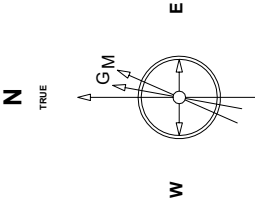


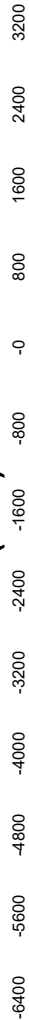
Created by admin		Date plotted 4-Jun-2019
Plot reference is B-Farm LD 18-394HNX (AWB).		
Ref wellpath is B-Farm LD 18-394HNX (AWP#1).		
Coordinates are in Feet reference E-12 - B-Farm LD 18-394HNX		
True Vertical Depths are reference Rig Datum.		
Measured Depths are reference Rig Datum.		
Rig Datum: Actual Datum #1		
Rig Datum to Mean Sea Level: 5144.50 ft.		
Plot North is aligned to TRUE North.		

Great Western Operating Company, LLC	
Location Colorado	Slot E-12 - B-Farm LD 18-394HNX
Field Wattenburg	Well B-Farm LD 18-394HNX
Installation B-Farm	Wellbore B-Farm LD 18-394HNX (AWB)



East (Feet) ->

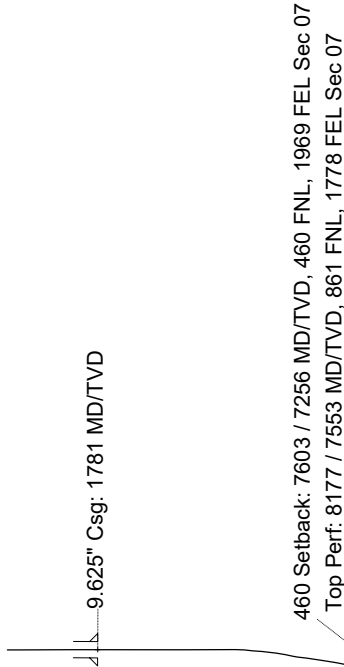
Scale 1 cm = 400 ft



Step-2-2016  
Dip: 48.51 deg / Field: 52.266 deg / T  
Lat: N30.09 / 33000 Long: W104.09 / 25000  
To convert azimuth from Magnetic to TRUE add 8.35 deg

Scale 1 cm = 800 ft

-> True Vertical Depth (Feet)



Btm Perf: 17,579 / 7598 MD/TVD, 289 FSL, 1843 FEL Sec 18  
Btm Toe Sub: 17,630 / 7598 MD/TVD, 238 FSL, 1843 FEL Sec 18  
150 Setback: 17,718 / 7598 MD/TVD, 150 FSL, 1843 FEL Sec 18  
PBTD: 17,852 / 7597 MD/TVD, 16 FSL, 1844 FEL Sec 18  
5.5" Csg: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL Sec 18  
BHL: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL Sec 18

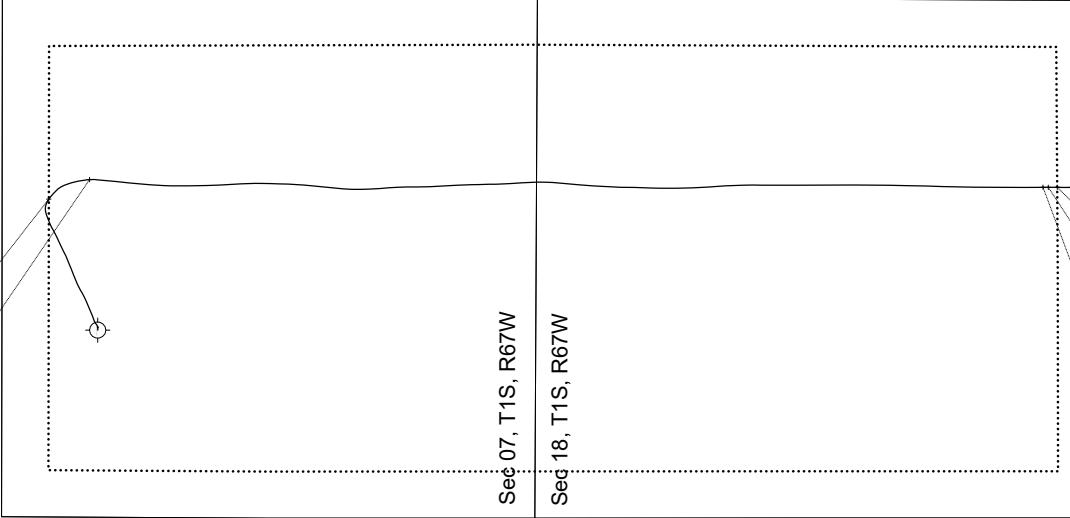
Scale 1 cm = 800 ft

Vertical Section (Feet) ->

Azimuth 171.67 with reference 0.00 N, 0.00 E from E-12 - B-Farm LD 18-394HNX

<- North(Feet)

Scale 1 cm = 400 ft



Btm Perf: 17,579 / 7598 MD/TVD, 289 FSL, 1843 FEL Sec 18  
Btm Toe Sub: 17,630 / 7598 MD/TVD, 238 FSL, 1843 FEL Sec 18  
150 Setback: 17,718 / 7598 MD/TVD, 150 FSL, 1843 FEL Sec 18  
PBTD: 17,852 / 7597 MD/TVD, 16 FSL, 1844 FEL Sec 18  
5.5" Csg: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL Sec 18  
BHL: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL Sec 18

Great Western Operating Co, LLC  
Directional Survey Report  
Wellpath: B-Farm LD 18-394HNNX  
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
Feb-15-2019	Jun-4-2019	05-001-10093	20.00	B-Farm LD 18-394HNNX

**Slot Coordinates**

Latitude	Longitude
39.98376300	-104.93367200

**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	39.98376300	-104.93367200
20.00	0.00	10.490	20.00	0.00	0.00	==>	0.00	39.98376300	-104.93367200
161.00	0.04	10.490	161.00	0.05	0.01	0.03	-0.05	39.98376313	-104.93367197
246.00	0.31	109.110	246.00	0.00	0.23	0.37	0.03	39.98376301	-104.93367117
306.00	1.71	93.290	305.99	-0.10	1.28	2.36	0.29	39.98376272	-104.93366744
396.00	1.76	91.350	395.95	-0.21	4.00	0.09	0.79	39.98376242	-104.93365772
486.00	1.58	98.120	485.91	-0.42	6.61	0.30	1.37	39.98376185	-104.93364841
576.00	1.36	98.120	575.88	-0.75	8.90	0.24	2.03	39.98376095	-104.93364025
666.00	1.27	96.540	665.86	-1.01	10.95	0.11	2.59	39.98376023	-104.93363294
756.00	1.27	104.360	755.83	-1.37	12.90	0.19	3.23	39.98375924	-104.93362596
846.00	1.14	96.010	845.81	-1.71	14.76	0.24	3.83	39.98375830	-104.93361933
936.00	1.89	92.410	935.78	-1.87	17.13	0.84	4.33	39.98375787	-104.93361086
1026.00	1.67	81.770	1025.74	-1.74	19.91	0.44	4.61	39.98375821	-104.93360094
1116.00	1.67	64.020	1115.70	-0.98	22.39	0.57	4.22	39.98376031	-104.93359210
1206.00	1.27	75.710	1205.67	-0.16	24.53	0.55	3.71	39.98376256	-104.93358445
1296.00	1.10	69.290	1295.65	0.39	26.31	0.24	3.43	39.98376407	-104.93357811
1386.00	1.27	73.510	1385.63	0.98	28.07	0.21	3.10	39.98376569	-104.93357182
1476.00	1.49	72.370	1475.61	1.62	30.15	0.25	2.77	39.98376744	-104.93356443
1566.00	0.88	98.120	1565.59	1.87	31.94	0.88	2.78	39.98376815	-104.93355800
1656.00	0.62	104.710	1655.58	1.65	33.10	0.30	3.16	39.98376754	-104.93355388
1730.00	0.57	307.040	1729.58	1.77	33.19	1.58	3.06	39.98376787	-104.93355355
1781.00	0.43	293.550	1780.58	2.00	32.81	0.35	2.77	39.98376850	-104.93355490
1889.00	0.33	234.980	1888.57	1.99	32.19	0.35	2.70	39.98376845	-104.93355714
1978.00	0.31	259.230	1977.57	1.79	31.74	0.15	2.82	39.98376793	-104.93355873
2068.00	0.18	348.900	2067.57	1.89	31.47	0.40	2.69	39.98376818	-104.93355968
2158.00	0.07	232.050	2157.57	1.99	31.40	0.25	2.58	39.98376847	-104.93355994
2247.00	0.07	175.690	2246.57	1.91	31.37	0.07	2.66	39.98376823	-104.93356007
2337.00	0.13	197.430	2336.57	1.75	31.34	0.08	2.81	39.98376781	-104.93356017
2427.00	0.03	244.400	2426.57	1.65	31.29	0.12	2.91	39.98376752	-104.93356035
2516.00	0.24	178.240	2515.57	1.45	31.27	0.26	3.10	39.98376698	-104.93356041
2606.00	0.22	119.790	2605.57	1.17	31.43	0.25	3.39	39.98376622	-104.93355985
2696.00	0.11	5.160	2695.57	1.17	31.58	0.32	3.42	39.98376623	-104.93355929
2785.00	0.07	146.090	2784.57	1.21	31.62	0.19	3.38	39.98376633	-104.93355915
2875.00	0.21	349.170	2874.57	1.33	31.62	0.31	3.27	39.98376665	-104.93355915
2965.00	0.15	199.290	2964.57	1.38	31.55	0.39	3.21	39.98376679	-104.93355940
3055.00	0.03	321.610	3054.57	1.29	31.50	0.19	3.29	39.98376654	-104.93355960
3144.00	0.07	347.620	3143.57	1.36	31.47	0.05	3.22	39.98376674	-104.93355969
3234.00	0.21	299.450	3233.57	1.50	31.32	0.19	3.06	39.98376711	-104.93356024
3324.00	0.07	162.440	3323.57	1.52	31.19	0.30	3.01	39.98376718	-104.93356070
3414.00	0.04	321.010	3413.57	1.50	31.19	0.12	3.04	39.98376711	-104.93356071
3503.00	0.07	141.570	3502.57	1.48	31.20	0.12	3.06	39.98376706	-104.93356066
3593.00	0.04	58.970	3592.57	1.45	31.26	0.08	3.10	39.98376698	-104.93356044
3683.00	0.45	111.280	3682.57	1.34	31.62	0.47	3.26	39.98376668	-104.93355917
3772.00	0.46	239.610	3771.57	1.03	31.64	0.92	3.56	39.98376583	-104.93355911
3862.00	0.44	228.230	3861.57	0.62	31.07	0.10	3.89	39.98376470	-104.93356114
3952.00	1.85	253.680	3951.55	-0.02	29.42	1.63	4.28	39.98376294	-104.93356703
4042.00	0.15	59.000	4041.53	-0.37	28.12	2.22	4.44	39.98376199	-104.93357165
4131.00	0.09	247.230	4130.53	-0.33	28.16	0.27	4.41	39.98376208	-104.93357152
4221.00	0.06	242.190	4220.53	-0.38	28.05	0.03	4.45	39.98376195	-104.93357190
4311.00	0.22	257.750	4310.53	-0.44	27.84	0.18	4.47	39.98376178	-104.93357265
4401.00	1.20	95.700	4400.52	-0.57	28.61	1.57	4.71	39.98376143	-104.93356991
4490.00	3.87	81.940	4489.43	-0.24	32.51	3.06	4.95	39.98376233	-104.93355599
4580.00	6.34	63.860	4579.07	2.37	39.98	3.24	3.45	39.98376951	-104.93352933
4670.00	10.85	52.570	4668.04	9.71	51.17	5.33	-2.19	39.98378966	-104.93348938
4759.00	13.48	53.410	4755.04	20.99	66.16	2.96	-11.18	39.98382062	-104.93343592
4849.00	16.17	64.560	4842.05	32.63	85.90	4.34	-19.84	39.98385257	-104.9336545
4939.00	18.47	70.210	4927.97	42.84	110.64	3.16	-26.35	39.98388061	-104.93327718
5029.00	21.19	72.670	5012.63	52.52	139.59	3.16	-31.73	39.98390716	-104.93317388
5118.00	22.93	68.630	5095.11	63.63	171.09	2.59	-38.16	39.98393766	-104.93306145
5208.00	25.41	64.300	5177.22	78.39	204.83	3.39	-47.88	39.98397819	-104.93294107
5298.00	28.06	66.340	5257.60	95.26	241.62	3.12	-59.24	39.98402451	-104.93280977
5388.00	29.93	68.440	5336.32	112.01	281.90	2.37	-69.97	39.98407048	-104.93266605
5477.00	29.93	64.080	5413.46	129.88	322.52	2.44	-81.76	39.98411952	-104.93252108
5567.00	29.76	60.230	5491.53	150.79	362.11	2.14	-96.71	39.98417691	-104.93237982
5657.00	29.97	60.130	5569.57	173.07	400.99	0.24	-113.13	39.98423809	-104.93224106
5747.00	29.95	62.350	5647.55	194.69	440.38	1.23	-128.81	39.98429744	-104.93210048
5836.00	29.28	68.090	5724.94	213.13	480.26	3.27	-141.27	39.98434805	-104.93195817
5926.00	29.82	70.350	5803.24	228.87	521.76	1.38	-150.83	39.98439125	-104.93181009

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6016.00	29.87	67.870	5881.30	244.83	563.59	1.37	-160.57	39.98443508	-104.93166079
6106.00	30.17	67.190	5959.23	262.04	605.20	0.50	-171.56	39.98448232	-104.93151231
6195.00	30.16	67.440	6036.18	279.29	646.46	0.14	-182.65	39.98452966	-104.93136507
6285.00	30.27	68.550	6113.95	296.26	688.46	0.63	-193.35	39.98457624	-104.93121522
6375.00	30.24	66.030	6191.69	313.76	730.28	1.41	-204.61	39.98462428	-104.93106597
6464.00	30.01	62.310	6268.68	333.21	770.47	2.11	-218.03	39.98467767	-104.93092255
6554.00	30.12	63.220	6346.57	353.85	810.56	0.52	-232.63	39.98473431	-104.93077949
6644.00	30.19	68.050	6424.40	372.48	851.71	2.70	-245.11	39.98478546	-104.93063262
6733.00	30.15	65.230	6501.35	390.21	892.76	1.59	-256.70	39.98483413	-104.93048613
6823.00	29.90	61.230	6579.28	410.48	932.95	2.24	-270.93	39.98488976	-104.93034270
6913.00	29.91	61.040	6657.30	432.14	972.25	0.11	-286.67	39.98494922	-104.93020247
7003.00	30.06	63.100	6735.25	453.21	1011.98	1.16	-301.75	39.98500704	-104.93006067
7092.00	29.99	67.230	6812.32	471.90	1052.38	2.32	-314.39	39.98505835	-104.92991652
7182.00	29.98	69.090	6890.28	488.63	1094.12	1.03	-324.90	39.98510428	-104.92976754
7272.00	30.13	68.960	6968.17	504.77	1136.21	0.18	-334.76	39.98514857	-104.92961735
7361.00	27.27	83.510	7046.33	515.11	1177.38	8.46	-339.03	39.98517694	-104.92947044
7451.00	28.28	101.990	7126.11	513.00	1218.80	9.60	-330.94	39.98517116	-104.92932263
7541.00	31.37	116.110	7204.27	498.24	1260.75	8.50	-310.26	39.98513064	-104.92917293
7602.80	34.42	123.720	7256.18	481.46	1289.74	8.30	-289.45	39.98508456	-104.92906947
7631.00	35.95	126.790	7279.23	472.08	1303.00	8.30	-278.24	39.98505880	-104.92902215
7720.00	42.00	131.880	7348.41	436.51	1346.14	7.69	-236.80	39.98496116	-104.92886820
7811.00	47.85	140.390	7412.87	390.11	1390.40	9.21	-184.48	39.98483380	-104.92871029
7901.00	53.42	157.300	7470.18	330.77	1425.79	15.75	-120.63	39.98467089	-104.92858399
7991.00	65.41	164.710	7515.94	257.62	1450.65	15.08	-44.65	39.98447008	-104.92849532
8080.00	78.63	168.320	7543.36	175.48	1470.24	15.34	39.46	39.98424458	-104.92842541
8170.00	89.17	176.770	7552.92	86.94	1481.76	14.97	128.73	39.98400154	-104.92838432
8177.00	89.22	177.440	7553.02	79.95	1482.12	9.53	135.70	39.98398235	-104.92838306
8260.00	89.78	185.330	7553.75	-2.95	1480.11	9.53	217.44	39.98375477	-104.92839022
8350.00	89.94	185.290	7553.97	-92.57	1471.78	0.18	304.90	39.98350877	-104.92841996
8439.00	90.12	186.110	7553.92	-181.13	1462.95	0.94	391.25	39.98326567	-104.92845152
8529.00	90.37	185.780	7553.54	-270.64	1453.62	0.46	478.47	39.98301994	-104.92848480
8619.00	90.12	185.090	7553.15	-360.24	1445.10	0.82	565.88	39.98277400	-104.92851524
8708.00	90.06	184.780	7553.01	-448.91	1437.44	0.35	652.50	39.98253059	-104.92854258
8798.00	90.00	184.470	7552.97	-538.61	1430.19	0.35	740.21	39.98228434	-104.92856849
8888.00	89.97	182.890	7552.99	-628.42	1424.41	1.76	828.24	39.98203780	-104.92858912
8978.00	89.85	181.120	7553.13	-718.37	1421.26	1.97	916.77	39.98179090	-104.92860038
9067.00	90.06	180.120	7553.20	-807.36	1420.30	1.15	1004.68	39.98154661	-104.92860383
9157.00	89.45	178.720	7553.59	-897.35	1421.21	1.70	1093.86	39.98129957	-104.92860060
9247.00	89.42	179.300	7554.47	-987.33	1422.76	0.65	1183.12	39.98105256	-104.92859507
9336.00	89.38	178.410	7555.41	-1076.31	1424.54	1.00	1271.41	39.98080831	-104.92858874
9426.00	89.38	177.810	7556.38	-1166.25	1427.51	0.67	1360.84	39.98056140	-104.92857817
9516.00	89.48	177.120	7557.27	-1256.16	1431.49	0.77	1450.37	39.98031460	-104.92856399
9605.00	89.45	176.470	7558.11	-1345.02	1436.47	0.73	1539.01	39.98007068	-104.92854625
9695.00	89.88	177.530	7558.63	-1434.89	1441.18	1.27	1628.62	39.97982397	-104.92852946
9785.00	90.06	178.620	7558.68	-1524.84	1444.20	1.23	1718.05	39.97957705	-104.92851869
9875.00	89.88	179.890	7558.73	-1614.83	1445.37	1.43	1807.26	39.97933002	-104.92851454
9964.00	89.97	182.230	7558.84	-1703.81	1443.72	2.63	1895.06	39.97908576	-104.92852043
10054.00	90.28	182.860	7558.65	-1793.72	1439.73	0.78	1983.45	39.97883895	-104.92853471
10144.00	89.91	181.620	7558.50	-1883.65	1436.21	1.44	2071.92	39.97859209	-104.92854728
10233.00	89.82	182.850	7558.71	-1972.58	1432.74	1.39	2159.40	39.97834797	-104.92855968
10323.00	89.97	184.670	7558.87	-2062.38	1426.84	2.03	2247.40	39.97810145	-104.92858076
10413.00	89.91	186.350	7558.97	-2151.96	1418.20	1.87	2334.79	39.97785554	-104.92861161
10503.00	90.06	186.340	7558.99	-2241.41	1408.25	0.17	2421.85	39.97761000	-104.92864712
10592.00	89.91	185.150	7559.01	-2329.96	1399.34	1.35	2508.17	39.97736692	-104.92867892
10682.00	90.65	184.570	7558.57	-2419.64	1391.72	1.04	2595.80	39.97712075	-104.92870615
10772.00	90.65	182.350	7557.55	-2509.46	1386.28	2.47	2683.88	39.97687418	-104.92872554
10861.00	90.15	178.540	7556.93	-2598.44	1385.59	4.32	2771.82	39.97662992	-104.92872803
10951.00	90.00	177.080	7556.81	-2688.37	1389.03	1.63	2861.30	39.97638305	-104.92871577
11041.00	89.94	175.400	7556.86	-2778.17	1394.93	1.87	2951.01	39.97613653	-104.92869473
11131.00	89.88	175.910	7557.00	-2867.91	1401.75	0.57	3040.80	39.97589018	-104.92867042
11220.00	90.18	177.350	7556.95	-2956.76	1406.98	1.65	3129.46	39.97564630	-104.92865177
11310.00	90.25	179.620	7556.62	-3046.72	1409.36	2.52	3218.82	39.97539934	-104.92864330
11400.00	90.28	179.520	7556.20	-3136.72	1410.04	0.12	3307.96	39.97515229	-104.92864091
11489.00	90.37	178.310	7555.70	-3225.70	1411.72	1.36	3396.25	39.97490803	-104.92863492
11579.00	90.28	177.480	7555.19	-3315.64	1415.03	0.93	3485.71	39.97466115	-104.92862314
11669.00	90.31	176.670	7554.72	-3405.52	1419.62	0.90	3575.31	39.97441441	-104.92860677
11758.00	90.28	176.710	7554.26	-3494.37	1424.76	0.06	3663.97	39.97417051	-104.92858846
11848.00	90.25	177.480	7553.85	-3584.25	1429.32	0.86	3753.56	39.97392377	-104.92857220
11938.00	90.37	178.910	7553.36	-3674.20	1432.16	1.59	3842.97	39.97367684	-104.92856210
12028.00	89.72	178.690	7553.29	-3764.18	1434.04	0.76	3932.28	39.97342984	-104.92855540
12117.00	89.94	178.200	7553.55	-3853.15	1436.46	0.60	4020.65	39.97318562	-104.92854680
12207.00	90.00	178.840	7553.60	-3943.12	1438.78	0.71	4110.01	39.97293864	-104.92853852
12297.00	89.97	177.320	7553.62	-4033.06	1441.80	1.69	4199.45	39.97269173	-104.92852778
12386.00	89.82	176.870	7553.79	-4121.95	1446.31	0.53	4288.05	39.97244773	-104.92851171
12476.00	89.78	175.810	7554.10	-4211.76	1452.05	1.18	4377.74	39.97220118	-104.92849123
12566.00	89.88	177.540	7554.37	-4301.61	1457.27	1.93	4467.40	39.97195455	-104.92847263
12656.00	89.82	181.600	7554.60	-4391.59	1457.95	4.51	4556.52	39.97170755	-104.92847024
12745.00	89.88	184.250	7554.84	-4480.46	1453.41	2.98	4643.80	39.97146357	-104.92848646
12835.00	89.91	184.720	7555.00	-4570.19	1446.37	0.52	4731.56	39.97121727	-104.92851158
12925.00	89.35	185.050	7555.58	-4659.86	1438.71	0.72	4819.17	39.97097112	-104.92853895
13014.00	89.51	184.970	7556.47	-4748.51	1430.93	0.20	4905.77	39.97072775	-104.92856669
13104.00	89.48	184.530	7557.26	-4838.20	1423.48	0.49	4993.43	39.97048155	-104.92859330
13194.00	89.57	183.380	7558.01	-4927.98	1417.27	1.28	5081.36	39.97023510	-104.92861547
13284.00	89.42	183.030	7558.80	-5017.84	1412.24	0.42	5169.54	39.96998843	-104.92863343
13373.00	89.42	181.410	7559.70	-5106.76	1408.79	1.82	5257.02	39.96974432	-104.92864575
13463.00	89.45	181.050	7560.59	-5196.74	1406.86	0.40	5345.77	39.96949734	-104.92865266
13553.00	89.51	181.390	7561.41	-5286.71	1404.95	0.38	5434.52	39.96925034	-104.92865952
13643.00	89.32	181.460	7562.33	-5376.68	1402.71	0.22	5523.21	39.96900337	-104.92866752
13732.00	89.45	182.510	7563.28	-5465.62	1399.63	1.19	5610.76	39.96875922	-104.92867854
13822.00	89.17	180.370	7564.37	-5555.58	1397.36	2.40	5699.45	39.96851228	-104.92868662
13912.00	89.20	179.840	7565.65	-5645.57	1397.20	0.59	5788.46	39.96826524	-104.92868723

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14001.00	89.35	179.130	7566.77	-5734.56	1398.00	0.82	5876.63	39.96802096	-104.92868439
14091.00	89.23	178.300	7567.89	-5824.53	1400.02	0.93	5965.94	39.96777398	-104.92867721
14181.00	89.29	177.280	7569.05	-5914.45	1403.49	1.14	6055.42	39.96752713	-104.92866485
14271.00	89.14	175.660	7570.28	-6004.27	1409.03	1.81	6145.09	39.96728057	-104.92864510
14360.00	88.98	176.230	7571.74	-6093.04	1415.32	0.67	6233.83	39.96703690	-104.92862267
14450.00	88.92	177.100	7573.39	-6182.87	1420.56	0.97	6323.47	39.96679031	-104.92860401
14540.00	88.86	177.820	7575.13	-6272.76	1424.54	0.80	6412.99	39.96654354	-104.92858980
14629.00	88.95	178.660	7576.84	-6361.70	1427.28	0.95	6501.39	39.96629938	-104.92858007
14719.00	88.95	180.080	7578.49	-6451.68	1428.27	1.58	6590.56	39.96605239	-104.92857656
14809.00	89.02	180.540	7580.08	-6541.66	1427.78	0.52	6679.53	39.96580537	-104.92857831
14899.00	88.86	180.560	7581.74	-6631.64	1426.92	0.18	6768.43	39.96555837	-104.92858141
14988.00	88.99	179.950	7583.41	-6720.63	1426.52	0.70	6856.42	39.96531410	-104.92858284
15078.00	88.89	179.570	7585.08	-6810.61	1426.90	0.44	6945.51	39.96506708	-104.92858152
15168.00	88.89	180.000	7586.82	-6900.59	1427.23	0.48	7034.59	39.96482007	-104.92858033
15257.00	88.89	179.420	7588.55	-6989.57	1427.68	0.65	7122.69	39.96457581	-104.92857874
15347.00	88.86	179.160	7590.31	-7079.55	1428.80	0.29	7211.88	39.96432882	-104.92857478
15437.00	88.89	180.260	7592.08	-7169.53	1429.25	1.22	7300.98	39.96408181	-104.92857318
15527.00	88.86	180.400	7593.85	-7259.51	1428.74	0.16	7389.93	39.96353481	-104.92857505
15616.00	89.45	180.090	7595.16	-7348.50	1428.36	0.75	7477.93	39.96359052	-104.92857642
15706.00	89.48	179.570	7596.00	-7438.50	1428.62	0.58	7567.01	39.96334347	-104.92857549
15796.00	89.48	180.150	7596.82	-7528.49	1428.84	0.64	7656.09	39.96309643	-104.92857472
15886.00	89.45	180.570	7597.66	-7618.49	1428.28	0.47	7745.05	39.96284938	-104.92857676
15975.00	89.78	180.920	7598.26	-7707.48	1427.12	0.54	7832.93	39.96260510	-104.92858090
16065.00	89.97	181.270	7598.45	-7797.46	1425.40	0.44	7921.72	39.96235808	-104.92858706
16155.00	89.85	180.970	7598.59	-7887.44	1423.64	0.36	8010.49	39.96211107	-104.92859335
16244.00	89.88	180.590	7598.80	-7976.43	1422.43	0.43	8098.37	39.96186678	-104.92859769
16334.00	89.69	181.180	7599.14	-8066.42	1421.04	0.69	8187.21	39.96161976	-104.92860267
16424.00	89.88	181.210	7599.48	-8156.40	1419.16	0.21	8275.97	39.96137275	-104.92860938
16514.00	90.03	181.600	7599.55	-8246.37	1416.96	0.46	8364.67	39.96112577	-104.92861727
16604.00	90.52	181.940	7599.12	-8336.33	1414.18	0.66	8453.27	39.96087883	-104.92862721
16693.00	89.66	181.280	7598.98	-8425.29	1411.68	1.22	8540.93	39.96063462	-104.92863615
16783.00	90.03	180.670	7599.22	-8515.28	1410.14	0.79	8629.75	39.96038760	-104.92864163
16873.00	89.97	181.070	7599.22	-8605.27	1408.78	0.45	8718.59	39.96014057	-104.92864652
16962.00	89.91	180.970	7599.31	-8694.25	1407.19	0.13	8806.40	39.95989629	-104.92865219
17052.00	89.94	180.730	7599.43	-8784.24	1405.86	0.27	8895.25	39.95964926	-104.92865697
17142.00	90.03	180.120	7599.46	-8874.24	1405.19	0.69	8984.20	39.95940221	-104.92865937
17232.00	90.12	179.560	7599.34	-8964.24	1405.44	0.63	9073.29	39.95915515	-104.92865849
17321.00	90.25	180.080	7599.05	-9053.24	1405.72	0.60	9161.39	39.95891084	-104.92865751
17411.00	90.12	179.820	7598.76	-9143.24	1405.80	0.32	9250.45	39.95866379	-104.92865725
17501.00	90.21	179.360	7598.50	-9233.24	1406.44	0.52	9339.59	39.95841673	-104.92865497
17579.00	90.18	180.180	7598.23	-9311.23	1406.75	1.06	9416.81	39.95820262	-104.92865388
17591.00	90.18	180.310	7598.19	-9323.23	1406.70	1.06	9428.67	39.95816968	-104.92865406
17630.18	90.21	180.270	7598.06	-9362.41	1406.50	0.13	9467.41	39.95806213	-104.92865478
17680.00	90.25	180.220	7597.86	-9412.23	1406.29	0.13	9516.67	39.95792537	-104.92865555
17717.85	90.21	180.410	7597.71	-9450.08	1406.08	0.52	9554.09	39.95782147	-104.92865630
17770.00	90.15	180.680	7597.55	-9502.23	1405.58	0.52	9605.61	39.95767832	-104.92865809
17837.00	90.28	179.960	7597.29	-9569.23	1405.21	1.09	9671.85	39.95749440	-104.92865944
17851.62	90.28	179.960	7597.22	-9583.85	1405.22	==>	9686.32	39.95745427	-104.92865941
17861.00	90.28	179.960	7597.18	-9593.23	1405.23	==>	9695.60	39.95742852	-104.92865938

#### Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1781.00	1780.58	2.00	32.81	39.98376850	-104.93355490	9.625" Csg: 1781 MD/TVD
7602.80	7256.18	481.46	1289.74	39.98508456	-104.92906947	460 Setback: 7603 / 7256 MD/TVD, 460 FNL, 1969 FEL Sec 07
8177.00	7553.02	79.95	1482.12	39.98398235	-104.92838306	Top Perf: 8177 / 7553 MD/TVD, 861 FNL, 1778 FEL Sec 07
17579.00	7598.23	-9311.23	1406.75	39.95820262	-104.92865388	Btm Perf: 17,579 / 7598 MD/TVD, 289 FSL, 1843 FEL Sec 18
17630.18	7598.06	-9362.41	1406.50	39.95806213	-104.92865478	Btm Toe Sub: 17,630 / 7598 MD/TVD, 238 FSL, 1843 FEL Sec 18
17717.85	7597.71	-9450.08	1406.08	39.95782147	-104.92865630	150 Setback: 17,718 / 7598 MD/TVD, 150 FSL, 1843 FEL Sec 18
17851.62	7597.22	-9583.85	1405.22	39.95745427	-104.92865941	PBTD: 17,852 / 7597 MD/TVD, 16 FSL, 1844 FEL Sec 18
17861.00	7597.18	-9593.23	1405.23	39.95742852	-104.92865938	5.5" Csg: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL Sec 18
17861.00	7597.18	-9593.23	1405.23	39.95742852	-104.92865938	BHL: 17,861 / 7597 MD/TVD, 7 FSL, 1844 FEL 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	1781.00	1780.58	2.00	32.81
8.500	1781.00	1780.58	2.00	32.81	17861.00	7597.18	-9593.23	1405.23

#### 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	1781.00	1780.58	2.00	32.81
5 1/2in Casing	0.00	0.00	0.00	0.00	17861.00	7597.18	-9593.23	1405.23

#### Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
525142	As Drilled - 20190218	17861.00	7597.18	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 171.670 degrees

Bottom hole distance is 9695.60 Feet on azimuth 171.67 degrees from Wellhead

Calculation method uses Minimum Curvature method

Prepared by Great Western Operating Co.

Date Printed: