

Petro Operating Company

Location Weld County, CO Slot BEF West 14
Field Wattenberg Well W BEF West 14
Installation Brighton East Farm Pad Wellbore W BEF West 14 (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

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

BEF WEST 14 BHL

BEF WEST 14 EP

W BEF West 14 (PWB)

Surface 0.00 N 0.00 E

End of Build - 3.17 Inc, 1632.12 MD, 1632.05 TVD, -2.82 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	52.48	1500.00	S 0.00	W 0.00	0.00	0.00
End of Build	1632.12	3.17	52.48	1632.05	N 2.23	E 2.90	2.40	-2.82
End of Hold	7158.20	3.17	52.48	7149.67	N 188.39	E 245.35	0.00	-239.04
Target BEF WEST 14 EP	7929.34	90.00	269.30	7648.00	N 199.14	W 231.82	12.00	238.22
T.D. & Target BEF...BHL	12190.63	90.00	269.30	7648.00	N 147.42	W 4492.78	0.00	4495.20

N
GRID

Oct-6-2017
ESMA-2015 (2000) 6-2020 (3) Dip: 98.39 deg Field: 52108.9 H/T
Lat: N39 59 33.9000 Long: W104 44 4.8840 Elev: 5067.00 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 14 (PWB).
Ref wellpath is W BEF West 14 (PWP#1).
Coordinates are in Feet reference BEF West 14.
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 - 3.17 Inc, 7158.20 MD, 7149.67 TVD, -239.04 VS

S/C Kick off Point - 90.00 Inc, 7929.34 MD, 7648.00 TVD, 238.22 VS

T.D. & End of Hold - 7648.00 TVD, 147.42 N 4492.78 W

BEF WEST 14 EP

BEF WEST 14 BHL

W BEF West 14 (PWB)

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

Scale 1 cm = 200 ft

Vertical Section (Feet) ->

Azimuth 271.88 with reference 0.00 N, 0.00 E from BEF West 14

Scale 1 cm = 200 ft
True Vertical Depth (Feet)

North(Feet)
Scale 1 cm = 400 ft



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 14 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 14	39.99459000	-104.73470000	1241801.3625	3214415.8894	670.24N	8.59W	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	52.480	1500.00	-3568.00	0.00N	0.00E	==>	0.00
1632.12	3.17	52.480	1632.05	-3435.95	2.23N	2.90E	2.40	-2.82
7158.20	3.17	52.480	7149.67	2081.67	188.39N	245.35E	==>	-239.04
7929.34	90.00	269.300	7648.00	2580.00	199.14N	231.82W	12.00	238.22
12190.63	90.00	269.300	7648.00	2580.00	147.42N	4492.78W	==>	4495.20

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	39.99459000	-104.73470000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1500.00	0.00	52.480	1500.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1600.00	2.40	52.480	1599.97	1.28N	1.66E	2.40	-1.62	39.99459346	-104.73469403
1700.00	3.17	52.480	1699.83	4.51N	5.88E	==>	-5.73	39.99460225	-104.73467889
1800.00	3.17	52.480	1799.68	7.88N	10.26E	==>	-10.00	39.99461139	-104.73466312
1900.00	3.17	52.480	1899.52	11.25N	14.65E	==>	-14.27	39.99462053	-104.73464736
2000.00	3.17	52.480	1999.37	14.62N	19.04E	==>	-18.55	39.99462968	-104.73463160
2100.00	3.17	52.480	2099.22	17.99N	23.43E	==>	-22.82	39.99463882	-104.73461584
2200.00	3.17	52.480	2199.06	21.36N	27.81E	==>	-27.10	39.99464796	-104.73460008
2300.00	3.17	52.480	2298.91	24.73N	32.20E	==>	-31.37	39.99465711	-104.73458431
2400.00	3.17	52.480	2398.76	28.09N	36.59E	==>	-35.65	39.99466625	-104.73456855
2500.00	3.17	52.480	2498.60	31.46N	40.98E	==>	-39.92	39.99467539	-104.73455279
2600.00	3.17	52.480	2598.45	34.83N	45.36E	==>	-44.20	39.99468454	-104.73453703
2700.00	3.17	52.480	2698.30	38.20N	49.75E	==>	-48.47	39.99469368	-104.73452127
2800.00	3.17	52.480	2798.14	41.57N	54.14E	==>	-52.75	39.99470282	-104.73450551
2900.00	3.17	52.480	2897.99	44.94N	58.53E	==>	-57.02	39.99471197	-104.73448974
3000.00	3.17	52.480	2997.84	48.31N	62.91E	==>	-61.29	39.99472111	-104.73447398
3100.00	3.17	52.480	3097.69	51.68N	67.30E	==>	-65.57	39.99473025	-104.73445822
3200.00	3.17	52.480	3197.53	55.04N	71.69E	==>	-69.84	39.99473940	-104.73444246

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 271.880 degrees
Bottom hole distance is 4495.20 Feet on azimuth 271.88 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	3.17	52.480	3297.38	58.41N	76.07E	==>	-74.12	39.99474854	-104.73442670
3400.00	3.17	52.480	3397.23	61.78N	80.46E	==>	-78.39	39.99475768	-104.73441093
3500.00	3.17	52.480	3497.07	65.15N	84.85E	==>	-82.67	39.99476683	-104.73439517
3600.00	3.17	52.480	3596.92	68.52N	89.24E	==>	-86.94	39.99477597	-104.73437941
3700.00	3.17	52.480	3696.77	71.89N	93.62E	==>	-91.22	39.99478511	-104.73436365
3800.00	3.17	52.480	3796.61	75.26N	98.01E	==>	-95.49	39.99479426	-104.73434789
3900.00	3.17	52.480	3896.46	78.63N	102.40E	==>	-99.76	39.99480340	-104.73433212
4000.00	3.17	52.480	3996.31	81.99N	106.79E	==>	-104.04	39.99481254	-104.73431636
4100.00	3.17	52.480	4096.15	85.36N	111.17E	==>	-108.31	39.99482169	-104.73430060
4200.00	3.17	52.480	4196.00	88.73N	115.56E	==>	-112.59	39.99483083	-104.73428484
4300.00	3.17	52.480	4295.85	92.10N	119.95E	==>	-116.86	39.99483997	-104.73426908
4400.00	3.17	52.480	4395.69	95.47N	124.34E	==>	-121.14	39.99484911	-104.73425331
4500.00	3.17	52.480	4495.54	98.84N	128.72E	==>	-125.41	39.99485826	-104.73423755
4600.00	3.17	52.480	4595.39	102.21N	133.11E	==>	-129.69	39.99486740	-104.73422179
4700.00	3.17	52.480	4695.24	105.58N	137.50E	==>	-133.96	39.99487654	-104.73420603
4800.00	3.17	52.480	4795.08	108.94N	141.88E	==>	-138.24	39.99488569	-104.73419027
4900.00	3.17	52.480	4894.93	112.31N	146.27E	==>	-142.51	39.99489483	-104.73417450
5000.00	3.17	52.480	4994.78	115.68N	150.66E	==>	-146.78	39.99490397	-104.73415874
5100.00	3.17	52.480	5094.62	119.05N	155.05E	==>	-151.06	39.99491312	-104.73414298
5200.00	3.17	52.480	5194.47	122.42N	159.43E	==>	-155.33	39.99492226	-104.73412722
5300.00	3.17	52.480	5294.32	125.79N	163.82E	==>	-159.61	39.99493140	-104.73411146
5400.00	3.17	52.480	5394.16	129.16N	168.21E	==>	-163.88	39.99494055	-104.73409569
5500.00	3.17	52.480	5494.01	132.53N	172.60E	==>	-168.16	39.99494969	-104.73407993
5600.00	3.17	52.480	5593.86	135.89N	176.98E	==>	-172.43	39.99495883	-104.73406417
5700.00	3.17	52.480	5693.70	139.26N	181.37E	==>	-176.71	39.99496798	-104.73404841
5800.00	3.17	52.480	5793.55	142.63N	185.76E	==>	-180.98	39.99497712	-104.73403265
5900.00	3.17	52.480	5893.40	146.00N	190.15E	==>	-185.25	39.99498626	-104.73401688
6000.00	3.17	52.480	5993.25	149.37N	194.53E	==>	-189.53	39.99499541	-104.73400112
6100.00	3.17	52.480	6093.09	152.74N	198.92E	==>	-193.80	39.99500455	-104.73398536
6200.00	3.17	52.480	6192.94	156.11N	203.31E	==>	-198.08	39.99501369	-104.73396960
6300.00	3.17	52.480	6292.79	159.48N	207.69E	==>	-202.35	39.99502283	-104.73395384
6400.00	3.17	52.480	6392.63	162.84N	212.08E	==>	-206.63	39.99503198	-104.73393807
6500.00	3.17	52.480	6492.48	166.21N	216.47E	==>	-210.90	39.99504112	-104.73392231
6600.00	3.17	52.480	6592.33	169.58N	220.86E	==>	-215.18	39.99505026	-104.73390655
6700.00	3.17	52.480	6692.17	172.95N	225.24E	==>	-219.45	39.99505941	-104.73389079
6800.00	3.17	52.480	6792.02	176.32N	229.63E	==>	-223.73	39.99506855	-104.73387503
6900.00	3.17	52.480	6891.87	179.69N	234.02E	==>	-228.00	39.99507769	-104.73385926
7000.00	3.17	52.480	6991.71	183.06N	238.41E	==>	-232.27	39.99508684	-104.73384350
7100.00	3.17	52.480	7091.56	186.43N	242.79E	==>	-236.55	39.99509598	-104.73382774
7200.00	3.12	306.780	7191.44	189.77N	245.35E	12.00	-239.00	39.99510511	-104.73381851
7300.00	14.60	276.630	7290.11	192.87N	230.60E	12.00	-224.15	39.99511396	-104.73381107
7400.00	26.54	273.120	7383.57	195.55N	195.64E	12.00	-189.12	39.99512214	-104.73399575
7500.00	38.52	271.700	7467.72	197.69N	142.01E	12.00	-135.45	39.99512930	-104.73418709
7600.00	50.50	270.870	7538.91	199.21N	72.05E	12.00	-65.48	39.99513511	-104.73443673
7700.00	62.50	270.300	7594.00	200.03N	11.18W	12.00	17.74	39.99513934	-104.73473375
7800.00	74.49	269.830	7630.60	200.11N	104.05W	12.00	110.56	39.99514178	-104.73506518
7900.00	86.48	269.420	7647.10	199.47N	202.49W	12.00	208.92	39.99514233	-104.73541654
8000.00	90.00	269.300	7648.00	198.28N	302.47W	==>	308.81	39.99514145	-104.73577338
8100.00	90.00	269.300	7648.00	197.07N	402.46W	==>	408.70	39.99514048	-104.73613029
8200.00	90.00	269.300	7648.00	195.86N	502.45W	==>	508.60	39.99513951	-104.73648719
8300.00	90.00	269.300	7648.00	194.64N	602.44W	==>	608.50	39.99513855	-104.73684410
8400.00	90.00	269.300	7648.00	193.43N	702.44W	==>	708.40	39.99513758	-104.73720101
8500.00	90.00	269.300	7648.00	192.22N	802.43W	==>	808.30	39.99513660	-104.73755791
8600.00	90.00	269.300	7648.00	191.00N	902.42W	==>	908.20	39.99513563	-104.73791482
8700.00	90.00	269.300	7648.00	189.79N	1002.41W	==>	1008.10	39.99513466	-104.73827173
8800.00	90.00	269.300	7648.00	188.57N	1102.41W	==>	1108.00	39.99513369	-104.73862863
8900.00	90.00	269.300	7648.00	187.36N	1202.40W	==>	1207.90	39.99513271	-104.73898554
9000.00	90.00	269.300	7648.00	186.15N	1302.39W	==>	1307.80	39.99513173	-104.73934245

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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 271.880 degrees
Bottom hole distance is 4495.20 Feet on azimuth 271.88 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 14 (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	7648.00	184.93N	1402.38W	==>	1407.70	39.99513076	-104.73969935
9200.00	90.00	269.300	7648.00	183.72N	1502.38W	==>	1507.59	39.99512978	-104.74005626
9300.00	90.00	269.300	7648.00	182.51N	1602.37W	==>	1607.49	39.99512880	-104.74041317
9400.00	90.00	269.300	7648.00	181.29N	1702.36W	==>	1707.39	39.99512782	-104.74077007
9500.00	90.00	269.300	7648.00	180.08N	1802.36W	==>	1807.29	39.99512684	-104.74112698
9600.00	90.00	269.300	7648.00	178.87N	1902.35W	==>	1907.19	39.99512585	-104.74148389
9700.00	90.00	269.300	7648.00	177.65N	2002.34W	==>	2007.09	39.99512487	-104.74184079
9800.00	90.00	269.300	7648.00	176.44N	2102.33W	==>	2106.99	39.99512388	-104.74219770
9900.00	90.00	269.300	7648.00	175.22N	2202.33W	==>	2206.89	39.99512290	-104.74255461
10000.00	90.00	269.300	7648.00	174.01N	2302.32W	==>	2306.79	39.99512191	-104.74291151
10100.00	90.00	269.300	7648.00	172.80N	2402.31W	==>	2406.69	39.99512092	-104.74326842
10200.00	90.00	269.300	7648.00	171.58N	2502.30W	==>	2506.58	39.99511993	-104.74362533
10300.00	90.00	269.300	7648.00	170.37N	2602.30W	==>	2606.48	39.99511894	-104.74398223
10400.00	90.00	269.300	7648.00	169.16N	2702.29W	==>	2706.38	39.99511795	-104.74433914
10500.00	90.00	269.300	7648.00	167.94N	2802.28W	==>	2806.28	39.99511695	-104.74469605
10600.00	90.00	269.300	7648.00	166.73N	2902.27W	==>	2906.18	39.99511596	-104.74505295
10700.00	90.00	269.300	7648.00	165.51N	3002.27W	==>	3006.08	39.99511497	-104.74540986
10800.00	90.00	269.300	7648.00	164.30N	3102.26W	==>	3105.98	39.99511397	-104.74576677
10900.00	90.00	269.300	7648.00	163.09N	3202.25W	==>	3205.88	39.99511297	-104.74612367
11000.00	90.00	269.300	7648.00	161.87N	3302.24W	==>	3305.78	39.99511197	-104.74648058
11100.00	90.00	269.300	7648.00	160.66N	3402.24W	==>	3405.68	39.99511097	-104.74683749
11200.00	90.00	269.300	7648.00	159.45N	3502.23W	==>	3505.58	39.99510997	-104.74719439
11300.00	90.00	269.300	7648.00	158.23N	3602.22W	==>	3605.47	39.99510897	-104.74755130
11400.00	90.00	269.300	7648.00	157.02N	3702.22W	==>	3705.37	39.99510797	-104.74790821
11500.00	90.00	269.300	7648.00	155.81N	3802.21W	==>	3805.27	39.99510696	-104.74826511
11600.00	90.00	269.300	7648.00	154.59N	3902.20W	==>	3905.17	39.99510596	-104.74862202
11700.00	90.00	269.300	7648.00	153.38N	4002.19W	==>	4005.07	39.99510495	-104.74897893
11800.00	90.00	269.300	7648.00	152.16N	4102.19W	==>	4104.97	39.99510395	-104.74933583
11900.00	90.00	269.300	7648.00	150.95N	4202.18W	==>	4204.87	39.99510294	-104.74969274
12000.00	90.00	269.300	7648.00	149.74N	4302.17W	==>	4304.77	39.99510193	-104.75004965
12100.00	90.00	269.300	7648.00	148.52N	4402.16W	==>	4404.67	39.99510092	-104.75040655
12190.63	90.00	269.300	7648.00	147.42N	4492.78W	==>	4495.20	39.99510000	-104.75073000

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 271.880 degrees
Bottom hole distance is 4495.20 Feet on azimuth 271.88 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 14 (PWB)



Targets

Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 14 BHL	147.42N	4492.78W	7648.00	39.99510000	-104.75073000	1241948.78	3209923.27
BEF WEST 14 EP	199.14N	141.82W	7648.00	39.99514000	-104.73520000	1242000.50	3214274.08

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
577647	Planned	2000.00	1999.37	WdW Rate Gyro	Standard
577646	Planned	12190.63	7648.00	ISCWSA MWD	Rev 4 + SAG + FLT

Notes

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