.01	433.45	0.51	1794.54	39.97871470	-104.93248035
10920.00	90.49	181.640	7972.25	-1868.98	431.39	0.85	1883.38	39.97847045	-104.93248772
11010.00	90.46	181.030	7971.50	-1958.95	429.29	0.68	1973.22	39.97822347	-104.93249521
11099.00	90.52	180.490	7970.74	-2047.94	428.11	0.61	2062.10	39.97797919	-104.93249943
11189.00	90.71	181.420	7969.78	-2137.92	426.61	1.05	2151.97	39.97773218	-104.93250478
11278.00	90.37	181.400	7968.94	-2226.89	424.42	0.38	2240.80	39.97748795	-104.93251260
11367.00	89.85	180.140	7968.77	-2315.88	423.22	1.53	2329.69	39.97724367	-104.93251688
11456.00	89.94	179.670	7968.93	-2404.88	423.37	0.54	2418.64	39.97699936	-104.93251636
11546.00	89.97	180.150	7969.00	-2494.88	423.51	0.53	2508.58	39.97675230	-104.93251586
11635.00	90.00	180.550	7969.02	-2583.88	422.97	0.45	2597.50	39.97650799	-104.93251780
11724.00	89.85	179.470	7969.14	-2672.88	422.95	1.23	2686.44	39.97626368	-104.93251786
11814.00	89.97	176.170	7969.28	-2762.80	426.37	3.67	2776.43	39.97601683	-104.93250565
11903.00	90.06	176.910	7969.26	-2851.64	431.75	0.84	2865.40	39.97577297	-104.93248650
11992.00	90.09	179.010	7969.14	-2940.58	434.91	2.36	2954.40	39.97552882	-104.93247520
12082.00	90.25	178.240	7968.88	-3030.55	437.07	0.87	3044.39	39.97528184	-104.93246750
12171.00	90.25	175.730	7968.49	-3119.42	441.75	2.82	3133.37	39.97503788	-104.93245080
12260.00	90.00	179.260	7968.29	-3208.32	445.64	3.98	3222.35	39.97479384	-104.93243693
12350.00	90.12	182.750	7968.20	-3298.29	444.07	3.88	3312.21	39.97454686	-104.93244257
12439.00	90.15	185.530	7967.99	-3387.05	437.64	3.12	3400.68	39.97430321	-104.93246550
12528.00	90.58	183.210	7967.42	-3475.78	430.86	2.65	3489.11	39.97405963	-104.93248970
12618.00	90.28	179.120	7966.75	-3565.74	429.03	4.56	3578.94	39.97381268	-104.93249623
12707.00	88.89	176.360	7967.39	-3654.66	432.54	3.47	3667.93	39.97356859	-104.93248371
12796.00	89.23	178.340	7968.85	-3743.55	436.65	2.26	3756.91	39.97332458	-104.93246904
12886.00	89.26	182.930	7970.04	-3833.51	435.66	5.10	3846.77	39.97307763	-104.93247260
12975.00	89.29	183.720	7971.16	-3922.35	430.49	0.89	3935.37	39.97283375	-104.93249103
13064.00	89.32	182.780	7972.24	-4011.20	425.45	1.06	4023.98	39.97258985	-104.93250903
13154.00	89.32	183.300	7973.31	-4101.07	420.68	0.58	4113.61	39.97234315	-104.93252607
13243.00	90.12	183.590	7973.75	-4189.91	415.33	0.96	4202.20	39.97209929	-104.93254515
13332.00	90.12	183.650	7973.56	-4278.73	409.71	0.07	4290.76	39.97185546	-104.93256521
13422.00	90.06	182.950	7973.42	-4368.58	404.53	0.78	4380.36	39.97160881	-104.93258370
13511.00	90.12	183.340	7973.28	-4457.44	399.65	0.44	4468.99	39.97136487	-104.93260112
13600.00	89.85	182.090	7973.30	-4546.34	395.43	1.44	4557.68	39.97112083	-104.93261617
13690.00	89.91	180.470	7973.49	-4636.32	393.42	1.80	4647.52	39.97087384	-104.93262335
13779.00	89.88	179.490	7973.65	-4725.32	393.45	1.10	4736.47	39.97062953	-104.93262324
13869.00	89.94	178.050	7973.80	-4815.29	395.38	1.60	4826.45	39.97038254	-104.93261635
13959.00	90.00	180.320	7973.84	-4905.28	396.66	2.52	4916.43	39.97013552	-104.93261179
14048.00	89.94	182.570	7973.89	-4994.24	394.42	2.53	5005.25	39.96989130	-104.93261980
14137.00	90.03	182.540	7973.91	-5083.15	390.45	0.11	5093.96	39.96964723	-104.93263396
14227.00	90.03	183.650	7973.87	-5173.02	385.59	1.23	5183.59	39.96940054	-104.93265130
14316.00	89.97	183.790	7973.87	-5261.83	379.82	0.17	5272.14	39.9691567	

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14406.00	89.94	183.870	7973.94	-5351.63	373.81	0.09	5361.66	39.96891023	-104.93269336
14495.00	89.97	183.180	7974.01	-5440.46	368.33	0.78	5450.24	39.96866638	-104.93271289
14584.00	89.91	182.630	7974.10	-5529.35	363.82	0.62	5538.90	39.96842238	-104.93272899
14674.00	90.15	182.270	7974.05	-5619.27	359.98	0.48	5628.62	39.96817555	-104.93274272
14763.00	89.91	181.980	7974.01	-5708.21	356.68	0.42	5717.38	39.96793140	-104.93275450
14853.00	90.00	181.460	7974.08	-5798.16	353.97	0.59	5807.18	39.96768446	-104.93276414
14943.00	89.91	180.860	7974.15	-5888.15	352.15	0.67	5897.04	39.96743745	-104.93277064
15032.00	90.06	179.040	7974.17	-5977.14	352.23	2.05	5985.98	39.96719315	-104.93277037
15121.00	89.94	177.150	7974.17	-6066.09	355.19	2.13	6074.97	39.96694898	-104.93275982
15210.00	90.03	178.050	7974.19	-6155.01	358.92	1.02	6163.97	39.96670488	-104.93274653
15300.00	89.94	179.450	7974.22	-6244.99	360.88	1.56	6253.96	39.96645789	-104.93273953
15389.00	90.09	180.030	7974.19	-6333.98	361.28	0.67	6342.91	39.96621358	-104.93273809
15478.00	90.03	179.940	7974.10	-6422.98	361.31	0.12	6431.86	39.96596926	-104.93273801
15568.00	90.03	179.100	7974.05	-6512.98	362.06	0.93	6521.82	39.96572221	-104.93273533
15657.00	89.94	178.780	7974.08	-6601.97	363.71	0.37	6610.81	39.96547794	-104.93272946
15746.00	89.41	176.750	7974.58	-6690.89	367.18	2.36	6699.80	39.96523383	-104.93271708
15835.00	89.35	180.700	7975.54	-6779.85	369.16	4.44	6788.77	39.96498964	-104.93271003
15925.00	89.38	181.560	7976.54	-6869.82	367.38	0.96	6878.62	39.96474265	-104.93271636
16014.00	89.48	181.770	7977.43	-6958.78	364.80	0.26	6967.43	39.96449845	-104.93272559
16104.00	89.54	184.430	7978.20	-7048.64	359.93	2.96	7057.05	39.96425178	-104.93274296
16193.00	89.42	182.310	7979.01	-7137.47	354.70	2.39	7145.64	39.96400791	-104.93276162
16283.00	89.32	183.690	7979.99	-7227.34	349.99	1.54	7235.28	39.96376121	-104.93277843
16372.00	89.32	183.780	7981.05	-7316.15	344.19	0.10	7323.81	39.96351744	-104.93279912
16461.00	89.23	181.770	7982.18	-7405.03	339.88	2.26	7412.48	39.96327344	-104.93281449
16551.00	89.32	182.440	7983.32	-7494.96	336.58	0.75	7502.24	39.96302657	-104.93282629
16640.00	89.32	181.010	7984.37	-7583.91	333.90	1.61	7591.03	39.96278239	-104.93283585
16729.00	89.42	180.880	7985.35	-7672.90	332.43	0.18	7679.90	39.96253812	-104.93284109
16819.00	89.38	180.060	7986.29	-7762.89	331.69	0.91	7769.81	39.96229109	-104.93284373
16908.00	89.20	175.840	7987.40	-7851.80	334.88	4.75	7858.78	39.96204701	-104.93283238
16998.00	89.26	176.580	7988.61	-7941.60	340.82	0.82	7948.73	39.96180051	-104.93281116
17087.00	90.15	180.290	7989.06	-8030.55	343.25	4.29	8037.71	39.96155634	-104.93280250
17176.00	89.42	182.850	7989.40	-8119.51	340.82	2.99	8126.52	39.96131214	-104.93281120
17266.00	89.88	183.800	7989.95	-8209.35	335.60	1.17	8216.12	39.96106550	-104.93282982
17355.00	89.29	184.110	7990.59	-8298.14	329.46	0.75	8304.63	39.96082178	-104.93285172
17445.00	89.35	181.050	7991.66	-8388.03	325.41	3.40	8394.31	39.96057502	-104.93286618
17534.00	89.32	179.420	7992.69	-8477.02	325.04	1.83	8483.23	39.96033073	-104.93286748
17624.00	89.66	177.880	7993.50	-8566.99	327.16	1.75	8573.22	39.96008375	-104.93285993
17713.00	89.48	179.390	7994.16	-8655.96	329.28	1.71	8662.20	39.95983952	-104.93285237
17803.00	89.85	180.440	7994.69	-8745.95	329.42	1.24	8752.15	39.95959247	-104.93285189
17893.00	89.23	178.520	7995.41	-8835.94	330.23	2.24	8842.11	39.95934544	-104.93284899
17982.00	89.23	176.800	7996.61	-8924.86	333.87	1.93	8931.09	39.95910137	-104.93283603
18071.00	89.35	177.700	7997.71	-9013.75	338.14	1.02	9020.08	39.95885735	-104.93282080
18143.24	89.37	180.070	7998.52	-9085.96	339.54	3.28	9092.30	39.95865911	-104.93281579
18161.00	89.38	180.650	7998.71	-9103.72	339.43	3.27	9110.04	39.95861036	-104.93281619
18250.00	89.82	181.930	7999.33	-9192.70	337.43	1.52	9198.89	39.95836612	-104.93282334
18339.00	89.66	180.190	7999.74	-9281.68	335.78	1.96	9287.75	39.95812186	-104.93282922
18408.00	89.31	177.690	8000.36	-9350.66	337.06	3.66	9356.73	39.95793250	-104.93282467
18429.00	89.20	176.930	8000.63	-9371.63	338.04	3.66	9377.73	39.95787493	-104.93282116
18451.60	89.22	176.840	8000.94	-9394.20	339.27	0.40	9400.32	39.95781298	-104.93281678
18452.00	89.22	176.840	8000.95	-9394.59	339.29	0.40	9400.72	39.95781189	-104.93281670
18453.73	89.22	176.830	8000.97	-9396.32	339.39	0.40	9402.45	39.95780715	-104.93281636
18486.00	89.26	176.710	8001.40	-9428.54	341.20	0.40	9434.71	39.95771871	-104.93280988
18501.91	89.26	176.710	8001.61	-9444.42	342.12	==>	9450.61	39.95767511	-104.93280662
18502.00	89.26	176.710	8001.61	-9444.51	342.12	==>	9450.70	39.95767486	-104.93280661
18510.00	89.26	176.710	8001.71	-9452.50	342.58	==>	9458.70	39.95765294	-104.93280497

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1720.00	1719.77	0.21	23.12	39.98360157	-104.93394451	9.625" Csg: 1720 MD/TVD
8505.07	7986.19	541.80	505.67	39.98508827	-104.93222247	460 Setback: 8505 / 7986 MD/TVD, 460 FNL, 2246 FWL Sec 07
8667.00	7986.12	380.24	495.57	39.98464479	-104.93225853	Top Perf: 8667 / 7986 MD/TVD, 622 FNL, 2237 FWL Sec 07
18408.00	8000.36	-9350.66	337.06	39.95793250	-104.93282467	Btm Perf: 18,408 / 8000 MD/TVD, 196 FSL, 2088 FWL Sec 18
18451.60	8000.94	-9394.20	339.27	39.95781298	-104.93281678	Btm Toe Sub: 18,452 / 8001 MD/TVD, 152 FSL, 2090 FWL Sec 18
18453.73	8000.97	-9396.32	339.39	39.95780715	-104.93281636	150 Setback: 18,454 / 8001 MD/TVD, 150 FSL, 2090 FWL Sec 18
18501.91	8001.61	-9444.42	342.12	39.95767511	-104.93280662	PBTD: 18,502 / 8002 MD/TVD, 102 FSL, 2093 FWL Sec 18
18510.00	8001.71	-9452.50	342.58	39.95765294	-104.93280497	5.5" Csg: 18,510 / 8002 MD/TVD, 94 FSL, 2093 FWL Sec 18
18510.00	8001.71	-9452.50	342.58	39.95765294	-104.93280497	BHL: 18,510 / 8002 MD/TVD, 94 FSL, 2093 FWL Sec 18

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	1720.00	1719.77	0.21	23.12
8.500	1720.00	1719.77	0.21	23.12	18510.00	8001.71	-9452.50	342.58

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	1720.00	1719.77	0.21	23.12
5 1/2in Casing	0.00	0.00	0.00	0.00	18510.00	8001.71	-9452.50	342.58

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
487300	As Drilled 20181108	18510.00	8001.71	MWD

Coordinates are from Slot  
MD's and TVD's are from Rig Floor 5144.5ft above Mean Sea Level  
Vertical Section is from 0.00 0.00 on azimuth 177.920 degrees  
Bottom hole distance is 9458.70 Feet on azimuth 177.92 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Great Western Operating Co.  
Date Printed: