

Great Western Operating Company, LLC

Location	Colorado	Slot	E-15 - B-Farm LD 18-392HN
Field	Wattenburg	Well	B-Farm LD 18-392HN
Installation	B-Farm	Wellbore	B-Farm LD 18-392HN (AWB)

Scale 1 cm = 400 ft

East (Feet) ->

-6400

-5600

-4800

-4000

-3200

-2400

-1600

-800

0

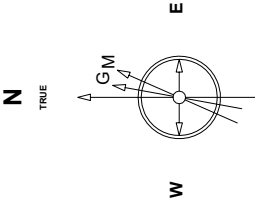
800

1600

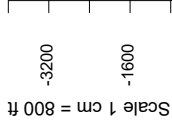
2400

3200

Created by	admin	Date plotted	4-Jun-2019
Plot reference is	B-Farm LD 18-392HN (AWB).	Ref wellpath is	B-Farm LD 18-392HN (AWP#1).
Coordinates are in Feet reference E-15 - B-Farm LD 18-392HN.			
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-5-2016  
Dip: 48.51 deg / Field: 5226.6 m/T  
Lat: 43.02 deg / 33000 Long: 97.104 deg / 25000  
To convert azimuth from Magnetic to TRUE add 0.35 deg



True Vertical Depth (Feet)

9.625" Csg: 1750 MD/TVD

460 Setback: 8284 / 7712 MD/TVD, 460 FNL, 2303 FEL Sec 07  
Top Perf: 8394 / 7725 MD/TVD, 569 FNL, 2302 FEL Sec 07

Btm Perf: 18,096 / 7742 MD/TVD, 288 FSL, 2291 FEL Sec 18  
Btm Toe Sub: 18,147 / 7742 MD/TVD, 237 FSL, 2295 FEL Sec 18  
150 Setback: 18,234 / 7742 MD/TVD, 150 FSL, 2303 FEL Sec 18  
PBDT: 18,368 / 7742 MD/TVD, 17 FSL, 2317 FEL Sec 18  
5.5" Csg: 18,377 / 7741 MD/TVD, 8 FSL, 2318 FEL Sec 18  
BHL: 18,377 / 7741 MD/TVD, 8 FSL, 2318 FEL Sec 18



Vertical Section (Feet) ->

Azimuth 174.44 with reference 0.00 N, 0.00 E from E-15 - B-Farm LD 18-392HN

Btm Perf: 18,096 / 7742 MD/TVD, 288 FSL, 2291 FEL Sec 18  
Btm Toe Sub: 18,147 / 7742 MD/TVD, 237 FSL, 2295 FEL Sec 18  
150 Setback: 18,234 / 7742 MD/TVD, 150 FSL, 2303 FEL Sec 18  
PBDT: 18,368 / 7742 MD/TVD, 17 FSL, 2317 FEL Sec 18  
5.5" Csg: 18,377 / 7741 MD/TVD, 8 FSL, 2318 FEL Sec 18  
BHL: 18,377 / 7741 MD/TVD, 8 FSL, 2318 FEL Sec 18

Great Western Operating Co, LLC  
Directional Survey Report  
Wellpath: B-Farm LD 18-392HN  
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
Mar-4-2019	Jun-4-2019	05-001-10097	20.00	B-Farm LD 18-392HN

**Slot Coordinates**

Latitude	Longitude
39.98368100	-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	39.98368100	-104.93367100
20.00	0.00	351.420	20.00	0.00	0.00	==>	0.00	39.98368100	-104.93367100
161.00	0.75	351.420	161.00	0.91	-0.14	0.53	-0.92	39.98368350	-104.93367149
246.00	0.83	270.470	245.99	1.47	-0.84	1.21	-1.54	39.98368503	-104.93367398
306.00	1.19	265.730	305.98	1.42	-1.89	0.62	-1.60	39.98368491	-104.93367775
396.00	1.41	243.580	395.96	0.86	-3.82	0.60	-1.23	39.98368337	-104.93368462
486.00	1.36	245.070	485.93	-0.08	-5.78	0.07	-0.48	39.98368078	-104.93369161
576.00	1.19	264.230	575.91	-0.62	-7.67	0.51	-0.12	39.98367929	-104.93369839
666.00	1.23	259.750	665.89	-0.89	-9.55	0.11	-0.04	39.98367856	-104.93370510
756.00	1.58	270.210	755.86	-1.06	-11.75	0.48	-0.09	39.98367810	-104.93371292
846.00	1.71	270.740	845.83	-1.04	-14.33	0.15	-0.36	39.98367816	-104.93372213
936.00	1.89	263.970	935.78	-1.17	-17.15	0.31	-0.49	39.98367778	-104.93373219
1026.00	1.85	258.610	1025.73	-1.62	-20.05	0.20	-0.33	39.98367656	-104.93374254
1116.00	1.45	259.840	1115.70	-2.10	-22.59	0.45	-0.09	39.98367522	-104.93375162
1206.00	2.07	276.190	1205.65	-2.13	-25.33	0.88	-0.33	39.98367515	-104.93376139
1296.00	1.71	289.110	1295.60	-1.52	-28.21	0.62	-1.22	39.98367684	-104.93377168
1386.00	0.66	299.570	1385.58	-0.82	-29.93	1.19	-2.08	39.98367875	-104.93377782
1476.00	0.48	304.140	1475.58	-0.35	-30.70	0.21	-2.62	39.98368003	-104.93378054
1566.00	0.40	70.960	1565.58	-0.04	-30.71	0.88	-2.94	39.98368089	-104.93378060
1656.00	0.57	226.000	1655.58	-0.25	-30.74	1.05	-2.73	39.98368032	-104.93378069
1699.00	0.57	313.630	1698.58	-0.25	-31.05	1.84	-2.76	39.98368032	-104.93378179
1750.00	0.38	297.740	1749.57	0.00	-31.38	0.46	-3.04	39.98368101	-104.93378297
1797.00	0.26	264.160	1796.57	0.07	-31.62	0.46	-3.13	39.98368118	-104.93378384
1887.00	0.17	103.590	1886.57	0.01	-31.69	0.47	-3.08	39.98368104	-104.93378410
1977.00	0.41	259.660	1976.57	-0.08	-31.88	0.63	-3.01	39.98368079	-104.93378477
2067.00	0.32	312.490	2066.57	0.04	-32.38	0.37	-3.17	39.98368110	-104.93378656
2156.00	0.10	204.610	2155.57	0.13	-32.60	0.41	-3.29	39.98368137	-104.93378733
2246.00	0.07	114.400	2245.57	0.04	-32.58	0.14	-3.19	39.98368111	-104.93378726
2336.00	0.37	296.760	2335.57	0.15	-32.79	0.49	-3.32	39.98368140	-104.93378801
2425.00	0.03	236.860	2424.57	0.26	-33.07	0.40	-3.47	39.98368172	-104.93378900
2515.00	0.03	13.670	2514.57	0.27	-33.08	0.06	-3.48	39.98368175	-104.93378905
2605.00	0.11	267.360	2604.57	0.29	-33.16	0.14	-3.50	39.98368180	-104.93378934
2694.00	0.09	186.000	2693.57	0.22	-33.25	0.15	-3.44	39.98368160	-104.93378967
2784.00	0.13	64.750	2783.57	0.19	-33.17	0.21	-3.40	39.98368153	-104.93378936
2874.00	0.04	33.000	2873.57	0.26	-33.06	0.11	-3.46	39.98368172	-104.93378897
2963.00	0.18	3.010	2962.57	0.43	-33.04	0.16	-3.63	39.98368218	-104.93378889
3053.00	0.17	259.280	3052.57	0.54	-33.16	0.31	-3.75	39.98368250	-104.93378933
3143.00	0.20	227.780	3142.57	0.41	-33.41	0.12	-3.65	39.98368214	-104.93379021
3233.00	0.17	344.270	3232.57	0.44	-33.56	0.35	-3.69	39.98368220	-104.93379076
3322.00	0.07	164.800	3321.57	0.51	-33.58	0.27	-3.76	39.98368241	-104.93379083
3412.00	0.07	301.060	3411.57	0.49	-33.61	0.14	-3.74	39.98368234	-104.93379095
3502.00	0.09	135.880	3501.57	0.46	-33.61	0.18	-3.72	39.98368228	-104.93379094
3592.00	0.09	187.120	3591.57	0.34	-33.57	0.09	-3.59	39.98368194	-104.93379080
3681.00	0.13	202.200	3680.57	0.18	-33.62	0.06	-3.44	39.98368150	-104.93379096
3771.00	0.07	168.630	3770.57	0.03	-33.65	0.09	-3.29	39.98368109	-104.93379106
3861.00	0.03	260.010	3860.57	-0.03	-33.66	0.09	-3.23	39.98368093	-104.93379111
3951.00	0.04	210.130	3950.57	-0.06	-33.70	0.03	-3.21	39.98368084	-104.93379125
4040.00	0.15	273.370	4039.57	-0.08	-33.83	0.15	-3.20	39.98368079	-104.93379172
4130.00	0.06	242.600	4129.57	-0.09	-33.99	0.11	-3.20	39.98368075	-104.93379229
4220.00	0.03	228.920	4219.57	-0.13	-34.05	0.04	-3.17	39.98368065	-104.93379250
4310.00	0.16	256.780	4309.57	-0.17	-34.19	0.15	-3.14	39.98368053	-104.93379300
4399.00	0.14	215.750	4398.57	-0.29	-34.37	0.12	-3.04	39.98368021	-104.93379366
4489.00	0.21	47.730	4488.57	-0.27	-34.31	0.39	-3.06	39.98368027	-104.93379345
4579.00	3.10	40.010	4578.52	1.71	-32.63	3.21	-4.86	39.98368569	-104.93378743
4668.00	5.52	39.470	4667.26	6.86	-28.36	2.72	-9.57	39.98369982	-104.93377220
4758.00	8.47	50.390	4756.59	14.43	-20.50	3.58	-16.34	39.98372060	-104.93374415
4848.00	11.20	54.720	4845.26	23.70	-8.25	3.14	-24.39	39.98374606	-104.93370046
4937.00	13.82	50.540	4932.14	35.45	7.01	3.11	-34.61	39.98377832	-104.93364598
5027.00	16.15	40.210	5019.09	51.85	23.40	3.93	-49.34	39.98382333	-104.93358751
5117.00	18.80	29.050	5104.95	74.09	38.53	4.73	-70.01	39.98388440	-104.93353352
5207.00	21.37	32.760	5189.47	100.57	54.44	3.19	-94.82	39.98395706	-104.93347672
5296.00	23.73	41.250	5271.68	127.68	75.03	4.51	-119.81	39.98403149	-104.93340324
5386.00	27.36	44.510	5352.88	156.05	101.48	4.32	-145.49	39.98410938	-104.93330886
5476.00	29.89	41.960	5431.87	187.48	130.98	3.12	-173.91	39.98419566	-104.93320359
5566.00	30.05	38.090	5509.85	221.90	159.88	2.16	-205.37	39.98429013	-104.93310047
5655.00	30.24	32.100	5586.83	258.43	185.54	3.39	-239.24	39.98439041	-104.93300889
5745.00	30.07	32.130	5664.65	296.72	209.58	0.19	-275.03	39.98449552	-104.93292312
5835.00	29.67	37.820	5742.71	333.42	235.23	3.18	-309.07	39.98459626	-104.93283157
5925.00	30.00	41.450	5820.78	367.88	263.79	2.04	-340.60	39.98469087	-104.93272966
6014.00	30.02	38.800	5897.86	401.91	292.47	1.49	-371.69	39.98478428	-104.93262732
6104.00	30.00	36.410	5975.79	437.57	319.93	1.33	-404.52	39.98488216	-104.93252931

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6194.00	29.93	34.900	6053.76	474.09	346.13	0.84	-438.33	39.98498241	-104.93243581
6284.00	29.94	34.790	6131.76	510.95	371.79	0.06	-472.53	39.98508359	-104.93234423
6373.00	29.26	38.720	6209.15	546.16	398.07	2.31	-505.04	39.98518026	-104.93225045
6463.00	30.02	41.730	6287.38	580.13	426.82	1.86	-536.06	39.98527349	-104.93214787
6553.00	30.01	40.980	6365.31	613.92	456.56	0.42	-566.81	39.98536626	-104.93204171
6642.00	30.13	42.690	6442.33	647.14	486.31	0.97	-596.99	39.98545745	-104.93193558
6732.00	30.16	42.080	6520.16	680.52	516.77	0.34	-627.27	39.98554909	-104.93182685
6822.00	30.24	37.600	6597.95	715.27	545.76	2.51	-659.04	39.98564446	-104.93172342
6911.00	30.17	34.100	6674.88	751.54	571.97	1.98	-692.61	39.98574404	-104.93162986
7001.00	30.18	32.880	6752.68	789.27	596.93	0.68	-727.74	39.98584760	-104.93154079
7091.00	30.09	35.820	6830.52	826.56	622.42	1.64	-762.39	39.98594998	-104.93144983
7181.00	30.19	39.090	6908.36	862.42	649.89	1.83	-795.42	39.98604841	-104.93135178
7270.00	30.07	39.350	6985.34	897.03	678.14	0.20	-827.13	39.98614342	-104.93125098
7360.00	28.70	41.310	7063.76	930.70	706.70	1.86	-857.88	39.98623585	-104.93114904
7450.00	18.37	58.110	7146.25	954.52	733.11	13.58	-879.02	39.98630122	-104.93105480
7539.00	17.62	92.780	7231.13	961.29	758.54	11.90	-883.30	39.98631981	-104.93096403
7629.00	21.16	121.350	7316.20	952.16	786.09	11.12	-871.54	39.98629474	-104.93086573
7719.00	28.09	141.480	7398.11	927.06	813.24	11.99	-843.93	39.98622582	-104.93076885
7808.00	37.24	146.780	7472.97	888.04	841.11	10.76	-802.40	39.98611873	-104.93066940
7898.00	45.18	151.240	7540.64	837.19	871.44	9.40	-748.84	39.98597912	-104.93056116
7988.00	53.53	157.880	7599.25	775.53	900.50	10.83	-684.66	39.98580987	-104.93045749
8077.00	62.58	164.370	7646.33	704.14	924.68	11.90	-611.26	39.98561388	-104.93037119
8167.00	70.68	169.850	7682.02	623.68	942.97	10.59	-529.41	39.98539302	-104.93030593
8257.00	77.42	175.180	7706.75	537.96	954.16	9.41	-443.01	39.98515771	-104.93026600
8283.76	79.43	176.800	7712.12	511.81	956.00	9.55	-416.81	39.98508593	-104.93025946
8347.00	84.20	180.540	7721.13	449.26	957.44	9.55	-354.41	39.98491422	-104.93025433
8394.00	87.39	181.850	7724.57	402.41	956.46	7.34	-307.87	39.98478560	-104.93025783
8436.00	90.25	183.020	7725.44	360.46	954.67	7.34	-266.29	39.98467044	-104.93026420
8526.00	89.78	183.780	7725.41	270.62	949.34	0.99	-177.39	39.98442382	-104.93028326
8616.00	89.72	184.060	7725.81	180.83	943.18	0.32	-88.62	39.98417735	-104.93030523
8705.00	89.75	185.070	7726.22	92.11	936.10	1.14	-1.01	39.98393381	-104.93033052
8795.00	89.88	185.530	7726.51	2.50	927.79	0.53	87.38	39.98368781	-104.93036020
8885.00	89.78	182.130	7726.78	-87.29	921.78	3.78	176.16	39.98344135	-104.93038166
8974.00	89.78	179.620	7727.12	-176.27	920.42	2.82	264.59	39.98319708	-104.93038652
9064.00	90.28	177.960	7727.07	-266.24	922.32	1.93	354.33	39.98295009	-104.93037975
9154.00	89.75	175.830	7727.05	-356.11	927.19	2.44	444.24	39.98270341	-104.93036237
9243.00	89.75	175.020	7727.43	-444.82	934.29	0.91	533.23	39.98245987	-104.93033705
9333.00	89.66	176.320	7727.90	-534.56	941.09	1.45	623.20	39.98221353	-104.93031281
9423.00	89.51	177.540	7728.55	-624.43	945.91	1.37	713.11	39.98196684	-104.93029563
9513.00	89.48	179.000	7729.34	-714.38	948.62	1.62	802.91	39.98171991	-104.93028594
9602.00	89.63	180.820	7730.03	-803.37	948.76	2.05	891.49	39.98147561	-104.93028546
9692.00	89.88	181.940	7730.42	-893.35	946.59	1.28	980.83	39.98122863	-104.93029320
9782.00	89.75	180.840	7730.71	-983.32	944.41	1.23	1070.17	39.98098165	-104.93030101
9871.00	89.69	179.380	7731.14	-1072.31	944.24	1.64	1158.73	39.98073734	-104.93030163
9961.00	89.66	177.300	7731.66	-1162.27	946.85	2.31	1248.52	39.98049041	-104.93029234
10051.00	90.43	175.870	7731.58	-1252.11	952.21	1.80	1338.45	39.98024379	-104.93027322
10141.00	90.62	175.730	7730.76	-1341.86	958.80	0.26	1428.42	39.97999741	-104.93024971
10230.00	90.55	177.010	7729.85	-1430.68	964.43	1.44	1517.36	39.97975360	-104.93022962
10320.00	90.52	178.440	7729.01	-1520.60	968.01	1.59	1607.21	39.97950675	-104.93021688
10410.00	90.65	180.600	7728.09	-1610.59	968.76	2.40	1696.85	39.97925973	-104.93021421
10500.00	90.62	181.950	7727.09	-1700.56	966.76	1.50	1786.20	39.97901276	-104.93022136
10589.00	90.65	182.230	7726.11	-1789.49	963.51	0.32	1874.40	39.97876862	-104.93023296
10679.00	90.58	181.990	7725.14	-1879.43	960.20	0.28	1963.59	39.97852174	-104.93024479
10769.00	90.49	181.890	7724.30	-1969.37	957.15	0.15	2052.82	39.97827484	-104.93025568
10858.00	90.62	181.080	7723.44	-2058.33	954.85	0.92	2141.14	39.97803062	-104.93026392
10948.00	90.55	181.070	7722.52	-2148.31	953.16	0.08	2230.54	39.97778362	-104.93026996
11038.00	90.43	180.350	7721.75	-2238.30	952.04	0.81	2319.99	39.97753659	-104.93027395
11128.00	90.52	181.460	7721.00	-2328.29	950.62	1.24	2409.42	39.97728957	-104.93027903
11217.00	90.59	180.780	7720.14	-2417.27	948.88	0.77	2497.81	39.97704532	-104.93028525
11307.00	90.40	179.560	7719.37	-2507.26	948.61	1.37	2587.35	39.97679827	-104.93028622
11397.00	90.06	178.390	7719.00	-2597.24	950.22	1.35	2677.07	39.97655126	-104.93028048
11486.00	90.00	177.280	7718.96	-2686.18	953.59	1.25	2765.91	39.97630713	-104.93026850
11576.00	90.00	176.930	7718.96	-2776.06	958.13	0.39	2855.82	39.97606038	-104.93025229
11666.00	89.69	176.120	7719.20	-2865.90	963.59	0.96	2945.76	39.97581378	-104.93023284
11755.00	89.78	176.580	7719.61	-2954.72	969.25	0.53	3034.70	39.97556996	-104.93021264
11845.00	89.78	178.450	7719.96	-3044.63	973.16	2.08	3124.57	39.97532315	-104.93019873
11935.00	89.42	179.230	7720.59	-3134.60	974.98	0.95	3214.30	39.97507615	-104.93019224
12024.00	89.45	180.460	7721.46	-3223.60	975.22	1.38	3302.90	39.97483185	-104.93019139
12114.00	89.54	181.030	7722.26	-3313.59	974.05	0.64	3392.35	39.97458483	-104.93019558
12204.00	89.75	181.520	7722.81	-3403.56	972.05	0.59	3481.71	39.97433783	-104.93020274
12294.00	89.63	182.880	7723.30	-3493.49	968.59	1.52	3570.88	39.97409097	-104.93021508
12383.00	89.91	183.460	7723.66	-3582.36	963.67	0.72	3658.85	39.97384703	-104.93023265
12473.00	89.91	183.770	7723.80	-3672.18	957.99	0.34	3747.70	39.97360047	-104.93025291
12563.00	89.85	183.090	7723.99	-3762.01	952.61	0.76	3836.60	39.97335385	-104.93027213
12653.00	89.94	182.840	7724.15	-3851.89	947.95	0.30	3925.60	39.97310712	-104.93028875
12742.00	89.78	183.480	7724.37	-3940.76	943.05	0.74	4013.57	39.97286318	-104.93030627
12832.00	89.88	183.720	7724.64	-4030.58	937.40	0.29	4102.42	39.97261661	-104.93032645
12922.00	89.66	183.100	7725.00	-4120.42	932.04	0.73	4191.32	39.97237000	-104.93034556
13011.00	90.03	182.990	7725.24	-4209.29	927.32	0.43	4279.32	39.97212603	-104.93036244
13101.00	89.91	182.810	7725.29	-4299.18	922.76	0.24	4368.34	39.97187929	-104.93037870
13191.00	90.15	183.530	7725.24	-4389.04	917.79	0.84	4457.30	39.97163261	-104.93039646
13281.00	90.06	183.100	7725.08	-4478.89	912.58	0.49	4546.22	39.97138597	-104.93041504
13370.00	90.18	180.540	7724.89	-4567.84	909.76	2.88	4634.48	39.97114180	-104.93042514
13460.00	89.97	178.630	7724.77	-4657.83	910.41	2.14	4724.11	39.97089475	-104.93042283
13550.00	90.00	177.440	7724.79	-4747.77	913.49	1.32	4813.93	39.97064785	-104.93041183
13640.00	90.03	178.020	7724.77	-4837.70	917.06	0.65	4903.78	39.97040098	-104.93039912
13729.00	89.97	176.800	7724.77	-4926.61	921.08	1.37	4992.66	39.97015692	-104.93038478
13819.00	90.09	176.980	7724.72	-5016.48	925.96	0.24	5082.58	39.96991023	-104.93036738
13909.00	89.57	176.150	7724.99	-5106.31	931.35	1.09	5172.52	39.96966361	-104.93034815
13998.00	89.66	176.120	7725.59	-5195.11	937.35	0.11	5261.48	39.96941986	-104.93032676
14088.00	89.69	177.620	7726.10	-5284.97	942.27	1.67	5351.39	39.96917318	-104.93030924
14178.00	89.82	179.110	7726.48	-5374.93	944.84	1.66	5441.18	39.96892623	-104.93030009
14267.00	89.75	180.990	7726.82	-5463.93	944.76	2.11	5529.75	39.96868193	-104.93030038
14357.00	89.60	182.820	7727.33	-5553.87	941.77	2.04	5618.98	39.96843502	-104.93031106

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14447.00	89.72	182.360	7727.86	-5643.78	937.70	0.53	5708.07	39.96818822	-104.93032558
14537.00	89.78	184.740	7728.26	-5733.60	932.13	2.65	5796.93	39.96794166	-104.93034548
14626.00	89.78	186.620	7728.60	-5822.16	923.32	2.11	5884.21	39.96769856	-104.93037691
14716.00	89.82	186.760	7728.91	-5911.54	912.83	0.16	5972.16	39.96745318	-104.93041433
14806.00	90.09	184.290	7728.98	-6001.12	904.17	2.76	6060.48	39.96720729	-104.93044525
14896.00	89.75	178.590	7729.11	-6091.05	901.91	6.34	6149.77	39.96696041	-104.93045333
14985.00	89.63	178.310	7729.59	-6180.02	904.32	0.34	6238.55	39.96671619	-104.93044475
15075.00	89.69	184.220	7730.12	-6269.96	902.33	6.57	6327.87	39.96646931	-104.93045185
15165.00	89.60	182.860	7730.68	-6359.78	896.77	1.51	6416.74	39.96622273	-104.93047169
15254.00	89.60	174.150	7731.30	-6448.66	899.09	9.79	6505.43	39.96597874	-104.93046342
15344.00	89.72	172.460	7731.84	-6538.04	909.59	1.88	6595.40	39.96573338	-104.93042600
15434.00	89.72	171.850	7732.28	-6627.20	921.87	0.68	6685.33	39.96548863	-104.93038219
15524.00	89.57	172.220	7732.84	-6716.33	934.34	0.44	6775.25	39.96524396	-104.93033771
15613.00	89.57	173.630	7733.50	-6804.65	945.30	1.58	6864.21	39.96500152	-104.93029862
15703.00	89.51	175.330	7734.23	-6894.22	953.96	1.89	6954.21	39.96475562	-104.93026775
15793.00	89.48	177.620	7735.02	-6984.04	959.49	2.54	7044.14	39.96450905	-104.93024802
15882.00	89.51	178.260	7735.80	-7072.98	962.69	0.72	7132.97	39.96426491	-104.93023662
15972.00	89.94	180.360	7736.24	-7162.97	963.77	2.38	7222.64	39.96401789	-104.93023277
16062.00	90.06	181.270	7736.24	-7252.96	962.49	1.02	7312.08	39.96377085	-104.93023735
16152.00	89.51	182.970	7736.57	-7342.89	959.16	1.99	7401.27	39.96352398	-104.93024924
16241.00	89.94	184.820	7737.00	-7431.68	953.12	2.13	7489.06	39.96328024	-104.93027081
16331.00	89.63	184.840	7737.34	-7521.36	945.54	0.35	7577.58	39.96303406	-104.93029786
16421.00	88.95	182.830	7738.45	-7611.15	939.52	2.36	7666.36	39.96278759	-104.93031934
16511.00	89.01	182.350	7740.06	-7701.04	935.46	0.54	7755.44	39.96254082	-104.93033386
16600.00	88.95	181.380	7741.64	-7789.98	932.56	1.09	7843.68	39.96229668	-104.93034421
16690.00	88.98	180.530	7743.27	-7879.95	931.06	0.94	7933.08	39.96204970	-104.93034957
16780.00	89.02	180.130	7744.84	-7969.94	930.54	0.45	8022.59	39.96180268	-104.93035143
16870.00	89.42	178.150	7746.06	-8059.91	931.89	2.24	8112.28	39.96155568	-104.93034662
16959.00	90.09	177.370	7746.44	-8148.84	935.37	1.16	8201.13	39.96131156	-104.93033423
17049.00	89.94	178.100	7746.42	-8238.77	938.93	0.83	8290.98	39.96106470	-104.93032155
17139.00	90.52	176.940	7746.06	-8328.69	942.82	1.44	8380.85	39.96081788	-104.93030767
17229.00	91.97	178.630	7744.10	-8418.59	946.30	2.47	8470.67	39.96057108	-104.93029527
17318.00	90.22	178.420	7742.40	-8507.54	948.59	1.98	8559.42	39.96032690	-104.93028712
17408.00	90.12	181.250	7742.14	-8597.53	948.85	3.15	8649.01	39.96007986	-104.93028620
17498.00	90.03	179.920	7742.02	-8687.53	947.93	1.48	8738.49	39.95983282	-104.93028949
17587.00	90.00	178.160	7741.99	-8776.51	949.42	1.98	8827.20	39.95958855	-104.93028419
17677.00	90.00	177.490	7741.99	-8866.44	952.84	0.74	8917.05	39.95934167	-104.93027202
17767.00	89.94	179.050	7742.04	-8956.40	955.56	1.73	9006.84	39.95909473	-104.93026234
17857.00	90.00	180.780	7742.09	-9046.40	955.69	1.92	9096.43	39.95884768	-104.93026187
17946.00	89.97	177.950	7742.11	-9135.38	956.67	3.18	9185.09	39.95860341	-104.93025837
18036.00	90.00	178.950	7742.14	-9225.35	959.11	1.11	9274.87	39.95835644	-104.93024969
18096.00	90.04	182.640	7742.11	-9285.33	958.28	6.16	9334.49	39.95819178	-104.93025268
18126.00	90.06	184.490	7742.09	-9315.27	956.41	6.16	9364.11	39.95810959	-104.93025934
18147.14	90.09	184.860	7742.06	-9336.34	954.69	1.77	9384.91	39.95805175	-104.93026549
18215.00	90.18	186.060	7741.90	-9403.89	948.23	1.77	9451.52	39.95786632	-104.93028854
18234.13	90.17	186.070	7741.84	-9422.92	946.21	0.09	9470.26	39.95781410	-104.93029575
18305.00	90.12	186.120	7741.67	-9493.38	938.68	0.09	9539.67	39.95762066	-104.93032261
18353.00	90.15	186.310	7741.55	-9541.10	933.48	0.40	9586.66	39.95748967	-104.93034115
18367.50	90.15	186.310	7741.51	-9555.51	931.89	==>	9600.85	39.95745011	-104.93034684
18377.00	90.15	186.310	7741.49	-9564.96	930.84	==>	9610.14	39.95742419	-104.93035056

**Comments**

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1750.00	1749.57	0.00	-31.38	39.98368101	-104.93378297	9.625" Csg: 1750 MD/TVD
8283.76	7712.12	511.81	956.00	39.98508593	-104.93025946	460 Setback: 8284 / 7712 MD/TVD, 460 FNL, 2303 FEL Sec 07
8394.00	7724.57	402.41	956.46	39.98478560	-104.93025783	Top Perf: 8394 / 7725 MD/TVD, 569 FNL, 2302 FEL Sec 07
18096.00	7742.11	-9285.33	958.28	39.95819178	-104.93025268	Btm Perf: 18,096 / 7742 MD/TVD, 288 FSL, 2291 FEL Sec 18
18147.14	7742.06	-9336.34	954.69	39.95805175	-104.93026549	Btm Toe Sub: 18,147 / 7742 MD/TVD, 237 FSL, 2295 FEL Sec 18
18234.13	7741.84	-9422.92	946.21	39.95781410	-104.93029575	150 Setback: 18,234 / 7742 MD/TVD, 150 FSL, 2303 FEL Sec 18
18367.50	7741.51	-9555.51	931.89	39.95745011	-104.93034684	PBTD: 18,368 / 7742 MD/TVD, 17 FSL, 2317 FEL Sec 18
18377.00	7741.49	-9564.96	930.84	39.95742419	-104.93035056	5.5" Csg: 18,377 / 7741 MD/TVD, 8 FSL, 2318 FEL Sec 18
18377.00	7741.49	-9564.96	930.84	39.95742419	-104.93035056	BHL: 18,377 / 7741 MD/TVD, 8 FSL, 2318 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	1750.00	1749.57	0.00	-31.38
8.500	1750.00	1749.57	0.00	-31.38	18377.00	7741.49	-9564.96	930.84

**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	1750.00	1749.57	0.00	-31.38
5 1/2in Casing	0.00	0.00	0.00	0.00	18377.00	7741.49	-9564.96	930.84

**Survey Tool Program**

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
533006	As Drilled - 20190307	18377.00	7741.49	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 174.440 degrees  
Bottom hole distance is 9610.14 Feet on azimuth 174.44 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Great Western Operating Co.  
Date Printed: