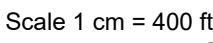
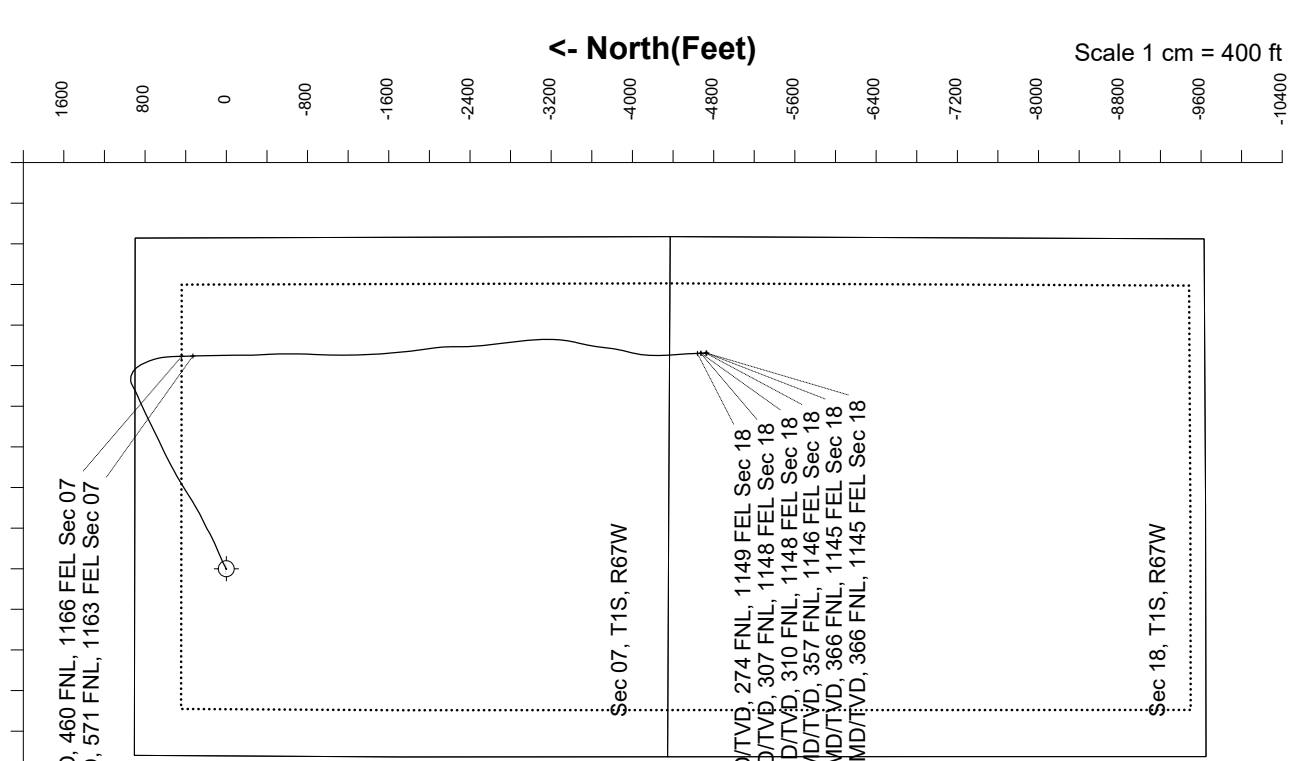
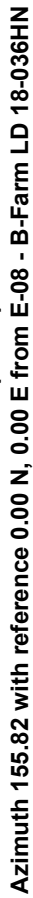
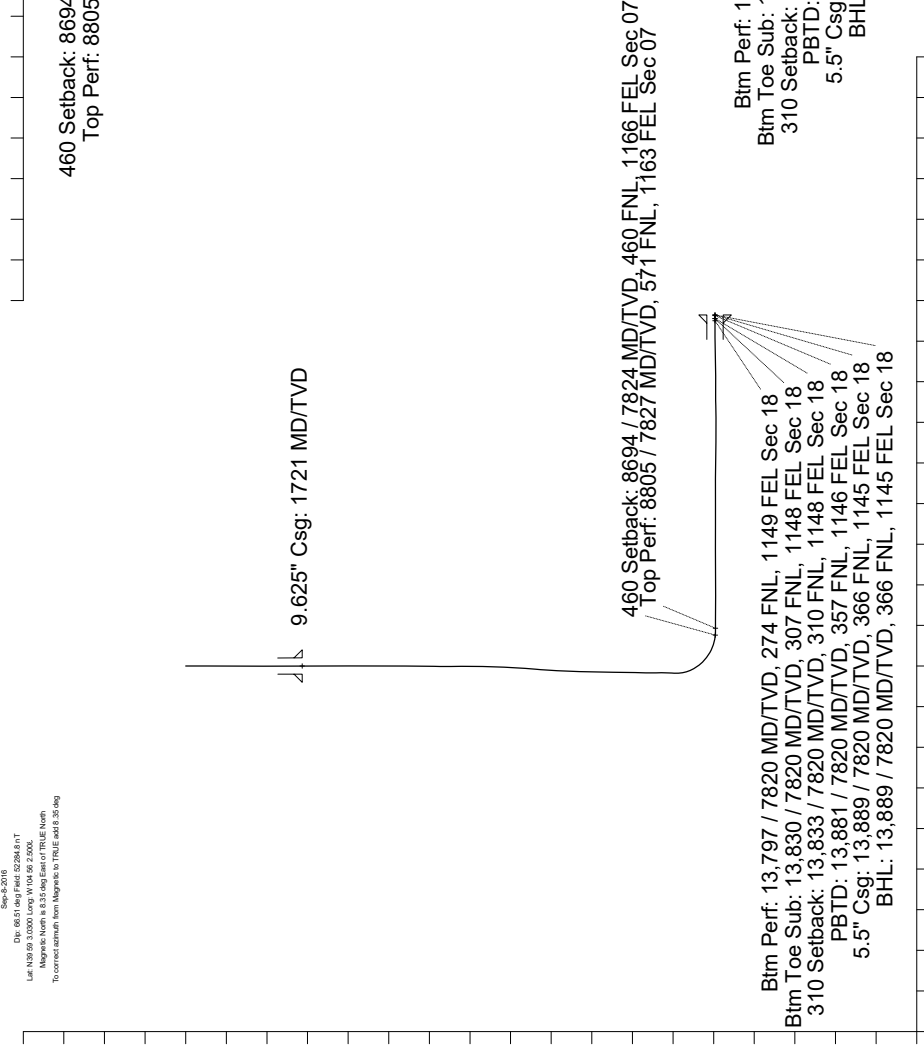
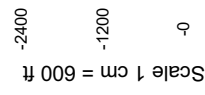
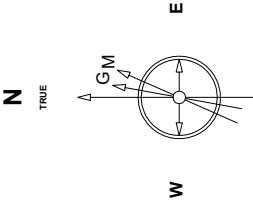


Great Western Operating Company, LLC

<p>Plot reference is B-F arm LD 18-0386N (AWB).</p> <p>Red welshp is B-F arm LD 18-0386N (AWP#1).</p> <p>Coordinates are in Feet reference E-88 - B-F arm LD 18-0386N.</p> <p>True Vertical Depths are reference Rig Datum.</p> <p>Measured Depths are reference Rig Datum.</p> <p>Rig Datum: Actual Datum #1</p> <p>Rig Datum to Mean Sea Level: 5144.50 ft.</p> <p>Plot North is aligned to TRUE North.</p>	<p>Created by admin</p> <p>Date plotted: 4-Jun-2019</p>
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Great Western Operating Co, LLC Directional Survey Report Wellpath: B-Farm LD 18-036HN 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	05-001-10092	20.00	B-Farm LD 18-036HN

Slot Coordinates

Latitude	Longitude
39.98387500	-104.93367000

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	39.98387500	-104.93367000
20.00	0.00	226.440	20.00	0.00	0.00	==>	0.00	39.98387500	-104.93367000
214.00	0.57	226.440	214.00	-0.66	-0.70	0.29	0.32	39.98387317	-104.93367250
309.00	0.83	234.620	308.99	-1.39	-1.60	0.29	0.61	39.98387119	-104.93367572
404.00	0.26	223.190	403.98	-1.94	-2.31	0.61	0.83	39.98386966	-104.93367825
500.00	0.18	245.160	499.98	-2.17	-2.60	0.12	0.91	39.98386905	-104.93367927
595.00	0.31	314.600	594.98	-2.05	-2.92	0.31	0.68	39.98386938	-104.93368040
690.00	0.70	2.590	689.98	-1.29	-3.07	0.57	-0.08	39.98387146	-104.93368096
786.00	1.01	11.460	785.97	0.13	-2.88	0.35	-1.29	39.98387535	-104.93368027
881.00	0.79	330.500	880.96	1.52	-3.03	0.70	-2.63	39.98387916	-104.93368083
976.00	0.22	54.000	975.96	2.19	-3.21	0.84	-3.32	39.98388102	-104.93368145
1070.00	0.48	110.950	1069.95	2.16	-2.70	0.43	-3.07	39.98388093	-104.93367962
1166.00	0.57	152.000	1165.95	1.59	-2.10	0.39	-2.31	39.98387938	-104.93367748
1261.00	0.48	166.850	1260.95	0.79	-1.78	0.17	-1.45	39.98387717	-104.93367636
1356.00	0.44	206.400	1355.94	0.08	-1.85	0.33	-0.83	39.98387521	-104.93367662
1452.00	0.22	278.210	1451.94	-0.23	-2.20	0.44	-0.69	39.98387437	-104.93367785
1547.00	0.40	161.750	1546.94	-0.52	-2.28	0.56	-0.46	39.98387358	-104.93367813
1640.00	0.40	134.680	1639.94	-1.05	-1.95	0.20	0.17	39.98387211	-104.93367694
1671.00	0.31	98.210	1670.94	-1.14	-1.79	0.77	0.31	39.98387186	-104.93367637
1721.00	0.18	103.220	1720.94	-1.18	-1.57	0.26	0.43	39.98387176	-104.93367562
1794.00	0.04	201.940	1793.94	-1.23	-1.47	0.26	0.52	39.98387162	-104.93367525
1883.00	0.03	275.400	1882.94	-1.26	-1.51	0.05	0.53	39.98387155	-104.93367538
1973.00	0.03	42.330	1972.94	-1.24	-1.51	0.06	0.51	39.98387161	-104.93367540
2062.00	0.04	11.470	2061.94	-1.19	-1.49	0.02	0.47	39.98387174	-104.93367533
2152.00	0.06	283.780	2151.94	-1.15	-1.53	0.08	0.42	39.98387185	-104.93367547
2241.00	0.03	215.190	2240.94	-1.15	-1.59	0.06	0.40	39.98387183	-104.93367568
2330.00	0.03	251.830	2329.94	-1.18	-1.63	0.02	0.41	39.98387176	-104.93367580
2419.00	0.09	209.890	2418.94	-1.25	-1.68	0.08	0.45	39.98387157	-104.93367601
2598.00	0.14	180.110	2597.94	-1.59	-1.75	0.04	0.73	39.98387064	-104.93367626
2687.00	0.03	289.590	2686.94	-1.69	-1.78	0.17	0.82	39.98387036	-104.93367634
2777.00	0.07	41.270	2776.94	-1.64	-1.76	0.10	0.78	39.98387049	-104.93367629
2866.00	0.13	18.140	2865.94	-1.50	-1.69	0.08	0.68	39.98387087	-104.93367605
2956.00	0.09	193.840	2955.94	-1.48	-1.68	0.24	0.66	39.98387095	-104.93367599
3045.00	0.10	62.940	3044.94	-1.51	-1.63	0.19	0.71	39.98387086	-104.93367581
3134.00	0.06	73.530	3133.94	-1.46	-1.51	0.05	0.71	39.98387099	-104.93367540
3224.00	1.05	65.070	3223.93	-1.10	-0.72	1.10	0.71	39.98387198	-104.93367257
3313.00	3.53	53.100	3312.85	0.89	2.21	2.82	0.09	39.98387744	-104.93366211
3403.00	5.88	56.210	3402.54	5.12	8.26	2.63	-1.29	39.98388905	-104.93364053
3492.00	7.90	63.210	3490.90	10.41	17.51	2.45	-2.33	39.98390358	-104.93360752
3582.00	11.00	61.520	3579.67	17.29	30.58	3.46	-3.25	39.98392248	-104.93356088
3671.00	14.32	62.130	3666.49	26.49	47.78	3.73	-4.60	39.98394772	-104.93349950
3761.00	16.19	64.330	3753.32	37.13	68.93	2.17	-5.65	39.98397693	-104.93342403
3850.00	18.68	64.900	3838.22	48.55	93.02	2.80	-6.20	39.98400828	-104.93333805
3940.00	21.56	67.770	3922.72	60.93	121.39	3.38	-5.87	39.98404225	-104.93323683
4029.00	25.09	69.460	4004.44	73.74	154.21	4.04	-4.12	39.98407742	-104.93311972
4118.00	28.74	68.400	4083.78	88.24	191.78	4.14	-1.96	39.98411723	-104.93298562
4208.00	30.26	66.250	4162.11	105.34	232.66	2.06	-0.82	39.98416417	-104.93283974
4297.00	30.34	62.300	4238.96	124.82	273.09	2.24	-2.03	39.98421764	-104.93269546
4387.00	29.75	60.860	4316.87	146.26	312.72	1.04	-5.36	39.98427650	-104.93255404
4476.00	29.53	61.040	4394.23	167.63	351.20	0.27	-9.10	39.98433517	-104.93241673
4566.00	30.13	62.350	4472.30	188.86	390.62	0.98	-12.32	39.98439342	-104.93227607
4655.00	30.05	64.190	4549.31	208.93	430.46	1.04	-14.31	39.98444851	-104.93213387
4745.00	30.12	64.130	4627.19	228.59	471.07	0.08	-15.62	39.98450249	-104.93198897
4834.00	30.10	62.150	4704.18	248.76	510.89	1.12	-17.71	39.98455785	-104.93184685
4924.00	30.05	62.180	4782.06	269.82	550.78	0.06	-20.59	39.98461566	-104.93170452
5013.00	30.04	62.650	4859.10	290.45	590.27	0.26	-23.24	39.98467230	-104.93156358
5103.00	30.11	60.350	4936.99	311.97	629.90	1.28	-26.64	39.98473137	-104.93142216
5192.00	30.13	58.690	5013.97	334.62	668.39	0.94	-31.54	39.98479355	-104.93128482
5282.00	30.27	56.550	5091.76	358.87	706.61	1.21	-38.01	39.98486009	-104.93114841
5371.00	29.87	55.120	5168.78	383.90	743.51	0.92	-45.74	39.98492882	-104.93101673
5460.00	29.83	56.620	5245.98	408.76	780.18	0.84	-53.39	39.98499704	-104.93088589
5550.00	29.79	59.800	5324.07	432.32	818.19	1.76	-59.32	39.98506172	-104.93075022
5639.00	29.77	60.980	5401.32	454.16	856.62	0.66	-63.51	39.98512167	-104.93061308
5729.00	29.85	61.260	5479.41	475.77	895.80	0.18	-67.18	39.98518099	-104.93047327
5818.00	29.80	60.300	5556.62	497.38	934.43	0.54	-71.07	39.98524030	-104.93033541
5908.00	29.90	59.680	5634.68	519.78	973.22	0.36	-75.62	39.98530180	-104.93019698
5997.00	29.96	61.720	5711.82	541.51	1011.94	1.15	-79.59	39.98536144	-104.93005880
6087.00	29.88	62.560	5789.82	562.49	1051.63	0.47	-82.47	39.98541902	-104.92991717
6176.00	30.09	63.500	5866.91	582.66	1091.27	0.58	-84.64	39.98547439	-104.92977571
6265.00	30.03	64.030	5943.94	602.37	1131.26	0.31	-86.24	39.98552848	-104.92963300
6355.00	29.86	64.620	6021.92	621.83	1171.75	0.38	-87.42	39.98558191	-104.92948851
6445.00	29.99	65.430	6099.93	640.79	1212.45	0.47	-88.04	39.98563394	-104.92934327
6534.00	30.06	65.090	6176.98	659.42	1252.89	0.21	-88.48	39.98568510	-104.92919893
6623.00	29.97	63.940	6254.05	678.58	1293.08	0.65	-89.50	39.98573767	-104.92905552
6712.00	30.06	62.560	6331.11	698.62	1332.83	0.78	-91.50	39.98579267	-104.92891365
6802.00	30.07	62.280	6409.00	719.49	1372.80	0.16	-94.18	39.98584997	-104.92877103
6891.00	30.08	64.640	6486.03	739.42	1412.69	1.33	-96.02	39.98590466	-104.92862866
6981.00	30.12	65.630	6563.89	758.39	1453.64	0.55	-96.56	39.98595675	-104.92848252
7070.00	30.03	65.200	6640.91	776.95	1494.20	0.26	-96.88	39.98600768	-104.92833778
7159.00	30.08	63.450	6717.94	796.26	1534.37	0.99	-98.04	39.98606068	-104.92819443
7249.00	30.14	62.290	6795.80	816.85	1574.55	0.65	-100.37	39.98611719	-104.92805104
7338.00	29.84	66.760	6872.89	835.98	1614.68	2.53	-101.39	39.98616970	-104.92790782
7427.00	30.03	68.170	6950.02	853.00	1655.70	0.82	-100.11	39.98621641	-104.92776143
7516.00	30.14	64.930	7027.04	870.75	1696.61	1.83	-99.55	39.98626513	-104.92761541
7606.00	30.15	63.220	7104.87	890.51	1737.26	0.95	-100.93	39.98631936	-104.92747036
7695.00	30.06	62.330	7181.86	910.93	1776.95	0.51	-103.30	39.98637541	-104.92732870
7784.00	28.54	63.490	7259.47	930.77	1815.72	1.82	-105.53	39.98642987	-104.92719034
7874.00	26.61	85.490	7339.45	941.98	1855.16	11.46	-99.60	39.98646064	-104.92704959
7963.00	30.54	103.950	7417.75	938.09	1897.08	10.81	-78.89	39.98644994	-104.92690002
8052.00	33.39	121.800	7493.42	919.69	1939.94	11.05	-44.55	39.98639942	-104.92674705
8142.00	35.92	140.770	7567.66	886.08	1977.80	12.27	1.62	39.98630717	-104.92661195
8231.00	44.75	151.350	7635.52	838.22	2009.43	12.53	58.24	39.98617576	-104.92649909
8320.00	53.20	156.250	7693.90	777.98	2038.87	10.36	125.25	39.98601040	-104.92639406
8410.00	60.59	164.250	7743.08	707.09	2064.08	11.08	200.25	39.98581579	-104.92630409

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
8499.00	69.16	171.400	7780.88	628.43	2080.88	12.06	278.88	39.98559986	-104.92624420
8588.00	76.58	177.820	7807.10	543.86	2088.76	10.81	359.27	39.98536769	-104.92621609
8677.00	83.77	178.590	7822.27	456.26	2091.50	8.12	440.30	39.98512724	-104.92620634
8692.75	84.87	178.500	7823.83	440.59	2091.90	7.01	454.76	39.98508423	-104.92620493
8693.85	84.95	178.490	7823.93	439.50	2091.92	7.01	455.77	39.98508123	-104.92620483
8767.00	90.06	178.080	7827.12	366.48	2094.11	7.01	523.28	39.98488077	-104.92619705
8805.00	89.98	178.140	7827.10	328.50	2095.36	0.26	558.44	39.98477651	-104.92619259
8856.00	89.88	178.220	7827.16	277.52	2096.98	0.26	605.61	39.98463658	-104.92618683
8946.00	89.82	179.060	7827.40	187.55	2099.12	0.94	688.57	39.98438959	-104.92617923
9035.00	89.32	179.150	7828.07	98.56	2100.51	0.57	770.32	39.98414532	-104.92617430
9124.00	89.69	179.190	7828.84	9.57	2101.80	0.42	852.03	39.98390104	-104.92616972
9214.00	89.82	179.860	7829.22	-80.42	2102.54	0.76	934.44	39.98365399	-104.92616709
9303.00	89.69	179.910	7829.60	-169.42	2102.72	0.16	1015.70	39.98340968	-104.92616648
9392.00	90.09	178.580	7829.77	-258.41	2103.90	1.56	1097.37	39.98316540	-104.92616232
9482.00	90.65	176.950	7829.19	-348.34	2107.41	1.91	1180.85	39.98291854	-104.92614982
9571.00	90.92	176.910	7827.97	-437.20	2112.17	0.31	1263.87	39.98267460	-104.92613284
9661.00	90.09	179.050	7827.18	-527.13	2115.34	2.55	1347.21	39.98242772	-104.92612155
9750.00	90.06	179.500	7827.06	-616.13	2116.47	0.51	1428.86	39.98218342	-104.92611756
9840.00	90.00	180.680	7827.01	-706.13	2116.33	1.31	1510.91	39.98193637	-104.92611809
9929.00	90.12	181.890	7826.92	-795.10	2114.33	1.37	1591.26	39.98169212	-104.92612524
10019.00	89.85	182.060	7826.94	-885.05	2111.23	0.35	1672.05	39.98144521	-104.92613633
10108.00	90.09	181.490	7826.99	-974.00	2108.47	0.69	1752.08	39.98120102	-104.92614620
10198.00	90.03	182.300	7826.90	-1063.95	2105.50	0.90	1832.92	39.98095410	-104.92615685
10287.00	90.09	182.110	7826.80	-1152.89	2102.07	0.22	1912.65	39.98070996	-104.92616909
10376.00	90.09	179.040	7826.66	-1241.87	2101.18	3.45	1993.46	39.98046569	-104.92617230
10466.00	90.12	176.710	7826.50	-1331.81	2104.52	2.59	2076.88	39.98021882	-104.92616042
10555.00	90.12	175.570	7826.31	-1420.60	2110.51	1.28	2160.34	39.97997506	-104.92613907
10645.00	89.97	175.580	7826.24	-1510.33	2117.45	0.17	2245.04	39.97972874	-104.92611432
10734.00	89.97	176.460	7826.29	-1599.12	2123.63	0.99	2328.57	39.97948502	-104.92609231
10824.00	89.94	175.050	7826.36	-1688.87	2130.29	1.57	2413.18	39.97923864	-104.92606856
10913.00	90.06	174.490	7826.36	-1777.50	2138.40	0.64	2497.36	39.97899534	-104.92603964
11003.00	89.35	172.270	7826.82	-1866.89	2148.78	2.59	2583.16	39.97874995	-104.92600265
11092.00	90.25	171.080	7827.13	-1954.95	2161.66	1.68	2668.77	39.97850822	-104.92595670
11181.00	89.85	171.940	7827.06	-2042.97	2174.80	1.07	2754.45	39.97826658	-104.92590984
11270.00	90.34	176.790	7826.91	-2131.52	2183.54	5.48	2838.81	39.97802352	-104.92587870
11360.00	88.68	180.050	7827.68	-2221.46	2186.02	4.06	2921.88	39.97777660	-104.92586987
11449.00	88.89	178.760	7829.56	-2310.44	2186.95	1.47	3003.43	39.97753236	-104.92586660
11538.00	89.05	177.080	7831.16	-2399.36	2190.18	1.90	3085.88	39.97728826	-104.92585511
11627.00	88.98	175.760	7832.69	-2488.17	2195.73	1.49	3169.18	39.97704446	-104.92583531
11717.00	88.89	174.180	7834.37	-2577.81	2203.62	1.76	3254.18	39.97679840	-104.92580719
11806.00	89.91	173.060	7835.30	-2666.25	2213.51	1.70	3338.92	39.97655562	-104.92577193
11895.00	90.18	172.810	7835.23	-2754.57	2224.46	0.41	3423.98	39.97631316	-104.92573290
11985.00	90.03	172.650	7835.06	-2843.85	2235.85	0.24	3510.09	39.97606808	-104.92569229
12074.00	90.09	175.030	7834.97	-2932.33	2245.40	2.68	3594.72	39.97582519	-104.92565824
12164.00	91.17	175.410	7833.98	-3022.01	2252.89	1.27	3679.60	39.97557901	-104.92563152
12253.00	91.14	177.360	7832.19	-3110.81	2258.50	2.19	3762.91	39.97533524	-104.92561153
12343.00	90.92	180.910	7830.57	-3200.77	2259.86	3.95	3845.54	39.97508829	-104.92560671
12432.00	89.85	185.920	7829.97	-3289.58	2254.56	5.76	3924.39	39.97484450	-104.92562565
12521.00	89.88	190.310	7830.18	-3377.67	2242.00	4.93	3999.61	39.97460270	-104.92567049
12611.00	90.00	193.490	7830.28	-3465.72	2223.45	3.54	4072.34	39.97436098	-104.92573673
12700.00	89.72	192.100	7830.49	-3552.51	2203.74	1.59	4143.44	39.97412275	-104.92580708
12790.00	90.12	188.190	7830.62	-3641.08	2187.89	4.37	4217.76	39.97387960	-104.92586366
12879.00	90.77	186.250	7829.93	-3729.37	2176.70	2.30	4293.72	39.97363725	-104.92590359
12968.00	91.17	187.660	7828.42	-3817.70	2165.93	1.65	4369.89	39.97339478	-104.92594207
13058.00	91.60	194.520	7826.24	-3905.94	2148.63	7.63	4443.31	39.97315255	-104.92600380
13147.00	90.22	194.490	7824.83	-3992.09	2126.34	1.55	4512.78	39.97291606	-104.92608335
13237.00	90.65	187.730	7824.14	-4080.35	2109.01	7.53	4586.20	39.97267379	-104.92614522
13326.00	90.77	182.760	7823.04	-4168.94	2100.88	5.59	4663.69	39.97243059	-104.92617426
13415.00	90.49	179.350	7822.06	-4257.91	2099.24	3.84	4744.18	39.97218637	-104.92618013
13505.00	90.49	176.150	7821.29	-4347.83	2102.77	3.56	4827.66	39.97193954	-104.92616756
13594.00	90.58	175.410	7820.46	-4436.58	2109.32	0.84	4911.31	39.97169590	-104.92614422
13684.00	89.94	177.000	7820.05	-4526.38	2115.28	1.90	4995.67	39.97144940	-104.92612299
13774.00	89.94	177.590	7820.15	-4616.28	2119.53	0.66	5079.42	39.97120261	-104.92610787
13797.00	89.93	177.690	7820.17	-4639.26	2120.47	0.45	5100.78	39.97113953	-104.92610450
13830.00	89.92	177.840	7820.22	-4672.23	2121.76	0.45	5131.39	39.97104901	-104.92609992
13830.20	89.92	177.840	7820.22	-4672.43	2121.77	0.43	5131.57	39.97104846	-104.92609989
13833.36	89.92	177.850	7820.22	-4675.59	2121.89	0.43	5134.50	39.97103979	-104.92609947
13863.00	89.91	177.980	7820.26	-4705.21	2122.96	0.43	5161.97	39.97095848	-104.92609563
13880.52	89.91	177.980	7820.29	-4722.72	2123.58	==>	5178.19	39.97091042	-104.92609343
13881.00	89.91	177.980	7820.29	-4723.20	2123.60	==>	5178.64	39.97090910	-104.92609337
13889.00	89.91	177.980	7820.31	-4731.20	2123.88	==>	5186.05	39.97088715	-104.92609237

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1721.00	1720.94	-1.18	-1.57	39.98387176	-104.93367562	9.625" Csg: 1721 MD/TVD
8693.85	7823.93	439.50	2091.92	39.98508123	-104.92620483	460 Setback: 8694 / 7824 MD/TVD, 460 FNL, 1166 FEL Sec 07
8805.00	7827.10	328.50	2095.36	39.98477651	-104.92619259	Top Perf: 8805 / 7827 MD/TVD, 571 FNL, 1163 FEL Sec 07
13797.00	7820.17	-4639.26	2120.47	39.97113953	-104.92610450	Btm Perf: 13,797 / 7820 MD/TVD, 274 FNL, 1149 FEL Sec 18
13830.20	7820.22	-4672.43	2121.77	39.97104846	-104.92609989	Btm Toe Sub: 13,830 / 7820 MD/TVD, 307 FNL, 1148 FEL Sec 18
13833.36	7820.22	-4675.59	2121.89	39.97103979	-104.92609947	310 Setback: 13,833 / 7820 MD/TVD, 310 FNL, 1148 FEL Sec 18
13880.52	7820.29	-4722.72	2123.58	39.97091042	-104.92609343	PBTD: 13,881 / 7820 MD/TVD, 357 FNL, 1146 FEL Sec 18
13889.00	7820.31	-4731.20	2123.88	39.97088715	-104.92609237	5.5" Csg: 13,889 / 7820 MD/TVD, 366 FNL, 1145 FEL Sec 18
13889.00	7820.31	-4731.20	2123.88	39.97088715	-104.92609237	BHL: 13,889 / 7820 MD/TVD, 366 FNL, 1145 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	1721.00	1720.94	-1.18	-1.57
8.500	1721.00	1720.94	-1.18	-1.57	13889.00	7820.31	-4731.20	2123.88

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	1721.00	1720.94	-1.18	-1.57
5 1/2in Casing	0.00	0.00	0.00	0.00	13889.00	7820.31	-4731.20	2123.88

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
486468	As Drilled 20111108	13889.00	7820.31	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 155.820 degrees
Bottom hole distance is 5186.05 Feet on azimuth 155.82 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Great Western Operating Co.
Date Printed: