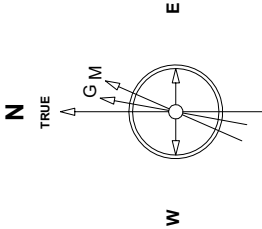


Great Western Operating Company, LLC

Created by	mmount
Date plotted	8-Aug-2019
Plot reference is Rio LC 12-368HC (AWB).	
Ref wellpath is Rio LC 12-368HC (AWP#1).	
Coordinates are in Feet reference E05 - Rio LC 12-368HC.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum: Actual Datum #1	
Rig Datum to Mean Sea Level: 5088.40 ft.	
Plot North is aligned to TRUE North.	

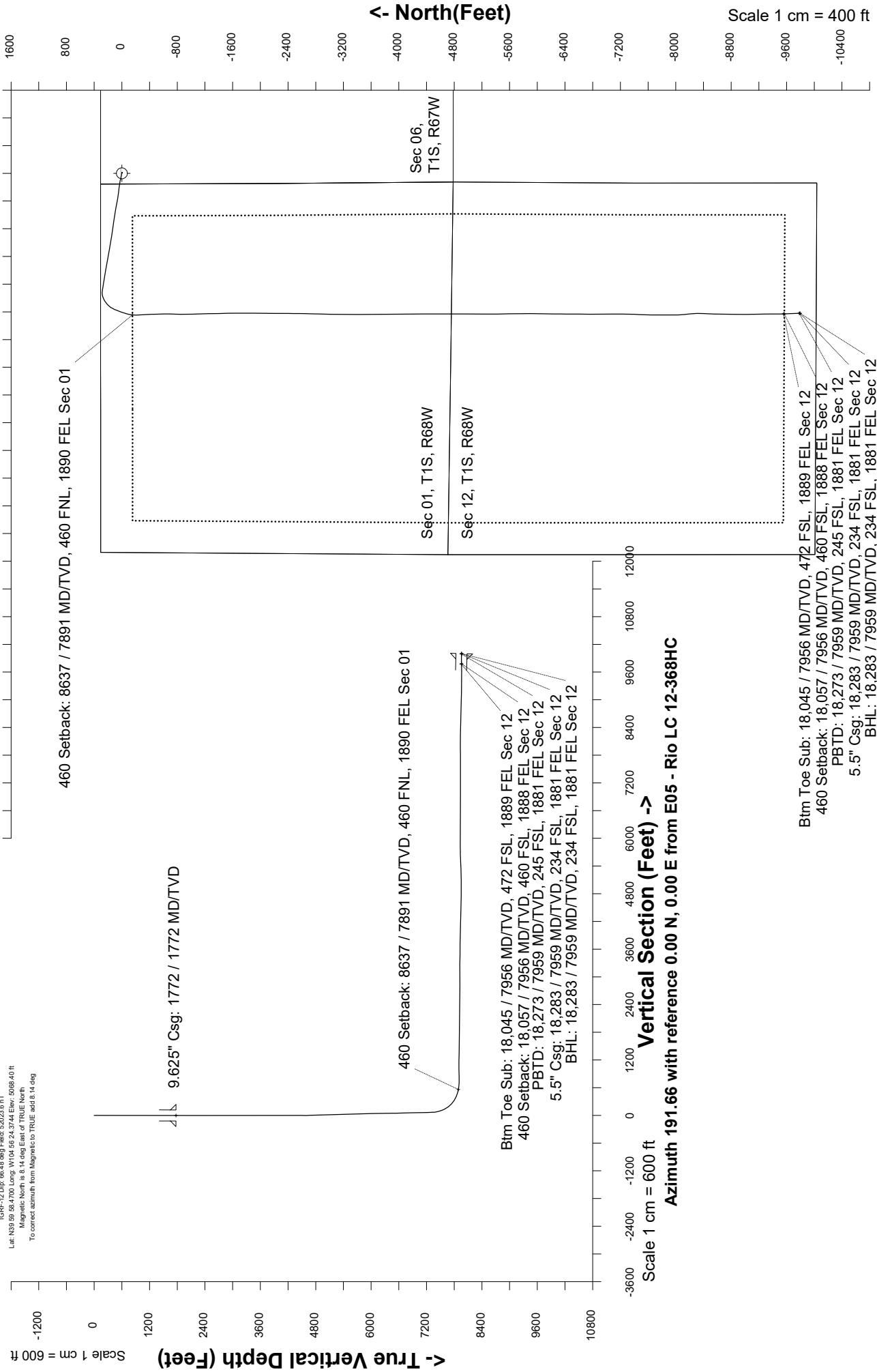
Location	Colorado	Slot	E05 - Rio LC 12-368HC
Field	Wattenburg	Well	Rio LC 12-368HC
Installation	Rio	Wellbore	Rio LC 12-368HC (AWB)



Sept-10-2018
IGRF-12 Dat: 69.43 deg Field: 52023.6 nT
Lat: N19 59 98.4700 Long: W104 56 24.3744 Elev: 5088.40 ft
Magnetic North is 8.14 deg East of TRUE North.
To correct azimuth from Magnetic to TRUE add 8.14 deg

East (Feet) ->

Scale 1 cm = 400 ft



Great Western Operating Co, LLC
Directional Survey Report
Wellpath: Rio LC 12-368HC
MDs and TVDs are from Rig Floor 5088.4ft above Mean Sea Level

Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Jul-30-2019	Aug-8-2019	05-001-10462	20.00	Rio LC 12-368HC

Slot Coordinates

Latitude	Longitude
39.99949600	-104.93978200

Pad Information

Pad Name	Ground Elev.
Rio	5068.40

Field

Name
Wattenburg

Wellpath Report

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
0.00	0.00	0.00	0.00	0.00	0.00		0.00	39.99949600	-104.93978200
12.50	0.00	24.32	12.50	0.00	0.00	0.00	0.00	39.99949600	-104.93978200
92.50	0.40	24.32	92.50	0.25	0.12	0.50	-0.27	39.99949670	-104.93978159
182.50	0.62	36.10	182.50	0.93	0.53	0.27	-1.02	39.99949856	-104.93978010
272.50	0.57	74.51	272.49	1.45	1.25	0.44	-1.67	39.99949997	-104.93977754
361.50	0.57	112.56	361.49	1.40	2.09	0.42	-1.79	39.99949983	-104.93977456
451.50	0.70	138.40	451.48	0.81	2.86	0.35	-1.37	39.99949823	-104.93977178
541.50	0.40	139.98	541.48	0.16	3.43	0.33	-0.85	39.99949644	-104.93976976
631.50	0.35	103.33	631.48	-0.14	3.90	0.27	-0.65	39.99949561	-104.93976808
721.50	0.70	85.32	721.47	-0.16	4.72	0.43	-0.79	39.99949556	-104.93976517
811.50	0.70	109.66	811.47	-0.30	5.78	0.33	-0.87	39.99949517	-104.93976137
901.50	0.70	88.50	901.46	-0.47	6.85	0.29	-0.92	39.99949470	-104.93975756
991.50	0.88	66.42	991.45	-0.18	8.03	0.39	-1.45	39.99949550	-104.93975333
1081.50	0.66	55.17	1081.44	0.39	9.09	0.30	-2.22	39.99949707	-104.93974955
1171.50	0.66	62.73	1171.44	0.92	9.98	0.10	-2.92	39.99949854	-104.93974639
1261.50	0.44	106.59	1261.43	1.06	10.77	0.51	-3.22	39.99949892	-104.93974356
1351.50	1.27	110.98	1351.42	0.61	12.03	0.92	-3.03	39.99949767	-104.93973906
1441.50	0.48	139.90	1441.41	-0.04	13.20	0.98	-2.63	39.99949590	-104.93973487
1531.50	0.66	130.05	1531.41	-0.66	13.84	0.23	-2.15	39.99949419	-104.93973258
1621.50	0.13	181.91	1621.40	-1.10	14.24	0.65	-1.80	39.99949299	-104.93973118
1719.50	0.09	8.59	1719.40	-1.13	14.25	0.22	-1.77	39.99949290	-104.93973115
1772.00	0.17	61.56	1771.90	-1.05	14.32	0.26	-1.86	39.99949311	-104.93973089
1819.00	0.28	74.84	1818.90	-0.99	14.49	0.26	-1.96	39.99949328	-104.93973027
1842.00	0.22	81.63	1841.90	-0.97	14.59	0.29	-2.00	39.99949334	-104.93972992
1931.00	0.35	258.34	1930.90	-1.00	14.49	0.64	-1.95	39.99949326	-104.93973027
2021.00	0.36	355.88	2020.90	-0.77	14.20	0.59	-2.11	39.99949388	-104.93973130
2111.00	0.33	166.56	2110.90	-0.74	14.24	0.76	-2.15	39.99949396	-104.93973116
2200.00	0.85	306.50	2199.90	-0.60	13.77	1.26	-2.20	39.99949436	-104.93973284
2290.00	1.21	246.81	2289.89	-0.58	12.36	1.19	-1.93	39.99949442	-104.93973788
2379.00	0.99	159.34	2378.87	-1.67	11.77	1.72	-0.75	39.99949143	-104.93973999
2468.00	1.36	54.77	2467.86	-1.78	12.90	2.10	-0.87	39.99949113	-104.93973594
2558.00	1.23	309.84	2557.85	-0.54	13.03	2.28	-2.11	39.99949452	-104.93973548
2648.00	1.09	198.95	2647.84	-0.73	12.01	2.12	-1.71	39.99949399	-104.93973912
2737.00	1.12	52.44	2736.83	-1.00	12.43	2.38	-1.53	39.99949325	-104.93973764
2826.00	1.81	324.31	2825.81	0.67	12.30	2.36	-3.14	39.99949784	-104.93973810
2916.00	1.10	243.73	2915.79	1.44	10.69	2.18	-3.57	39.99949996	-104.93974383
3006.00	0.55	277.39	3005.78	1.12	9.49	0.79	-3.01	39.99949906	-104.93974812
3095.00	0.72	273.04	3094.78	1.20	8.51	0.20	-2.90	39.99949930	-104.93975163
3184.00	0.89	186.25	3183.77	0.54	7.88	1.25	-2.12	39.99949749	-104.93975389
3274.00	1.77	175.85	3273.74	-1.54	7.90	1.01	-0.09	39.99949178	-104.93975380
3363.00	1.31	132.25	3362.72	-3.59	8.75	1.37	1.75	39.99948614	-104.93975076
3453.00	0.94	52.65	3452.70	-3.84	10.10	1.63	1.72	39.99948547	-104.93974594
3542.00	0.82	8.79	3541.69	-2.76	10.78	0.75	0.53	39.99948841	-104.93974353
3632.00	0.83	8.62	3631.68	-1.48	10.98	0.00	-0.76	39.99949193	-104.93974283
3721.00	0.49	307.52	3720.68	-0.61	10.77	0.82	-1.57	39.99949431	-104.93974356
3811.00	0.70	214.75	3810.68	-0.83	10.15	0.97	-1.24	39.99949372	-104.93974577
3900.00	2.14	270.90	3899.65	-1.25	8.18	2.07	-0.43	39.99949256	-104.93975280
3990.00	4.75	287.03	3989.48	-0.13	2.94	3.07	-0.46	39.99949563	-104.93977152
4079.00	7.81	282.61	4077.94	2.27	-6.49	3.48	-0.91	39.99950222	-104.93980517
4168.00	9.70	278.58	4165.90	4.70	-19.81	2.23	-0.60	39.99950891	-104.93985270
4258.00	12.02	281.59	4254.28	7.72	-36.49	2.65	-0.19	39.99951719	-104.93991224
4348.00	15.96	283.23	4341.59	12.44	-57.72	4.40	-0.51	39.99953014	-104.93998803
4437.00	17.94	282.70	4426.72	18.25	-83.01	2.23	-1.10	39.99954610	-104.94007828
4526.00	22.28	283.22	4510.28	25.12	-112.82	4.88	-1.81	39.99956497	-104.94018468
4616.00	26.20	280.76	4592.33	32.74	-148.96	4.50	-1.96	39.99958587	-104.94031368
4705.00	26.85	274.91	4671.97	38.13	-188.29	3.02	0.71	39.99960066	-104.94045408
4795.00	27.81	276.38	4751.93	42.20	-229.41	1.30	5.03	39.99961184	-104.94060083
4884.00	29.77	276.80	4829.92	47.12	-271.98	2.21	8.81	39.99962536	-104.94075280
4974.00	30.10	278.90	4907.92	53.26	-316.47	1.22	11.79	39.99964220	-104.94091158
5063.00	29.95	279.35	4984.97	60.32	-360.44	0.30	13.76	39.99966159	-104.94106852
5153.00	29.86	279.40	5062.99	67.63	-404.71	0.10	15.55	39.99968165	-104.94122654
5242.00	29.82	281.24	5140.19	75.56	-448.27	1.03	16.59	39.99970342	-104.94138204
5332.00	30.08	282.49	5218.17	84.80	-492.24	0.75	16.42	39.99972878	-104.94153898
5421.00	30.00	277.80	5295.23	92.65	-536.07	2.64	17.60	39.99975031	-104.94169541
5511.00	29.78	279.99	5373.26	99.58	-580.37	1.24	19.76	39.99976934	-104.94185355
5600.00	30.02	277.39	5450.42	106.28	-624.22	1.48	22.06	39.99978772	-104.94201005
5690.00	30.05	279.26	5528.33	112.80	-668.79	1.04	24.68	39.99980562	-104.94216913
5779.00	29.97	277.19	5605.41	119.17	-712.84	1.17	27.35	39.99982310	-104.94232636
5869.00	29.74	279.06	5683.46	125.50	-757.19	1.07	30.11	39.99984047	-104.94248465
5958.00	29.93	277.66	5760.67	131.93	-800.99	0.81	32.66	39.99985813	-104.94264101
6048.00	29.65	279.43	5838.78	138.57	-845.21	1.03	35.09	39.99987636	-104.94279882

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6137.00	30.44	278.48	5915.82	145.50	-889.22	1.04	37.20	39.99989538	-104.94295593
6227.00	29.57	278.35	5993.75	152.09	-933.74	0.97	39.75	39.99991346	-104.94311485
6316.00	29.80	277.76	6071.07	158.27	-977.38	0.42	42.52	39.99993040	-104.94327061
6405.00	30.16	279.32	6148.17	164.87	-1021.36	0.96	44.94	39.99994854	-104.94342758
6495.00	29.86	280.05	6226.10	172.45	-1065.73	0.53	46.49	39.99996931	-104.94358596
6584.00	30.17	282.61	6303.17	181.19	-1109.37	1.48	46.74	39.99999333	-104.94374174
6673.00	30.29	280.91	6380.07	190.32	-1153.24	0.97	46.66	40.00001839	-104.94389830
6763.00	29.58	281.14	6458.06	198.91	-1197.32	0.80	47.16	40.00004195	-104.94405565
6852.00	29.86	280.82	6535.35	207.32	-1240.64	0.36	47.68	40.00006502	-104.94421026
6941.00	30.17	277.44	6612.42	214.37	-1284.58	1.93	49.65	40.00008438	-104.94436710
7031.00	30.15	280.30	6690.24	221.34	-1329.24	1.60	51.85	40.00010351	-104.94452653
7120.00	30.21	279.04	6767.18	228.86	-1373.35	0.71	53.41	40.00012413	-104.94468395
7210.00	30.35	278.91	6844.90	235.94	-1418.17	0.17	55.53	40.00014355	-104.94484395
7299.00	29.57	280.24	6922.01	243.32	-1462.00	1.15	57.15	40.00016382	-104.94500038
7389.00	30.18	279.04	7000.05	250.82	-1506.19	0.95	58.74	40.00018441	-104.94515813
7478.00	29.79	279.84	7077.14	258.12	-1550.07	0.63	60.46	40.00020442	-104.94531474
7568.00	30.27	279.62	7155.06	265.73	-1594.46	0.55	61.98	40.00022531	-104.94547320
7657.00	30.29	279.38	7231.92	273.14	-1638.72	0.14	63.67	40.00024564	-104.94563118
7747.00	30.27	279.57	7309.64	280.61	-1683.48	0.11	65.40	40.00026613	-104.94579095
7836.00	30.53	270.22	7386.44	284.42	-1728.23	5.32	70.70	40.00027661	-104.94595068
7925.00	30.51	254.15	7463.24	278.33	-1772.65	9.15	85.65	40.00025987	-104.94610921
8015.00	34.06	243.82	7539.38	260.95	-1817.29	7.28	111.69	40.00021216	-104.94626855
8104.00	37.83	235.98	7611.45	234.66	-1862.32	6.68	146.54	40.00013998	-104.94642926
8194.00	43.12	223.02	7680.01	196.64	-1906.29	11.02	192.66	40.00003559	-104.94658620
8283.00	49.48	210.77	7741.59	145.18	-1944.46	12.23	250.77	39.99989432	-104.94672244
8373.00	56.78	201.42	7795.63	80.56	-1975.80	11.60	320.39	39.99971694	-104.94683427
8462.00	64.89	199.48	7838.97	7.79	-2002.88	9.31	397.13	39.99951717	-104.94693090
8552.00	73.43	196.07	7870.97	-72.24	-2028.46	10.13	480.68	39.99929748	-104.94702219
8636.56	79.84	185.61	7890.55	-152.89	-2043.80	14.21	562.77	39.99907607	-104.94707694
8641.00	80.19	185.08	7891.32	-157.25	-2044.21	14.21	567.12	39.99906412	-104.94707839
8730.00	87.26	176.89	7901.06	-245.57	-2045.69	12.11	653.92	39.99882167	-104.94708363
8820.00	86.76	175.86	7905.76	-335.26	-2040.00	1.27	740.61	39.99857544	-104.94706333
8909.00	91.79	178.61	7906.88	-424.11	-2035.71	6.44	826.76	39.99833154	-104.94704799
8998.00	92.03	177.88	7903.92	-513.02	-2032.99	0.86	913.29	39.99808748	-104.94703824
9087.00	89.91	178.56	7902.41	-601.96	-2030.23	2.50	999.83	39.99784333	-104.94702835
9177.00	89.69	181.52	7902.72	-691.95	-2030.29	3.30	1087.98	39.99759630	-104.94702855
9267.00	89.91	182.97	7903.04	-781.88	-2033.82	1.63	1176.76	39.99734944	-104.94704110
9356.00	88.83	179.99	7904.02	-870.83	-2036.11	3.56	1264.35	39.99710526	-104.94704928
9445.00	88.52	177.44	7906.08	-959.78	-2034.12	2.89	1351.05	39.99686109	-104.94704213
9535.00	89.35	178.81	7907.75	-1049.71	-2031.17	1.78	1438.54	39.99661422	-104.94703160
9625.00	89.17	178.72	7908.91	-1139.68	-2029.23	0.22	1526.26	39.99636724	-104.94702465
9714.00	89.32	179.42	7910.08	-1228.66	-2027.79	0.80	1613.11	39.99612298	-104.94701947
9804.00	89.32	178.46	7911.15	-1318.64	-2026.13	1.07	1700.90	39.99587598	-104.94701350
9893.00	89.20	178.32	7912.30	-1407.60	-2023.63	0.21	1787.51	39.99563179	-104.94700455
9982.00	89.29	178.09	7913.47	-1496.55	-2020.84	0.28	1874.06	39.99538762	-104.94699458
10072.00	89.35	180.24	7914.54	-1586.53	-2019.53	2.39	1961.92	39.99514062	-104.94698987
10162.00	89.48	180.04	7915.46	-1676.52	-2019.75	0.27	2050.10	39.99489357	-104.94699063
10251.00	89.23	179.90	7916.46	-1765.51	-2019.70	0.32	2137.25	39.99464928	-104.94699044
10340.00	89.42	180.09	7917.51	-1854.51	-2019.69	0.30	2224.41	39.99440498	-104.94699038
10430.00	89.17	180.26	7918.62	-1944.50	-2019.97	0.34	2312.60	39.99415794	-104.94699134
10520.00	89.23	180.25	7919.88	-2034.49	-2020.37	0.07	2400.81	39.99391091	-104.94699274
10609.00	89.45	181.00	7920.90	-2123.48	-2021.34	0.88	2488.16	39.99366663	-104.94699618
10699.00	89.29	180.13	7921.89	-2213.47	-2022.23	0.98	2576.47	39.99341960	-104.94699932
10788.00	89.35	180.04	7922.95	-2302.46	-2022.36	0.12	2663.66	39.99317531	-104.94699977
10878.00	90.25	180.40	7923.26	-2392.46	-2022.70	1.08	2751.87	39.99292825	-104.94700097
10967.00	90.34	180.58	7922.80	-2481.46	-2023.46	0.23	2839.18	39.99268395	-104.94700366
11057.00	90.18	180.82	7922.39	-2571.45	-2024.56	0.32	2927.54	39.99243692	-104.94700756
11146.00	90.12	181.40	7922.16	-2660.43	-2026.29	0.66	3015.03	39.99219265	-104.94701369
11236.00	89.94	181.34	7922.11	-2750.41	-2028.44	0.21	3103.59	39.99194566	-104.94702134
11325.00	89.94	181.60	7922.21	-2839.38	-2030.72	0.29	3191.18	39.99170143	-104.94702947
11415.00	90.09	181.53	7922.18	-2929.34	-2033.18	0.18	3279.79	39.99145446	-104.94703821
11504.00	87.81	180.89	7923.81	-3018.30	-2035.06	2.66	3367.29	39.99121026	-104.94704489
11593.00	88.86	181.98	7926.40	-3107.23	-2037.29	1.70	3454.84	39.99096613	-104.94705282
11683.00	88.98	179.52	7928.10	-3197.20	-2038.47	2.74	3543.19	39.99071916	-104.94705699
11773.00	88.98	180.24	7929.70	-3287.19	-2038.28	0.80	3631.28	39.99047214	-104.94705630
11862.00	88.92	179.26	7931.33	-3376.17	-2037.89	1.10	3718.35	39.99022788	-104.94705488
11952.00	89.54	179.08	7932.54	-3466.15	-2036.59	0.72	3806.21	39.98998087	-104.94705021
12041.00	89.54	179.28	7933.25	-3555.14	-2035.31	0.22	3893.10	39.98973659	-104.94704563
12131.00	88.80	179.75	7934.56	-3645.13	-2034.55	0.97	3981.08	39.98948957	-104.94704289
12220.00	91.79	180.69	7934.10	-3734.11	-2034.89	3.52	4068.30	39.98924529	-104.94704408
12309.00	88.74	180.54	7933.69	-3823.10	-2035.85	3.43	4155.64	39.98900102	-104.94704746
12399.00	89.14	179.32	7935.35	-3913.08	-2035.74	1.43	4243.74	39.98875401	-104.94704705
12488.00	88.03	178.99	7937.55	-4002.04	-2034.42	1.30	4330.61	39.98850980	-104.94704234
12578.00	88.21	178.89	7940.50	-4091.98	-2032.76	0.23	4418.35	39.98826292	-104.94703637
12667.00	87.44	179.14	7943.88	-4180.90	-2031.23	0.91	4505.13	39.98801882	-104.94703089
12757.00	86.92	179.60	7948.31	-4270.78	-2030.24	0.77	4592.96	39.98777208	-104.94702734
12847.00	87.66	180.36	7952.56	-4360.68	-2030.21	1.18	4681.00	39.98752530	-104.94702720
12936.00	89.51	180.02	7954.76	-4449.65	-2030.51	2.11	4768.19	39.98728107	-104.94702823
13026.00	89.85	180.06	7955.26	-4539.65	-2030.57	0.38	4856.34	39.98703402	-104.94702842
13115.00	90.49	180.60	7955.00	-4628.65	-2031.08	0.94	4943.61	39.98678971	-104.94703023
13205.00	90.86	179.59	7953.94	-4718.64	-2031.23	1.20	5031.77	39.98654268	-104.94703073
13294.00	91.20	179.94	7952.34	-4807.62	-2030.87	0.55	5118.85	39.98629841	-104.94702940
13383.00	91.88	179.97	7949.95	-4896.59	-2030.80	0.76	5205.96	39.98605418	-104.94702913
13473.00	92.19	180.09	7946.75	-4986.53	-2030.84	0.37	5294.06	39.98580728	-104.94702927
13563.00	92.09	180.21	7943.39	-5076.47	-2031.08	0.17	5382.19	39.98556039	-104.94703009
13652.00	92.12	180.07	7940.12	-5165.41	-2031.30	0.16	5469.34	39.98531625	-104.94703083
13742.00	92.19	180.32	7936.74	-5255.35	-2031.60	0.29	5557.48	39.98506936	-104.94703190
13831.00	91.35	180.18	7933.99	-5344.30	-2031.99	0.96	5644.68	39.98482517	-104.94703326
13921.00	90.98	180.03	7932.16	-5434.28	-2032.16	0.44	5732.84	39.98457817	-104.94703382
14010.00	90.92	178.46	7930.68	-5523.26	-2030.98	1.77	5819.74	39.98433392	-104.94702961
14100.00	89.20	177.45	7930.59	-5613.20	-2027.77	2.22	5907.17	39.98408703	-104.94701813
14189.00	89.78	179.72	7931.38	-5702.16	-2025.57	2.63	5993.86	39.98384282	-104.94701026
14279.00	89.54	179.51	7931.92	-5792.16	-2024.97	0.35	6081.88	39.98359577	-104.94700807
14368.00	89.94	180.70	7932.32	-5881.16	-2025.13	1.41	6169.07	39.98335146	-104.94700863

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14457.00	90.00	180.69	7932.37	-5970.15	-2026.21	0.07	6256.44	39.98310717	-104.94701246
14547.00	89.94	180.72	7932.41	-6060.14	-2027.32	0.07	6344.80	39.98286013	-104.94701638
14637.00	89.82	180.79	7932.60	-6150.13	-2028.51	0.15	6433.18	39.98261309	-104.94702059
14726.00	89.94	180.78	7932.79	-6239.13	-2029.72	0.14	6520.58	39.98236880	-104.94702491
14816.00	89.94	180.52	7932.88	-6329.12	-2030.75	0.29	6608.92	39.98212176	-104.94702853
14905.00	89.97	180.35	7932.95	-6418.12	-2031.42	0.19	6696.22	39.98187745	-104.94703092
14995.00	89.57	180.18	7933.31	-6508.11	-2031.84	0.48	6784.45	39.98163040	-104.94703237
15084.00	89.57	180.19	7933.98	-6597.11	-2032.13	0.00	6871.67	39.98138609	-104.94703337
15174.00	89.63	180.66	7934.61	-6687.11	-2032.79	0.53	6959.94	39.98113905	-104.94703573
15263.00	89.82	179.70	7935.04	-6776.10	-2033.07	1.10	7047.16	39.98089474	-104.94703670
15353.00	89.66	180.17	7935.45	-6866.10	-2032.97	0.55	7135.28	39.98064769	-104.94703631
15442.00	89.78	179.56	7935.88	-6955.10	-2032.76	0.70	7222.40	39.98040338	-104.94703554
15532.00	89.57	179.90	7936.39	-7045.10	-2032.34	0.44	7310.45	39.98015633	-104.94703400
15621.00	89.91	180.10	7936.80	-7134.10	-2032.34	0.44	7397.62	39.97991202	-104.94703397
15711.00	89.57	180.17	7937.20	-7224.10	-2032.55	0.39	7485.80	39.97966496	-104.94703470
15800.00	91.20	180.62	7936.61	-7313.09	-2033.16	1.90	7573.08	39.97942067	-104.94703686
15889.00	88.83	182.15	7936.58	-7402.05	-2035.31	3.17	7660.64	39.97917645	-104.94704451
15982.00	91.02	182.59	7936.70	-7494.97	-2039.16	2.40	7752.42	39.97892139	-104.94705821
16072.00	91.54	182.91	7934.69	-7584.84	-2043.48	0.68	7841.31	39.97867468	-104.94707359
16161.00	90.22	180.81	7933.33	-7673.78	-2046.36	2.79	7928.99	39.97843054	-104.94708386
16251.00	89.82	177.65	7933.30	-7763.76	-2045.15	3.54	8016.87	39.97818354	-104.94707952
16340.00	89.35	180.63	7933.94	-7852.74	-2043.82	3.39	8103.75	39.97793928	-104.94707473
16430.00	89.42	181.09	7934.91	-7942.72	-2045.17	0.52	8192.15	39.97769227	-104.94707952
16520.00	88.55	178.17	7936.50	-8032.69	-2044.59	3.38	8280.15	39.97744528	-104.94707743
16610.00	89.26	174.41	7938.22	-8122.47	-2038.77	4.25	8366.89	39.97719883	-104.94705663
16699.00	88.98	172.56	7939.59	-8210.88	-2028.67	2.10	8451.44	39.97695614	-104.94702057
16789.00	89.11	179.23	7941.09	-8300.59	-2022.23	7.41	8538.00	39.97670989	-104.94699758
16878.00	88.89	182.37	7942.64	-8389.55	-2023.47	3.54	8625.38	39.97646567	-104.94700198
16968.00	88.22	182.12	7944.91	-8479.46	-2027.00	0.79	8714.14	39.97621888	-104.94701453
17058.00	88.65	182.58	7947.37	-8569.35	-2030.69	0.70	8802.92	39.97597212	-104.94702767
17147.00	88.74	182.20	7949.40	-8658.25	-2034.40	0.44	8890.73	39.97572808	-104.94704088
17237.00	88.28	179.39	7951.74	-8748.20	-2035.65	3.16	8979.08	39.97548116	-104.94704531
17326.00	88.58	180.26	7954.18	-8837.16	-2035.37	1.03	9066.15	39.97523694	-104.94704431
17416.00	88.21	180.27	7956.70	-8927.13	-2035.79	0.41	9154.35	39.97498998	-104.94704577
17506.00	88.49	179.83	7959.29	-9017.09	-2035.87	0.58	9242.47	39.97474302	-104.94704603
17595.00	89.23	179.09	7961.06	-9106.07	-2035.03	1.18	9329.44	39.97449877	-104.94704301
17684.00	88.68	178.04	7962.68	-9195.02	-2032.80	1.33	9416.11	39.97425458	-104.94703503
17773.00	90.22	179.68	7963.54	-9283.99	-2031.03	2.53	9502.89	39.97401034	-104.94702869
17862.00	93.57	181.28	7960.59	-9372.93	-2031.78	4.17	9590.14	39.97376622	-104.94703132
17951.00	91.60	178.28	7956.58	-9461.82	-2031.43	4.03	9677.13	39.97352219	-104.94703007
18041.00	89.26	178.07	7955.90	-9551.77	-2028.57	2.61	9764.64	39.97327528	-104.94701982
18045.18	89.29	178.04	7955.96	-9555.94	-2028.42	1.09	9768.70	39.97326382	-104.94701931
18057.19	89.39	177.95	7956.10	-9567.95	-2028.00	1.09	9780.37	39.97323087	-104.94701781
18131.00	90.00	177.42	7956.49	-9641.69	-2025.03	1.09	9851.99	39.97302843	-104.94700715
18220.00	88.80	178.67	7957.42	-9730.63	-2021.99	1.95	9938.49	39.97278428	-104.94699630
18259.00	88.31	179.16	7958.40	-9769.61	-2021.25	1.78	9976.51	39.97267727	-104.94699365
18272.69	88.31	179.16	7958.81	-9783.30	-2021.05	0.00	9989.87	39.97263971	-104.94699293
18283.00	88.31	179.16	7959.11	-9793.60	-2020.90	0.00	9999.93	39.97261143	-104.94699239

Comments						
MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1772.00	1771.90	-1.05	14.32	39.99949311	-104.93973089	9.625" Csg: 1772 / 1772 MD/TVD
8636.56	7890.55	-152.89	-2043.80	39.99907607	-104.94707694	460 Setback: 8637 / 7891 MD/TVD, 460 FNL, 1890 FEL Sec 01
18045.18	7955.96	-9555.94	-2028.42	39.97326382	-104.94701931	Btm Toe Sub: 18,045 / 7956 MD/TVD, 472 FSL, 1889 FEL Sec 12
18057.19	7956.10	-9567.95	-2028.00	39.97323087	-104.94701781	460 Setback: 18,057 / 7956 MD/TVD, 460 FSL, 1888 FEL Sec 12
18272.69	7958.81	-9783.30	-2021.05	39.97263971	-104.94699293	PBTD: 18,273 / 7959 MD/TVD, 245 FSL, 1881 FEL Sec 12
18283.00	7959.11	-9793.60	-2020.90	39.97261143	-104.94699239	5.5" Csg: 18,283 / 7959 MD/TVD, 234 FSL, 1881 FEL Sec 12
18283.00	7959.11	-9793.60	-2020.90	39.97261143	-104.94699239	BHL: 18,283 / 7959 MD/TVD, 234 FSL, 1881 FEL Sec 12

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	1772.00	1771.90	-1.05	14.32
8.500	1772.00	1771.90	-1.05	14.32	18283.00	7959.11	-9793.60	-2020.90

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	1772.00	1771.90	-1.05	14.32
5 1/2in Casing	0.00	0.00	0.00	0.00	18283.00	7959.11	-9793.60	-2020.90

Survey Tool Program				
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
588263	As Drilled - 20190804	18283.00	7959.11	MWD

Coordinates are from Slot
MD's and TVD's are from Rig Floor 5088.4ft above Mean Sea Level
Vertical Section is from 0.00 0.00 on azimuth 191.66 degrees
Bottom hole distance is 9999.93 Feet on azimuth 191.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by
Date Printed: