

Petro Operating Company			
Location	Weld County, CO	Slot	BEF West 9
Field	Wattenberg	Well	W BEF West 9
Installation	Brighton East Farm Pad	Wellbore	W BEF West 9 (PWB)

Slot BEF West 9

Well W BEF West 9

Wellbore W BEF West 9 (PWB)

Created by	admin
Date plotted	29-Oct-2018
Plot reference is W BEF West 9 (PWB).	
Ref wellpath is W BEF West 9 (PWP#1).	
Coordinates are in Feet reference BEF West 9.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum: Planned Datum #1	
Rig Datum to Mean Sea Level: 5069.00 ft.	
Plot North is aligned to GRID North.	

**East (Feet) ->**

[illegible]

BEF WEST 9 EP

**< - North(Feet)** Scale 1 cm = 400 ft

### <- True Vertical Depth (Feet)

Scale 1 cm = 200 ft

N  
GRID

W BEF West 9 (PWB)

**Vertical Section (Feet) ->**

**Azimuth 255.87 with reference 0.00 N, 0.00 E from BEF West 9**



SYSDRILL  
Well Design Combined Report  
Wellbore: W BEF West 9 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 9	39.99489000	-104.73461000	1241910.8581	3214440.1611	779.74N	15.69E	1.00

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	-5048.00	0.00N	0.00E		0.00
1500.00	0.00	166.080	1500.00	-3569.00	0.00N	0.00E	==>	0.00
2053.58	11.07	166.080	2050.14	-3018.86	51.76S	12.82E	2.00	0.20
7057.87	11.07	166.080	6961.29	1892.29	984.55S	243.96E	==>	3.81
7828.92	90.00	269.350	7451.00	2382.00	1083.20S	231.96W	12.00	489.41
12090.40	90.00	269.350	7451.00	2382.00	1131.28S	4493.17W	==>	4633.39

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	39.99489000	-104.73461000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1500.00	0.00	166.080	1500.00	0.00N	0.00E	==>	0.00	39.99489000	-104.73461000
1600.00	2.00	166.080	1599.98	1.69S	0.42E	2.00	0.01	39.99488534	-104.73460855
1700.00	4.00	166.080	1699.84	6.77S	1.68E	2.00	0.03	39.99487137	-104.73460422
1800.00	6.00	166.080	1799.45	15.23S	3.77E	2.00	0.06	39.99484810	-104.73459700
1900.00	8.00	166.080	1898.70	27.06S	6.71E	2.00	0.10	39.99481556	-104.73458690
2000.00	10.00	166.080	1997.47	42.25S	10.47E	2.00	0.16	39.99477379	-104.73457394
2053.58	11.07	166.080	2050.14	51.76S	12.82E	2.00	0.20	39.99474763	-104.73456583
2100.00	11.07	166.080	2095.70	60.41S	14.97E	==>	0.23	39.99472383	-104.73455844
2200.00	11.07	166.080	2193.84	79.05S	19.59E	==>	0.31	39.99467255	-104.73454253
2300.00	11.07	166.080	2291.97	97.69S	24.21E	==>	0.38	39.99462128	-104.73452662
2400.00	11.07	166.080	2390.11	116.33S	28.82E	==>	0.45	39.99457000	-104.73451071
2500.00	11.07	166.080	2488.25	134.97S	33.44E	==>	0.52	39.99451872	-104.73449480
2600.00	11.07	166.080	2586.39	153.61S	38.06E	==>	0.59	39.99446745	-104.73447889
2700.00	11.07	166.080	2684.53	172.25S	42.68E	==>	0.67	39.99441617	-104.73446298
2800.00	11.07	166.080	2782.67	190.89S	47.30E	==>	0.74	39.99436490	-104.73444708
2900.00	11.07	166.080	2880.81	209.53S	51.92E	==>	0.81	39.99431362	-104.73443117

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig ( Planned Datum #1 5069.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 255.870 degrees  
Bottom hole distance is 4633.39 Feet on azimuth 255.87 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	11.07	166.080	2978.95	228.17S	56.54E	==>	0.88	39.99426234	-104.73441526
3100.00	11.07	166.080	3077.09	246.81S	61.15E	==>	0.96	39.99421107	-104.73439935
3200.00	11.07	166.080	3175.22	265.45S	65.77E	==>	1.03	39.99415979	-104.73438344
3300.00	11.07	166.080	3273.36	284.09S	70.39E	==>	1.10	39.99410852	-104.73436753
3400.00	11.07	166.080	3371.50	302.73S	75.01E	==>	1.17	39.99405724	-104.73435162
3500.00	11.07	166.080	3469.64	321.37S	79.63E	==>	1.24	39.99400596	-104.73433571
3600.00	11.07	166.080	3567.78	340.01S	84.25E	==>	1.32	39.99395469	-104.73431980
3700.00	11.07	166.080	3665.92	358.65S	88.87E	==>	1.39	39.99390341	-104.73430389
3800.00	11.07	166.080	3764.06	377.29S	93.49E	==>	1.46	39.99385214	-104.73428798
3900.00	11.07	166.080	3862.20	395.93S	98.10E	==>	1.53	39.99380086	-104.73427207
4000.00	11.07	166.080	3960.33	414.57S	102.72E	==>	1.61	39.99374958	-104.73425616
4100.00	11.07	166.080	4058.47	433.21S	107.34E	==>	1.68	39.99369831	-104.73424026
4200.00	11.07	166.080	4156.61	451.85S	111.96E	==>	1.75	39.99364703	-104.73422435
4300.00	11.07	166.080	4254.75	470.49S	116.58E	==>	1.82	39.99359576	-104.73420844
4400.00	11.07	166.080	4352.89	489.13S	121.20E	==>	1.89	39.99354448	-104.73419253
4500.00	11.07	166.080	4451.03	507.77S	125.82E	==>	1.97	39.99349320	-104.73417662
4600.00	11.07	166.080	4549.17	526.41S	130.43E	==>	2.04	39.99344193	-104.73416071
4700.00	11.07	166.080	4647.31	545.05S	135.05E	==>	2.11	39.99339065	-104.73414480
4800.00	11.07	166.080	4745.44	563.69S	139.67E	==>	2.18	39.99333938	-104.73412889
4900.00	11.07	166.080	4843.58	582.33S	144.29E	==>	2.26	39.99328810	-104.73411298
5000.00	11.07	166.080	4941.72	600.97S	148.91E	==>	2.33	39.99323682	-104.73409708
5100.00	11.07	166.080	5039.86	619.61S	153.53E	==>	2.40	39.99318555	-104.73408117
5200.00	11.07	166.080	5138.00	638.25S	158.15E	==>	2.47	39.99313427	-104.73406526
5300.00	11.07	166.080	5236.14	656.89S	162.77E	==>	2.54	39.99308300	-104.73404935
5400.00	11.07	166.080	5334.28	675.53S	167.38E	==>	2.62	39.99303172	-104.73403344
5500.00	11.07	166.080	5432.42	694.17S	172.00E	==>	2.69	39.99298044	-104.73401753
5600.00	11.07	166.080	5530.55	712.81S	176.62E	==>	2.76	39.99292917	-104.73400162
5700.00	11.07	166.080	5628.69	731.45S	181.24E	==>	2.83	39.99287789	-104.73398571
5800.00	11.07	166.080	5726.83	750.09S	185.86E	==>	2.90	39.99282661	-104.73396981
5900.00	11.07	166.080	5824.97	768.73S	190.48E	==>	2.98	39.99277534	-104.73395390
6000.00	11.07	166.080	5923.11	787.37S	195.10E	==>	3.05	39.99272406	-104.73393799
6100.00	11.07	166.080	6021.25	806.01S	199.72E	==>	3.12	39.99267279	-104.73392208
6200.00	11.07	166.080	6119.39	824.65S	204.33E	==>	3.19	39.99262151	-104.73390617
6300.00	11.07	166.080	6217.53	843.29S	208.95E	==>	3.27	39.99257023	-104.73389026
6400.00	11.07	166.080	6315.66	861.93S	213.57E	==>	3.34	39.99251896	-104.73387435
6500.00	11.07	166.080	6413.80	880.57S	218.19E	==>	3.41	39.99246768	-104.73385845
6600.00	11.07	166.080	6511.94	899.21S	222.81E	==>	3.48	39.99241641	-104.73384254
6700.00	11.07	166.080	6610.08	917.85S	227.43E	==>	3.55	39.99236513	-104.73382663
6800.00	11.07	166.080	6708.22	936.49S	232.05E	==>	3.63	39.99231385	-104.73381072
6900.00	11.07	166.080	6806.36	955.13S	236.66E	==>	3.70	39.99226258	-104.73379481
7000.00	11.07	166.080	6904.50	973.77S	241.28E	==>	3.77	39.99221130	-104.73377890
7057.87	11.07	166.080	6961.29	984.55S	243.96E	==>	3.81	39.99218163	-104.73376970
7100.00	11.07	192.640	7002.66	992.43S	244.04E	12.00	5.65	39.99216000	-104.73376963
7200.00	18.02	233.530	7099.63	1011.07S	229.45E	12.00	24.35	39.99210919	-104.73382229
7300.00	28.49	248.810	7191.46	1028.95S	194.64E	12.00	62.47	39.99206093	-104.73394705
7400.00	39.78	256.130	7274.13	1045.30S	141.15E	12.00	118.34	39.99201732	-104.73413846
7500.00	51.36	260.600	7344.04	1059.40S	71.31E	12.00	189.51	39.99198026	-104.73438816
7600.00	63.05	263.800	7398.11	1070.64S	11.84W	12.00	272.88	39.99195139	-104.73468522
7700.00	74.81	266.390	7434.01	1078.52S	104.64W	12.00	364.81	39.99193195	-104.73501667
7800.00	86.59	268.700	7450.14	1082.71S	203.06W	12.00	461.26	39.99192279	-104.73536803
7828.92	90.00	269.350	7451.00	1083.20S	231.96W	12.00	489.41	39.99192213	-104.73547119
7900.00	90.00	269.350	7451.00	1084.00S	303.03W	==>	558.53	39.99192161	-104.73572485
8000.00	90.00	269.350	7451.00	1085.13S	403.03W	==>	655.77	39.99192088	-104.73608174
8100.00	90.00	269.350	7451.00	1086.25S	503.02W	==>	753.01	39.99192015	-104.73643864
8200.00	90.00	269.350	7451.00	1087.38S	603.01W	==>	850.26	39.99191941	-104.73679553
8300.00	90.00	269.350	7451.00	1088.51S	703.01W	==>	947.50	39.99191868	-104.73715242
8400.00	90.00	269.350	7451.00	1089.64S	803.00W	==>	1044.74	39.99191794	-104.73750931
8500.00	90.00	269.350	7451.00	1090.77S	902.99W	==>	1141.99	39.99191720	-104.73786620

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Vertical Section is from 0.00N 0.00E on azimuth 255.870 degrees  
Bottom hole distance is 4633.39 Feet on azimuth 255.87 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by IPT  
Date Printed: 29-Oct-2018



SYS DRILL  
Well Design Combined Report  
Wellbore: W BEF West 9 (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	7451.00	1091.90S	1002.99W	==>	1239.23	39.99191647	-104.73822309
8700.00	90.00	269.350	7451.00	1093.02S	1102.98W	==>	1336.47	39.99191573	-104.73857998
8800.00	90.00	269.350	7451.00	1094.15S	1202.98W	==>	1433.71	39.99191499	-104.73893687
8900.00	90.00	269.350	7451.00	1095.28S	1302.97W	==>	1530.96	39.99191424	-104.73929376
9000.00	90.00	269.350	7451.00	1096.41S	1402.96W	==>	1628.20	39.99191350	-104.73965065
9100.00	90.00	269.350	7451.00	1097.54S	1502.96W	==>	1725.44	39.99191276	-104.74000754
9200.00	90.00	269.350	7451.00	1098.67S	1602.95W	==>	1822.69	39.99191201	-104.74036444
9300.00	90.00	269.350	7451.00	1099.79S	1702.94W	==>	1919.93	39.99191127	-104.74072133
9400.00	90.00	269.350	7451.00	1100.92S	1802.94W	==>	2017.17	39.99191052	-104.74107822
9500.00	90.00	269.350	7451.00	1102.05S	1902.93W	==>	2114.41	39.99190977	-104.74143511
9600.00	90.00	269.350	7451.00	1103.18S	2002.92W	==>	2211.66	39.99190902	-104.74179200
9700.00	90.00	269.350	7451.00	1104.31S	2102.92W	==>	2308.90	39.99190827	-104.74214889
9800.00	90.00	269.350	7451.00	1105.43S	2202.91W	==>	2406.14	39.99190752	-104.74250578
9900.00	90.00	269.350	7451.00	1106.56S	2302.91W	==>	2503.39	39.99190677	-104.74286267
10000.00	90.00	269.350	7451.00	1107.69S	2402.90W	==>	2600.63	39.99190601	-104.74321956
10100.00	90.00	269.350	7451.00	1108.82S	2502.89W	==>	2697.87	39.99190526	-104.74357645
10200.00	90.00	269.350	7451.00	1109.95S	2602.89W	==>	2795.11	39.99190450	-104.74393334
10300.00	90.00	269.350	7451.00	1111.08S	2702.88W	==>	2892.36	39.99190374	-104.74429023
10400.00	90.00	269.350	7451.00	1112.20S	2802.87W	==>	2989.60	39.99190299	-104.74464712
10500.00	90.00	269.350	7451.00	1113.33S	2902.87W	==>	3086.84	39.99190223	-104.74500402
10600.00	90.00	269.350	7451.00	1114.46S	3002.86W	==>	3184.09	39.99190147	-104.74536091
10700.00	90.00	269.350	7451.00	1115.59S	3102.85W	==>	3281.33	39.99190070	-104.74571780
10800.00	90.00	269.350	7451.00	1116.72S	3202.85W	==>	3378.57	39.99189994	-104.74607469
10900.00	90.00	269.350	7451.00	1117.85S	3302.84W	==>	3475.81	39.99189918	-104.74643158
11000.00	90.00	269.350	7451.00	1118.97S	3402.84W	==>	3573.06	39.99189841	-104.74678847
11100.00	90.00	269.350	7451.00	1120.10S	3502.83W	==>	3670.30	39.99189765	-104.74714536
11200.00	90.00	269.350	7451.00	1121.23S	3602.82W	==>	3767.54	39.99189688	-104.74750225
11300.00	90.00	269.350	7451.00	1122.36S	3702.82W	==>	3864.79	39.99189611	-104.74785914
11400.00	90.00	269.350	7451.00	1123.49S	3802.81W	==>	3962.03	39.99189534	-104.74821603
11500.00	90.00	269.350	7451.00	1124.61S	3902.80W	==>	4059.27	39.99189457	-104.74857292
11600.00	90.00	269.350	7451.00	1125.74S	4002.80W	==>	4156.51	39.99189380	-104.74892981
11700.00	90.00	269.350	7451.00	1126.87S	4102.79W	==>	4253.76	39.99189303	-104.74928670
11800.00	90.00	269.350	7451.00	1128.00S	4202.78W	==>	4351.00	39.99189225	-104.74964359
11900.00	90.00	269.350	7451.00	1129.13S	4302.78W	==>	4448.24	39.99189148	-104.75000048
12000.00	90.00	269.350	7451.00	1130.26S	4402.77W	==>	4545.49	39.99189070	-104.75035738
12090.40	90.00	269.350	7451.00	1131.28S	4493.17W	==>	4633.39	39.99189000	-104.75068000

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SYSDRILL  
Well Design Combined Report  
Wellbore: W BEF West 9 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 9 BHL	1131.28S	4493.17W	7451.00	39.99189000	-104.75068000	1240779.62	3209947.15
BEF WEST 9 EP	1083.20S	141.96W	7451.00	39.99192000	-104.73515000	1240827.70	3214298.20

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577612	Planned	2000.00	1997.47	WdW Rate Gyro	Standard	
577611	Planned	12090.40	7451.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes