

Petro Operating Company

Location	Weld County, CO	Slot	BEF West 22
Field	Wattenberg	Well	W BEF West 22
Installation	Brighton East Farm Pad	Wellbore	W BEF West 22 (PWB)

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

Scale 1 cm = 400 ft **East (Feet) ->**

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

Created by admin
Date plotted 12-Nov-2018

Plot reference is W BEF West 22 (PWB).
Ref wellpath is W BEF West 22 (PWP#1).
Coordinates are in Feet reference BEF West 22.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5068.00 ft.
Plot North is aligned to GRID North.

BEF WEST 22 BHL

BEF WEST 22 EP

W BEF West 22 (PWB)

Surface 0.00 N 0.00 E

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

End of Build - 15.61 Inc, 2280.38 MD, 2270.77 TVD, 16.28 VS

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	9.07	1500.00	S 0.00	W 0.00	0.00	0.00
End of Build	2280.38	15.61	9.07	2270.77	N 104.31	E 16.65	2.00	16.28
End of Hold	7091.97	15.61	9.07	6904.94	N 1382.69	E 220.67	0.00	215.85
Target BEF WEST 22 EP	7865.82	90.27	269.35	7386.00	N 1510.38	W 259.93	12.00	712.42
T.D. & Target BEF...BHL	12124.08	90.27	269.35	7366.00	N 1462.33	W 4517.88	0.00	4748.65

End of Hold - 15.61 Inc, 7091.97 MD, 6904.94 TVD, 215.85 VS

BEF WEST 22 EP

S/C Kick off Point - 90.27 Inc, 7865.82 MD, 7386.00 TVD, 712.42 VS

T.D. & End of Hold - 7366.00 TVD, 1462.33 N 4517.88 W

N
GRID

Drawn 2017
09-Nov-2017 10:00:00 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
Lat: 40.0000 Lon: 105.0000 Elev: 4888.0000
Magnetic North is 0.00 deg East of True North
GRID North is 0.00 deg East of True North
To convert azimuth from True to GRID add 0.00 deg
To convert azimuth from Magnetic to GRID add 0.00 deg

W BEF West 22 (PWB)

BEF WEST 22 BHL

<- True Vertical Depth (Feet)

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

-400 -0 400 800 1200 1600 2000 2400 2800 3200 3600 4000 4400 4800 5200

Scale 1 cm = 200 ft

Vertical Section (Feet) ->

Azimuth 287.94 with reference 0.00 N, 0.00 E from BEF West 22



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 22 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 22	39.99494000	-104.73470000	1241928.8535	3214414.7891	797.73N	9.69W	0.00

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	-5047.00	0.00N	0.00E		0.00
1500.00	0.00	9.070	1500.00	-3568.00	0.00N	0.00E	==>	0.00
2280.38	15.61	9.070	2270.77	-2797.23	104.31N	16.65E	2.00	16.28
7091.97	15.61	9.070	6904.94	1836.94	1382.69N	220.67E	==>	215.85
7865.82	90.27	269.350	7386.00	2318.00	1510.38N	259.93W	12.00	712.42
12124.08	90.27	269.350	7366.00	2298.00	1462.33N	4517.88W	==>	4748.65

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	39.99494000	-104.73470000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1500.00	0.00	9.070	1500.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1600.00	2.00	9.070	1599.98	1.72N	0.28E	2.00	0.27	39.99494472	-104.73469897
1700.00	4.00	9.070	1699.84	6.89N	1.10E	2.00	1.08	39.99495889	-104.73469586
1800.00	6.00	9.070	1799.45	15.50N	2.47E	2.00	2.42	39.99498248	-104.73469070
1900.00	8.00	9.070	1898.70	27.53N	4.39E	2.00	4.30	39.99501547	-104.73468347
2000.00	10.00	9.070	1997.47	42.98N	6.86E	2.00	6.71	39.99505781	-104.73467420
2100.00	12.00	9.070	2095.62	61.82N	9.87E	2.00	9.65	39.99510946	-104.73466288
2200.00	14.00	9.070	2193.06	84.03N	13.41E	2.00	13.12	39.99517035	-104.73464955
2280.38	15.61	9.070	2270.77	104.31N	16.65E	2.00	16.28	39.99522595	-104.73463737
2300.00	15.61	9.070	2289.66	109.53N	17.48E	==>	17.10	39.99524023	-104.73463424
2400.00	15.61	9.070	2385.97	136.09N	21.72E	==>	21.25	39.99531306	-104.73461829
2500.00	15.61	9.070	2482.29	162.66N	25.96E	==>	25.39	39.99538589	-104.73460234
2600.00	15.61	9.070	2578.60	189.23N	30.20E	==>	29.54	39.99545872	-104.73458639
2700.00	15.61	9.070	2674.91	215.80N	34.44E	==>	33.69	39.99553156	-104.73457043
2800.00	15.61	9.070	2771.22	242.37N	38.68E	==>	37.84	39.99560439	-104.73455448
2900.00	15.61	9.070	2867.54	268.94N	42.92E	==>	41.98	39.99567722	-104.73453853

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 5068.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 287.940 degrees
Bottom hole distance is 4748.65 Feet on azimuth 287.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 12-Nov-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	15.61	9.070	2963.85	295.51N	47.16E	==>	46.13	39.99575005	-104.73452258
3100.00	15.61	9.070	3060.16	322.08N	51.40E	==>	50.28	39.99582288	-104.73450663
3200.00	15.61	9.070	3156.48	348.64N	55.64E	==>	54.43	39.99589571	-104.73449067
3300.00	15.61	9.070	3252.79	375.21N	59.88E	==>	58.57	39.99596854	-104.73447472
3400.00	15.61	9.070	3349.10	401.78N	64.12E	==>	62.72	39.99604137	-104.73445877
3500.00	15.61	9.070	3445.41	428.35N	68.36E	==>	66.87	39.99611420	-104.73444282
3600.00	15.61	9.070	3541.73	454.92N	72.60E	==>	71.02	39.99618703	-104.73442687
3700.00	15.61	9.070	3638.04	481.49N	76.84E	==>	75.16	39.99625986	-104.73441091
3800.00	15.61	9.070	3734.35	508.06N	81.08E	==>	79.31	39.99633269	-104.73439496
3900.00	15.61	9.070	3830.66	534.62N	85.32E	==>	83.46	39.99640552	-104.73437901
4000.00	15.61	9.070	3926.98	561.19N	89.56E	==>	87.61	39.99647835	-104.73436306
4100.00	15.61	9.070	4023.29	587.76N	93.80E	==>	91.75	39.99655118	-104.73434711
4200.00	15.61	9.070	4119.60	614.33N	98.04E	==>	95.90	39.99662401	-104.73433115
4300.00	15.61	9.070	4215.91	640.90N	102.28E	==>	100.05	39.99669684	-104.73431520
4400.00	15.61	9.070	4312.23	667.47N	106.52E	==>	104.20	39.99676967	-104.73429925
4500.00	15.61	9.070	4408.54	694.04N	110.76E	==>	108.34	39.99684250	-104.73428330
4600.00	15.61	9.070	4504.85	720.60N	115.01E	==>	112.49	39.99691533	-104.73426734
4700.00	15.61	9.070	4601.16	747.17N	119.25E	==>	116.64	39.99698816	-104.73425139
4800.00	15.61	9.070	4697.48	773.74N	123.49E	==>	120.79	39.99706099	-104.73423544
4900.00	15.61	9.070	4793.79	800.31N	127.73E	==>	124.93	39.99713382	-104.73421949
5000.00	15.61	9.070	4890.10	826.88N	131.97E	==>	129.08	39.99720665	-104.73420353
5100.00	15.61	9.070	4986.42	853.45N	136.21E	==>	133.23	39.99727948	-104.73418758
5200.00	15.61	9.070	5082.73	880.02N	140.45E	==>	137.38	39.99735231	-104.73417163
5300.00	15.61	9.070	5179.04	906.59N	144.69E	==>	141.52	39.99742514	-104.73415568
5400.00	15.61	9.070	5275.35	933.15N	148.93E	==>	145.67	39.99749797	-104.73413972
5500.00	15.61	9.070	5371.67	959.72N	153.17E	==>	149.82	39.99757080	-104.73412377
5600.00	15.61	9.070	5467.98	986.29N	157.41E	==>	153.97	39.99764363	-104.73410782
5700.00	15.61	9.070	5564.29	1012.86N	161.65E	==>	158.12	39.99771646	-104.73409186
5800.00	15.61	9.070	5660.60	1039.43N	165.89E	==>	162.26	39.99778929	-104.73407591
5900.00	15.61	9.070	5756.92	1066.00N	170.13E	==>	166.41	39.99786212	-104.73405996
6000.00	15.61	9.070	5853.23	1092.57N	174.37E	==>	170.56	39.99793495	-104.73404401
6100.00	15.61	9.070	5949.54	1119.13N	178.61E	==>	174.71	39.99800778	-104.73402805
6200.00	15.61	9.070	6045.85	1145.70N	182.85E	==>	178.85	39.99808061	-104.73401210
6300.00	15.61	9.070	6142.17	1172.27N	187.09E	==>	183.00	39.99815344	-104.73399615
6400.00	15.61	9.070	6238.48	1198.84N	191.33E	==>	187.15	39.99822627	-104.73398019
6500.00	15.61	9.070	6334.79	1225.41N	195.57E	==>	191.30	39.99829910	-104.73396424
6600.00	15.61	9.070	6431.11	1251.98N	199.81E	==>	195.44	39.99837193	-104.73394829
6700.00	15.61	9.070	6527.42	1278.55N	204.05E	==>	199.59	39.99844476	-104.73393233
6800.00	15.61	9.070	6623.73	1305.11N	208.29E	==>	203.74	39.99851759	-104.73391638
6900.00	15.61	9.070	6720.04	1331.68N	212.53E	==>	207.89	39.99859042	-104.73390043
7000.00	15.61	9.070	6816.36	1358.25N	216.77E	==>	212.03	39.99866325	-104.73388447
7091.97	15.61	9.070	6904.94	1382.69N	220.67E	==>	215.85	39.99873023	-104.73386850
7100.00	15.48	5.500	6912.67	1384.82N	220.94E	12.00	216.25	39.99873608	-104.73386876
7200.00	18.50	324.820	7008.62	1411.17N	213.06E	12.00	231.86	39.99880859	-104.73389610
7300.00	26.94	302.240	7100.95	1436.31N	184.65E	12.00	266.63	39.99887829	-104.73399670
7400.00	37.28	290.640	7185.62	1459.16N	136.98E	12.00	319.02	39.99894212	-104.73416616
7500.00	48.31	283.630	7258.93	1478.70N	72.11E	12.00	386.76	39.99899730	-104.73439708
7600.00	59.64	278.710	7317.67	1494.09N	7.11W	12.00	466.87	39.99904142	-104.73467936
7700.00	71.11	274.830	7359.28	1504.65N	97.23W	12.00	555.85	39.99907254	-104.73500067
7800.00	82.66	271.460	7381.94	1509.92N	194.29W	12.00	649.83	39.99908931	-104.73534696
7865.82	90.27	269.350	7386.00	1510.38N	259.93W	12.00	712.42	39.99909213	-104.73558122
7900.00	90.27	269.350	7385.84	1509.99N	294.11W	==>	744.82	39.99909188	-104.73570322
8000.00	90.27	269.350	7385.37	1508.87N	394.11W	==>	839.60	39.99909115	-104.73606015
8100.00	90.27	269.350	7384.90	1507.74N	494.10W	==>	934.39	39.99909042	-104.73641707
8200.00	90.27	269.350	7384.43	1506.61N	594.09W	==>	1029.18	39.99908968	-104.73677400
8300.00	90.27	269.350	7383.96	1505.48N	694.08W	==>	1123.96	39.99908895	-104.73713092
8400.00	90.27	269.350	7383.49	1504.35N	794.08W	==>	1218.75	39.99908821	-104.73748784
8500.00	90.27	269.350	7383.02	1503.22N	894.07W	==>	1313.53	39.99908747	-104.73784477

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 5068.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 287.940 degrees
Bottom hole distance is 4748.65 Feet on azimuth 287.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 12-Nov-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 22 (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	90.27	269.350	7382.55	1502.10N	994.06W	==>	1408.32	39.99908673	-104.73820169
8700.00	90.27	269.350	7382.08	1500.97N	1094.05W	==>	1503.10	39.99908599	-104.73855862
8800.00	90.27	269.350	7381.61	1499.84N	1194.05W	==>	1597.89	39.99908525	-104.73891554
8900.00	90.27	269.350	7381.14	1498.71N	1294.04W	==>	1692.68	39.99908451	-104.73927247
9000.00	90.27	269.350	7380.67	1497.58N	1394.03W	==>	1787.46	39.99908377	-104.73962939
9100.00	90.27	269.350	7380.20	1496.45N	1494.02W	==>	1882.25	39.99908302	-104.73998632
9200.00	90.27	269.350	7379.73	1495.33N	1594.02W	==>	1977.03	39.99908228	-104.74034324
9300.00	90.27	269.350	7379.26	1494.20N	1694.01W	==>	2071.82	39.99908153	-104.74070016
9400.00	90.27	269.350	7378.79	1493.07N	1794.00W	==>	2166.60	39.99908079	-104.74105709
9500.00	90.27	269.350	7378.32	1491.94N	1893.99W	==>	2261.39	39.99908004	-104.74141401
9600.00	90.27	269.350	7377.85	1490.81N	1993.99W	==>	2356.18	39.99907929	-104.74177094
9700.00	90.27	269.350	7377.39	1489.68N	2093.98W	==>	2450.96	39.99907854	-104.74212786
9800.00	90.27	269.350	7376.92	1488.56N	2193.97W	==>	2545.75	39.99907778	-104.74248479
9900.00	90.27	269.350	7376.45	1487.43N	2293.96W	==>	2640.53	39.99907703	-104.74284171
10000.00	90.27	269.350	7375.98	1486.30N	2393.96W	==>	2735.32	39.99907628	-104.74319864
10100.00	90.27	269.350	7375.51	1485.17N	2493.95W	==>	2830.11	39.99907552	-104.74355556
10200.00	90.27	269.350	7375.04	1484.04N	2593.94W	==>	2924.89	39.99907477	-104.74391248
10300.00	90.27	269.350	7374.57	1482.91N	2693.93W	==>	3019.68	39.99907401	-104.74426941
10400.00	90.27	269.350	7374.10	1481.79N	2793.93W	==>	3114.46	39.99907325	-104.74462633
10500.00	90.27	269.350	7373.63	1480.66N	2893.92W	==>	3209.25	39.99907249	-104.74498326
10600.00	90.27	269.350	7373.16	1479.53N	2993.91W	==>	3304.03	39.99907173	-104.74534018
10700.00	90.27	269.350	7372.69	1478.40N	3093.90W	==>	3398.82	39.99907097	-104.74569711
10800.00	90.27	269.350	7372.22	1477.27N	3193.90W	==>	3493.61	39.99907021	-104.74605403
10900.00	90.27	269.350	7371.75	1476.14N	3293.89W	==>	3588.39	39.99906944	-104.74641095
11000.00	90.27	269.350	7371.28	1475.02N	3393.88W	==>	3683.18	39.99906868	-104.74676788
11100.00	90.27	269.350	7370.81	1473.89N	3493.87W	==>	3777.96	39.99906791	-104.74712480
11200.00	90.27	269.350	7370.34	1472.76N	3593.87W	==>	3872.75	39.99906714	-104.74748173
11300.00	90.27	269.350	7369.87	1471.63N	3693.86W	==>	3967.53	39.99906637	-104.74783865
11400.00	90.27	269.350	7369.40	1470.50N	3793.85W	==>	4062.32	39.99906560	-104.74819558
11500.00	90.27	269.350	7368.93	1469.37N	3893.84W	==>	4157.11	39.99906483	-104.74855250
11600.00	90.27	269.350	7368.46	1468.25N	3993.84W	==>	4251.89	39.99906406	-104.74890942
11700.00	90.27	269.350	7367.99	1467.12N	4093.83W	==>	4346.68	39.99906329	-104.74926635
11800.00	90.27	269.350	7367.52	1465.99N	4193.82W	==>	4441.46	39.99906252	-104.74962327
11900.00	90.27	269.350	7367.05	1464.86N	4293.81W	==>	4536.25	39.99906174	-104.74998020
12000.00	90.27	269.350	7366.58	1463.73N	4393.81W	==>	4631.04	39.99906096	-104.75033712
12100.00	90.27	269.350	7366.11	1462.60N	4493.80W	==>	4725.82	39.99906019	-104.75069405
12124.08	90.27	269.350	7366.00	1462.33N	4517.88W	==>	4748.65	39.99906000	-104.75078000

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 5068.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 287.940 degrees
Bottom hole distance is 4748.65 Feet on azimuth 287.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 12-Nov-2018



SYS DRILL
Well Design Combined Report
Wellbore: W BEF West 22 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 22 BHL	1462.33N	4517.88W	7366.00	39.99906000	-104.75078000	1243391.14	3209897.07
BEF WEST 22 EP	1510.38N	169.93W	7386.00	39.99909000	-104.73526000	1243439.18	3214244.86

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577703	Planned	2000.00	1997.47	WdW Rate Gyro	Standard	
577702	Planned	12124.08	7366.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes