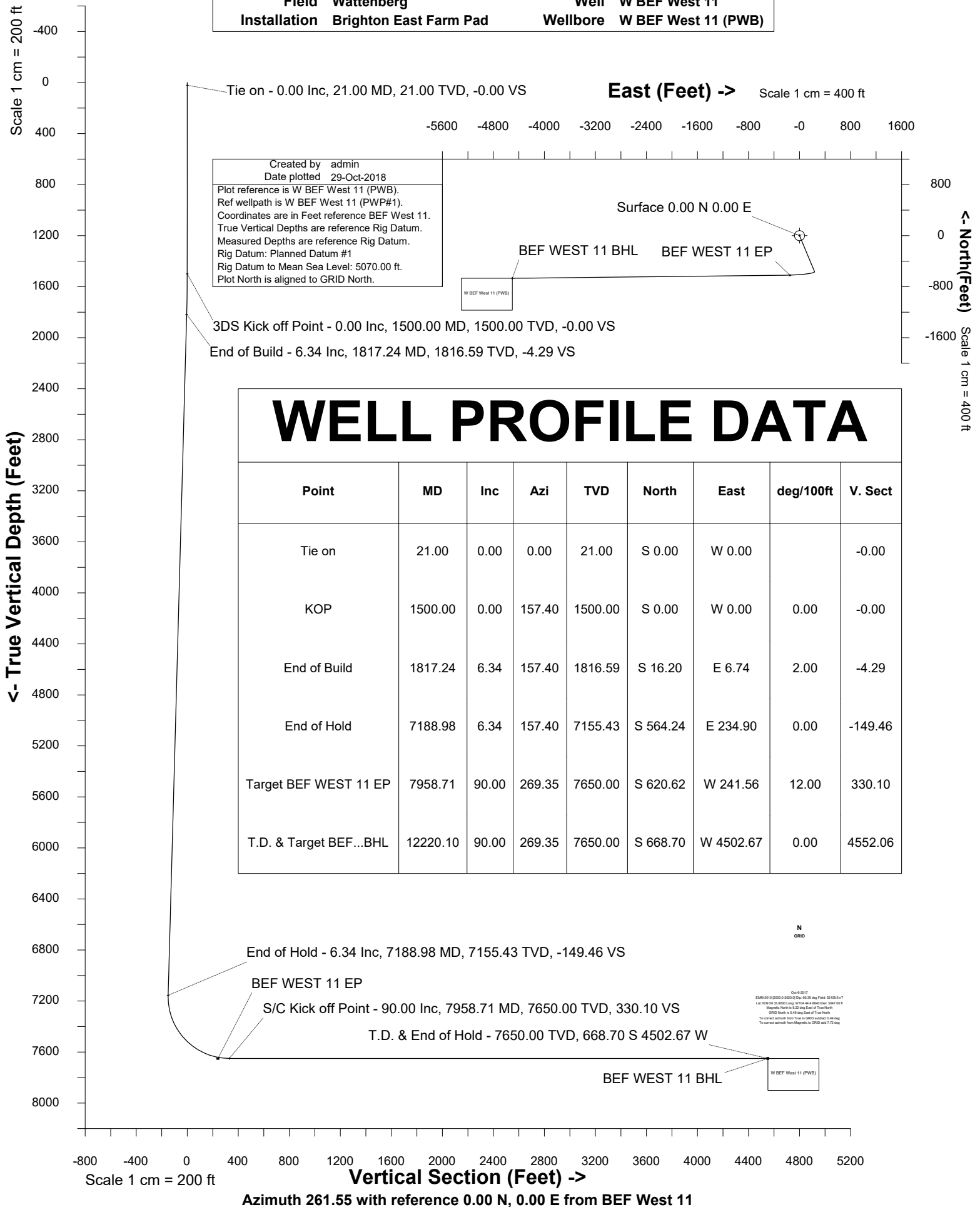


Petro Operating Company			
Location	Weld County, CO	Slot	BEF West 11
Field	Wattenberg	Well	W BEF West 11
Installation	Brighton East Farm Pad	Wellbore	W BEF West 11 (PWB)

Slot BEF West 11

Well W BEF West 11

Wellbore W BEF West 11 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 11 (PWB)



Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 11	39.99498000	-104.73461000	1241943.6416	3214439.8781	812.52N	15.40E	2.00

Declination

Date	Source	Time
Oct-6-2017	EMM-2015 [2000.0-2020.0]	14:35

Installation Details

Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Brighton East Farm Pad	39.99275000	-104.73469000	1241131.1481	3214424.4758	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Summary Wellpath

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	Vertical Depth SS	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]
21.00	0.00	0.000	21.00	-5049.00	0.00N	0.00E		0.00
1500.00	0.00	157.400	1500.00	-3570.00	0.00N	0.00E	==>	0.00
1817.24	6.34	157.400	1816.59	-3253.41	16.20S	6.74E	2.00	-4.29
7188.98	6.34	157.400	7155.43	2085.43	564.24S	234.90E	==>	-149.46
7958.71	90.00	269.350	7650.00	2580.00	620.62S	241.56W	12.00	330.10
12220.10	90.00	269.350	7650.00	2580.00	668.70S	4502.67W	==>	4552.06

Interpolated Wellpath

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	39.99498000	-104.73461000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1500.00	0.00	157.400	1500.00	0.00N	0.00E	==>	0.00	39.99498000	-104.73461000
1600.00	2.00	157.400	1599.98	1.61S	0.67E	2.00	-0.43	39.99497556	-104.73460766
1700.00	4.00	157.400	1699.84	6.44S	2.68E	2.00	-1.71	39.99496225	-104.73460063
1800.00	6.00	157.400	1799.45	14.49S	6.03E	2.00	-3.84	39.99494009	-104.73458892
1817.24	6.34	157.400	1816.59	16.20S	6.74E	2.00	-4.29	39.99493537	-104.73458643
1900.00	6.34	157.400	1898.85	24.64S	10.26E	==>	-6.53	39.99491211	-104.73457415
2000.00	6.34	157.400	1998.23	34.85S	14.51E	==>	-9.23	39.99488401	-104.73455930
2100.00	6.34	157.400	2097.62	45.05S	18.75E	==>	-11.93	39.99485590	-104.73454446
2200.00	6.34	157.400	2197.01	55.25S	23.00E	==>	-14.64	39.99482780	-104.73452961
2300.00	6.34	157.400	2296.40	65.45S	27.25E	==>	-17.34	39.99479969	-104.73451477
2400.00	6.34	157.400	2395.78	75.65S	31.50E	==>	-20.04	39.99477158	-104.73449993
2500.00	6.34	157.400	2495.17	85.86S	35.74E	==>	-22.74	39.99474348	-104.73448508
2600.00	6.34	157.400	2594.56	96.06S	39.99E	==>	-25.45	39.99471537	-104.73447024
2700.00	6.34	157.400	2693.95	106.26S	44.24E	==>	-28.15	39.99468727	-104.73445539
2800.00	6.34	157.400	2793.33	116.46S	48.48E	==>	-30.85	39.99465916	-104.73444055
2900.00	6.34	157.400	2892.72	126.66S	52.73E	==>	-33.55	39.99463106	-104.73442571

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5070.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 261.550 degrees
Bottom hole distance is 4552.06 Feet on azimuth 261.55 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
3000.00	6.34	157.400	2992.11	136.87S	56.98E	==>	-36.25	39.99460295	-104.73441086
3100.00	6.34	157.400	3091.50	147.07S	61.23E	==>	-38.96	39.99457485	-104.73439602
3200.00	6.34	157.400	3190.88	157.27S	65.47E	==>	-41.66	39.99454674	-104.73438118
3300.00	6.34	157.400	3290.27	167.47S	69.72E	==>	-44.36	39.99451863	-104.73436633
3400.00	6.34	157.400	3389.66	177.68S	73.97E	==>	-47.06	39.99449053	-104.73435149
3500.00	6.34	157.400	3489.05	187.88S	78.22E	==>	-49.77	39.99446242	-104.73433664
3600.00	6.34	157.400	3588.43	198.08S	82.46E	==>	-52.47	39.99443432	-104.73432180
3700.00	6.34	157.400	3687.82	208.28S	86.71E	==>	-55.17	39.99440621	-104.73430696
3800.00	6.34	157.400	3787.21	218.48S	90.96E	==>	-57.87	39.99437811	-104.73429211
3900.00	6.34	157.400	3886.60	228.69S	95.20E	==>	-60.58	39.99435000	-104.73427727
4000.00	6.34	157.400	3985.98	238.89S	99.45E	==>	-63.28	39.99432189	-104.73426243
4100.00	6.34	157.400	4085.37	249.09S	103.70E	==>	-65.98	39.99429379	-104.73424758
4200.00	6.34	157.400	4184.76	259.29S	107.95E	==>	-68.68	39.99426568	-104.73423274
4300.00	6.34	157.400	4284.15	269.50S	112.19E	==>	-71.39	39.99423758	-104.73421789
4400.00	6.34	157.400	4383.53	279.70S	116.44E	==>	-74.09	39.99420947	-104.73420305
4500.00	6.34	157.400	4482.92	289.90S	120.69E	==>	-76.79	39.99418137	-104.73418821
4600.00	6.34	157.400	4582.31	300.10S	124.93E	==>	-79.49	39.99415326	-104.73417336
4700.00	6.34	157.400	4681.70	310.30S	129.18E	==>	-82.20	39.99412516	-104.73415852
4800.00	6.34	157.400	4781.08	320.51S	133.43E	==>	-84.90	39.99409705	-104.73414368
4900.00	6.34	157.400	4880.47	330.71S	137.68E	==>	-87.60	39.99406894	-104.73412883
5000.00	6.34	157.400	4979.86	340.91S	141.92E	==>	-90.30	39.99404084	-104.73411399
5100.00	6.34	157.400	5079.25	351.11S	146.17E	==>	-93.01	39.99401273	-104.73409915
5200.00	6.34	157.400	5178.63	361.32S	150.42E	==>	-95.71	39.99398463	-104.73408430
5300.00	6.34	157.400	5278.02	371.52S	154.67E	==>	-98.41	39.99395652	-104.73406946
5400.00	6.34	157.400	5377.41	381.72S	158.91E	==>	-101.11	39.99392842	-104.73405462
5500.00	6.34	157.400	5476.80	391.92S	163.16E	==>	-103.82	39.99390031	-104.73403977
5600.00	6.34	157.400	5576.18	402.12S	167.41E	==>	-106.52	39.99387220	-104.73402493
5700.00	6.34	157.400	5675.57	412.33S	171.65E	==>	-109.22	39.99384410	-104.73401009
5800.00	6.34	157.400	5774.96	422.53S	175.90E	==>	-111.92	39.99381599	-104.73399524
5900.00	6.34	157.400	5874.35	432.73S	180.15E	==>	-114.63	39.99378789	-104.73398040
6000.00	6.34	157.400	5973.73	442.93S	184.40E	==>	-117.33	39.99375978	-104.73396555
6100.00	6.34	157.400	6073.12	453.14S	188.64E	==>	-120.03	39.99373168	-104.73395071
6200.00	6.34	157.400	6172.51	463.34S	192.89E	==>	-122.73	39.99370357	-104.73393587
6300.00	6.34	157.400	6271.90	473.54S	197.14E	==>	-125.44	39.99367546	-104.73392102
6400.00	6.34	157.400	6371.28	483.74S	201.39E	==>	-128.14	39.99364736	-104.73390618
6500.00	6.34	157.400	6470.67	493.94S	205.63E	==>	-130.84	39.99361925	-104.73389134
6600.00	6.34	157.400	6570.06	504.15S	209.88E	==>	-133.54	39.99359115	-104.73387649
6700.00	6.34	157.400	6669.45	514.35S	214.13E	==>	-136.25	39.99356304	-104.73386165
6800.00	6.34	157.400	6768.83	524.55S	218.37E	==>	-138.95	39.99353494	-104.73384681
6900.00	6.34	157.400	6868.22	534.75S	222.62E	==>	-141.65	39.99350683	-104.73383196
7000.00	6.34	157.400	6967.61	544.96S	226.87E	==>	-144.35	39.99347872	-104.73381712
7100.00	6.34	157.400	7067.00	555.16S	231.12E	==>	-147.06	39.99345062	-104.73380228
7188.98	6.34	157.400	7155.43	564.24S	234.90E	==>	-149.46	39.99342251	-104.73378797
7200.00	5.98	169.270	7166.39	565.36S	235.24E	12.00	-149.63	39.99342251	-104.73378789
7300.00	12.42	241.430	7265.31	575.66S	226.73E	12.00	-139.71	39.99339445	-104.73381856
7400.00	23.66	255.740	7360.28	585.78S	197.74E	12.00	-109.54	39.99336735	-104.73392235
7500.00	35.38	261.000	7447.16	595.29S	149.52E	12.00	-60.45	39.99334240	-104.73409473
7600.00	47.24	263.880	7522.15	603.76S	84.18E	12.00	5.42	39.99332070	-104.73432816
7700.00	59.14	265.820	7581.97	610.82S	4.59E	12.00	85.19	39.99330319	-104.73461244
7800.00	71.06	267.330	7624.00	616.18S	85.79W	12.00	175.38	39.99329063	-104.73493515
7900.00	82.99	268.630	7646.41	619.59S	183.00W	12.00	272.03	39.99328357	-104.73528218
7958.71	90.00	269.350	7650.00	620.62S	241.56W	12.00	330.10	39.99328213	-104.73549120
8000.00	90.00	269.350	7650.00	621.08S	282.84W	==>	371.01	39.99328183	-104.73563855
8100.00	90.00	269.350	7650.00	622.21S	382.83W	==>	470.08	39.99328110	-104.73599545
8200.00	90.00	269.350	7650.00	623.34S	482.83W	==>	569.16	39.99328036	-104.73635234
8300.00	90.00	269.350	7650.00	624.47S	582.82W	==>	668.23	39.99327963	-104.73670924
8400.00	90.00	269.350	7650.00	625.60S	682.81W	==>	767.31	39.99327890	-104.73706614
8500.00	90.00	269.350	7650.00	626.72S	782.81W	==>	866.38	39.99327816	-104.73742304

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Vertical Section is from 0.00N 0.00E on azimuth 261.550 degrees
Bottom hole distance is 4552.06 Feet on azimuth 261.55 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 11 (PWB)



Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
8600.00	90.00	269.350	7650.00	627.85S	882.80W	==>	965.46	39.99327742	-104.73777994
8700.00	90.00	269.350	7650.00	628.98S	982.80W	==>	1064.53	39.99327669	-104.73813683
8800.00	90.00	269.350	7650.00	630.11S	1082.79W	==>	1163.60	39.99327595	-104.73849373
8900.00	90.00	269.350	7650.00	631.24S	1182.78W	==>	1262.68	39.99327521	-104.73885063
9000.00	90.00	269.350	7650.00	632.37S	1282.78W	==>	1361.75	39.99327446	-104.73920753
9100.00	90.00	269.350	7650.00	633.49S	1382.77W	==>	1460.83	39.99327372	-104.73956443
9200.00	90.00	269.350	7650.00	634.62S	1482.76W	==>	1559.90	39.99327298	-104.73992132
9300.00	90.00	269.350	7650.00	635.75S	1582.76W	==>	1658.98	39.99327223	-104.74027822
9400.00	90.00	269.350	7650.00	636.88S	1682.75W	==>	1758.05	39.99327149	-104.74063512
9500.00	90.00	269.350	7650.00	638.01S	1782.74W	==>	1857.13	39.99327074	-104.74099202
9600.00	90.00	269.350	7650.00	639.14S	1882.74W	==>	1956.20	39.99326999	-104.74134892
9700.00	90.00	269.350	7650.00	640.26S	1982.73W	==>	2055.28	39.99326924	-104.74170581
9800.00	90.00	269.350	7650.00	641.39S	2082.73W	==>	2154.35	39.99326849	-104.74206271
9900.00	90.00	269.350	7650.00	642.52S	2182.72W	==>	2253.43	39.99326774	-104.74241961
10000.00	90.00	269.350	7650.00	643.65S	2282.71W	==>	2352.50	39.99326699	-104.74277651
10100.00	90.00	269.350	7650.00	644.78S	2382.71W	==>	2451.57	39.99326624	-104.74313341
10200.00	90.00	269.350	7650.00	645.90S	2482.70W	==>	2550.65	39.99326548	-104.74349030
10300.00	90.00	269.350	7650.00	647.03S	2582.69W	==>	2649.72	39.99326473	-104.74384720
10400.00	90.00	269.350	7650.00	648.16S	2682.69W	==>	2748.80	39.99326397	-104.74420410
10500.00	90.00	269.350	7650.00	649.29S	2782.68W	==>	2847.87	39.99326321	-104.74456100
10600.00	90.00	269.350	7650.00	650.42S	2882.67W	==>	2946.95	39.99326245	-104.74491789
10700.00	90.00	269.350	7650.00	651.55S	2982.67W	==>	3046.02	39.99326169	-104.74527479
10800.00	90.00	269.350	7650.00	652.67S	3082.66W	==>	3145.10	39.99326093	-104.74563169
10900.00	90.00	269.350	7650.00	653.80S	3182.66W	==>	3244.17	39.99326017	-104.74598859
11000.00	90.00	269.350	7650.00	654.93S	3282.65W	==>	3343.25	39.99325940	-104.74634549
11100.00	90.00	269.350	7650.00	656.06S	3382.64W	==>	3442.32	39.99325864	-104.74670238
11200.00	90.00	269.350	7650.00	657.19S	3482.64W	==>	3541.39	39.99325787	-104.74705928
11300.00	90.00	269.350	7650.00	658.31S	3582.63W	==>	3640.47	39.99325711	-104.74741618
11400.00	90.00	269.350	7650.00	659.44S	3682.62W	==>	3739.54	39.99325634	-104.74777308
11500.00	90.00	269.350	7650.00	660.57S	3782.62W	==>	3838.62	39.99325557	-104.74812998
11600.00	90.00	269.350	7650.00	661.70S	3882.61W	==>	3937.69	39.99325480	-104.74848687
11700.00	90.00	269.350	7650.00	662.83S	3982.60W	==>	4036.77	39.99325403	-104.74884377
11800.00	90.00	269.350	7650.00	663.96S	4082.60W	==>	4135.84	39.99325326	-104.74920067
11900.00	90.00	269.350	7650.00	665.08S	4182.59W	==>	4234.92	39.99325248	-104.74955757
12000.00	90.00	269.350	7650.00	666.21S	4282.59W	==>	4333.99	39.99325171	-104.74991446
12100.00	90.00	269.350	7650.00	667.34S	4382.58W	==>	4433.07	39.99325093	-104.75027136
12200.00	90.00	269.350	7650.00	668.47S	4482.57W	==>	4532.14	39.99325016	-104.75062826
12220.10	90.00	269.350	7650.00	668.70S	4502.67W	==>	4552.06	39.99325000	-104.75070000

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Vertical Section is from 0.00N 0.00E on azimuth 261.550 degrees
Bottom hole distance is 4552.06 Feet on azimuth 261.55 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 11 BHL	668.70S	4502.67W	7650.00	39.99325000	-104.75070000	1241274.97	3209937.36
BEF WEST 11 EP	620.62S	151.56W	7650.00	39.99328000	-104.73517000	1241323.05	3214288.33

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577626	Planned	2000.00	1998.23	WdW Rate Gyro	Standard	
577625	Planned	12220.10	7650.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes