

Petro Operating Company

Location Weld County, CO Slot BEF West 5
Field Wattenberg Well W BEF West 5
Installation Brighton East Farm Pad Wellbore W BEF West 5 (PWB)

Created by admin
Date plotted 29-Oct-2018

Plot reference is W BEF West 5 (PWB).
Ref wellpath is W BEF West 5 (PWP#1).
Coordinates are in Feet reference BEF West 5.
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.

Scale 1 cm = 400 ft

East (Feet) ->

-5600 -4800 -4000 -3200 -2400 -1600 -800 -0 800 1600

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

Tie on - 0.00 Inc, 21.00 MD, 21.00 TVD, -0.00 VS

3DS Kick off Point - 0.00 Inc, 1500.00 MD, 1500.00 TVD, -0.00 VS

End of Build - 18.14 Inc, 2407.02 MD, 2391.94 TVD, 34.73 VS

Surface 0.00 N 0.00 E

BEF WEST 5 BHL

BEF WEST 5 EP

W BEF West 5 (PWB)

WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	21.00	0.00	0.00	21.00	S 0.00	W 0.00		-0.00
KOP	1500.00	0.00	171.21	1500.00	S 0.00	W 0.00	0.00	-0.00
End of Build	2407.02	18.14	171.21	2391.94	S 140.72	E 21.76	2.00	34.73
End of Hold	7439.90	18.14	171.21	7174.67	S 1689.29	E 261.21	0.00	416.98
Target BEF WEST 5 EP	8211.09	90.00	269.40	7649.00	S 1848.07	W 214.16	12.00	916.66
T.D. & Target BEF...BHL	12475.50	90.00	269.40	7649.00	S 1892.54	W 4478.34	0.00	4861.81

End of Hold - 18.14 Inc, 7439.90 MD, 7174.67 TVD, 416.98 VS

BEF WEST 5 EP

S/C Kick off Point - 90.00 Inc, 8211.09 MD, 7649.00 TVD, 916.66 VS

T.D. & End of Hold - 7649.00 TVD, 1892.54 S 4478.34 W

BEF WEST 5 BHL

N
GRID

Oct-6-2017
EMM-2015 (2000.0-2020.0) Dip: 68.39 deg Field: 02108.9 nT
Lat: 39.99 99.33 3600 Long: 101.04 44.4 4846 Elev: 5047.00 ft
Magnetic North is 8.22 deg East of True North
GRID North is 0.49 deg East of True North
To correct azimuth from True to GRID subtract 0.49 deg
To correct azimuth from Magnetic to GRID add 7.72 deg

W BEF West 5 (PWB)

Scale 1 cm = 200 ft

Vertical Section (Feet) ->

Azimuth 247.09 with reference 0.00 N, 0.00 E from BEF West 5



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 5 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 5	39.99472000	-104.73461000	1241848.9339	3214440.6956	717.81N	16.22E	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	171.210	1500.00	-3569.00	0.00N	0.00E	==>	0.00
2407.02	18.14	171.210	2391.94	-2677.06	140.72S	21.76E	2.00	34.73
7439.90	18.14	171.210	7174.67	2105.67	1689.29S	261.21E	==>	416.98
8211.09	90.00	269.400	7649.00	2580.00	1848.07S	214.16W	12.00	916.66
12475.50	90.00	269.400	7649.00	2580.00	1892.54S	4478.34W	==>	4861.81

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	39.99472000	-104.73461000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1500.00	0.00	171.210	1500.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73461000
1600.00	2.00	171.210	1599.98	1.72S	0.27E	2.00	0.43	39.99471526	-104.73460910
1700.00	4.00	171.210	1699.84	6.90S	1.07E	2.00	1.70	39.99470104	-104.73460641
1800.00	6.00	171.210	1799.45	15.51S	2.40E	2.00	3.83	39.99467737	-104.73460192
1900.00	8.00	171.210	1898.70	27.55S	4.26E	2.00	6.80	39.99464427	-104.73459564
2000.00	10.00	171.210	1997.47	43.01S	6.65E	2.00	10.62	39.99460178	-104.73458759
2100.00	12.00	171.210	2095.62	61.87S	9.57E	2.00	15.27	39.99454995	-104.73457776
2200.00	14.00	171.210	2193.06	84.10S	13.00E	2.00	20.76	39.99448885	-104.73456618
2300.00	16.00	171.210	2289.64	109.67S	16.96E	2.00	27.07	39.99441855	-104.73455286
2400.00	18.00	171.210	2385.27	138.57S	21.43E	2.00	34.20	39.99433913	-104.73453780
2407.02	18.14	171.210	2391.94	140.72S	21.76E	2.00	34.73	39.99433321	-104.73453668
2500.00	18.14	171.210	2480.30	169.33S	26.18E	==>	41.80	39.99425458	-104.73452177
2600.00	18.14	171.210	2575.33	200.10S	30.94E	==>	49.39	39.99417001	-104.73450574
2700.00	18.14	171.210	2670.36	230.87S	35.70E	==>	56.99	39.99408543	-104.73448971
2800.00	18.14	171.210	2765.39	261.63S	40.46E	==>	64.58	39.99400086	-104.73447368
2900.00	18.14	171.210	2860.42	292.40S	45.21E	==>	72.18	39.99391628	-104.73445765

All data is in Feet unless otherwise stated
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 247.090 degrees
Bottom hole distance is 4861.81 Feet on azimuth 247.09 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	18.14	171.210	2955.45	323.17S	49.97E	==>	79.77	39.99383171	-104.73444161
3100.00	18.14	171.210	3050.48	353.94S	54.73E	==>	87.37	39.99374714	-104.73442558
3200.00	18.14	171.210	3145.51	384.71S	59.49E	==>	94.96	39.99366256	-104.73440955
3300.00	18.14	171.210	3240.54	415.48S	64.24E	==>	102.55	39.99357799	-104.73439352
3400.00	18.14	171.210	3335.57	446.25S	69.00E	==>	110.15	39.99349342	-104.73437749
3500.00	18.14	171.210	3430.60	477.02S	73.76E	==>	117.74	39.99340884	-104.73436146
3600.00	18.14	171.210	3525.63	507.79S	78.52E	==>	125.34	39.99332427	-104.73434543
3700.00	18.14	171.210	3620.66	538.56S	83.27E	==>	132.93	39.99323970	-104.73432939
3800.00	18.14	171.210	3715.69	569.32S	88.03E	==>	140.53	39.99315512	-104.73431336
3900.00	18.14	171.210	3810.72	600.09S	92.79E	==>	148.12	39.99307055	-104.73429733
4000.00	18.14	171.210	3905.75	630.86S	97.55E	==>	155.72	39.99298598	-104.73428130
4100.00	18.14	171.210	4000.77	661.63S	102.31E	==>	163.31	39.99290140	-104.73426527
4200.00	18.14	171.210	4095.80	692.40S	107.06E	==>	170.91	39.99281683	-104.73424924
4300.00	18.14	171.210	4190.83	723.17S	111.82E	==>	178.50	39.99273226	-104.73423321
4400.00	18.14	171.210	4285.86	753.94S	116.58E	==>	186.10	39.99264768	-104.73421717
4500.00	18.14	171.210	4380.89	784.71S	121.34E	==>	193.69	39.99256311	-104.73420114
4600.00	18.14	171.210	4475.92	815.48S	126.09E	==>	201.29	39.99247854	-104.73418511
4700.00	18.14	171.210	4570.95	846.25S	130.85E	==>	208.88	39.99239396	-104.73416908
4800.00	18.14	171.210	4665.98	877.02S	135.61E	==>	216.48	39.99230939	-104.73415305
4900.00	18.14	171.210	4761.01	907.78S	140.37E	==>	224.07	39.99222481	-104.73413702
5000.00	18.14	171.210	4856.04	938.55S	145.13E	==>	231.67	39.99214024	-104.73412099
5100.00	18.14	171.210	4951.07	969.32S	149.88E	==>	239.26	39.99205567	-104.73410496
5200.00	18.14	171.210	5046.10	1000.09S	154.64E	==>	246.86	39.99197109	-104.73408893
5300.00	18.14	171.210	5141.13	1030.86S	159.40E	==>	254.45	39.99188652	-104.73407290
5400.00	18.14	171.210	5236.16	1061.63S	164.16E	==>	262.05	39.99180195	-104.73405687
5500.00	18.14	171.210	5331.19	1092.40S	168.91E	==>	269.64	39.99171737	-104.73404083
5600.00	18.14	171.210	5426.22	1123.17S	173.67E	==>	277.24	39.99163280	-104.73402480
5700.00	18.14	171.210	5521.25	1153.94S	178.43E	==>	284.83	39.99154823	-104.73400877
5800.00	18.14	171.210	5616.28	1184.71S	183.19E	==>	292.43	39.99146365	-104.73399274
5900.00	18.14	171.210	5711.31	1215.47S	187.94E	==>	300.02	39.99137908	-104.73397671
6000.00	18.14	171.210	5806.34	1246.24S	192.70E	==>	307.62	39.99129451	-104.73396068
6100.00	18.14	171.210	5901.37	1277.01S	197.46E	==>	315.21	39.99120993	-104.73394465
6200.00	18.14	171.210	5996.40	1307.78S	202.22E	==>	322.81	39.99112536	-104.73392862
6300.00	18.14	171.210	6091.43	1338.55S	206.98E	==>	330.40	39.99104078	-104.73391259
6400.00	18.14	171.210	6186.46	1369.32S	211.73E	==>	338.00	39.99095621	-104.73389656
6500.00	18.14	171.210	6281.49	1400.09S	216.49E	==>	345.59	39.99087164	-104.73388053
6600.00	18.14	171.210	6376.52	1430.86S	221.25E	==>	353.19	39.99078706	-104.73386450
6700.00	18.14	171.210	6471.55	1461.63S	226.01E	==>	360.78	39.99070249	-104.73384847
6800.00	18.14	171.210	6566.57	1492.40S	230.76E	==>	368.38	39.99061792	-104.73383244
6900.00	18.14	171.210	6661.60	1523.17S	235.52E	==>	375.97	39.99053334	-104.73381641
7000.00	18.14	171.210	6756.63	1553.93S	240.28E	==>	383.57	39.99044877	-104.73380038
7100.00	18.14	171.210	6851.66	1584.70S	245.04E	==>	391.16	39.99036420	-104.73378435
7200.00	18.14	171.210	6946.69	1615.47S	249.79E	==>	398.76	39.99027962	-104.73376832
7300.00	18.14	171.210	7041.72	1646.24S	254.55E	==>	406.35	39.99019505	-104.73375229
7400.00	18.14	171.210	7136.75	1677.01S	259.31E	==>	413.95	39.99011048	-104.73373626
7439.90	18.14	171.210	7174.67	1689.29S	261.21E	==>	416.98	39.99007673	-104.73372986
7500.00	18.54	194.230	7231.79	1707.82S	260.29E	12.00	425.04	39.99002588	-104.73373372
7600.00	24.32	223.550	7325.10	1738.27S	242.12E	12.00	453.62	39.98994272	-104.73379948
7700.00	33.42	239.970	7412.71	1767.08S	203.95E	12.00	500.00	39.98986454	-104.73393659
7800.00	43.82	249.650	7490.80	1793.00S	147.44E	12.00	562.14	39.98979474	-104.73413907
7900.00	54.77	256.160	7555.96	1814.88S	75.06E	12.00	637.34	39.98973638	-104.73439805
8000.00	65.98	261.100	7605.33	1831.78S	10.03W	12.00	722.29	39.98969201	-104.73470223
8100.00	77.33	265.220	7636.76	1842.96S	104.11W	12.00	813.30	39.98966357	-104.73503831
8200.00	88.73	268.990	7648.88	1847.92S	203.07W	12.00	906.38	39.98965229	-104.73539160
8211.09	90.00	269.400	7649.00	1848.07S	214.16W	12.00	916.66	39.98965213	-104.73543118
8300.00	90.00	269.400	7649.00	1849.00S	303.06W	==>	998.91	39.98965169	-104.73574848
8400.00	90.00	269.400	7649.00	1850.04S	403.06W	==>	1091.42	39.98965119	-104.73610536
8500.00	90.00	269.400	7649.00	1851.08S	503.05W	==>	1183.94	39.98965069	-104.73646224

All data is in Feet unless otherwise stated
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 247.090 degrees
Bottom hole distance is 4861.81 Feet on azimuth 247.09 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 5 (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	269.400	7649.00	1852.13S	603.04W	==>	1276.45	39.98965020	-104.73681912
8700.00	90.00	269.400	7649.00	1853.17S	703.04W	==>	1368.96	39.98964970	-104.73717600
8800.00	90.00	269.400	7649.00	1854.21S	803.03W	==>	1461.48	39.98964919	-104.73753288
8900.00	90.00	269.400	7649.00	1855.26S	903.03W	==>	1553.99	39.98964869	-104.73788976
9000.00	90.00	269.400	7649.00	1856.30S	1003.02W	==>	1646.50	39.98964819	-104.73824664
9100.00	90.00	269.400	7649.00	1857.34S	1103.02W	==>	1739.02	39.98964768	-104.73860352
9200.00	90.00	269.400	7649.00	1858.38S	1203.01W	==>	1831.53	39.98964718	-104.73896040
9300.00	90.00	269.400	7649.00	1859.43S	1303.01W	==>	1924.04	39.98964667	-104.73931728
9400.00	90.00	269.400	7649.00	1860.47S	1403.00W	==>	2016.56	39.98964616	-104.73967416
9500.00	90.00	269.400	7649.00	1861.51S	1503.00W	==>	2109.07	39.98964565	-104.74003104
9600.00	90.00	269.400	7649.00	1862.55S	1602.99W	==>	2201.58	39.98964514	-104.74038792
9700.00	90.00	269.400	7649.00	1863.60S	1702.98W	==>	2294.10	39.98964463	-104.74074480
9800.00	90.00	269.400	7649.00	1864.64S	1802.98W	==>	2386.61	39.98964412	-104.74110168
9900.00	90.00	269.400	7649.00	1865.68S	1902.97W	==>	2479.12	39.98964361	-104.74145856
10000.00	90.00	269.400	7649.00	1866.72S	2002.97W	==>	2571.64	39.98964309	-104.74181543
10100.00	90.00	269.400	7649.00	1867.77S	2102.96W	==>	2664.15	39.98964258	-104.74217231
10200.00	90.00	269.400	7649.00	1868.81S	2202.96W	==>	2756.66	39.98964206	-104.74252919
10300.00	90.00	269.400	7649.00	1869.85S	2302.95W	==>	2849.18	39.98964154	-104.74288607
10400.00	90.00	269.400	7649.00	1870.90S	2402.95W	==>	2941.69	39.98964102	-104.74324295
10500.00	90.00	269.400	7649.00	1871.94S	2502.94W	==>	3034.20	39.98964050	-104.74359983
10600.00	90.00	269.400	7649.00	1872.98S	2602.94W	==>	3126.72	39.98963998	-104.74395671
10700.00	90.00	269.400	7649.00	1874.02S	2702.93W	==>	3219.23	39.98963946	-104.74431359
10800.00	90.00	269.400	7649.00	1875.07S	2802.92W	==>	3311.74	39.98963893	-104.74467047
10900.00	90.00	269.400	7649.00	1876.11S	2902.92W	==>	3404.26	39.98963841	-104.74502735
11000.00	90.00	269.400	7649.00	1877.15S	3002.91W	==>	3496.77	39.98963788	-104.74538423
11100.00	90.00	269.400	7649.00	1878.19S	3102.91W	==>	3589.28	39.98963736	-104.74574111
11200.00	90.00	269.400	7649.00	1879.24S	3202.90W	==>	3681.80	39.98963683	-104.74609799
11300.00	90.00	269.400	7649.00	1880.28S	3302.90W	==>	3774.31	39.98963630	-104.74645487
11400.00	90.00	269.400	7649.00	1881.32S	3402.89W	==>	3866.83	39.98963577	-104.74681175
11500.00	90.00	269.400	7649.00	1882.36S	3502.89W	==>	3959.34	39.98963524	-104.74716863
11600.00	90.00	269.400	7649.00	1883.41S	3602.88W	==>	4051.85	39.98963471	-104.74752551
11700.00	90.00	269.400	7649.00	1884.45S	3702.88W	==>	4144.37	39.98963417	-104.74788239
11800.00	90.00	269.400	7649.00	1885.49S	3802.87W	==>	4236.88	39.98963364	-104.74823927
11900.00	90.00	269.400	7649.00	1886.54S	3902.87W	==>	4329.39	39.98963310	-104.74859615
12000.00	90.00	269.400	7649.00	1887.58S	4002.86W	==>	4421.91	39.98963257	-104.74895303
12100.00	90.00	269.400	7649.00	1888.62S	4102.85W	==>	4514.42	39.98963203	-104.74930991
12200.00	90.00	269.400	7649.00	1889.66S	4202.85W	==>	4606.93	39.98963149	-104.74966679
12300.00	90.00	269.400	7649.00	1890.71S	4302.84W	==>	4699.45	39.98963095	-104.75002367
12400.00	90.00	269.400	7649.00	1891.75S	4402.84W	==>	4791.96	39.98963041	-104.75038055
12475.50	90.00	269.400	7649.00	1892.54S	4478.34W	==>	4861.81	39.98963000	-104.75065000

All data is in Feet unless otherwise stated
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 247.090 degrees
Bottom hole distance is 4861.81 Feet on azimuth 247.09 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 5 (PWB)



Targets

Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 5 BHL	1892.54S	4478.34W	7649.00	39.98963000	-104.75065000	1239956.46	3209962.52
BEF WEST 5 EP	1848.07S	124.16W	7649.00	39.98965000	-104.73511000	1240000.93	3214316.54

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
577584	Planned	2000.00	1997.47	WdW Rate Gyro	Standard
577583	Planned	12475.50	7649.00	ISCWSA MWD	Rev 4 + SAG + FLT

Notes

All data is in Feet unless otherwise stated
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 247.090 degrees
Bottom hole distance is 4861.81 Feet on azimuth 247.09 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018