



Great Western Operating Co, LLC  
Directional Survey Report  
Wellpath: B-Farm LD 18-393HN  
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-2-2019	Jun-4-2019	05-001-10096	20.00	B-Farm LD 18-393HN

**Slot Coordinates**

Latitude	Longitude
39.98373600	-104.93367100

**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	39.98373600	-104.93367100
20.00	0.00	88.800	20.00	0.00	0.00	==>	0.00	39.98373600	-104.93367100
161.00	0.22	88.800	161.00	0.01	0.27	0.16	0.03	39.98373602	-104.93367003
246.00	0.53	133.280	246.00	-0.26	0.72	0.47	0.35	39.98373529	-104.93366843
306.00	0.44	159.290	306.00	-0.67	1.00	0.39	0.79	39.98373417	-104.93366742
396.00	0.31	152.080	395.99	-1.20	1.24	0.15	1.36	39.98373269	-104.93366658
486.00	0.31	161.230	485.99	-1.65	1.43	0.05	1.82	39.98373147	-104.93366589
576.00	0.79	330.770	575.99	-1.34	1.21	1.22	1.49	39.98373232	-104.93366669
666.00	0.44	336.390	665.99	-0.48	0.77	0.39	0.58	39.98373468	-104.93366827
756.00	0.35	326.370	755.98	0.06	0.48	0.13	0.00	39.98373618	-104.93366930
846.00	0.22	343.160	845.98	0.46	0.27	0.17	-0.42	39.98373726	-104.93367003
936.00	0.18	353.790	935.98	0.76	0.21	0.06	-0.73	39.98373810	-104.93367026
1026.00	0.26	337.360	1025.98	1.09	0.11	0.11	-1.07	39.98373900	-104.93367059
1116.00	0.18	278.120	1115.98	1.30	-0.10	0.25	-1.30	39.98373957	-104.93367137
1206.00	0.31	249.380	1205.98	1.24	-0.47	0.19	-1.29	39.98373939	-104.93367269
1296.00	0.09	304.790	1295.98	1.19	-0.76	0.30	-1.28	39.98373927	-104.93367371
1386.00	0.18	307.300	1385.98	1.32	-0.93	0.10	-1.43	39.98373961	-104.93367432
1476.00	0.31	315.470	1475.98	1.58	-1.21	0.15	-1.72	39.98374033	-104.93367533
1566.00	0.75	118.420	1565.98	1.47	-0.86	1.17	-1.57	39.98374003	-104.93367409
1656.00	0.70	98.120	1655.97	1.11	0.20	0.29	-1.08	39.98373905	-104.93367030
1731.00	1.23	110.950	1730.96	0.76	1.40	0.76	-0.57	39.98373808	-104.93366599
1782.00	0.81	104.130	1781.95	0.47	2.27	0.85	-0.17	39.98373730	-104.93366292
1799.00	0.68	100.030	1798.95	0.43	2.48	0.85	-0.10	39.98373717	-104.93366214
1889.00	0.13	84.150	1888.95	0.34	3.11	0.62	0.07	39.98373695	-104.93365990
1978.00	0.12	39.550	1977.95	0.43	3.27	0.11	0.01	39.98373717	-104.93365933
2068.00	0.37	261.770	2067.94	0.46	3.04	0.52	-0.05	39.98373726	-104.93366015
2158.00	0.03	145.070	2157.94	0.40	2.77	0.43	-0.03	39.98373709	-104.93366113
2247.00	0.04	161.210	2246.94	0.35	2.79	==>	0.02	39.98373696	-104.93366104
2337.00	0.28	118.330	2336.94	0.21	2.99	0.28	0.18	39.98373659	-104.93366031
2427.00	0.11	62.420	2426.94	0.15	3.26	0.26	0.28	39.98373641	-104.93365935
2517.00	0.09	83.020	2516.94	0.20	3.41	0.05	0.25	39.98373655	-104.93365883
2606.00	0.07	14.240	2605.94	0.26	3.49	0.10	0.20	39.98373671	-104.93365853
2696.00	0.07	241.510	2695.94	0.29	3.46	0.14	0.17	39.98373679	-104.93365866
2786.00	0.13	208.310	2785.94	0.17	3.36	0.09	0.27	39.98373647	-104.93365900
2875.00	0.11	306.270	2874.94	0.13	3.25	0.20	0.30	39.98373636	-104.93365942
2965.00	0.06	315.290	2964.94	0.22	3.14	0.06	0.20	39.98373660	-104.93365978
3055.00	0.10	182.370	3054.94	0.17	3.11	0.16	0.24	39.98373647	-104.93365991
3145.00	0.07	77.080	3144.94	0.11	3.16	0.15	0.31	39.98373629	-104.93365974
3234.00	0.14	263.250	3233.94	0.11	3.10	0.24	0.31	39.98373629	-104.93365993
3324.00	0.07	187.970	3323.94	0.04	2.98	0.16	0.36	39.98373610	-104.93366035
3414.00	0.00	8.290	3413.94	-0.02	2.98	0.08	0.41	39.98373595	-104.93366038
3503.00	0.09	317.800	3502.94	0.04	2.93	0.10	0.35	39.98373610	-104.93366054
3593.00	0.09	131.210	3592.94	0.04	2.94	0.20	0.35	39.98373611	-104.93366052
3683.00	0.17	129.040	3682.94	-0.09	3.09	0.09	0.50	39.98373575	-104.93365996
3772.00	0.14	189.620	3771.94	-0.28	3.18	0.18	0.70	39.98373523	-104.93365966
3862.00	0.25	206.360	3861.94	-0.56	3.07	0.14	0.97	39.98373445	-104.93366004
3952.00	0.00	8.290	3951.94	-0.74	2.98	0.28	1.13	39.98373397	-104.93366035
4042.00	0.13	316.480	4041.94	-0.67	2.91	0.14	1.05	39.98373417	-104.93366060
4132.00	0.15	247.050	4131.94	-0.64	2.74	0.18	0.99	39.98373425	-104.93366124
4221.00	0.14	152.870	4220.94	-0.78	2.68	0.24	1.13	39.98373386	-104.93366144
4311.00	0.52	46.550	4310.94	-0.60	3.02	0.64	0.99	39.98373436	-104.93366021
4401.00	2.83	36.740	4400.89	1.46	4.65	2.58	-0.84	39.98374002	-104.93365441
4491.00	5.60	40.690	4490.64	6.58	8.84	3.09	-5.35	39.98375405	-104.93363944
4580.00	7.91	42.790	4579.02	14.36	15.84	2.61	-12.15	39.98377543	-104.93361449
4670.00	11.09	39.670	4667.77	25.57	25.57	3.58	-21.97	39.98380620	-104.93357795
4760.00	13.74	35.870	4755.66	40.90	37.36	3.08	-35.61	39.98384828	-104.93353768
4849.00	16.60	50.050	4841.58	57.64	53.31	5.24	-50.09	39.98389422	-104.93348077
4939.00	19.51	54.200	4927.15	74.69	75.36	3.53	-64.08	39.98394103	-104.93340208
5029.00	22.68	51.740	5011.10	94.23	101.18	3.66	-80.04	39.98399467	-104.93330994
5119.00	26.57	51.430	5092.90	117.53	130.55	4.32	-99.25	39.98405864	-104.93320512
5208.00	29.84	52.610	5171.33	143.39	163.72	3.73	-120.51	39.98412963	-104.93308677
5298.00	29.69	50.620	5249.45	171.13	198.74	1.11	-143.38	39.98420578	-104.93296181
5388.00	29.63	47.160	5327.67	200.40	232.28	1.90	-167.96	39.98428613	-104.93284210
5477.00	29.80	42.370	5404.98	231.71	263.32	2.67	-194.89	39.98437206	-104.93273133
5567.00	29.74	43.320	5483.10	264.47	293.71	0.53	-223.35	39.98446199	-104.93262290
5657.00	29.91	45.320	5561.18	296.49	324.98	1.12	-250.96	39.98454989	-104.93251130
5747.00	29.86	46.160	5639.21	327.79	357.09	0.47	-277.74	39.98463580	-104.93239670
5837.00	29.51	49.470	5717.41	357.71	390.10	1.86	-303.04	39.98471795	-104.93227890
5926.00	29.75	49.240	5794.77	386.37	423.49	0.30	-327.04	39.98479662	-104.93215976
6016.00	27.69	46.960	5873.69	415.23	455.69	2.59	-351.39	39.98487583	-104.93204484
6106.00	29.01	46.190	5952.90	444.61	486.72	1.52	-376.41	39.98495648	-104.93193410

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6195.00	29.54	47.420	6030.53	474.39	518.45	0.90	-401.74	39.98503824	-104.93182087
6285.00	30.14	49.590	6108.60	504.05	552.00	1.37	-426.71	39.98511966	-104.93170117
6375.00	29.62	49.970	6186.64	533.01	586.23	0.61	-450.89	39.98519914	-104.93157899
6465.00	30.30	48.420	6264.61	562.38	620.24	1.14	-475.51	39.98527977	-104.93145761
6554.00	29.09	46.320	6341.93	592.22	652.69	1.79	-500.81	39.98536169	-104.93134183
6644.00	30.26	48.810	6420.12	622.27	685.58	1.89	-526.25	39.98544417	-104.93122446
6734.00	30.39	52.270	6497.82	651.14	720.65	1.95	-550.23	39.98552341	-104.93109930
6823.00	30.41	49.540	6574.58	679.53	755.59	1.55	-573.76	39.98560135	-104.93097459
6913.00	30.42	46.650	6652.20	709.96	789.50	1.63	-599.43	39.98568486	-104.93085360
7003.00	30.41	45.970	6729.82	741.43	822.44	0.38	-626.28	39.98577125	-104.93073603
7092.00	30.37	44.460	6806.59	773.14	854.40	0.86	-653.49	39.98585831	-104.93062200
7182.00	30.48	48.620	6884.20	804.47	887.46	2.34	-680.18	39.98594431	-104.93050399
7272.00	30.34	48.050	6961.82	834.76	921.49	0.36	-705.70	39.98602744	-104.93038254
7362.00	30.23	44.340	7039.55	866.16	954.24	2.08	-732.51	39.98611364	-104.93026569
7451.00	29.09	48.260	7116.89	896.59	986.04	2.53	-758.47	39.98619717	-104.93015218
7541.00	27.05	60.010	7196.36	921.41	1020.12	6.54	-778.56	39.98626529	-104.93003056
7631.00	24.20	91.600	7277.88	931.17	1056.46	15.33	-783.44	39.98629209	-104.92990087
7720.00	24.49	112.660	7359.12	923.54	1091.79	9.71	-771.21	39.98627113	-104.92977481
7810.00	29.62	124.990	7439.31	903.57	1127.27	8.42	-746.73	39.98621631	-104.92964818
7900.00	34.01	137.030	7515.84	872.35	1162.71	8.55	-711.10	39.98613061	-104.92952174
7989.00	38.04	151.760	7587.95	829.88	1192.72	10.71	-665.04	39.98601403	-104.92941466
8079.00	47.09	157.420	7654.19	774.89	1218.55	10.91	-607.11	39.98586305	-104.92932246
8169.00	54.85	159.600	7710.82	709.86	1244.08	8.82	-539.29	39.98568456	-104.92923139
8259.00	62.32	165.420	7757.73	636.66	1266.98	9.96	-463.70	39.98548360	-104.92914967
8348.00	72.27	169.200	7792.05	556.66	1284.89	11.84	-382.04	39.98526400	-104.92908576
8416.14	80.19	173.590	7808.26	491.29	1294.74	13.20	-315.93	39.98508454	-104.92905062
8438.00	82.75	174.940	7811.50	469.78	1296.90	13.20	-294.33	39.98502550	-104.92904291
8528.00	89.97	179.660	7817.22	380.14	1301.12	9.58	-204.92	39.98477944	-104.92902790
8543.00	90.16	180.440	7817.20	365.14	1301.10	5.33	-190.06	39.98473826	-104.92902794
8617.00	91.08	184.270	7816.40	291.23	1298.07	5.33	-117.19	39.98453535	-104.92903880
8707.00	90.83	187.710	7814.90	201.74	1288.68	3.83	-29.73	39.98428971	-104.92907232
8797.00	90.09	185.000	7814.18	112.31	1278.72	3.12	57.60	39.98404421	-104.92910788
8886.00	90.06	176.450	7814.06	23.40	1277.59	9.61	145.59	39.98380014	-104.92911191
8976.00	89.94	174.530	7814.06	-66.32	1284.67	2.14	235.45	39.98355386	-104.92908668
9066.00	89.94	178.600	7814.16	-156.14	1290.06	4.52	325.20	39.98330729	-104.92906745
9155.00	90.09	180.890	7814.13	-245.13	1290.46	2.58	413.46	39.98306300	-104.92906606
9245.00	90.12	180.330	7813.97	-335.13	1289.50	0.62	502.54	39.98281595	-104.92906949
9335.00	90.00	184.690	7813.87	-425.02	1285.56	4.85	591.13	39.98256919	-104.92908357
9425.00	90.03	184.260	7813.85	-514.74	1278.54	0.48	679.14	39.98232289	-104.92910865
9514.00	90.00	181.210	7813.83	-603.63	1274.29	3.43	766.68	39.98207888	-104.92912381
9604.00	90.00	179.720	7813.83	-693.63	1273.56	1.66	855.79	39.98183184	-104.92912644
9694.00	89.69	180.660	7814.07	-783.62	1273.26	1.10	944.96	39.98158479	-104.92912752
9783.00	90.00	178.440	7814.31	-872.62	1273.96	2.52	1033.27	39.98134050	-104.92912504
9873.00	89.78	176.430	7814.48	-962.52	1277.99	2.25	1122.92	39.98109370	-104.92911069
9963.00	90.18	179.500	7814.51	-1052.45	1281.18	3.44	1212.48	39.98084682	-104.92909930
10052.00	89.91	185.960	7814.44	-1141.30	1276.95	7.26	1300.00	39.98060292	-104.92911443
10142.00	90.00	188.230	7814.52	-1230.61	1265.83	2.52	1387.05	39.98035777	-104.92915411
10232.00	90.00	183.790	7814.52	-1320.09	1256.41	4.93	1474.50	39.98011213	-104.92918775
10322.00	89.63	180.170	7814.81	-1410.02	1253.30	4.04	1563.24	39.97986526	-104.92919886
10411.00	89.69	177.590	7815.33	-1499.00	1255.04	2.90	1651.66	39.97962102	-104.92919267
10501.00	90.09	174.180	7815.51	-1588.75	1261.50	3.81	1741.48	39.97937463	-104.92916964
10591.00	90.00	172.640	7815.44	-1678.15	1271.82	1.71	1831.46	39.97912921	-104.92913280
10681.00	89.91	172.730	7815.51	-1767.42	1283.28	0.14	1921.46	39.97888416	-104.92909193
10770.00	89.97	172.860	7815.60	-1855.72	1294.45	0.16	2010.46	39.97864178	-104.92905212
10860.00	89.78	177.340	7815.80	-1945.37	1302.13	4.98	2100.34	39.97839569	-104.92902471
10950.00	90.18	180.350	7815.83	-2035.34	1303.95	3.37	2189.76	39.97814871	-104.92901825
11039.00	90.03	185.410	7815.66	-2124.20	1299.48	5.69	2277.25	39.97790478	-104.92903422
11129.00	90.09	187.260	7815.57	-2213.64	1289.55	2.06	2364.60	39.97765924	-104.92906967
11219.00	89.75	186.230	7815.70	-2303.02	1278.97	1.21	2451.80	39.97741390	-104.92910740
11309.00	90.06	186.480	7815.85	-2392.46	1269.01	0.44	2539.14	39.97716836	-104.92914297
11398.00	90.09	185.630	7815.73	-2480.97	1259.63	0.96	2625.63	39.97692541	-104.92917648
11488.00	90.09	182.110	7815.59	-2570.75	1253.55	3.91	2713.82	39.97667896	-104.92919817
11578.00	90.09	178.090	7815.45	-2660.73	1253.39	4.47	2802.99	39.97643195	-104.92919874
11667.00	90.15	179.110	7815.26	-2749.70	1255.57	1.15	2891.47	39.97618771	-104.92919100
11757.00	90.12	179.100	7815.05	-2839.69	1256.97	0.04	2980.86	39.97594068	-104.92918600
11847.00	89.60	180.830	7815.27	-2929.69	1257.03	2.01	3070.07	39.97569364	-104.92918582
11936.00	89.60	178.010	7815.89	-3018.67	1257.93	3.17	3158.40	39.97544937	-104.92918262
12026.00	89.57	170.610	7816.54	-3108.16	1266.85	8.22	3248.28	39.97520370	-104.92915082
12116.00	89.26	171.690	7817.46	-3197.08	1280.69	1.25	3338.25	39.97495960	-104.92910144
12206.00	89.72	180.170	7818.26	-3286.77	1287.07	9.44	3428.00	39.97471340	-104.92907869
12295.00	89.66	183.650	7818.74	-3375.71	1284.11	3.91	3515.76	39.97446926	-104.92908929
12385.00	89.63	183.680	7819.30	-3465.52	1278.36	0.05	3604.03	39.97422271	-104.92910983
12475.00	89.85	180.700	7819.71	-3555.45	1274.92	3.32	3692.71	39.97397586	-104.92912211
12565.00	89.63	178.640	7820.12	-3645.44	1275.44	2.30	3781.98	39.97372882	-104.92912028
12654.00	89.54	178.120	7820.76	-3734.40	1277.95	0.59	3870.50	39.97348462	-104.92911132
12744.00	89.72	179.030	7821.35	-3824.37	1280.19	1.03	3959.97	39.97323764	-104.92910335
12834.00	89.51	179.110	7821.95	-3914.35	1281.65	0.25	4049.36	39.97299062	-104.92909816
12923.00	89.42	178.580	7822.78	-4003.33	1283.44	0.60	4137.80	39.97274637	-104.92909177
13013.00	89.60	178.200	7823.55	-4093.29	1285.97	0.47	4227.30	39.97249941	-104.92908277
13103.00	89.60	178.520	7824.18	-4183.25	1288.55	0.36	4316.82	39.97225246	-104.92907359
13192.00	89.60	177.650	7824.80	-4272.20	1291.52	0.98	4405.38	39.97200829	-104.92906300
13282.00	89.72	177.990	7825.33	-4362.13	1294.95	0.40	4494.97	39.97176142	-104.92905080
13372.00	89.38	177.410	7826.04	-4452.06	1298.56	0.75	4584.59	39.97151457	-104.92903793
13462.00	89.63	178.840	7826.82	-4542.01	1301.50	1.61	4674.13	39.97126765	-104.92902744
13551.00	89.69	179.650	7827.35	-4631.00	1302.67	0.91	4762.50	39.97102337	-104.92902328
13641.00	89.60	182.960	7827.90	-4720.96	1300.63	3.68	4851.40	39.97077641	-104.92903061
13731.00	89.57	185.850	7828.56	-4810.68	1293.71	3.21	4939.43	39.97053012	-104.92905528
13821.00	89.94	181.430	7828.94	-4900.47	1288.00	4.93	5027.68	39.97028362	-104.92907568
13910.00	90.00	178.800	7828.99	-4989.47	1287.82	2.96	5115.87	39.97003933	-104.92907633
14000.00	90.00	171.200	7828.99	-5079.06	1295.66	8.44	5205.71	39.96979339	-104.92904838
14090.00	89.91	169.550	7829.06	-5167.79	1310.71	1.84	5295.65	39.96954981	-104.92899471
14179.00	89.94	173.870	7829.18	-5255.84	1323.54	4.85	5384.62	39.96930811	-104.92894896
14269.00	89.75	177.430	7829.42	-5345.56	1330.36	3.96	5474.46	39.96906180	-104.92892463
14359.00	89.82	179.640	7829.76	-5435.53	1332.66	2.46	5563.94	39.96881484	-104.92891643

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14449.00	89.97	184.750	7829.92	-5525.43	1329.22	5.68	5652.60	39.96856804	-104.92892875
14538.00	90.46	191.950	7829.59	-5613.43	1316.30	8.11	5738.12	39.96832648	-104.92897484
14628.00	89.94	195.930	7829.27	-5700.76	1294.62	4.46	5821.83	39.96808675	-104.92905220
14718.00	90.15	190.620	7829.20	-5788.32	1273.97	5.90	5905.89	39.96784639	-104.92912592
14807.00	89.91	186.770	7829.16	-5876.29	1260.51	4.33	5991.31	39.96760493	-104.92917392
14897.00	90.09	190.820	7829.16	-5965.21	1246.76	4.50	6077.63	39.96736083	-104.92922302
14987.00	89.75	184.330	7829.28	-6054.37	1234.90	7.22	6164.45	39.96711606	-104.92926534
15077.00	88.80	174.830	7830.42	-6144.26	1235.56	10.61	6253.64	39.96686931	-104.92926301
15166.00	89.26	175.340	7831.93	-6232.92	1243.18	0.77	6342.53	39.96662593	-104.92923583
15256.00	90.03	172.710	7832.49	-6322.42	1252.55	3.04	6432.48	39.96638024	-104.92920242
15346.00	89.85	172.990	7832.58	-6411.72	1263.75	0.37	6522.48	39.96613510	-104.92916248
15435.00	89.88	174.270	7832.79	-6500.17	1273.62	1.44	6611.45	39.96589230	-104.92912727
15525.00	89.97	177.480	7832.91	-6589.92	1280.10	3.57	6701.28	39.96564591	-104.92910419
15615.00	90.00	182.060	7832.93	-6679.90	1280.46	5.09	6790.51	39.96539892	-104.92910292
15705.00	90.00	182.980	7832.93	-6769.81	1276.50	1.02	6879.11	39.96515210	-104.92911705
15794.00	90.15	185.670	7832.82	-6858.55	1269.79	3.03	6966.19	39.96490851	-104.92914101
15884.00	89.60	185.920	7833.01	-6948.09	1260.70	0.67	7053.74	39.96466271	-104.92917344
15974.00	90.15	184.430	7833.21	-7037.72	1252.59	1.76	7141.51	39.96441667	-104.92920242
16064.00	89.60	181.820	7833.41	-7127.58	1247.68	2.96	7229.94	39.96417000	-104.92921994
16153.00	89.57	180.540	7834.05	-7216.55	1245.85	1.44	7317.89	39.96392575	-104.92922649
16243.00	89.26	180.360	7834.97	-7306.55	1245.14	0.40	7407.00	39.96367871	-104.92922903
16333.00	90.25	178.260	7835.35	-7396.53	1246.22	2.58	7496.34	39.96343169	-104.92922518
16420.00	89.94	178.130	7835.21	-7483.49	1248.96	0.39	7582.90	39.96319299	-104.92921542
16510.00	89.94	179.490	7835.30	-7573.47	1250.83	1.51	7672.33	39.96294599	-104.92920877
16600.00	89.94	179.680	7835.40	-7663.47	1251.48	0.21	7761.63	39.96269893	-104.92920646
16690.00	90.43	177.490	7835.11	-7753.43	1253.71	2.49	7851.10	39.96245197	-104.92919855
16778.00	89.54	176.990	7835.13	-7841.33	1257.94	1.16	7938.79	39.96221068	-104.92918344
16868.00	89.57	178.770	7835.83	-7931.26	1261.27	1.98	8028.37	39.96196381	-104.92917158
16957.00	89.51	179.140	7836.54	-8020.24	1262.90	0.42	8116.79	39.96171954	-104.92916581
17047.00	89.48	179.620	7837.34	-8110.23	1263.87	0.53	8206.12	39.96147251	-104.92916235
17137.00	89.51	180.960	7838.13	-8200.23	1263.42	1.49	8295.26	39.96122547	-104.92916399
17226.00	89.45	182.090	7838.94	-8289.19	1261.05	1.27	8383.13	39.96098125	-104.92917246
17316.00	89.91	181.000	7839.44	-8379.16	1258.62	1.31	8471.99	39.96073429	-104.92918113
17406.00	89.94	177.230	7839.56	-8469.13	1260.01	4.19	8561.36	39.96048731	-104.92917619
17496.00	89.91	176.680	7839.68	-8559.00	1264.79	0.61	8651.07	39.96024060	-104.92915915
17585.00	89.91	176.500	7839.82	-8647.84	1270.08	0.20	8739.84	39.95999672	-104.92914028
17675.00	89.88	174.780	7839.98	-8737.58	1276.93	1.91	8829.69	39.95975038	-104.92911589
17765.00	89.45	172.810	7840.51	-8827.05	1286.65	2.24	8919.66	39.95950478	-104.92908121
17854.00	89.32	172.950	7841.46	-8915.35	1297.68	0.21	9008.65	39.95926237	-104.92904188
17944.00	89.45	177.320	7842.43	-9005.00	1305.31	4.86	9098.52	39.95901627	-104.92901468
18034.00	89.38	179.640	7843.35	-9094.96	1307.70	2.58	9188.00	39.95876933	-104.92900618
18124.00	89.45	180.580	7844.27	-9184.95	1307.53	1.05	9277.19	39.95852228	-104.92900681
18213.00	89.42	181.490	7845.15	-9273.94	1305.92	1.02	9365.17	39.95827802	-104.92901256
18245.00	89.61	182.610	7845.42	-9305.91	1304.78	3.54	9396.72	39.95819024	-104.92901665
18296.13	89.91	184.390	7845.63	-9356.95	1301.66	3.54	9446.89	39.95805015	-104.92902779
18307.00	89.97	184.770	7845.65	-9367.78	1300.79	3.54	9457.52	39.95802041	-104.92903089
18380.50	89.99	186.800	7845.67	-9440.90	1293.38	2.76	9529.02	39.95781968	-104.92905733
18396.00	90.00	187.230	7845.67	-9456.29	1291.49	2.76	9544.02	39.95777745	-104.92906409
18486.00	89.97	186.060	7845.69	-9545.68	1281.07	1.30	9631.26	39.95753206	-104.92910125
18500.00	89.88	185.710	7845.71	-9559.61	1279.64	2.58	9644.87	39.95749383	-104.92910637
18514.56	89.88	185.710	7845.74	-9574.09	1278.19	==>	9659.04	39.95745406	-104.92911154
18524.00	89.88	185.710	7845.76	-9583.49	1277.25	==>	9668.23	39.95742828	-104.92911490

#### Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1782.00	1781.95	0.47	2.27	39.98373730	-104.93366292	9.625" Csg: 1782 MD/TVD
8416.14	7808.26	491.29	1294.74	39.98508454	-104.92905062	460 Setback: 8416 / 7808 MD/TVD, 460 FNL, 1964 FEL Sec 07
8543.00	7817.20	365.14	1301.10	39.98473826	-104.92902794	Top Perf: 8543 / 7817 MD/TVD, 586 FNL, 1958 FEL Sec 07
18245.00	7845.42	-9305.91	1304.78	39.95819024	-104.92901665	Btm Perf: 18,245 / 7845 MD/TVD, 285 FSL, 1945 FEL Sec 18
18296.13	7845.63	-9356.95	1301.66	39.95805015	-104.92902779	Btm Toe Sub: 18,296 / 7846 MD/TVD, 234 FSL, 1948 FEL Sec 18
18380.50	7845.67	-9440.90	1293.38	39.95781968	-104.92905733	150 Setback: 18,381 / 7846 MD/TVD, 150 FSL, 1956 FEL Sec 18
18514.56	7845.74	-9574.09	1278.19	39.95745406	-104.92911154	PBTD: 18,515 / 7846 MD/TVD, 17 FSL, 1970 FEL Sec 18
18524.00	7845.76	-9583.49	1277.25	39.95742828	-104.92911490	5.5" Csg: 18,524 / 7846 MD/TVD, 8 FSL, 1971 FEL Sec 18
18524.00	7845.76	-9583.49	1277.25	39.95742828	-104.92911490	BHL: 18,524 / 7846 MD/TVD, 8 FSL, 1971 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	1782.00	1781.95	0.47	2.27
8.500	1782.00	1781.95	0.47	2.27	18524.00	7845.76	-9583.49	1277.25

#### 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	1782.00	1781.95	0.47	2.27
5 1/2in Casing	0.00	0.00	0.00	0.00	18524.00	7845.76	-9583.49	1277.25

#### Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
521625	As Drilled - 20190211	18524.00	7845.76	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 172.410 degrees  
Bottom hole distance is 9668.23 Feet on azimuth 172.41 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Great Western Operating Co.  
Date Printed: