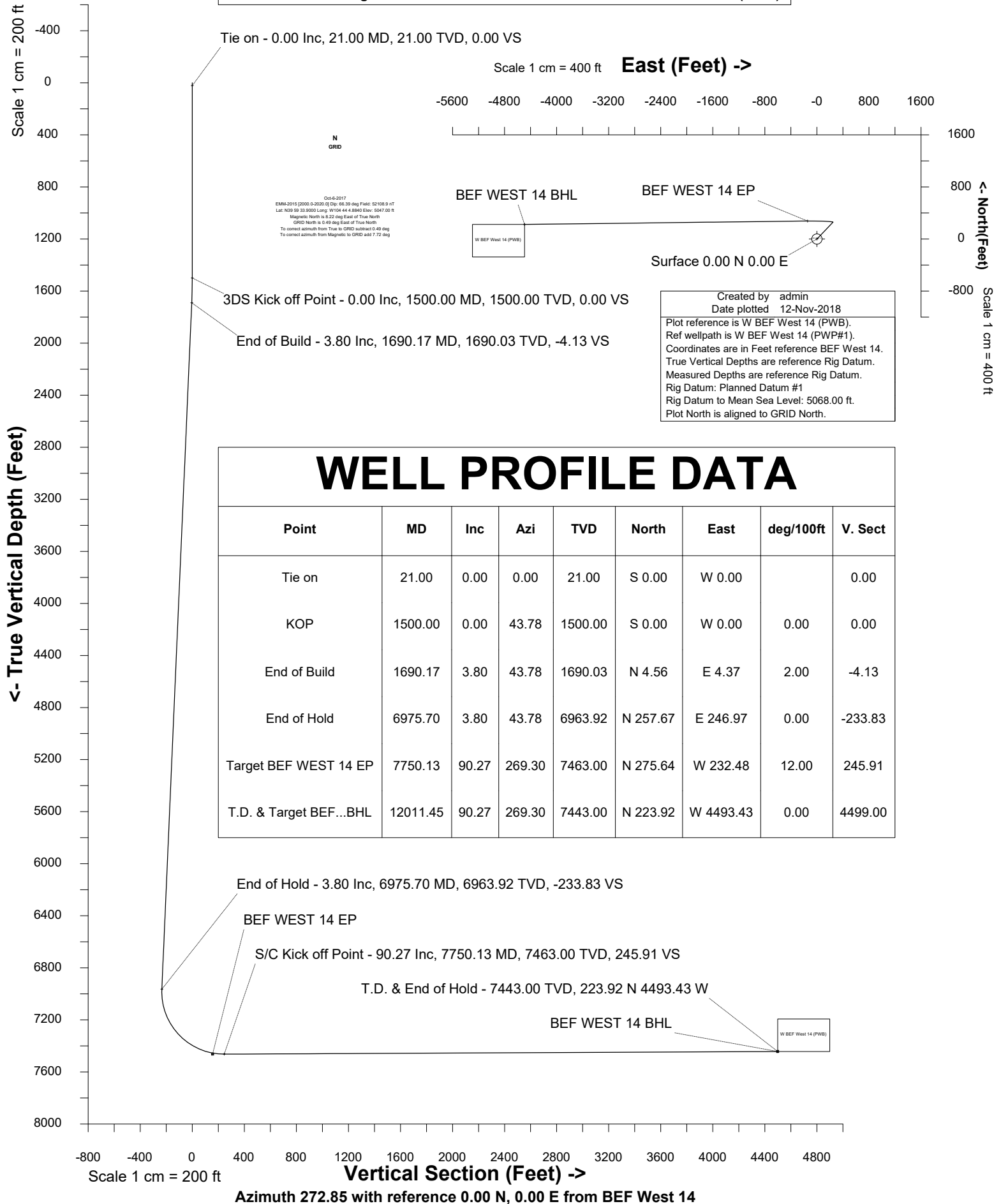


Petro Operating Company

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)





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	43.780	1500.00	-3568.00	0.00N	0.00E	==>	0.00
1690.17	3.80	43.780	1690.03	-3377.97	4.56N	4.37E	2.00	-4.13
6975.70	3.80	43.780	6963.92	1895.92	257.67N	246.97E	==>	-233.83
7750.13	90.27	269.300	7463.00	2395.00	275.64N	232.48W	12.00	245.91
12011.45	90.27	269.300	7443.00	2375.00	223.92N	4493.43W	==>	4499.00

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	43.780	1500.00	0.00N	0.00E	==>	0.00	39.99459000	-104.73470000
1600.00	2.00	43.780	1599.98	1.26N	1.21E	2.00	-1.14	39.99459343	-104.73469565
1690.17	3.80	43.780	1690.03	4.56N	4.37E	2.00	-4.13	39.99460240	-104.73468428
1700.00	3.80	43.780	1699.84	5.03N	4.82E	==>	-4.56	39.99460368	-104.73468265
1800.00	3.80	43.780	1799.62	9.81N	9.41E	==>	-8.91	39.99461672	-104.73466612
1900.00	3.80	43.780	1899.40	14.60N	14.00E	==>	-13.25	39.99462976	-104.73464960
2000.00	3.80	43.780	1999.18	19.39N	18.59E	==>	-17.60	39.99464279	-104.73463307
2100.00	3.80	43.780	2098.96	24.18N	23.18E	==>	-21.94	39.99465583	-104.73461654
2200.00	3.80	43.780	2198.74	28.97N	27.77E	==>	-26.29	39.99466887	-104.73460001
2300.00	3.80	43.780	2298.52	33.76N	32.36E	==>	-30.64	39.99468190	-104.73458348
2400.00	3.80	43.780	2398.30	38.55N	36.95E	==>	-34.98	39.99469494	-104.73456695
2500.00	3.80	43.780	2498.08	43.34N	41.54E	==>	-39.33	39.99470798	-104.73455043
2600.00	3.80	43.780	2597.86	48.13N	46.13E	==>	-43.67	39.99472101	-104.73453390
2700.00	3.80	43.780	2697.64	52.91N	50.72E	==>	-48.02	39.99473405	-104.73451737
2800.00	3.80	43.780	2797.42	57.70N	55.31E	==>	-52.37	39.99474708	-104.73450084
2900.00	3.80	43.780	2897.20	62.49N	59.90E	==>	-56.71	39.99476012	-104.73448431

All data is in Feet unless otherwise stated
Coordinates are from Slot MD's are from Rig (Planned Datum #1 5068.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 272.850 degrees
Bottom hole distance is 4499.00 Feet on azimuth 272.85 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	3.80	43.780	2996.98	67.28N	64.49E	==>	-61.06	39.99477316	-104.73446778
3100.00	3.80	43.780	3096.76	72.07N	69.08E	==>	-65.40	39.99478619	-104.73445125
3200.00	3.80	43.780	3196.54	76.86N	73.67E	==>	-69.75	39.99479923	-104.73443473
3300.00	3.80	43.780	3296.31	81.65N	78.26E	==>	-74.09	39.99481227	-104.73441820
3400.00	3.80	43.780	3396.09	86.44N	82.85E	==>	-78.44	39.99482530	-104.73440167
3500.00	3.80	43.780	3495.87	91.23N	87.43E	==>	-82.79	39.99483834	-104.73438514
3600.00	3.80	43.780	3595.65	96.01N	92.02E	==>	-87.13	39.99485138	-104.73436861
3700.00	3.80	43.780	3695.43	100.80N	96.61E	==>	-91.48	39.99486441	-104.73435208
3800.00	3.80	43.780	3795.21	105.59N	101.20E	==>	-95.82	39.99487745	-104.73433555
3900.00	3.80	43.780	3894.99	110.38N	105.79E	==>	-100.17	39.99489049	-104.73431903
4000.00	3.80	43.780	3994.77	115.17N	110.38E	==>	-104.52	39.99490352	-104.73430250
4100.00	3.80	43.780	4094.55	119.96N	114.97E	==>	-108.86	39.99491656	-104.73428597
4200.00	3.80	43.780	4194.33	124.75N	119.56E	==>	-113.21	39.99492960	-104.73426944
4300.00	3.80	43.780	4294.11	129.54N	124.15E	==>	-117.55	39.99494263	-104.73425291
4400.00	3.80	43.780	4393.89	134.33N	128.74E	==>	-121.90	39.99495567	-104.73423638
4500.00	3.80	43.780	4493.67	139.11N	133.33E	==>	-126.24	39.99496871	-104.73421985
4600.00	3.80	43.780	4593.45	143.90N	137.92E	==>	-130.59	39.99498174	-104.73420332
4700.00	3.80	43.780	4693.23	148.69N	142.51E	==>	-134.94	39.99499478	-104.73418680
4800.00	3.80	43.780	4793.01	153.48N	147.10E	==>	-139.28	39.99500782	-104.73417027
4900.00	3.80	43.780	4892.79	158.27N	151.69E	==>	-143.63	39.99502085	-104.73415374
5000.00	3.80	43.780	4992.57	163.06N	156.28E	==>	-147.97	39.99503389	-104.73413721
5100.00	3.80	43.780	5092.35	167.85N	160.87E	==>	-152.32	39.99504693	-104.73412068
5200.00	3.80	43.780	5192.13	172.64N	165.46E	==>	-156.67	39.99505996	-104.73410415
5300.00	3.80	43.780	5291.91	177.42N	170.05E	==>	-161.01	39.99507300	-104.73408762
5400.00	3.80	43.780	5391.69	182.21N	174.64E	==>	-165.36	39.99508604	-104.73407110
5500.00	3.80	43.780	5491.47	187.00N	179.23E	==>	-169.70	39.99509907	-104.73405457
5600.00	3.80	43.780	5591.25	191.79N	183.82E	==>	-174.05	39.99511211	-104.73403804
5700.00	3.80	43.780	5691.03	196.58N	188.41E	==>	-178.39	39.99512515	-104.73402151
5800.00	3.80	43.780	5790.81	201.37N	193.00E	==>	-182.74	39.99513818	-104.73400498
5900.00	3.80	43.780	5890.59	206.16N	197.59E	==>	-187.09	39.99515122	-104.73398845
6000.00	3.80	43.780	5990.37	210.95N	202.18E	==>	-191.43	39.99516425	-104.73397192
6100.00	3.80	43.780	6090.15	215.74N	206.77E	==>	-195.78	39.99517729	-104.73395539
6200.00	3.80	43.780	6189.93	220.52N	211.36E	==>	-200.12	39.99519033	-104.73393887
6300.00	3.80	43.780	6289.71	225.31N	215.95E	==>	-204.47	39.99520336	-104.73392234
6400.00	3.80	43.780	6389.49	230.10N	220.54E	==>	-208.82	39.99521640	-104.73390581
6500.00	3.80	43.780	6489.27	234.89N	225.13E	==>	-213.16	39.99522944	-104.73388928
6600.00	3.80	43.780	6589.05	239.68N	229.72E	==>	-217.51	39.99524247	-104.73387275
6700.00	3.80	43.780	6688.83	244.47N	234.31E	==>	-221.85	39.99525551	-104.73385622
6800.00	3.80	43.780	6788.61	249.26N	238.90E	==>	-226.20	39.99526855	-104.73383969
6900.00	3.80	43.780	6888.39	254.05N	243.49E	==>	-230.54	39.99528158	-104.73382316
6975.70	3.80	43.780	6963.92	257.67N	246.97E	==>	-233.83	39.99529145	-104.73381065
7000.00	2.73	353.990	6988.18	258.83N	247.46E	12.00	-234.27	39.99529462	-104.73380884
7100.00	12.55	281.630	7087.30	263.40N	236.54E	12.00	-223.13	39.99530743	-104.73384770
7200.00	24.40	275.320	7181.98	267.52N	205.22E	12.00	-191.65	39.99531948	-104.73395934
7300.00	36.34	273.010	7268.11	271.01N	154.88E	12.00	-141.20	39.99533024	-104.73413888
7400.00	48.31	271.740	7341.91	273.71N	87.73E	12.00	-74.00	39.99533925	-104.73437847
7500.00	60.29	270.870	7400.16	275.51N	6.69E	12.00	7.03	39.99534611	-104.73466764
7600.00	72.27	270.190	7440.31	276.32N	84.69W	12.00	98.34	39.99535051	-104.73499375
7700.00	84.26	269.590	7460.61	276.12N	182.42W	12.00	195.94	39.99535227	-104.73534256
7750.13	90.27	269.300	7463.00	275.64N	232.48W	12.00	245.91	39.99535213	-104.73552121
7800.00	90.27	269.300	7462.77	275.03N	282.34W	==>	295.68	39.99535165	-104.73569918
7900.00	90.27	269.300	7462.30	273.82N	382.33W	==>	395.48	39.99535068	-104.73605608
8000.00	90.27	269.300	7461.83	272.61N	482.32W	==>	495.29	39.99534972	-104.73641299
8100.00	90.27	269.300	7461.36	271.39N	582.31W	==>	595.10	39.99534875	-104.73676989
8200.00	90.27	269.300	7460.89	270.18N	682.30W	==>	694.90	39.99534778	-104.73712680
8300.00	90.27	269.300	7460.42	268.97N	782.29W	==>	794.71	39.99534681	-104.73748370
8400.00	90.27	269.300	7459.95	267.75N	882.29W	==>	894.52	39.99534583	-104.73784060
8500.00	90.27	269.300	7459.48	266.54N	982.28W	==>	994.33	39.99534486	-104.73819751

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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 272.850 degrees
Bottom hole distance is 4499.00 Feet on azimuth 272.85 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 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)
8600.00	90.27	269.300	7459.01	265.32N	1082.27W	==>	1094.13	39.99534389	-104.73855441
8700.00	90.27	269.300	7458.54	264.11N	1182.26W	==>	1193.94	39.99534291	-104.73891132
8800.00	90.27	269.300	7458.07	262.90N	1282.25W	==>	1293.75	39.99534194	-104.73926822
8900.00	90.27	269.300	7457.60	261.68N	1382.24W	==>	1393.56	39.99534096	-104.73962512
9000.00	90.27	269.300	7457.13	260.47N	1482.24W	==>	1493.36	39.99533998	-104.73998203
9100.00	90.27	269.300	7456.66	259.26N	1582.23W	==>	1593.17	39.99533900	-104.74033893
9200.00	90.27	269.300	7456.20	258.04N	1682.22W	==>	1692.98	39.99533802	-104.74069584
9300.00	90.27	269.300	7455.73	256.83N	1782.21W	==>	1792.78	39.99533704	-104.74105274
9400.00	90.27	269.300	7455.26	255.62N	1882.20W	==>	1892.59	39.99533606	-104.74140964
9500.00	90.27	269.300	7454.79	254.40N	1982.19W	==>	1992.40	39.99533507	-104.74176655
9600.00	90.27	269.300	7454.32	253.19N	2082.18W	==>	2092.21	39.99533409	-104.74212345
9700.00	90.27	269.300	7453.85	251.97N	2182.18W	==>	2192.01	39.99533310	-104.74248036
9800.00	90.27	269.300	7453.38	250.76N	2282.17W	==>	2291.82	39.99533211	-104.74283726
9900.00	90.27	269.300	7452.91	249.55N	2382.16W	==>	2391.63	39.99533113	-104.74319416
10000.00	90.27	269.300	7452.44	248.33N	2482.15W	==>	2491.43	39.99533014	-104.74355107
10100.00	90.27	269.300	7451.97	247.12N	2582.14W	==>	2591.24	39.99532915	-104.74390797
10200.00	90.27	269.300	7451.50	245.91N	2682.13W	==>	2691.05	39.99532815	-104.74426487
10300.00	90.27	269.300	7451.03	244.69N	2782.13W	==>	2790.86	39.99532716	-104.74462178
10400.00	90.27	269.300	7450.56	243.48N	2882.12W	==>	2890.66	39.99532617	-104.74497868
10500.00	90.27	269.300	7450.09	242.26N	2982.11W	==>	2990.47	39.99532517	-104.74533559
10600.00	90.27	269.300	7449.62	241.05N	3082.10W	==>	3090.28	39.99532418	-104.74569249
10700.00	90.27	269.300	7449.16	239.84N	3182.09W	==>	3190.08	39.99532318	-104.74604939
10800.00	90.27	269.300	7448.69	238.62N	3282.08W	==>	3289.89	39.99532218	-104.74640630
10900.00	90.27	269.300	7448.22	237.41N	3382.07W	==>	3389.70	39.99532118	-104.74676320
11000.00	90.27	269.300	7447.75	236.20N	3482.07W	==>	3489.51	39.99532018	-104.74712010
11100.00	90.27	269.300	7447.28	234.98N	3582.06W	==>	3589.31	39.99531918	-104.74747701
11200.00	90.27	269.300	7446.81	233.77N	3682.05W	==>	3689.12	39.99531818	-104.74783391
11300.00	90.27	269.300	7446.34	232.56N	3782.04W	==>	3788.93	39.99531717	-104.74819082
11400.00	90.27	269.300	7445.87	231.34N	3882.03W	==>	3888.74	39.99531617	-104.74854772
11500.00	90.27	269.300	7445.40	230.13N	3982.02W	==>	3988.54	39.99531516	-104.74890462
11600.00	90.27	269.300	7444.93	228.91N	4082.02W	==>	4088.35	39.99531416	-104.74926153
11700.00	90.27	269.300	7444.46	227.70N	4182.01W	==>	4188.16	39.99531315	-104.74961843
11800.00	90.27	269.300	7443.99	226.49N	4282.00W	==>	4287.96	39.99531214	-104.74997533
11900.00	90.27	269.300	7443.52	225.27N	4381.99W	==>	4387.77	39.99531113	-104.75033224
12000.00	90.27	269.300	7443.05	224.06N	4481.98W	==>	4487.58	39.99531012	-104.75068914
12011.45	90.27	269.300	7443.00	223.92N	4493.43W	==>	4499.00	39.99531000	-104.75073000

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Vertical Section is from 0.00N 0.00E on azimuth 272.850 degrees
Bottom hole distance is 4499.00 Feet on azimuth 272.85 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 14 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 14 BHL	223.92N	4493.43W	7443.00	39.99531000	-104.75073000	1242025.28	3209922.62
BEF WEST 14 EP	275.64N	142.48W	7463.00	39.99535000	-104.73520000	1242076.99	3214273.42

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577647	Planned	2000.00	1999.18	WdW Rate Gyro	Standard	
577646	Planned	12011.45	7443.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes