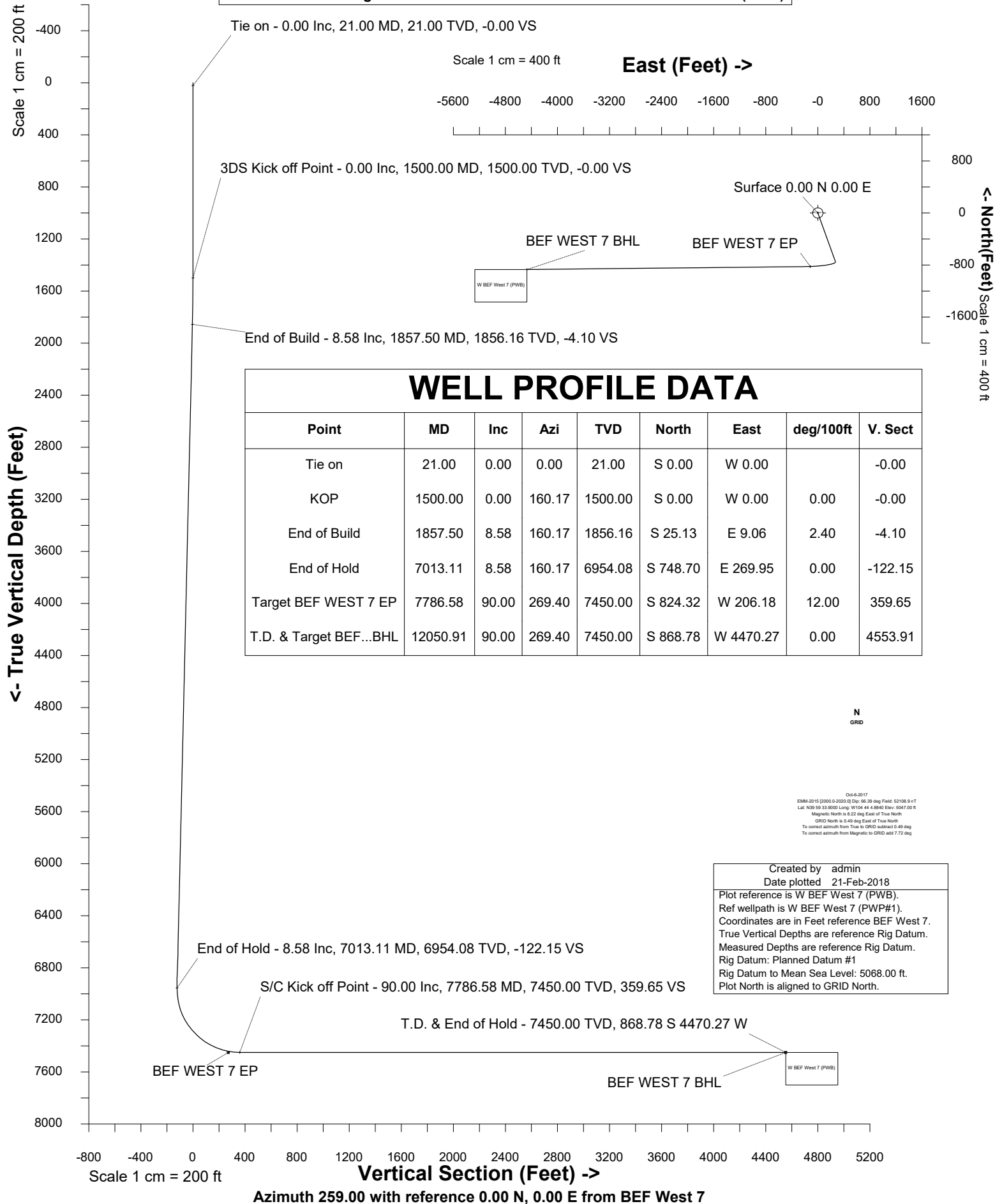


# Petro Operating Company

Location Weld County, CO Slot BEF West 7  
Field Wattenberg Well W BEF West 7  
Installation Brighton East Farm Pad Wellbore W BEF West 7 (PWB)





SYSDRILL  
Well Design Combined Report  
Wellbore: W BEF West 7 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 7	39.99327000	-104.73469000	1241320.5633	3214422.8410	189.42N	1.63W	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	160.170	1500.00	-3568.00	0.00N	0.00E	==>	0.00
1857.50	8.58	160.170	1856.16	-3211.84	25.13S	9.06E	2.40	-4.10
7013.11	8.58	160.170	6954.08	1886.08	748.70S	269.95E	==>	-122.15
7786.58	90.00	269.400	7450.00	2382.00	824.32S	206.18W	12.00	359.65
12050.91	90.00	269.400	7450.00	2382.00	868.78S	4470.27W	==>	4553.91

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	39.99327000	-104.73469000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1500.00	0.00	160.170	1500.00	0.00N	0.00E	==>	0.00	39.99327000	-104.73469000
1600.00	2.40	160.170	1599.97	1.97S	0.71E	2.40	-0.32	39.99326458	-104.73468753
1700.00	4.80	160.170	1699.77	7.88S	2.84E	2.40	-1.29	39.99324831	-104.73468011
1800.00	7.20	160.170	1799.21	17.71S	6.38E	2.40	-2.89	39.99322124	-104.73466776
1900.00	8.58	160.170	1898.19	31.10S	11.21E	==>	-5.07	39.99318437	-104.73465094
2000.00	8.58	160.170	1997.07	45.13S	16.27E	==>	-7.36	39.99314572	-104.73463331
2100.00	8.58	160.170	2095.95	59.17S	21.33E	==>	-9.65	39.99310708	-104.73461569
2200.00	8.58	160.170	2194.83	73.20S	26.39E	==>	-11.94	39.99306843	-104.73459806
2300.00	8.58	160.170	2293.71	87.24S	31.45E	==>	-14.23	39.99302979	-104.73458043
2400.00	8.58	160.170	2392.59	101.27S	36.51E	==>	-16.52	39.99299115	-104.73456281
2500.00	8.58	160.170	2491.47	115.31S	41.57E	==>	-18.81	39.99295250	-104.73454518
2600.00	8.58	160.170	2590.36	129.34S	46.63E	==>	-21.10	39.99291386	-104.73452755
2700.00	8.58	160.170	2689.24	143.38S	51.69E	==>	-23.39	39.99287521	-104.73450993
2800.00	8.58	160.170	2788.12	157.41S	56.75E	==>	-25.68	39.99283657	-104.73449230
2900.00	8.58	160.170	2887.00	171.44S	61.81E	==>	-27.97	39.99279792	-104.73447467
3000.00	8.58	160.170	2985.88	185.48S	66.88E	==>	-30.26	39.99275928	-104.73445705
3100.00	8.58	160.170	3084.76	199.51S	71.94E	==>	-32.55	39.99272063	-104.73443942
3200.00	8.58	160.170	3183.64	213.55S	77.00E	==>	-34.84	39.99268199	-104.73442179

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 259.000 degrees  
Bottom hole distance is 4553.91 Feet on azimuth 259.00 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	8.58	160.170	3282.52	227.58S	82.06E	==>	-37.13	39.99264334	-104.73440417
3400.00	8.58	160.170	3381.40	241.62S	87.12E	==>	-39.42	39.99260470	-104.73438654
3500.00	8.58	160.170	3480.28	255.65S	92.18E	==>	-41.71	39.99256605	-104.73436891
3600.00	8.58	160.170	3579.16	269.69S	97.24E	==>	-44.00	39.99252741	-104.73435129
3700.00	8.58	160.170	3678.05	283.72S	102.30E	==>	-46.29	39.99248876	-104.73433366
3800.00	8.58	160.170	3776.93	297.76S	107.36E	==>	-48.58	39.99245012	-104.73431603
3900.00	8.58	160.170	3875.81	311.79S	112.42E	==>	-50.87	39.99241147	-104.73429841
4000.00	8.58	160.170	3974.69	325.82S	117.48E	==>	-53.16	39.99237283	-104.73428078
4100.00	8.58	160.170	4073.57	339.86S	122.54E	==>	-55.45	39.99233418	-104.73426316
4200.00	8.58	160.170	4172.45	353.89S	127.60E	==>	-57.74	39.99229554	-104.73424553
4300.00	8.58	160.170	4271.33	367.93S	132.66E	==>	-60.03	39.99225690	-104.73422790
4400.00	8.58	160.170	4370.21	381.96S	137.72E	==>	-62.32	39.99221825	-104.73421028
4500.00	8.58	160.170	4469.09	396.00S	142.78E	==>	-64.61	39.99217961	-104.73419265
4600.00	8.58	160.170	4567.97	410.03S	147.84E	==>	-66.90	39.99214096	-104.73417502
4700.00	8.58	160.170	4666.85	424.07S	152.90E	==>	-69.19	39.99210232	-104.73415740
4800.00	8.58	160.170	4765.73	438.10S	157.96E	==>	-71.48	39.99206367	-104.73413977
4900.00	8.58	160.170	4864.62	452.14S	163.02E	==>	-73.77	39.99202503	-104.73412214
5000.00	8.58	160.170	4963.50	466.17S	168.08E	==>	-76.06	39.99198638	-104.73410452
5100.00	8.58	160.170	5062.38	480.21S	173.14E	==>	-78.35	39.99194774	-104.73408689
5200.00	8.58	160.170	5161.26	494.24S	178.20E	==>	-80.64	39.99190909	-104.73406927
5300.00	8.58	160.170	5260.14	508.27S	183.26E	==>	-82.93	39.99187045	-104.73405164
5400.00	8.58	160.170	5359.02	522.31S	188.32E	==>	-85.22	39.99183180	-104.73403401
5500.00	8.58	160.170	5457.90	536.34S	193.38E	==>	-87.51	39.99179316	-104.73401639
5600.00	8.58	160.170	5556.78	550.38S	198.44E	==>	-89.80	39.99175451	-104.73399876
5700.00	8.58	160.170	5655.66	564.41S	203.50E	==>	-92.09	39.99171587	-104.73398113
5800.00	8.58	160.170	5754.54	578.45S	208.56E	==>	-94.38	39.99167722	-104.73396351
5900.00	8.58	160.170	5853.42	592.48S	213.62E	==>	-96.67	39.99163858	-104.73394588
6000.00	8.58	160.170	5952.30	606.52S	218.68E	==>	-98.96	39.99159993	-104.73392826
6100.00	8.58	160.170	6051.19	620.55S	223.74E	==>	-101.25	39.99156129	-104.73391063
6200.00	8.58	160.170	6150.07	634.59S	228.80E	==>	-103.54	39.99152264	-104.73389300
6300.00	8.58	160.170	6248.95	648.62S	233.86E	==>	-105.83	39.99148400	-104.73387538
6400.00	8.58	160.170	6347.83	662.66S	238.92E	==>	-108.11	39.99144535	-104.73385775
6500.00	8.58	160.170	6446.71	676.69S	243.98E	==>	-110.40	39.99140671	-104.73384013
6600.00	8.58	160.170	6545.59	690.72S	249.04E	==>	-112.69	39.99136806	-104.73382250
6700.00	8.58	160.170	6644.47	704.76S	254.10E	==>	-114.98	39.99132942	-104.73380487
6800.00	8.58	160.170	6743.35	718.79S	259.16E	==>	-117.27	39.99129078	-104.73378725
6900.00	8.58	160.170	6842.23	732.83S	264.22E	==>	-119.56	39.99125213	-104.73376962
7000.00	8.58	160.170	6941.11	746.86S	269.28E	==>	-121.85	39.99121349	-104.73375200
7100.00	11.10	222.850	7039.90	760.97S	266.45E	12.00	-116.38	39.99117484	-104.73376256
7200.00	21.16	247.810	7135.95	774.89S	243.10E	12.00	-90.81	39.99113716	-104.73384629
7300.00	32.53	256.500	7225.06	788.04S	200.09E	12.00	-46.08	39.99110210	-104.73400019
7400.00	44.21	260.980	7303.34	799.82S	139.30E	12.00	15.85	39.99107119	-104.73421753
7500.00	56.00	263.890	7367.38	809.74S	63.37E	12.00	92.27	39.99104577	-104.73448879
7600.00	67.85	266.080	7414.36	817.35S	24.37W	12.00	179.85	39.99102697	-104.73480214
7700.00	79.71	267.920	7442.25	822.32S	120.08W	12.00	274.76	39.99101559	-104.73514387
7800.00	90.00	269.400	7450.00	824.46S	219.59W	==>	372.85	39.99101206	-104.73549906
7900.00	90.00	269.400	7450.00	825.50S	319.59W	==>	471.20	39.99101157	-104.73585595
8000.00	90.00	269.400	7450.00	826.55S	419.58W	==>	569.56	39.99101107	-104.73621284
8100.00	90.00	269.400	7450.00	827.59S	519.58W	==>	667.92	39.99101057	-104.73656972
8200.00	90.00	269.400	7450.00	828.63S	619.57W	==>	766.28	39.99101007	-104.73692661
8300.00	90.00	269.400	7450.00	829.67S	719.57W	==>	864.63	39.99100957	-104.73728350
8400.00	90.00	269.400	7450.00	830.72S	819.56W	==>	962.99	39.99100907	-104.73764038
8500.00	90.00	269.400	7450.00	831.76S	919.55W	==>	1061.35	39.99100857	-104.73799727
8600.00	90.00	269.400	7450.00	832.80S	1019.55W	==>	1159.70	39.99100806	-104.73835416
8700.00	90.00	269.400	7450.00	833.84S	1119.54W	==>	1258.06	39.99100756	-104.73871105
8800.00	90.00	269.400	7450.00	834.89S	1219.54W	==>	1356.42	39.99100705	-104.73906793
8900.00	90.00	269.400	7450.00	835.93S	1319.53W	==>	1454.77	39.99100655	-104.73942482
9000.00	90.00	269.400	7450.00	836.97S	1419.53W	==>	1553.13	39.99100604	-104.73978171

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Vertical Section is from 0.00N 0.00E on azimuth 259.000 degrees  
Bottom hole distance is 4553.91 Feet on azimuth 259.00 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 7 (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	269.400	7450.00	838.01S	1519.52W	==>	1651.49	39.99100553	-104.74013859
9200.00	90.00	269.400	7450.00	839.06S	1619.52W	==>	1749.84	39.99100502	-104.74049548
9300.00	90.00	269.400	7450.00	840.10S	1719.51W	==>	1848.20	39.99100451	-104.74085237
9400.00	90.00	269.400	7450.00	841.14S	1819.51W	==>	1946.56	39.99100399	-104.74120925
9500.00	90.00	269.400	7450.00	842.19S	1919.50W	==>	2044.92	39.99100348	-104.74156614
9600.00	90.00	269.400	7450.00	843.23S	2019.49W	==>	2143.27	39.99100297	-104.74192303
9700.00	90.00	269.400	7450.00	844.27S	2119.49W	==>	2241.63	39.99100245	-104.74227991
9800.00	90.00	269.400	7450.00	845.31S	2219.48W	==>	2339.99	39.99100193	-104.74263680
9900.00	90.00	269.400	7450.00	846.36S	2319.48W	==>	2438.34	39.99100141	-104.74299369
10000.00	90.00	269.400	7450.00	847.40S	2419.47W	==>	2536.70	39.99100089	-104.74335057
10100.00	90.00	269.400	7450.00	848.44S	2519.47W	==>	2635.06	39.99100037	-104.74370746
10200.00	90.00	269.400	7450.00	849.48S	2619.46W	==>	2733.41	39.99099985	-104.74406435
10300.00	90.00	269.400	7450.00	850.53S	2719.46W	==>	2831.77	39.99099933	-104.74442123
10400.00	90.00	269.400	7450.00	851.57S	2819.45W	==>	2930.13	39.99099881	-104.74477812
10500.00	90.00	269.400	7450.00	852.61S	2919.45W	==>	3028.48	39.99099828	-104.74513501
10600.00	90.00	269.400	7450.00	853.65S	3019.44W	==>	3126.84	39.99099776	-104.74549189
10700.00	90.00	269.400	7450.00	854.70S	3119.43W	==>	3225.20	39.99099723	-104.74584878
10800.00	90.00	269.400	7450.00	855.74S	3219.43W	==>	3323.56	39.99099670	-104.74620567
10900.00	90.00	269.400	7450.00	856.78S	3319.42W	==>	3421.91	39.99099617	-104.74656256
11000.00	90.00	269.400	7450.00	857.82S	3419.42W	==>	3520.27	39.99099564	-104.74691944
11100.00	90.00	269.400	7450.00	858.87S	3519.41W	==>	3618.63	39.99099511	-104.74727633
11200.00	90.00	269.400	7450.00	859.91S	3619.41W	==>	3716.98	39.99099458	-104.74763322
11300.00	90.00	269.400	7450.00	860.95S	3719.40W	==>	3815.34	39.99099404	-104.74799010
11400.00	90.00	269.400	7450.00	862.00S	3819.40W	==>	3913.70	39.99099351	-104.74834699
11500.00	90.00	269.400	7450.00	863.04S	3919.39W	==>	4012.05	39.99099297	-104.74870388
11600.00	90.00	269.400	7450.00	864.08S	4019.39W	==>	4110.41	39.99099244	-104.74906076
11700.00	90.00	269.400	7450.00	865.12S	4119.38W	==>	4208.77	39.99099190	-104.74941765
11800.00	90.00	269.400	7450.00	866.17S	4219.38W	==>	4307.12	39.99099136	-104.74977454
11900.00	90.00	269.400	7450.00	867.21S	4319.37W	==>	4405.48	39.99099082	-104.75013142
12000.00	90.00	269.400	7450.00	868.25S	4419.36W	==>	4503.84	39.99099028	-104.75048831
12050.91	90.00	269.400	7450.00	868.78S	4470.27W	==>	4553.91	39.99099000	-104.75067000

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Vertical Section is from 0.00N 0.00E on azimuth 259.000 degrees  
Bottom hole distance is 4553.91 Feet on azimuth 259.00 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 7 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 7 BHL	868.78S	4470.27W	7450.00	39.99099000	-104.75067000	1240451.81	3209952.73
BEF WEST 7 EP	824.32S	116.18W	7450.00	39.99101000	-104.73513000	1240496.27	3214306.67

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577598	Planned	2000.00	1997.07	WdW Rate Gyro	Standard	
577597	Planned	12050.91	7450.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes