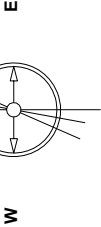


Great Western Operating Company, LLC

Location	Colorado	Slot	E02 - Rio LC 12-369HNX
Field	Wattenburg	Well	Rio LC 12-369HNX
Installation	Rio	Wellbore	Rio LC 12-369HNX (AWB)

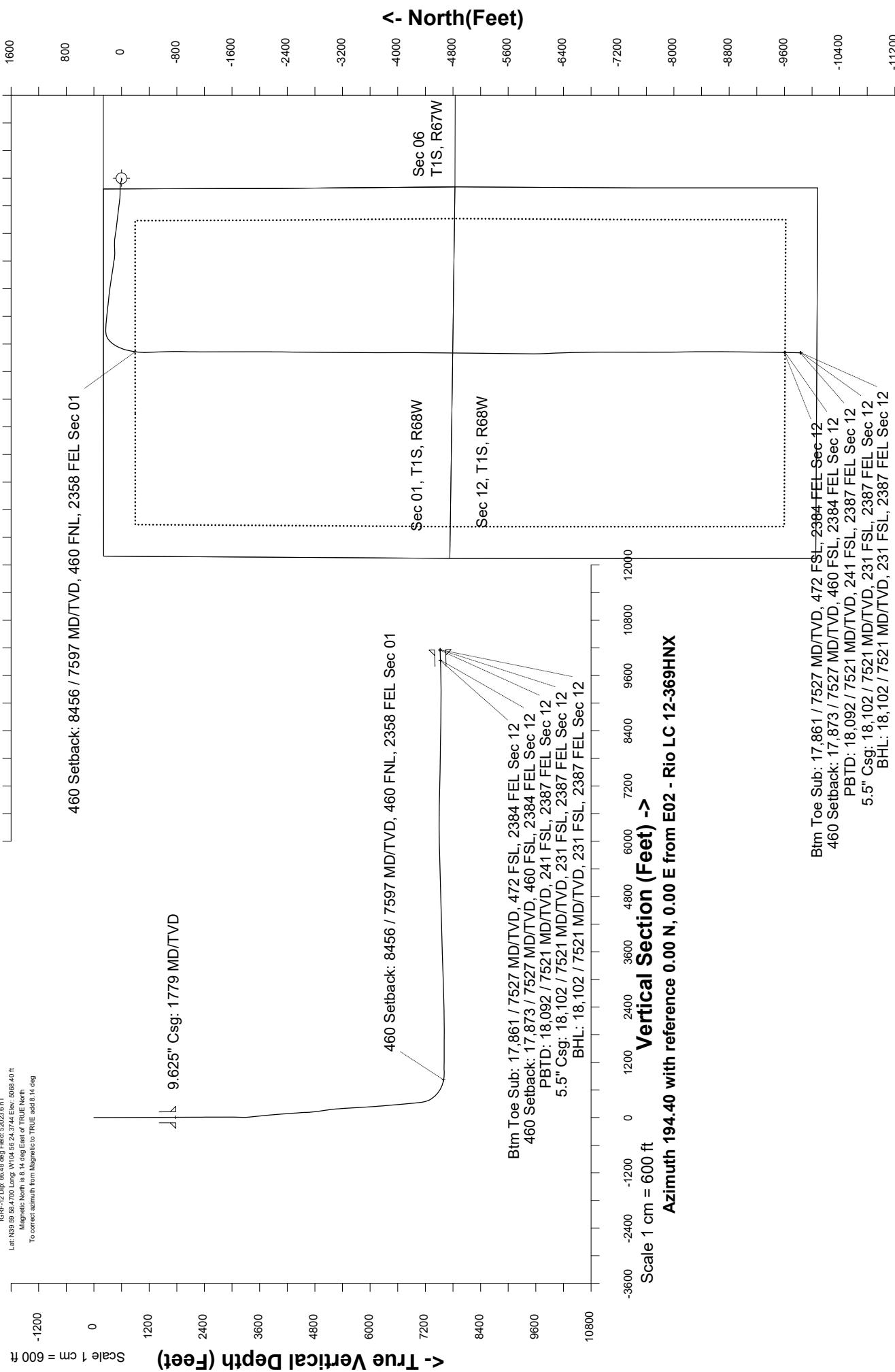
Created by	mmount
Date plotted	23-Aug-2019
Plot reference is Rio LC 12-369HNX (AWB).	
Ref wellpath is Rio LC 12-369HNX (AWP#1).	
Coordinates are in Feet reference E02 - Rio LC 12-369HNX.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum: Actual Datum #1	
Rig Datum to Mean Sea Level: 5088.40 ft.	
Plot North is aligned to TRUE North.	



Sept-10-2018
IGRF-12 Dec 69.43 deg Field: 52023.6 nT
Lat: N39 59 58.4700 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



Vertical Section (Feet) ->
Azimuth 194.40 with reference 0.00 N, 0.00 E from E02 - Rio LC 12-369HNX

Scale 1 cm = 600 ft

Great Western Operating Co, LLC
 Directional Survey Report
 Wellpath: Rio LC 12-369HNX
 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
Aug-19-2019	Aug-23-2019	05-001-10468	20.00	Rio LC 12-369HNX

Slot Coordinates

Latitude	Longitude
39.99961800	-104.93978300

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	39.99961800	-104.93978300
12.50	0.00	77.41	12.50	0.00	0.00	0.00	0.00	39.99961800	-104.93978300
94.50	0.48	77.41	94.50	0.07	0.34	0.59	-0.16	39.99961821	-104.93978180
184.50	0.79	306.01	184.50	0.52	0.20	1.29	-0.56	39.99961943	-104.93978228
273.50	1.14	290.45	273.48	1.19	-1.12	0.49	-0.87	39.99962127	-104.93978701
362.50	0.75	249.23	362.47	1.29	-2.50	0.85	-0.63	39.99962155	-104.93979192
452.50	0.97	241.15	452.46	0.72	-3.72	0.28	0.23	39.99961997	-104.93979627
542.50	1.10	246.68	542.45	0.01	-5.18	0.18	1.28	39.99961802	-104.93980148
632.50	0.53	309.70	632.44	-0.07	-6.29	1.09	1.63	39.99961781	-104.93980545
722.50	0.26	329.48	722.44	0.37	-6.71	0.33	1.31	39.99961903	-104.93980697
812.50	0.97	288.08	812.43	0.79	-7.54	0.88	1.11	39.99962016	-104.93980992
902.50	0.26	253.45	902.43	0.96	-8.46	0.86	1.17	39.99962065	-104.93981321
992.50	0.79	246.33	992.42	0.66	-9.23	0.59	1.66	39.99961981	-104.93981593
1082.50	0.66	236.05	1082.41	0.12	-10.23	0.20	2.43	39.99961833	-104.93981950
1172.50	0.57	292.12	1172.41	0.00	-11.07	0.65	2.76	39.99961800	-104.93982251
1262.50	0.40	256.79	1262.41	0.09	-11.79	0.37	2.84	39.99961826	-104.93982508
1352.50	0.70	263.29	1352.40	-0.04	-12.64	0.34	3.18	39.99961789	-104.93982812
1442.50	0.57	260.83	1442.40	-0.18	-13.63	0.15	3.56	39.99961752	-104.93983165
1532.50	0.75	290.72	1532.39	-0.04	-14.62	0.42	3.68	39.99961789	-104.93983519
1622.50	0.04	43.83	1622.39	0.19	-15.15	0.85	3.58	39.99961853	-104.93983708
1726.50	0.35	243.78	1726.39	0.08	-15.41	0.37	3.76	39.99961821	-104.93983801
1779.00	0.39	264.85	1778.89	-0.01	-15.74	0.27	3.92	39.99961797	-104.93983916
1798.00	0.42	271.08	1797.89	-0.01	-15.87	0.27	3.96	39.99961796	-104.93983964
1888.00	0.69	274.60	1887.88	0.04	-16.74	0.30	4.13	39.99961810	-104.93984275
1977.00	0.69	254.55	1976.88	-0.06	-17.79	0.27	4.49	39.99961782	-104.93984650
2067.00	0.80	237.28	2066.87	-0.55	-18.84	0.28	5.22	39.99961649	-104.93985025
2156.00	0.40	195.21	2155.86	-1.18	-19.45	0.64	5.98	39.99961475	-104.93985241
2246.00	0.59	186.26	2245.86	-1.95	-19.58	0.23	6.76	39.99961265	-104.93985288
2335.00	0.46	171.64	2334.86	-2.76	-19.58	0.21	7.54	39.99961043	-104.93985288
2425.00	0.40	153.06	2424.85	-3.39	-19.38	0.17	8.11	39.99960868	-104.93985218
2514.00	0.72	164.52	2513.85	-4.21	-19.09	0.38	8.83	39.99960644	-104.93985115
2604.00	0.40	122.50	2603.85	-4.92	-18.68	0.56	9.41	39.99960448	-104.93984966
2693.00	0.39	122.15	2692.84	-5.25	-18.16	0.00	9.60	39.99960358	-104.93984781
2783.00	0.22	15.05	2782.84	-5.25	-17.85	0.56	9.52	39.99960359	-104.93984672
2872.00	2.83	291.12	2871.81	-4.29	-19.86	3.16	9.10	39.99960622	-104.93985388
2962.00	5.69	284.36	2961.55	-2.38	-26.25	3.22	8.84	39.99961146	-104.93987671
3051.00	8.70	290.63	3049.84	1.08	-36.83	3.49	8.11	39.99962097	-104.93991446
3141.00	11.56	293.73	3138.43	7.11	-51.46	3.23	5.91	39.99963752	-104.93996668
3230.00	14.80	288.24	3225.08	14.26	-70.43	3.90	3.70	39.99965715	-104.94003437
3319.00	17.97	275.99	3310.48	19.25	-94.89	5.25	4.95	39.99967085	-104.94012169
3409.00	20.48	270.46	3395.46	20.83	-124.45	3.44	10.78	39.99967518	-104.94022720
3498.00	23.02	269.27	3478.11	20.73	-157.42	2.90	19.07	39.99967491	-104.94034490
3588.00	24.98	269.32	3560.33	20.28	-194.03	2.18	28.61	39.99967368	-104.94047554
3677.00	27.36	272.69	3640.21	21.02	-233.25	3.15	37.66	39.99967570	-104.94061556
3767.00	29.83	275.68	3719.23	24.21	-276.19	3.17	45.25	39.99968444	-104.94076883
3856.00	30.23	275.96	3796.28	28.72	-320.50	0.48	51.90	39.99969684	-104.94092699
3946.00	30.17	276.46	3874.06	33.62	-365.51	0.29	58.35	39.99971028	-104.94108763
4035.00	30.09	275.93	3951.04	38.44	-409.92	0.31	64.72	39.99972352	-104.94124615
4125.00	29.62	276.99	4029.09	43.48	-454.44	0.79	70.92	39.99973734	-104.94140505
4214.00	29.50	277.31	4106.51	48.94	-498.01	0.22	76.46	39.99975234	-104.94156055
4304.00	29.82	277.39	4184.72	54.64	-542.18	0.36	81.93	39.99976798	-104.94171821
4393.00	30.01	277.20	4261.86	60.28	-586.20	0.24	87.42	39.99978345	-104.94187535
4483.00	29.83	276.12	4339.87	65.48	-630.79	0.63	93.47	39.99979774	-104.94203450
4572.00	29.15	275.99	4417.33	70.11	-674.36	0.77	99.83	39.99981042	-104.94219000
4661.00	29.82	276.37	4494.81	74.82	-717.91	0.78	106.09	39.99982337	-104.94234545
4751.00	30.12	278.79	4572.78	80.76	-762.46	1.38	111.42	39.99983966	-104.94250449
4840.00	30.19	278.90	4649.73	87.63	-806.64	0.10	115.75	39.99985852	-104.94266217
4930.00	29.90	279.47	4727.64	94.82	-851.12	0.45	119.85	39.99987826	-104.94282095
5019.00	30.23	275.98	4804.67	100.81	-895.29	2.00	125.04	39.99989468	-104.94297860
5109.00	29.95	272.71	4882.55	104.23	-940.27	1.85	132.91	39.99990408	-104.94313913
5198.00	25.85	260.01	4961.26	101.91	-981.62	8.09	145.44	39.99989771	-104.94328674
5288.00	28.31	265.87	5041.40	96.97	-1022.24	4.03	160.33	39.99988413	-104.94343174
5377.00	31.72	271.27	5118.46	95.97	-1066.71	4.88	172.36	39.99988138	-104.94359043
5467.00	32.23	277.80	5194.83	99.75	-1114.15	3.88	180.50	39.99989176	-104.94375978
5556.00	31.92	277.52	5270.25	106.05	-1160.99	0.39	186.05	39.99990905	-104.94392697
5646.00	32.23	277.30	5346.51	112.21	-1208.38	0.37	191.87	39.99992596	-104.94409613
5735.00	31.00	277.92	5422.30	118.39	-1254.63	1.43	197.39	39.99994290	-104.94426119
5825.00	30.53	277.09	5499.63	124.40	-1300.27	0.70	202.91	39.99995941	-104.94442410

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
5915.00	29.44	278.87	5577.59	130.64	-1344.81	1.56	207.96	39.99997651	-104.94458308
6004.00	29.47	280.10	5655.09	137.85	-1387.97	0.68	211.71	39.99999630	-104.94473715
6094.00	26.71	278.36	5734.48	144.67	-1429.79	3.20	215.50	40.00001503	-104.94488641
6183.00	29.43	277.74	5813.00	150.53	-1471.25	3.07	220.14	40.00003109	-104.94503441
6272.00	30.57	277.47	5890.08	156.41	-1515.36	1.29	225.41	40.00004724	-104.94519184
6361.00	31.07	278.21	5966.51	162.64	-1560.53	0.71	230.62	40.00006431	-104.94535308
6451.00	30.53	279.24	6043.81	169.62	-1606.08	0.84	235.18	40.00008349	-104.94551566
6540.00	30.80	276.67	6120.37	175.90	-1651.03	1.50	240.28	40.00010071	-104.94567609
6629.00	30.26	276.60	6197.03	181.12	-1695.93	0.61	246.39	40.00011504	-104.94583638
6719.00	31.00	275.52	6274.48	185.96	-1741.53	1.02	253.05	40.00012831	-104.94599913
6808.00	30.59	276.27	6350.93	190.64	-1786.85	0.63	259.79	40.00014114	-104.94616091
6898.00	30.81	276.43	6428.31	195.72	-1832.52	0.26	266.22	40.00015508	-104.94632391
6987.00	30.54	276.20	6504.86	200.71	-1877.65	0.33	272.61	40.00016878	-104.94648500
7077.00	31.17	276.16	6582.12	205.68	-1923.54	0.70	279.21	40.00018241	-104.94664879
7166.00	28.36	275.70	6659.37	210.25	-1967.48	3.17	285.71	40.00019495	-104.94680564
7255.00	29.53	275.32	6737.25	214.39	-2010.36	1.33	292.37	40.00020629	-104.94695867
7345.00	29.87	275.75	6815.43	218.69	-2054.74	0.45	299.25	40.00021809	-104.94711709
7434.00	30.11	275.52	6892.52	223.06	-2099.01	0.30	306.03	40.00023007	-104.94727511
7524.00	29.48	275.29	6970.62	227.27	-2143.53	0.71	313.02	40.00024163	-104.94743403
7613.00	24.06	266.47	7050.08	228.17	-2183.49	7.54	322.08	40.00024409	-104.94757666
7703.00	29.50	271.92	7130.41	227.79	-2223.99	6.63	332.53	40.00024302	-104.94772120
7792.00	31.82	255.34	7207.10	222.57	-2268.67	9.82	348.70	40.00022870	-104.94788070
7882.00	35.26	240.36	7282.24	203.68	-2314.30	9.93	378.34	40.00017683	-104.94804354
7971.00	40.53	226.61	7352.57	171.03	-2357.75	11.16	420.77	40.00008719	-104.94819862
8060.00	46.62	215.87	7417.11	124.85	-2397.81	10.75	475.47	39.99996040	-104.94834159
8150.00	52.71	209.21	7475.37	67.00	-2434.50	8.80	540.62	39.99980160	-104.94847255
8240.00	60.66	200.38	7524.83	-1.22	-2465.73	12.04	614.47	39.99961431	-104.94858398
8329.00	68.74	194.48	7562.86	-77.92	-2489.66	10.87	694.71	39.99940376	-104.94866938
8418.00	76.33	189.15	7589.57	-160.94	-2506.95	10.26	779.42	39.99917586	-104.94873104
8455.74	79.94	187.65	7597.33	-197.47	-2512.34	10.32	816.15	39.99907558	-104.94875027
8508.00	84.95	185.63	7604.20	-248.91	-2518.32	10.32	867.46	39.99893437	-104.94877161
8597.00	90.22	181.13	7607.95	-337.62	-2523.55	7.78	954.68	39.99869084	-104.94879026
8686.00	89.97	176.40	7607.80	-426.58	-2521.64	5.32	1040.36	39.99844665	-104.94878338
8776.00	89.94	175.66	7607.87	-516.36	-2515.40	0.82	1125.78	39.99820019	-104.94876111
8865.00	89.88	178.10	7608.01	-605.22	-2510.56	2.74	1210.64	39.99795626	-104.94874379
8954.00	89.57	179.22	7608.44	-694.20	-2508.48	1.31	1296.30	39.99771202	-104.94873633
9044.00	90.09	181.03	7608.71	-784.19	-2508.68	2.09	1383.52	39.99746498	-104.94873699
9133.00	90.43	181.31	7608.30	-873.17	-2510.49	0.49	1470.15	39.99722072	-104.94874345
9223.00	89.97	180.74	7607.99	-963.16	-2512.10	0.81	1557.71	39.99697370	-104.94874916
9312.00	89.82	180.28	7608.15	-1052.15	-2512.90	0.54	1644.11	39.99672940	-104.94875196
9401.00	89.78	180.79	7608.46	-1141.15	-2513.73	0.57	1730.51	39.99648510	-104.94875489
9491.00	89.85	180.44	7608.75	-1231.14	-2514.69	0.40	1817.92	39.99623806	-104.94875831
9581.00	89.78	179.73	7609.04	-1321.14	-2514.83	0.79	1905.12	39.99599100	-104.94875875
9670.00	90.00	179.23	7609.22	-1410.14	-2514.02	0.61	1991.12	39.99574670	-104.94875584
9760.00	89.75	179.53	7609.41	-1500.13	-2513.04	0.43	2078.04	39.99549966	-104.94875233
9849.00	89.72	179.62	7609.82	-1589.13	-2512.38	0.11	2164.08	39.99525535	-104.94874994
9938.00	90.99	180.04	7609.27	-1678.12	-2512.12	1.50	2250.21	39.99501105	-104.94874896
10028.00	91.75	180.40	7607.12	-1768.10	-2512.47	0.93	2337.44	39.99476407	-104.94875016
10118.00	91.45	179.85	7604.61	-1858.06	-2512.66	0.70	2424.63	39.99451711	-104.94875083
10207.00	91.91	180.03	7602.00	-1947.02	-2512.57	0.55	2510.77	39.99427290	-104.94875047
10297.00	91.69	180.10	7599.17	-2036.98	-2512.67	0.26	2597.93	39.99402597	-104.94875080
10386.00	91.66	180.07	7596.57	-2125.94	-2512.80	0.05	2684.12	39.99378176	-104.94875124
10476.00	91.57	180.74	7594.03	-2215.90	-2513.44	0.75	2771.42	39.99353481	-104.94875348
10565.00	91.72	180.45	7591.48	-2304.86	-2514.36	0.37	2857.81	39.99329061	-104.94875674
10655.00	91.69	181.21	7588.80	-2394.81	-2515.67	0.84	2945.26	39.99304368	-104.94876136
10744.00	91.66	180.42	7586.20	-2483.76	-2516.93	0.89	3031.73	39.99279950	-104.94876584
10834.00	91.69	180.54	7583.57	-2573.72	-2517.68	0.14	3119.05	39.99255256	-104.94876850
10923.00	91.82	180.70	7580.84	-2662.67	-2518.65	0.23	3205.44	39.99230837	-104.94877190
11013.00	91.66	180.47	7578.11	-2752.63	-2519.57	0.31	3292.80	39.99206144	-104.94877515
11102.00	91.85	180.68	7575.38	-2841.58	-2520.46	0.32	3379.18	39.99181726	-104.94877830
11192.00	91.72	180.64	7572.58	-2931.53	-2521.49	0.15	3466.56	39.99157033	-104.94878197
11282.00	91.78	180.65	7569.83	-3021.48	-2522.51	0.07	3553.94	39.99132341	-104.94878555
11371.00	92.06	180.43	7566.85	-3110.43	-2523.35	0.40	3640.30	39.99107924	-104.94878851
11460.00	91.69	180.67	7563.94	-3199.38	-2524.20	0.50	3726.66	39.99083507	-104.94879152
11550.00	91.79	180.05	7561.21	-3289.33	-2524.76	0.70	3813.93	39.99058813	-104.94879351
11639.00	91.26	180.08	7558.84	-3378.30	-2524.87	0.60	3900.13	39.99034391	-104.94879384
11729.00	91.45	180.11	7556.71	-3468.28	-2525.01	0.21	3987.32	39.99009692	-104.94879434
11818.00	91.26	179.92	7554.60	-3557.25	-2525.04	0.30	4073.50	39.98985267	-104.94879439
11908.00	91.35	179.99	7552.55	-3647.23	-2524.97	0.13	4160.63	39.98960568	-104.94879410
11997.00	91.51	179.80	7550.33	-3736.20	-2524.80	0.28	4246.77	39.98936144	-104.94879349
12086.00	91.60	180.23	7547.92	-3825.17	-2524.83	0.49	4332.94	39.98911722	-104.94879354
12176.00	91.63	179.93	7545.38	-3915.13	-2524.95	0.33	4420.11	39.98887026	-104.94879396
12265.00	91.32	179.63	7543.09	-4004.10	-2524.61	0.48	4506.20	39.98862603	-104.94879270
12355.00	91.85	180.15	7540.60	-4094.06	-2524.44	0.82	4593.30	39.98837907	-104.94879205
12444.00	91.39	180.42	7538.08	-4183.03	-2524.88	0.60	4679.57	39.98813486	-104.94879360
12534.00	91.48	180.42	7535.83	-4273.00	-2525.54	0.10	4766.88	39.98788788	-104.94879592
12624.00	91.57	180.44	7533.44	-4362.96	-2526.22	0.10	4854.18	39.98764092	-104.94879830
12713.00	91.38	179.97	7531.14	-4451.93	-2526.53	0.57	4940.44	39.98739669	-104.94879940
12803.00	91.69	180.26	7528.73	-4541.90	-2526.72	0.47	5027.62	39.98714972	-104.94880002
12892.00	91.42	180.41	7526.32	-4630.86	-2527.24	0.35	5113.92	39.98690550	-104.94880184
12982.00	91.57	181.16	7523.97	-4720.83	-2528.47	0.85	5201.36	39.98665855	-104.94880621
13071.00	91.51	180.35	7521.58	-4809.78	-2529.64	0.91	5287.82	39.98641435	-104.94881036
13161.00	91.48	180.97	7519.23	-4899.75	-2530.68	0.69	5375.21	39.98616739	-104.94881402
13250.00	91.51	181.04	7516.91	-4988.70	-2532.24	0.09	5461.76	39.98592320	-104.94881956
13339.00	91.48	180.94	7514.59	-5077.66	-2533.77	0.12	5548.30	39.98567900	-104.94882501
13429.00	91.48	180.67	7512.26	-5167.62	-2535.04	0.30	5635.75	39.98543205	-104.94882949
13519.00	91.48	180.23	7509.94	-5257.59	-2535.74	0.49	5723.07	39.98518509	-104.94883198
13608.00	91.51	181.26	7507.62	-5346.55	-2536.90	1.16	5809.52	39.98494088	-104.94883607
13698.00	91.45	180.49	7505.29	-5436.51	-2538.28	0.86	5896.99	39.98469393	-104.94884094
13787.00	90.92	179.88	7503.45	-5525.49	-2538.56	0.91	5983.25	39.98444967	-104.94884194
13877.00	90.09	179.20	7502.66	-5615.48	-2537.84	1.19	6070.23	39.98420264	-104.94883933

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	DLS [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
13966.00	89.54	180.92	7502.94	-5704.48	-2537.93	2.03	6156.45	39.98395834	-104.94883963
14056.00	90.18	181.45	7503.16	-5794.46	-2539.79	0.92	6244.07	39.98371133	-104.94884623
14145.00	90.52	181.06	7502.62	-5883.43	-2541.74	0.58	6330.73	39.98346708	-104.94885316
14235.00	90.77	179.74	7501.61	-5973.42	-2542.37	1.49	6418.05	39.98322005	-104.94885537
14324.00	91.01	178.46	7500.23	-6062.40	-2540.97	1.46	6503.89	39.98297580	-104.94885035
14414.00	89.51	177.37	7499.82	-6152.33	-2537.70	2.06	6590.18	39.98272892	-104.94883863
14503.00	89.97	177.36	7500.22	-6241.24	-2533.61	0.52	6675.27	39.98248487	-104.94882400
14593.00	90.09	178.67	7500.17	-6331.18	-2530.49	1.46	6761.62	39.98223797	-104.94881284
14682.00	88.89	178.21	7500.97	-6420.14	-2528.07	1.44	6847.18	39.98199376	-104.94880416
14772.00	88.06	178.54	7503.36	-6510.08	-2525.52	0.99	6933.65	39.98174689	-104.94879503
14861.00	87.20	178.38	7507.04	-6598.97	-2523.13	0.98	7019.15	39.98150288	-104.94878647
14951.00	87.63	178.10	7511.10	-6688.83	-2520.37	0.57	7105.51	39.98125619	-104.94877658
15040.00	88.80	179.15	7513.87	-6777.76	-2518.23	1.77	7191.11	39.98101207	-104.94876893
15130.00	89.32	180.29	7515.35	-6867.75	-2517.79	1.39	7278.16	39.98076506	-104.94876733
15219.00	88.68	180.01	7516.90	-6956.73	-2518.03	0.78	7364.41	39.98052078	-104.94876813
15309.00	89.29	180.24	7518.50	-7046.72	-2518.22	0.72	7451.61	39.98027376	-104.94876880
15398.00	88.74	179.82	7520.03	-7135.70	-2518.27	0.78	7537.81	39.98002949	-104.94876893
15488.00	89.51	180.71	7521.40	-7225.69	-2518.68	1.31	7625.08	39.97978247	-104.94877039
15577.00	89.63	179.93	7522.07	-7314.68	-2519.18	0.89	7711.40	39.97953817	-104.94877213
15667.00	89.32	180.23	7522.89	-7404.68	-2519.31	0.48	7798.60	39.97929112	-104.94877254
15756.00	89.42	180.32	7523.87	-7493.67	-2519.73	0.15	7884.90	39.97904682	-104.94877403
15846.00	88.89	179.70	7525.20	-7583.66	-2519.75	0.91	7972.06	39.97879979	-104.94877406
15935.00	89.14	179.66	7526.73	-7672.65	-2519.25	0.28	8058.13	39.97855552	-104.94877225
16024.00	89.23	179.87	7528.00	-7761.64	-2518.89	0.26	8144.23	39.97831123	-104.94877092
16114.00	89.32	179.74	7529.13	-7851.63	-2518.58	0.18	8231.32	39.97806420	-104.94876979
16204.00	88.65	179.72	7530.73	-7941.62	-2518.16	0.74	8318.37	39.97781718	-104.94876825
16293.00	89.14	179.57	7532.44	-8030.60	-2517.61	0.58	8404.42	39.97757292	-104.94876625
16383.00	89.23	179.01	7533.73	-8120.58	-2516.49	0.63	8491.30	39.97732590	-104.94876224
16473.00	88.95	179.43	7535.15	-8210.56	-2515.27	0.56	8578.15	39.97707890	-104.94875783
16562.00	88.98	179.73	7536.76	-8299.54	-2514.61	0.34	8664.17	39.97683463	-104.94875547
16652.00	89.14	179.02	7538.24	-8389.53	-2513.63	0.81	8751.08	39.97658763	-104.94875194
16742.00	89.14	179.25	7539.59	-8479.51	-2512.27	0.26	8837.89	39.97634062	-104.94874706
16831.00	88.86	179.12	7541.14	-8568.48	-2511.01	0.35	8923.76	39.97609637	-104.94874251
16921.00	89.54	179.49	7542.40	-8658.47	-2509.92	0.86	9010.65	39.97584936	-104.94873858
17011.00	90.12	180.09	7542.67	-8748.46	-2509.59	0.93	9097.73	39.97560230	-104.94873737
17100.00	91.02	181.34	7541.78	-8837.45	-2510.70	1.73	9184.20	39.97535803	-104.94874130
17190.00	89.91	180.91	7541.05	-8927.43	-2512.46	1.32	9271.79	39.97511103	-104.94874758
17280.00	90.03	181.33	7541.10	-9017.41	-2514.22	0.49	9359.38	39.97486402	-104.94875382
17369.00	91.54	181.24	7539.88	-9106.38	-2516.22	1.70	9446.05	39.97461980	-104.94876091
17458.00	91.45	181.35	7537.56	-9195.33	-2518.23	0.16	9532.70	39.97437563	-104.94876805
17548.00	91.54	180.74	7535.21	-9285.28	-2519.87	0.68	9620.24	39.97412870	-104.94877387
17637.00	91.51	180.62	7532.84	-9374.24	-2520.93	0.14	9706.66	39.97388449	-104.94877761
17726.00	91.45	180.84	7530.54	-9463.20	-2522.06	0.26	9793.11	39.97364027	-104.94878162
17816.00	91.41	180.70	7528.29	-9553.17	-2523.27	0.16	9880.55	39.97339331	-104.94878590
17861.20	91.43	180.57	7527.17	-9598.35	-2523.77	0.29	9924.44	39.97326928	-104.94878767
17872.72	91.44	180.54	7526.89	-9609.87	-2523.88	0.29	9935.62	39.97323767	-104.94878806
17906.00	91.45	180.44	7526.05	-9643.14	-2524.16	0.29	9967.91	39.97314634	-104.94878906
17995.00	91.51	180.72	7523.75	-9732.10	-2525.06	0.32	10054.31	39.97290212	-104.94879224
18078.00	91.38	180.90	7521.66	-9815.07	-2526.24	0.27	10134.96	39.97267438	-104.94879640
18091.67	91.38	180.90	7521.33	-9828.73	-2526.45	0.00	10148.25	39.97263687	-104.94879716
18102.00	91.38	180.90	7521.08	-9839.06	-2526.61	0.00	10158.29	39.97260852	-104.94879773

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1779.00	1778.89	-0.01	-15.74	39.99961797	-104.93983916	9.625" Csg: 1779 MD/TVD
8455.74	7597.33	-197.47	-2512.34	39.99907558	-104.94875027	460 Setback: 8456 / 7597 MD/TVD, 460 FNL, 2358 FEL Sec 01
17861.20	7527.17	-9598.35	-2523.77	39.97326928	-104.94878767	Btm Toe Sub: 17,861 / 7527 MD/TVD, 472 FSL, 2384 FEL Sec 12
17872.72	7526.89	-9609.87	-2523.88	39.97323767	-104.94878806	460 Setback: 17,873 / 7527 MD/TVD, 460 FSL, 2384 FEL Sec 12
18091.67	7521.33	-9828.73	-2526.45	39.97263687	-104.94879716	PBTD: 18,092 / 7521 MD/TVD, 241 FSL, 2387 FEL Sec 12
18102.00	7521.08	-9839.06	-2526.61	39.97260852	-104.94879773	5.5" Csg: 18,102 / 7521 MD/TVD, 231 FSL, 2387 FEL Sec 12
18102.00	7521.08	-9839.06	-2526.61	39.97260852	-104.94879773	BHL: 18,102 / 7521 MD/TVD, 231 FSL, 2387 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	1779.00	1778.89	-0.01	-15.74
8.500	1779.00	1778.89	-0.01	-15.74	18102.00	7521.08	-9839.06	-2526.61

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	1779.00	1778.89	-0.01	-15.74
5 1/2in Casing	0.00	0.00	0.00	0.00	18102.00	7521.08	-9839.06	-2526.61

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
604245	As Drilled - 20190821	18102.00	7521.08	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 194.40 degrees
Bottom hole distance is 10158.29 Feet on azimuth 194.40 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by
Date Printed: