

Petro Operating Company

Location Weld County, CO Slot BEF West 17
Field Wattenberg Well W BEF West 17
Installation Brighton East Farm Pad Wellbore W BEF West 17 (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

BEF WEST 17 BHL

BEF WEST 17 EP

W BEF West 17 (PWB)

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

End of Build - 7.29 Inc, 1803.91 MD, 1803.09 TVD, -4.02 VS

Surface 0.00 N 0.00 E

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	20.10	1500.00	S 0.00	W 0.00	0.00	0.00
End of Build	1803.91	7.29	20.10	1803.09	N 18.14	E 6.64	2.40	-4.02
End of Hold	6997.40	7.29	20.10	6954.55	N 637.35	E 233.20	0.00	-141.31
Target BEF WEST 17 EP	7768.92	90.00	269.30	7450.00	N 690.84	W 244.46	12.00	339.13
T.D. & Target BEF...BHL	12027.31	90.00	269.30	7450.00	N 639.15	W 4502.53	0.00	4547.67

N
GRID

Oct-6-2017
EMMA-2015 [2000-0-2020.0] Dip: 69.39 deg Field: 52108.9 r/t
Lat: N438 59 33 3000 Long: W1024 44 4 8840 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

Created by admin
Date plotted 21-Feb-2018

Plot reference is W BEF West 17 (PWB).
Ref wellpath is W BEF West 17 (PWP#1).
Coordinates are in Feet reference BEF West 17.
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.

End of Hold - 7.29 Inc, 6997.40 MD, 6954.55 TVD, -141.31 VS

S/C Kick off Point - 90.00 Inc, 7768.92 MD, 7450.00 TVD, 339.13 VS

T.D. & End of Hold - 7450.00 TVD, 639.15 N 4502.53 W

BEF WEST 17 EP

BEF WEST 17 BHL

W BEF West 17 (PWB)

Scale 1 cm = 200 ft

Vertical Section (Feet) ->

Azimuth 278.08 with reference 0.00 N, 0.00 E from BEF West 17



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 17 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 17	39.99472000	-104.73470000	1241848.7163	3214415.4808	717.59N	9.00W	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	20.100	1500.00	-3568.00	0.00N	0.00E	==>	0.00
1803.91	7.29	20.100	1803.09	-3264.91	18.14N	6.64E	2.40	-4.02
6997.40	7.29	20.100	6954.55	1886.55	637.35N	233.20E	==>	-141.31
7768.92	90.00	269.300	7450.00	2382.00	690.84N	244.46W	12.00	339.13
12027.31	90.00	269.300	7450.00	2382.00	639.15N	4502.53W	==>	4547.67

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	-104.73470000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1500.00	0.00	20.100	1500.00	0.00N	0.00E	==>	0.00	39.99472000	-104.73470000
1600.00	2.40	20.100	1599.97	1.97N	0.72E	2.40	-0.44	39.99472538	-104.73469737
1700.00	4.80	20.100	1699.77	7.86N	2.88E	2.40	-1.74	39.99474152	-104.73468949
1800.00	7.20	20.100	1799.21	17.68N	6.47E	2.40	-3.92	39.99476837	-104.73467637
1900.00	7.29	20.100	1898.40	29.60N	10.83E	==>	-6.56	39.99480099	-104.73466044
2000.00	7.29	20.100	1997.59	41.52N	15.19E	==>	-9.21	39.99483361	-104.73464450
2100.00	7.29	20.100	2096.78	53.44N	19.55E	==>	-11.85	39.99486624	-104.73462856
2200.00	7.29	20.100	2195.97	65.37N	23.92E	==>	-14.49	39.99489886	-104.73461263
2300.00	7.29	20.100	2295.17	77.29N	28.28E	==>	-17.14	39.99493149	-104.73459669
2400.00	7.29	20.100	2394.36	89.21N	32.64E	==>	-19.78	39.99496411	-104.73458075
2500.00	7.29	20.100	2493.55	101.13N	37.00E	==>	-22.42	39.99499674	-104.73456482
2600.00	7.29	20.100	2592.74	113.06N	41.37E	==>	-25.07	39.99502936	-104.73454888
2700.00	7.29	20.100	2691.93	124.98N	45.73E	==>	-27.71	39.99506199	-104.73453294
2800.00	7.29	20.100	2791.12	136.90N	50.09E	==>	-30.35	39.99509461	-104.73451701
2900.00	7.29	20.100	2890.31	148.83N	54.45E	==>	-33.00	39.99512723	-104.73450107
3000.00	7.29	20.100	2989.50	160.75N	58.82E	==>	-35.64	39.99515986	-104.73448513
3100.00	7.29	20.100	3088.69	172.67N	63.18E	==>	-38.28	39.99519248	-104.73446920
3200.00	7.29	20.100	3187.88	184.59N	67.54E	==>	-40.93	39.99522511	-104.73445326

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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 278.080 degrees
Bottom hole distance is 4547.67 Feet on azimuth 278.08 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 21-Feb-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)
3300.00	7.29	20.100	3287.07	196.52N	71.90E	==>	-43.57	39.99525773	-104.73443732
3400.00	7.29	20.100	3386.26	208.44N	76.27E	==>	-46.22	39.99529036	-104.73442139
3500.00	7.29	20.100	3485.46	220.36N	80.63E	==>	-48.86	39.99532298	-104.73440545
3600.00	7.29	20.100	3584.65	232.28N	84.99E	==>	-51.50	39.99535561	-104.73438951
3700.00	7.29	20.100	3683.84	244.21N	89.35E	==>	-54.15	39.99538823	-104.73437357
3800.00	7.29	20.100	3783.03	256.13N	93.72E	==>	-56.79	39.99542085	-104.73435764
3900.00	7.29	20.100	3882.22	268.05N	98.08E	==>	-59.43	39.99545348	-104.73434170
4000.00	7.29	20.100	3981.41	279.98N	102.44E	==>	-62.08	39.99548610	-104.73432576
4100.00	7.29	20.100	4080.60	291.90N	106.80E	==>	-64.72	39.99551873	-104.73430983
4200.00	7.29	20.100	4179.79	303.82N	111.17E	==>	-67.36	39.99555135	-104.73429389
4300.00	7.29	20.100	4278.98	315.74N	115.53E	==>	-70.01	39.99558398	-104.73427795
4400.00	7.29	20.100	4378.17	327.67N	119.89E	==>	-72.65	39.99561660	-104.73426202
4500.00	7.29	20.100	4477.36	339.59N	124.25E	==>	-75.29	39.99564923	-104.73424608
4600.00	7.29	20.100	4576.55	351.51N	128.62E	==>	-77.94	39.99568185	-104.73423014
4700.00	7.29	20.100	4675.74	363.44N	132.98E	==>	-80.58	39.99571447	-104.73421420
4800.00	7.29	20.100	4774.94	375.36N	137.34E	==>	-83.22	39.99574710	-104.73419827
4900.00	7.29	20.100	4874.13	387.28N	141.70E	==>	-85.87	39.99577972	-104.73418233
5000.00	7.29	20.100	4973.32	399.20N	146.07E	==>	-88.51	39.99581235	-104.73416639
5100.00	7.29	20.100	5072.51	411.13N	150.43E	==>	-91.15	39.99584497	-104.73415046
5200.00	7.29	20.100	5171.70	423.05N	154.79E	==>	-93.80	39.99587760	-104.73413452
5300.00	7.29	20.100	5270.89	434.97N	159.15E	==>	-96.44	39.99591022	-104.73411858
5400.00	7.29	20.100	5370.08	446.89N	163.52E	==>	-99.09	39.99594284	-104.73410264
5500.00	7.29	20.100	5469.27	458.82N	167.88E	==>	-101.73	39.99597547	-104.73408671
5600.00	7.29	20.100	5568.46	470.74N	172.24E	==>	-104.37	39.99600809	-104.73407077
5700.00	7.29	20.100	5667.65	482.66N	176.60E	==>	-107.02	39.99604072	-104.73405483
5800.00	7.29	20.100	5766.84	494.59N	180.97E	==>	-109.66	39.99607334	-104.73403890
5900.00	7.29	20.100	5866.03	506.51N	185.33E	==>	-112.30	39.99610597	-104.73402296
6000.00	7.29	20.100	5965.23	518.43N	189.69E	==>	-114.95	39.99613859	-104.73400702
6100.00	7.29	20.100	6064.42	530.35N	194.05E	==>	-117.59	39.99617122	-104.73399108
6200.00	7.29	20.100	6163.61	542.28N	198.42E	==>	-120.23	39.99620384	-104.73397515
6300.00	7.29	20.100	6262.80	554.20N	202.78E	==>	-122.88	39.99623646	-104.73395921
6400.00	7.29	20.100	6361.99	566.12N	207.14E	==>	-125.52	39.99626909	-104.73394327
6500.00	7.29	20.100	6461.18	578.04N	211.50E	==>	-128.16	39.99630171	-104.73392733
6600.00	7.29	20.100	6560.37	589.97N	215.87E	==>	-130.81	39.99633434	-104.73391140
6700.00	7.29	20.100	6659.56	601.89N	220.23E	==>	-133.45	39.99636696	-104.73389546
6800.00	7.29	20.100	6758.75	613.81N	224.59E	==>	-136.09	39.99639959	-104.73387952
6900.00	7.29	20.100	6857.94	625.74N	228.95E	==>	-138.74	39.99643221	-104.73386358
7000.00	7.19	17.760	6957.13	637.66N	233.31E	12.00	-141.37	39.99646483	-104.73384767
7100.00	11.86	304.020	7056.03	649.41N	226.67E	12.00	-133.15	39.99649726	-104.73387099
7200.00	22.73	285.900	7151.43	660.50N	199.48E	12.00	-104.67	39.99652833	-104.73396772
7300.00	34.33	279.390	7239.16	670.43N	152.91E	12.00	-57.17	39.99655670	-104.73413361
7400.00	46.12	275.910	7315.38	678.78N	89.00E	12.00	7.28	39.99658113	-104.73436144
7500.00	57.99	273.590	7376.77	685.17N	10.55E	12.00	85.85	39.99660054	-104.73464123
7600.00	69.88	271.820	7420.64	689.33N	79.01W	12.00	175.11	39.99661408	-104.73496076
7700.00	81.79	270.290	7445.07	691.08N	175.78W	12.00	271.16	39.99662117	-104.73530607
7800.00	90.00	269.300	7450.00	690.46N	275.54W	==>	369.84	39.99662183	-104.73566213
7900.00	90.00	269.300	7450.00	689.25N	375.53W	==>	468.67	39.99662086	-104.73601905
8000.00	90.00	269.300	7450.00	688.03N	475.52W	==>	567.50	39.99661990	-104.73637596
8100.00	90.00	269.300	7450.00	686.82N	575.52W	==>	666.33	39.99661893	-104.73673288
8200.00	90.00	269.300	7450.00	685.60N	675.51W	==>	765.16	39.99661796	-104.73708979
8300.00	90.00	269.300	7450.00	684.39N	775.50W	==>	863.99	39.99661699	-104.73744671
8400.00	90.00	269.300	7450.00	683.18N	875.49W	==>	962.82	39.99661601	-104.73780362
8500.00	90.00	269.300	7450.00	681.96N	975.49W	==>	1061.65	39.99661504	-104.73816054
8600.00	90.00	269.300	7450.00	680.75N	1075.48W	==>	1160.48	39.99661407	-104.73851745
8700.00	90.00	269.300	7450.00	679.54N	1175.47W	==>	1259.31	39.99661309	-104.73887437
8800.00	90.00	269.300	7450.00	678.32N	1275.46W	==>	1358.14	39.99661211	-104.73923128
8900.00	90.00	269.300	7450.00	677.11N	1375.46W	==>	1456.97	39.99661114	-104.73958819
9000.00	90.00	269.300	7450.00	675.89N	1475.45W	==>	1555.80	39.99661016	-104.73994511

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Vertical Section is from 0.00N 0.00E on azimuth 278.080 degrees
Bottom hole distance is 4547.67 Feet on azimuth 278.08 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 21-Feb-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 17 (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)
9100.00	90.00	269.300	7450.00	674.68N	1575.44W	==>	1654.63	39.99660918	-104.74030202
9200.00	90.00	269.300	7450.00	673.47N	1675.43W	==>	1753.46	39.99660820	-104.74065894
9300.00	90.00	269.300	7450.00	672.25N	1775.43W	==>	1852.29	39.99660721	-104.74101585
9400.00	90.00	269.300	7450.00	671.04N	1875.42W	==>	1951.12	39.99660623	-104.74137277
9500.00	90.00	269.300	7450.00	669.82N	1975.41W	==>	2049.94	39.99660525	-104.74172968
9600.00	90.00	269.300	7450.00	668.61N	2075.40W	==>	2148.77	39.99660426	-104.74208660
9700.00	90.00	269.300	7450.00	667.40N	2175.40W	==>	2247.60	39.99660327	-104.74244351
9800.00	90.00	269.300	7450.00	666.18N	2275.39W	==>	2346.43	39.99660229	-104.74280042
9900.00	90.00	269.300	7450.00	664.97N	2375.38W	==>	2445.26	39.99660130	-104.74315734
10000.00	90.00	269.300	7450.00	663.75N	2475.38W	==>	2544.09	39.99660031	-104.74351425
10100.00	90.00	269.300	7450.00	662.54N	2575.37W	==>	2642.92	39.99659932	-104.74387117
10200.00	90.00	269.300	7450.00	661.33N	2675.36W	==>	2741.75	39.99659832	-104.74422808
10300.00	90.00	269.300	7450.00	660.11N	2775.35W	==>	2840.58	39.99659733	-104.74458500
10400.00	90.00	269.300	7450.00	658.90N	2875.35W	==>	2939.41	39.99659634	-104.74494191
10500.00	90.00	269.300	7450.00	657.69N	2975.34W	==>	3038.24	39.99659534	-104.74529882
10600.00	90.00	269.300	7450.00	656.47N	3075.33W	==>	3137.07	39.99659434	-104.74565574
10700.00	90.00	269.300	7450.00	655.26N	3175.32W	==>	3235.90	39.99659335	-104.74601265
10800.00	90.00	269.300	7450.00	654.04N	3275.32W	==>	3334.73	39.99659235	-104.74636957
10900.00	90.00	269.300	7450.00	652.83N	3375.31W	==>	3433.56	39.99659135	-104.74672648
11000.00	90.00	269.300	7450.00	651.62N	3475.30W	==>	3532.39	39.99659035	-104.74708340
11100.00	90.00	269.300	7450.00	650.40N	3575.29W	==>	3631.22	39.99658934	-104.74744031
11200.00	90.00	269.300	7450.00	649.19N	3675.29W	==>	3730.05	39.99658834	-104.74779722
11300.00	90.00	269.300	7450.00	647.97N	3775.28W	==>	3828.88	39.99658734	-104.74815414
11400.00	90.00	269.300	7450.00	646.76N	3875.27W	==>	3927.71	39.99658633	-104.74851105
11500.00	90.00	269.300	7450.00	645.55N	3975.26W	==>	4026.54	39.99658533	-104.74886797
11600.00	90.00	269.300	7450.00	644.33N	4075.26W	==>	4125.37	39.99658432	-104.74922488
11700.00	90.00	269.300	7450.00	643.12N	4175.25W	==>	4224.19	39.99658331	-104.74958180
11800.00	90.00	269.300	7450.00	641.90N	4275.24W	==>	4323.02	39.99658230	-104.74993871
11900.00	90.00	269.300	7450.00	640.69N	4375.24W	==>	4421.85	39.99658129	-104.75029562
12000.00	90.00	269.300	7450.00	639.48N	4475.23W	==>	4520.68	39.99658028	-104.75065254
12027.31	90.00	269.300	7450.00	639.15N	4502.53W	==>	4547.67	39.99658000	-104.75075000

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 278.080 degrees
Bottom hole distance is 4547.67 Feet on azimuth 278.08 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 21-Feb-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 17 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 17 BHL	639.15N	4502.53W	7450.00	39.99658000	-104.75075000	1242487.84	3209913.11
BEF WEST 17 EP	690.84N	154.46W	7450.00	39.99662000	-104.73523000	1242539.53	3214261.02

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577668	Planned	2000.00	1997.59	WdW Rate Gyro	Standard	
577667	Planned	12027.31	7450.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes