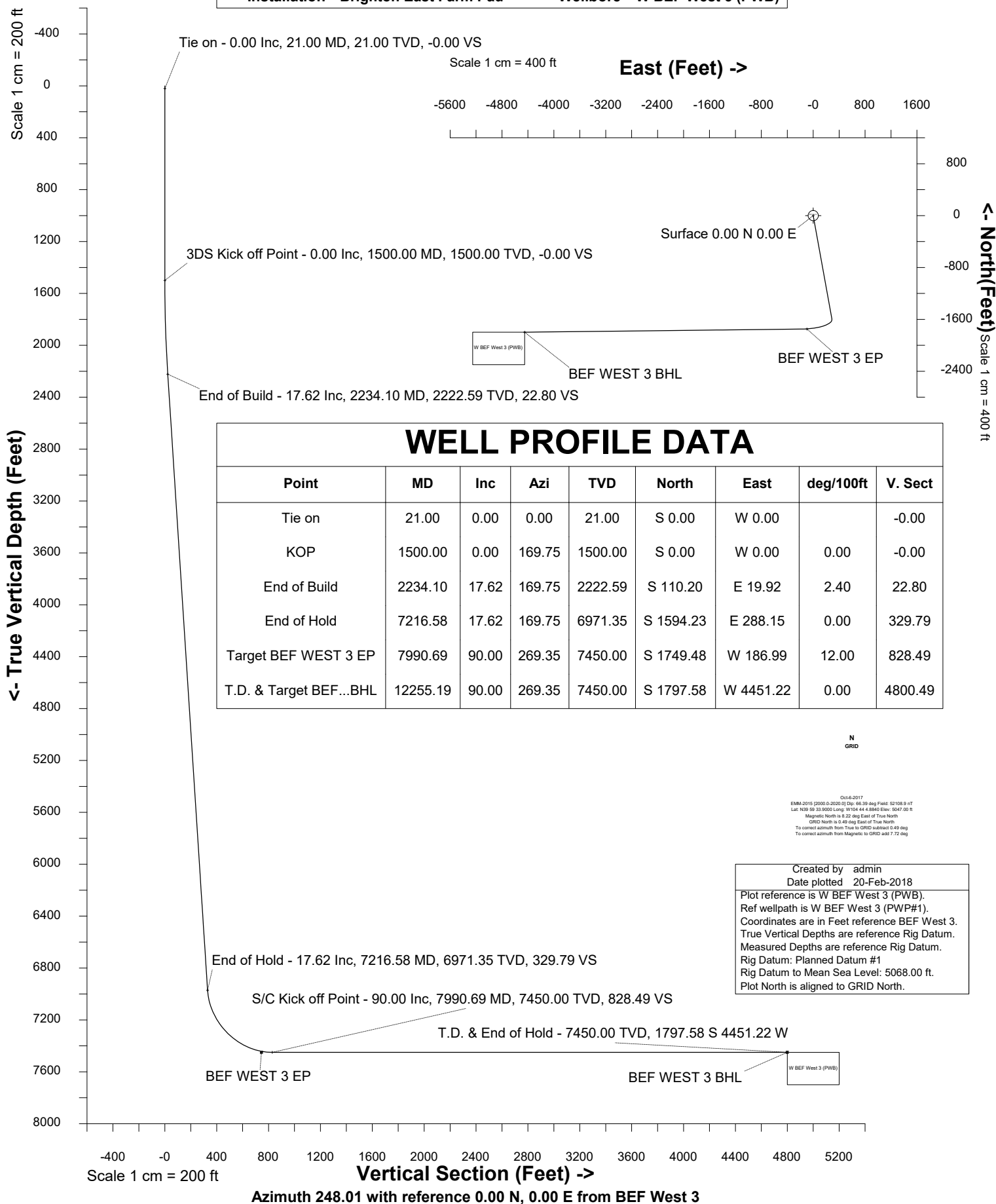


Petro Operating Company

Location Weld County, CO **Slot** BEF West 3
Field Wattenberg **Well** W BEF West 3
Installation Brighton East Farm Pad **Wellbore** W BEF West 3 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 3 (PWB)



Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 3	39.99310000	-104.73469000	1241258.6391	3214423.3754	127.50N	1.10W	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	169.750	1500.00	-3568.00	0.00N	0.00E	==>	0.00
2234.10	17.62	169.750	2222.59	-2845.41	110.20S	19.92E	2.40	22.80
7216.58	17.62	169.750	6971.35	1903.35	1594.23S	288.15E	==>	329.79
7990.69	90.00	269.350	7450.00	2382.00	1749.48S	186.99W	12.00	828.49
12255.19	90.00	269.350	7450.00	2382.00	1797.58S	4451.22W	==>	4800.49

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	39.99310000	-104.73469000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1500.00	0.00	169.750	1500.00	0.00N	0.00E	==>	0.00	39.99310000	-104.73469000
1600.00	2.40	169.750	1599.97	2.06S	0.37E	2.40	0.43	39.99309433	-104.73468873
1700.00	4.80	169.750	1699.77	8.24S	1.49E	2.40	1.70	39.99307735	-104.73468494
1800.00	7.20	169.750	1799.21	18.52S	3.35E	2.40	3.83	39.99304907	-104.73467862
1900.00	9.60	169.750	1898.13	32.90S	5.95E	2.40	6.81	39.99300955	-104.73466979
2000.00	12.00	169.750	1996.35	51.34S	9.28E	2.40	10.62	39.99295886	-104.73465847
2100.00	14.40	169.750	2093.70	73.81S	13.34E	2.40	15.27	39.99289709	-104.73464467
2200.00	16.80	169.750	2190.01	100.27S	18.12E	2.40	20.74	39.99282434	-104.73462841
2300.00	17.62	169.750	2285.39	129.82S	23.46E	==>	26.86	39.99274308	-104.73461026
2400.00	17.62	169.750	2380.70	159.61S	28.85E	==>	33.02	39.99266119	-104.73459196
2500.00	17.62	169.750	2476.01	189.39S	34.23E	==>	39.18	39.99257930	-104.73457367
2600.00	17.62	169.750	2571.32	219.18S	39.62E	==>	45.34	39.99249742	-104.73455537
2700.00	17.62	169.750	2666.63	248.96S	45.00E	==>	51.50	39.99241553	-104.73453708
2800.00	17.62	169.750	2761.94	278.75S	50.38E	==>	57.66	39.99233364	-104.73451878
2900.00	17.62	169.750	2857.25	308.53S	55.77E	==>	63.83	39.99225176	-104.73450049
3000.00	17.62	169.750	2952.56	338.32S	61.15E	==>	69.99	39.99216987	-104.73448219
3100.00	17.62	169.750	3047.87	368.10S	66.53E	==>	76.15	39.99208798	-104.73446390
3200.00	17.62	169.750	3143.18	397.89S	71.92E	==>	82.31	39.99200609	-104.73444560

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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 248.010 degrees
Bottom hole distance is 4800.49 Feet on azimuth 248.01 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 20-Feb-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 3 (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	17.62	169.750	3238.49	427.67S	77.30E	==>	88.47	39.99192421	-104.73442731
3400.00	17.62	169.750	3333.80	457.46S	82.68E	==>	94.63	39.99184232	-104.73440901
3500.00	17.62	169.750	3429.11	487.24S	88.07E	==>	100.79	39.99176043	-104.73439072
3600.00	17.62	169.750	3524.42	517.03S	93.45E	==>	106.96	39.99167854	-104.73437242
3700.00	17.62	169.750	3619.73	546.81S	98.83E	==>	113.12	39.99159666	-104.73435413
3800.00	17.62	169.750	3715.03	576.60S	104.22E	==>	119.28	39.99151477	-104.73433584
3900.00	17.62	169.750	3810.34	606.38S	109.60E	==>	125.44	39.99143288	-104.73431754
4000.00	17.62	169.750	3905.65	636.17S	114.98E	==>	131.60	39.99135100	-104.73429925
4100.00	17.62	169.750	4000.96	665.95S	120.37E	==>	137.76	39.99126911	-104.73428095
4200.00	17.62	169.750	4096.27	695.74S	125.75E	==>	143.92	39.99118722	-104.73426266
4300.00	17.62	169.750	4191.58	725.52S	131.13E	==>	150.09	39.99110533	-104.73424436
4400.00	17.62	169.750	4286.89	755.31S	136.52E	==>	156.25	39.99102345	-104.73422607
4500.00	17.62	169.750	4382.20	785.10S	141.90E	==>	162.41	39.99094156	-104.73420778
4600.00	17.62	169.750	4477.51	814.88S	147.28E	==>	168.57	39.99085967	-104.73418948
4700.00	17.62	169.750	4572.82	844.67S	152.67E	==>	174.73	39.99077778	-104.73417119
4800.00	17.62	169.750	4668.13	874.45S	158.05E	==>	180.89	39.99069590	-104.73415289
4900.00	17.62	169.750	4763.44	904.24S	163.43E	==>	187.06	39.99061401	-104.73413460
5000.00	17.62	169.750	4858.75	934.02S	168.82E	==>	193.22	39.99053212	-104.73411631
5100.00	17.62	169.750	4954.06	963.81S	174.20E	==>	199.38	39.99045023	-104.73409801
5200.00	17.62	169.750	5049.37	993.59S	179.58E	==>	205.54	39.99036835	-104.73407972
5300.00	17.62	169.750	5144.67	1023.38S	184.97E	==>	211.70	39.99028646	-104.73406142
5400.00	17.62	169.750	5239.98	1053.16S	190.35E	==>	217.86	39.99020457	-104.73404313
5500.00	17.62	169.750	5335.29	1082.95S	195.73E	==>	224.02	39.99012269	-104.73402484
5600.00	17.62	169.750	5430.60	1112.73S	201.12E	==>	230.19	39.99004080	-104.73400654
5700.00	17.62	169.750	5525.91	1142.52S	206.50E	==>	236.35	39.98995891	-104.73398825
5800.00	17.62	169.750	5621.22	1172.30S	211.89E	==>	242.51	39.98987702	-104.73396996
5900.00	17.62	169.750	5716.53	1202.09S	217.27E	==>	248.67	39.98979514	-104.73395166
6000.00	17.62	169.750	5811.84	1231.87S	222.65E	==>	254.83	39.98971325	-104.73393337
6100.00	17.62	169.750	5907.15	1261.66S	228.04E	==>	260.99	39.98963136	-104.73391508
6200.00	17.62	169.750	6002.46	1291.44S	233.42E	==>	267.15	39.98954947	-104.73389678
6300.00	17.62	169.750	6097.77	1321.23S	238.80E	==>	273.32	39.98946759	-104.73387849
6400.00	17.62	169.750	6193.08	1351.01S	244.19E	==>	279.48	39.98938570	-104.73386020
6500.00	17.62	169.750	6288.39	1380.80S	249.57E	==>	285.64	39.98930381	-104.73384190
6600.00	17.62	169.750	6383.70	1410.58S	254.95E	==>	291.80	39.98922192	-104.73382361
6700.00	17.62	169.750	6479.01	1440.37S	260.34E	==>	297.96	39.98914004	-104.73380532
6800.00	17.62	169.750	6574.31	1470.15S	265.72E	==>	304.12	39.98905815	-104.73378702
6900.00	17.62	169.750	6669.62	1499.94S	271.10E	==>	310.29	39.98897626	-104.73376873
7000.00	17.62	169.750	6764.93	1529.72S	276.49E	==>	316.45	39.98889437	-104.73375044
7100.00	17.62	169.750	6860.24	1559.51S	281.87E	==>	322.61	39.98881249	-104.73373214
7200.00	17.62	169.750	6955.55	1589.29S	287.25E	==>	328.77	39.98873060	-104.73371385
7300.00	18.75	202.030	7050.81	1619.14S	285.36E	12.00	341.71	39.98864871	-104.73372154
7400.00	25.62	228.590	7143.58	1648.44S	263.03E	12.00	373.38	39.98856880	-104.73380211
7500.00	35.22	243.020	7229.83	1675.93S	220.97E	12.00	422.67	39.98849436	-104.73395307
7600.00	45.84	251.650	7305.79	1700.39S	161.01E	12.00	487.43	39.98842863	-104.73416780
7700.00	56.92	257.590	7368.13	1720.76S	85.76E	12.00	564.83	39.98837449	-104.73443694
7800.00	68.22	262.170	7414.14	1736.15S	1.47W	12.00	651.48	39.98833431	-104.73474872
7900.00	79.62	266.070	7441.81	1745.89S	96.88W	12.00	743.60	39.98830983	-104.73508950
8000.00	90.00	269.350	7450.00	1749.58S	196.30W	==>	837.16	39.98830206	-104.73544441
8100.00	90.00	269.350	7450.00	1750.71S	296.29W	==>	930.31	39.98830133	-104.73580128
8200.00	90.00	269.350	7450.00	1751.84S	396.29W	==>	1023.45	39.98830060	-104.73615815
8300.00	90.00	269.350	7450.00	1752.97S	496.28W	==>	1116.59	39.98829987	-104.73651502
8400.00	90.00	269.350	7450.00	1754.09S	596.28W	==>	1209.73	39.98829913	-104.73687189
8500.00	90.00	269.350	7450.00	1755.22S	696.27W	==>	1302.87	39.98829840	-104.73722877
8600.00	90.00	269.350	7450.00	1756.35S	796.26W	==>	1396.01	39.98829766	-104.73758564
8700.00	90.00	269.350	7450.00	1757.48S	896.26W	==>	1489.15	39.98829693	-104.73794251
8800.00	90.00	269.350	7450.00	1758.61S	996.25W	==>	1582.29	39.98829619	-104.73829938
8900.00	90.00	269.350	7450.00	1759.73S	1096.24W	==>	1675.43	39.98829545	-104.73865625
9000.00	90.00	269.350	7450.00	1760.86S	1196.24W	==>	1768.57	39.98829471	-104.73901313

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Vertical Section is from 0.00N 0.00E on azimuth 248.010 degrees
Bottom hole distance is 4800.49 Feet on azimuth 248.01 degrees from Wellhead
Calculation method uses Minimum Curvature method
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SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 3 (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	7450.00	1761.99S	1296.23W	==>	1861.71	39.98829397	-104.73937000
9200.00	90.00	269.350	7450.00	1763.12S	1396.22W	==>	1954.86	39.98829322	-104.73972687
9300.00	90.00	269.350	7450.00	1764.25S	1496.22W	==>	2048.00	39.98829248	-104.74008374
9400.00	90.00	269.350	7450.00	1765.37S	1596.21W	==>	2141.14	39.98829173	-104.74044061
9500.00	90.00	269.350	7450.00	1766.50S	1696.21W	==>	2234.28	39.98829099	-104.74079749
9600.00	90.00	269.350	7450.00	1767.63S	1796.20W	==>	2327.42	39.98829024	-104.74115436
9700.00	90.00	269.350	7450.00	1768.76S	1896.19W	==>	2420.56	39.98828949	-104.74151123
9800.00	90.00	269.350	7450.00	1769.89S	1996.19W	==>	2513.70	39.98828874	-104.74186810
9900.00	90.00	269.350	7450.00	1771.02S	2096.18W	==>	2606.84	39.98828799	-104.74222497
10000.00	90.00	269.350	7450.00	1772.14S	2196.17W	==>	2699.98	39.98828724	-104.74258185
10100.00	90.00	269.350	7450.00	1773.27S	2296.17W	==>	2793.12	39.98828649	-104.74293872
10200.00	90.00	269.350	7450.00	1774.40S	2396.16W	==>	2886.26	39.98828574	-104.74329559
10300.00	90.00	269.350	7450.00	1775.53S	2496.15W	==>	2979.41	39.98828498	-104.74365246
10400.00	90.00	269.350	7450.00	1776.66S	2596.15W	==>	3072.55	39.98828422	-104.74400933
10500.00	90.00	269.350	7450.00	1777.78S	2696.14W	==>	3165.69	39.98828347	-104.74436621
10600.00	90.00	269.350	7450.00	1778.91S	2796.14W	==>	3258.83	39.98828271	-104.74472308
10700.00	90.00	269.350	7450.00	1780.04S	2896.13W	==>	3351.97	39.98828195	-104.74507995
10800.00	90.00	269.350	7450.00	1781.17S	2996.12W	==>	3445.11	39.98828119	-104.74543682
10900.00	90.00	269.350	7450.00	1782.30S	3096.12W	==>	3538.25	39.98828043	-104.74579369
11000.00	90.00	269.350	7450.00	1783.42S	3196.11W	==>	3631.39	39.98827967	-104.74615056
11100.00	90.00	269.350	7450.00	1784.55S	3296.10W	==>	3724.53	39.98827890	-104.74650744
11200.00	90.00	269.350	7450.00	1785.68S	3396.10W	==>	3817.67	39.98827814	-104.74686431
11300.00	90.00	269.350	7450.00	1786.81S	3496.09W	==>	3910.81	39.98827737	-104.74722118
11400.00	90.00	269.350	7450.00	1787.94S	3596.08W	==>	4003.95	39.98827660	-104.74757805
11500.00	90.00	269.350	7450.00	1789.07S	3696.08W	==>	4097.10	39.98827584	-104.74793492
11600.00	90.00	269.350	7450.00	1790.19S	3796.07W	==>	4190.24	39.98827507	-104.74829180
11700.00	90.00	269.350	7450.00	1791.32S	3896.07W	==>	4283.38	39.98827430	-104.74864867
11800.00	90.00	269.350	7450.00	1792.45S	3996.06W	==>	4376.52	39.98827353	-104.74900554
11900.00	90.00	269.350	7450.00	1793.58S	4096.05W	==>	4469.66	39.98827275	-104.74936241
12000.00	90.00	269.350	7450.00	1794.71S	4196.05W	==>	4562.80	39.98827198	-104.74971928
12100.00	90.00	269.350	7450.00	1795.83S	4296.04W	==>	4655.94	39.98827120	-104.75007615
12200.00	90.00	269.350	7450.00	1796.96S	4396.03W	==>	4749.08	39.98827043	-104.75043303
12255.19	90.00	269.350	7450.00	1797.58S	4451.22W	==>	4800.49	39.98827000	-104.75063000

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Wellbore: W BEF West 3 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 3 BHL	1797.58S	4451.22W	7450.00	39.98827000	-104.75063000	1239461.12	3209972.31
BEF WEST 3 EP	1749.48S	96.99W	7450.00	39.98830000	-104.73509000	1239509.22	3214326.39

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577570	Planned	2000.00	1996.35	WdW Rate Gyro	Standard	
577569	Planned	12255.19	7450.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes