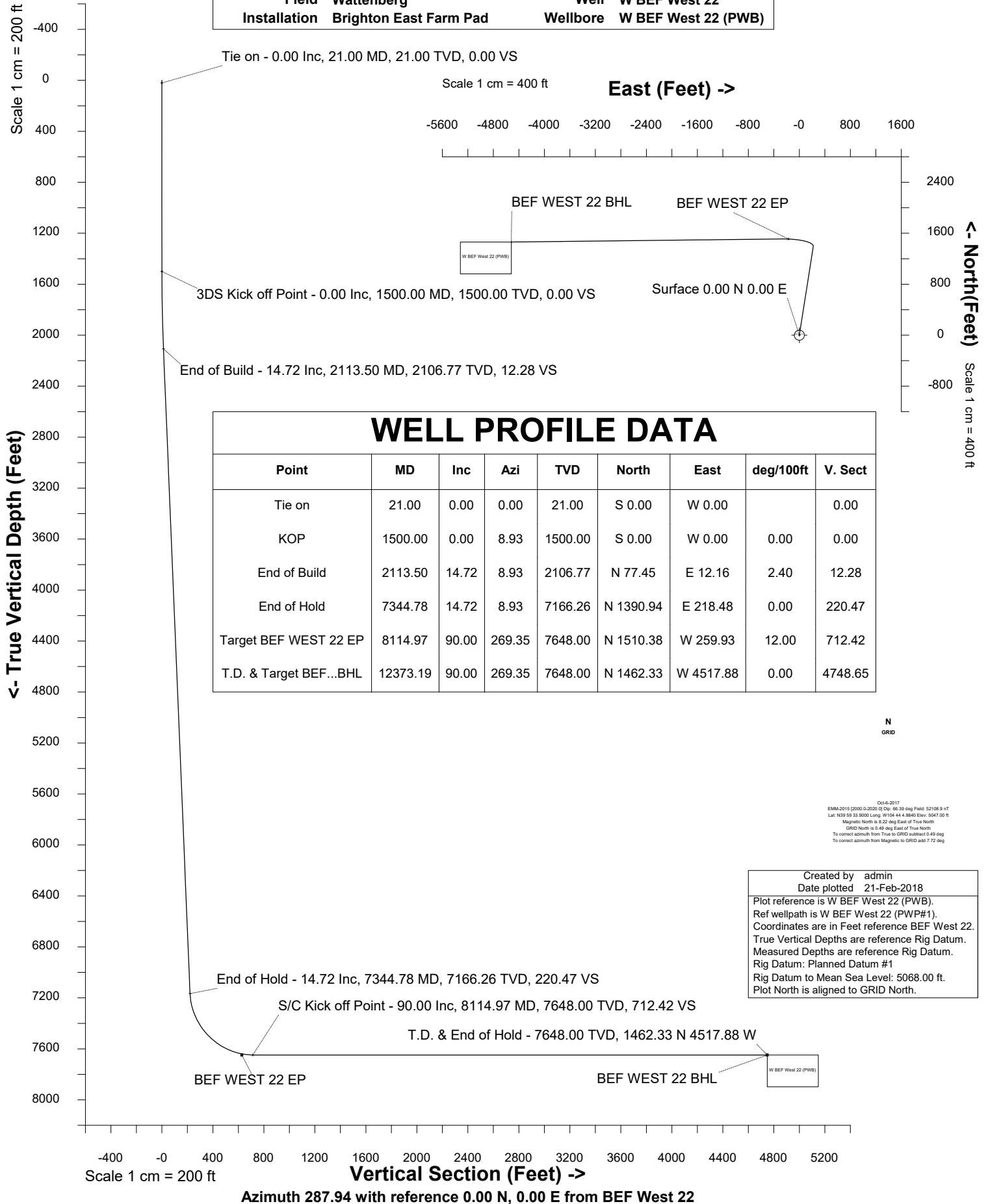


Petro Operating Company

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)





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	8.930	1500.00	-3568.00	0.00N	0.00E	==>	0.00
2113.50	14.72	8.930	2106.77	-2961.23	77.45N	12.16E	2.40	12.28
7344.78	14.72	8.930	7166.26	2098.26	1390.94N	218.48E	==>	220.47
8114.97	90.00	269.350	7648.00	2580.00	1510.38N	259.93W	12.00	712.42
12373.19	90.00	269.350	7648.00	2580.00	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	8.930	1500.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73470000
1600.00	2.40	8.930	1599.97	2.07N	0.32E	2.40	0.33	39.99494567	-104.73469878
1700.00	4.80	8.930	1699.77	8.27N	1.30E	2.40	1.31	39.99496267	-104.73469511
1800.00	7.20	8.930	1799.21	18.60N	2.92E	2.40	2.95	39.99499098	-104.73468900
1900.00	9.60	8.930	1898.13	33.03N	5.19E	2.40	5.23	39.99503054	-104.73468047
2000.00	12.00	8.930	1996.35	51.54N	8.10E	2.40	8.17	39.99508128	-104.73466952
2100.00	14.40	8.930	2093.70	74.09N	11.64E	2.40	11.74	39.99514311	-104.73465618
2200.00	14.72	8.930	2190.43	99.17N	15.58E	==>	15.72	39.99521184	-104.73464135
2300.00	14.72	8.930	2287.15	124.27N	19.52E	==>	19.70	39.99528067	-104.73462650
2400.00	14.72	8.930	2383.86	149.38N	23.46E	==>	23.68	39.99534950	-104.73461166
2500.00	14.72	8.930	2480.58	174.49N	27.41E	==>	27.66	39.99541833	-104.73459681
2600.00	14.72	8.930	2577.29	199.60N	31.35E	==>	31.64	39.99548715	-104.73458196
2700.00	14.72	8.930	2674.01	224.71N	35.30E	==>	35.62	39.99555598	-104.73456711
2800.00	14.72	8.930	2770.73	249.82N	39.24E	==>	39.60	39.99562481	-104.73455226
2900.00	14.72	8.930	2867.44	274.92N	43.18E	==>	43.58	39.99569364	-104.73453741
3000.00	14.72	8.930	2964.16	300.03N	47.13E	==>	47.56	39.99576247	-104.73452256
3100.00	14.72	8.930	3060.87	325.14N	51.07E	==>	51.54	39.99583130	-104.73450771
3200.00	14.72	8.930	3157.59	350.25N	55.02E	==>	55.52	39.99590013	-104.73449286

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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: 21-Feb-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)
3300.00	14.72	8.930	3254.31	375.36N	58.96E	==>	59.50	39.99596896	-104.73447801
3400.00	14.72	8.930	3351.02	400.47N	62.90E	==>	63.48	39.99603778	-104.73446316
3500.00	14.72	8.930	3447.74	425.57N	66.85E	==>	67.46	39.99610661	-104.73444831
3600.00	14.72	8.930	3544.46	450.68N	70.79E	==>	71.44	39.99617544	-104.73443346
3700.00	14.72	8.930	3641.17	475.79N	74.73E	==>	75.42	39.99624427	-104.73441861
3800.00	14.72	8.930	3737.89	500.90N	78.68E	==>	79.40	39.99631310	-104.73440376
3900.00	14.72	8.930	3834.60	526.01N	82.62E	==>	83.38	39.99638193	-104.73438892
4000.00	14.72	8.930	3931.32	551.12N	86.57E	==>	87.36	39.99645076	-104.73437407
4100.00	14.72	8.930	4028.04	576.22N	90.51E	==>	91.33	39.99651959	-104.73435922
4200.00	14.72	8.930	4124.75	601.33N	94.45E	==>	95.31	39.99658841	-104.73434437
4300.00	14.72	8.930	4221.47	626.44N	98.40E	==>	99.29	39.99665724	-104.73432952
4400.00	14.72	8.930	4318.18	651.55N	102.34E	==>	103.27	39.99672607	-104.73431467
4500.00	14.72	8.930	4414.90	676.66N	106.29E	==>	107.25	39.99679490	-104.73429982
4600.00	14.72	8.930	4511.62	701.77N	110.23E	==>	111.23	39.99686373	-104.73428497
4700.00	14.72	8.930	4608.33	726.88N	114.17E	==>	115.21	39.99693256	-104.73427012
4800.00	14.72	8.930	4705.05	751.98N	118.12E	==>	119.19	39.99700139	-104.73425527
4900.00	14.72	8.930	4801.77	777.09N	122.06E	==>	123.17	39.99707022	-104.73424042
5000.00	14.72	8.930	4898.48	802.20N	126.01E	==>	127.15	39.99713904	-104.73422557
5100.00	14.72	8.930	4995.20	827.31N	129.95E	==>	131.13	39.99720787	-104.73421072
5200.00	14.72	8.930	5091.91	852.42N	133.89E	==>	135.11	39.99727670	-104.73419587
5300.00	14.72	8.930	5188.63	877.53N	137.84E	==>	139.09	39.99734553	-104.73418102
5400.00	14.72	8.930	5285.35	902.63N	141.78E	==>	143.07	39.99741436	-104.73416617
5500.00	14.72	8.930	5382.06	927.74N	145.73E	==>	147.05	39.99748319	-104.73415132
5600.00	14.72	8.930	5478.78	952.85N	149.67E	==>	151.03	39.99755202	-104.73413647
5700.00	14.72	8.930	5575.49	977.96N	153.61E	==>	155.01	39.99762085	-104.73412162
5800.00	14.72	8.930	5672.21	1003.07N	157.56E	==>	158.99	39.99768967	-104.73410677
5900.00	14.72	8.930	5768.93	1028.18N	161.50E	==>	162.97	39.99775850	-104.73409192
6000.00	14.72	8.930	5865.64	1053.28N	165.44E	==>	166.95	39.99782733	-104.73407707
6100.00	14.72	8.930	5962.36	1078.39N	169.39E	==>	170.93	39.99789616	-104.73406222
6200.00	14.72	8.930	6059.08	1103.50N	173.33E	==>	174.91	39.99796499	-104.73404737
6300.00	14.72	8.930	6155.79	1128.61N	177.28E	==>	178.89	39.99803382	-104.73403252
6400.00	14.72	8.930	6252.51	1153.72N	181.22E	==>	182.87	39.99810265	-104.73401767
6500.00	14.72	8.930	6349.22	1178.83N	185.16E	==>	186.85	39.99817148	-104.73400282
6600.00	14.72	8.930	6445.94	1203.93N	189.11E	==>	190.83	39.99824030	-104.73398797
6700.00	14.72	8.930	6542.66	1229.04N	193.05E	==>	194.81	39.99830913	-104.73397312
6800.00	14.72	8.930	6639.37	1254.15N	197.00E	==>	198.79	39.99837796	-104.73395826
6900.00	14.72	8.930	6736.09	1279.26N	200.94E	==>	202.77	39.99844679	-104.73394341
7000.00	14.72	8.930	6832.80	1304.37N	204.88E	==>	206.75	39.99851562	-104.73392856
7100.00	14.72	8.930	6929.52	1329.48N	208.83E	==>	210.73	39.99858445	-104.73391371
7200.00	14.72	8.930	7026.24	1354.58N	212.77E	==>	214.71	39.99865328	-104.73389886
7300.00	14.72	8.930	7122.95	1379.69N	216.72E	==>	218.69	39.99872210	-104.73388401
7400.00	15.11	343.020	7219.68	1404.77N	217.47E	12.00	225.70	39.99879092	-104.73388055
7500.00	21.63	310.150	7314.78	1429.21N	199.51E	12.00	250.31	39.99885844	-104.73394390
7600.00	31.45	294.420	7404.24	1451.97N	161.53E	12.00	293.45	39.99892180	-104.73407875
7700.00	42.33	285.880	7484.15	1472.04N	105.19E	12.00	353.23	39.99897824	-104.73427923
7800.00	53.61	280.360	7551.03	1488.55N	32.95E	12.00	427.05	39.99902528	-104.73453655
7900.00	65.09	276.270	7601.94	1500.79N	52.03W	12.00	511.67	39.99906088	-104.73483948
8000.00	76.65	272.880	7634.67	1508.21N	146.04W	12.00	603.39	39.99908348	-104.73517479
8100.00	88.26	269.800	7647.77	1510.49N	244.97W	12.00	698.21	39.99909208	-104.73552780
8200.00	90.00	269.350	7648.00	1509.42N	344.96W	==>	793.02	39.99909151	-104.73588472
8300.00	90.00	269.350	7648.00	1508.29N	444.95W	==>	887.80	39.99909078	-104.73624165
8400.00	90.00	269.350	7648.00	1507.16N	544.95W	==>	982.59	39.99909004	-104.73659858
8500.00	90.00	269.350	7648.00	1506.04N	644.94W	==>	1077.38	39.99908931	-104.73695551
8600.00	90.00	269.350	7648.00	1504.91N	744.93W	==>	1172.16	39.99908857	-104.73731243
8700.00	90.00	269.350	7648.00	1503.78N	844.93W	==>	1266.95	39.99908783	-104.73766936
8800.00	90.00	269.350	7648.00	1502.65N	944.92W	==>	1361.74	39.99908710	-104.73802629
8900.00	90.00	269.350	7648.00	1501.52N	1044.91W	==>	1456.53	39.99908636	-104.73838322
9000.00	90.00	269.350	7648.00	1500.39N	1144.91W	==>	1551.31	39.99908562	-104.73874015

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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
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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)
9100.00	90.00	269.350	7648.00	1499.27N	1244.90W	==>	1646.10	39.99908488	-104.73909708
9200.00	90.00	269.350	7648.00	1498.14N	1344.90W	==>	1740.89	39.99908413	-104.73945401
9300.00	90.00	269.350	7648.00	1497.01N	1444.89W	==>	1835.67	39.99908339	-104.73981093
9400.00	90.00	269.350	7648.00	1495.88N	1544.88W	==>	1930.46	39.99908265	-104.74016786
9500.00	90.00	269.350	7648.00	1494.75N	1644.88W	==>	2025.25	39.99908190	-104.74052479
9600.00	90.00	269.350	7648.00	1493.62N	1744.87W	==>	2120.03	39.99908115	-104.74088172
9700.00	90.00	269.350	7648.00	1492.50N	1844.86W	==>	2214.82	39.99908040	-104.74123865
9800.00	90.00	269.350	7648.00	1491.37N	1944.86W	==>	2309.61	39.99907966	-104.74159558
9900.00	90.00	269.350	7648.00	1490.24N	2044.85W	==>	2404.39	39.99907891	-104.74195250
10000.00	90.00	269.350	7648.00	1489.11N	2144.84W	==>	2499.18	39.99907815	-104.74230943
10100.00	90.00	269.350	7648.00	1487.98N	2244.84W	==>	2593.97	39.99907740	-104.74266636
10200.00	90.00	269.350	7648.00	1486.85N	2344.83W	==>	2688.75	39.99907665	-104.74302329
10300.00	90.00	269.350	7648.00	1485.73N	2444.83W	==>	2783.54	39.99907589	-104.74338022
10400.00	90.00	269.350	7648.00	1484.60N	2544.82W	==>	2878.33	39.99907514	-104.74373715
10500.00	90.00	269.350	7648.00	1483.47N	2644.81W	==>	2973.11	39.99907438	-104.74409407
10600.00	90.00	269.350	7648.00	1482.34N	2744.81W	==>	3067.90	39.99907362	-104.74445100
10700.00	90.00	269.350	7648.00	1481.21N	2844.80W	==>	3162.69	39.99907286	-104.74480793
10800.00	90.00	269.350	7648.00	1480.08N	2944.79W	==>	3257.47	39.99907210	-104.74516486
10900.00	90.00	269.350	7648.00	1478.96N	3044.79W	==>	3352.26	39.99907134	-104.74552179
11000.00	90.00	269.350	7648.00	1477.83N	3144.78W	==>	3447.05	39.99907058	-104.74587871
11100.00	90.00	269.350	7648.00	1476.70N	3244.77W	==>	3541.84	39.99906982	-104.74623564
11200.00	90.00	269.350	7648.00	1475.57N	3344.77W	==>	3636.62	39.99906905	-104.74659257
11300.00	90.00	269.350	7648.00	1474.44N	3444.76W	==>	3731.41	39.99906829	-104.74694950
11400.00	90.00	269.350	7648.00	1473.31N	3544.76W	==>	3826.20	39.99906752	-104.74730643
11500.00	90.00	269.350	7648.00	1472.19N	3644.75W	==>	3920.98	39.99906675	-104.74766336
11600.00	90.00	269.350	7648.00	1471.06N	3744.74W	==>	4015.77	39.99906598	-104.74802028
11700.00	90.00	269.350	7648.00	1469.93N	3844.74W	==>	4110.56	39.99906521	-104.74837721
11800.00	90.00	269.350	7648.00	1468.80N	3944.73W	==>	4205.34	39.99906444	-104.74873414
11900.00	90.00	269.350	7648.00	1467.67N	4044.72W	==>	4300.13	39.99906367	-104.74909107
12000.00	90.00	269.350	7648.00	1466.54N	4144.72W	==>	4394.92	39.99906290	-104.74944800
12100.00	90.00	269.350	7648.00	1465.42N	4244.71W	==>	4489.70	39.99906212	-104.74980492
12200.00	90.00	269.350	7648.00	1464.29N	4344.70W	==>	4584.49	39.99906135	-104.75016185
12300.00	90.00	269.350	7648.00	1463.16N	4444.70W	==>	4679.28	39.99906057	-104.75051878
12373.19	90.00	269.350	7648.00	1462.33N	4517.88W	==>	4748.65	39.99906000	-104.75078000

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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: 21-Feb-2018



SYSDRILL
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	7648.00	39.99906000	-104.75078000	1243391.14	3209897.07
BEF WEST 22 EP	1510.38N	169.93W	7648.00	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	1996.35	WdW Rate Gyro	Standard	
577702	Planned	12373.19	7648.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes