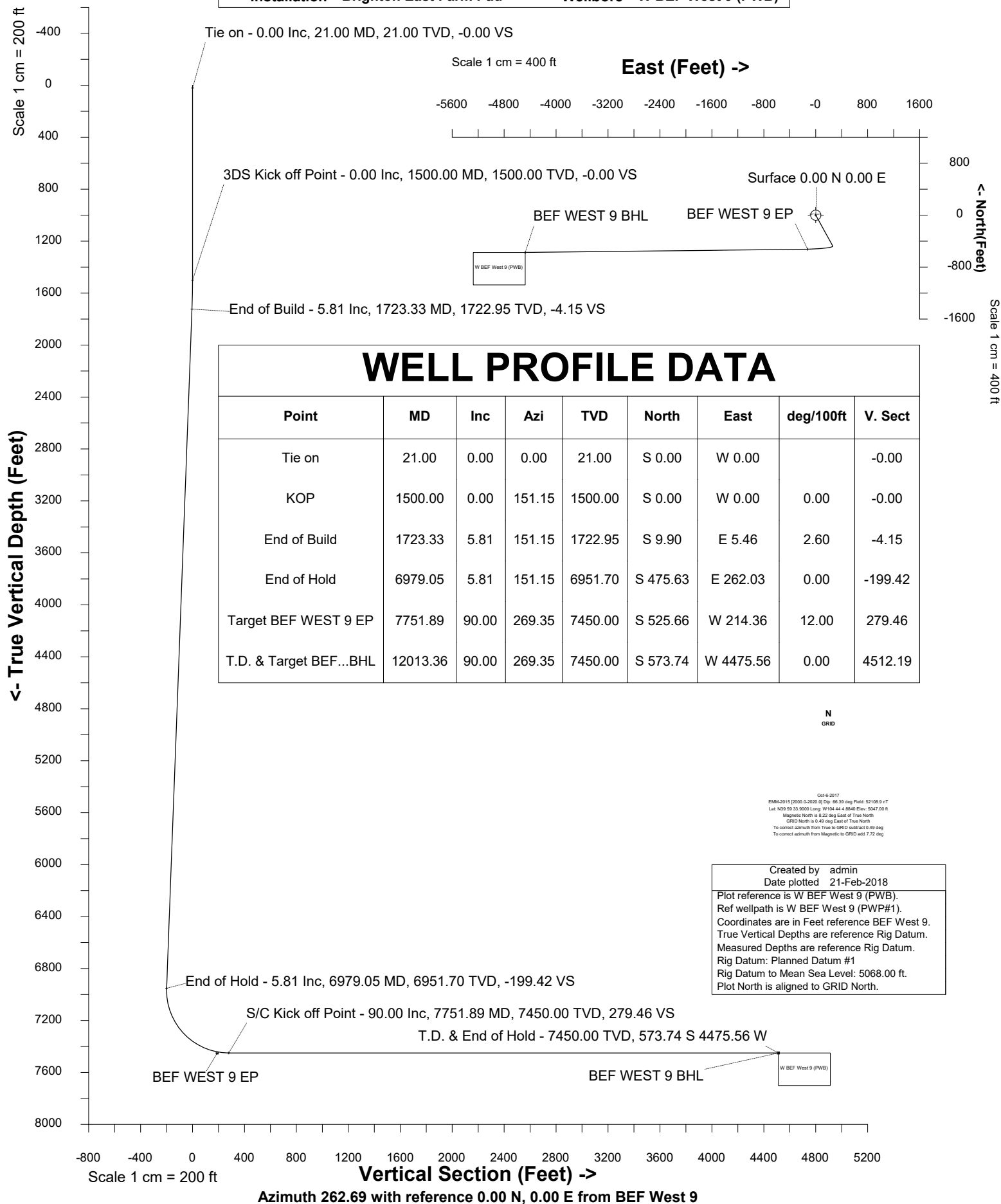


Petro Operating Company

Location Weld County, CO Slot BEF West 9
Field Wattenberg Well W BEF West 9
Installation Brighton East Farm Pad Wellbore W BEF West 9 (PWB)





SYS DRILL
Well Design Combined Report
Wellbore: W BEF West 9 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 9	39.99336000	-104.73469000	1241353.3467	3214422.5580	222.21N	1.92W	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	151.150	1500.00	-3568.00	0.00N	0.00E	==>	0.00
1723.33	5.81	151.150	1722.95	-3345.05	9.90S	5.46E	2.60	-4.15
6979.05	5.81	151.150	6951.70	1883.70	475.63S	262.03E	==>	-199.42
7751.89	90.00	269.350	7450.00	2382.00	525.66S	214.36W	12.00	279.46
12013.36	90.00	269.350	7450.00	2382.00	573.74S	4475.56W	==>	4512.19

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	39.99336000	-104.73469000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1500.00	0.00	151.150	1500.00	0.00N	0.00E	==>	0.00	39.99336000	-104.73469000
1600.00	2.60	151.150	1599.97	1.99S	1.09E	2.60	-0.83	39.99335452	-104.73468615
1700.00	5.20	151.150	1699.73	7.94S	4.38E	2.60	-3.33	39.99333809	-104.73467463
1800.00	5.81	151.150	1799.22	16.70S	9.20E	==>	-7.00	39.99331395	-104.73465769
1900.00	5.81	151.150	1898.71	25.56S	14.08E	==>	-10.72	39.99328951	-104.73464054
2000.00	5.81	151.150	1998.20	34.42S	18.96E	==>	-14.43	39.99326507	-104.73462339
2100.00	5.81	151.150	2097.69	43.28S	23.84E	==>	-18.15	39.99324063	-104.73460624
2200.00	5.81	151.150	2197.17	52.14S	28.73E	==>	-21.86	39.99321619	-104.73458909
2300.00	5.81	151.150	2296.66	61.00S	33.61E	==>	-25.58	39.99319175	-104.73457194
2400.00	5.81	151.150	2396.15	69.87S	38.49E	==>	-29.29	39.99316731	-104.73455479
2500.00	5.81	151.150	2495.63	78.73S	43.37E	==>	-33.01	39.99314287	-104.73453764
2600.00	5.81	151.150	2595.12	87.59S	48.25E	==>	-36.72	39.99311843	-104.73452049
2700.00	5.81	151.150	2694.61	96.45S	53.13E	==>	-40.44	39.99309399	-104.73450334
2800.00	5.81	151.150	2794.09	105.31S	58.02E	==>	-44.15	39.99306955	-104.73448619
2900.00	5.81	151.150	2893.58	114.17S	62.90E	==>	-47.87	39.99304511	-104.73446904
3000.00	5.81	151.150	2993.07	123.03S	67.78E	==>	-51.59	39.99302067	-104.73445189
3100.00	5.81	151.150	3092.55	131.89S	72.66E	==>	-55.30	39.99299623	-104.73443475
3200.00	5.81	151.150	3192.04	140.76S	77.54E	==>	-59.02	39.99297179	-104.73441760

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 262.690 degrees
Bottom hole distance is 4512.19 Feet on azimuth 262.69 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 9 (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	5.81	151.150	3291.53	149.62S	82.42E	==>	-62.73	39.99294735	-104.73440045
3400.00	5.81	151.150	3391.02	158.48S	87.31E	==>	-66.45	39.99292291	-104.73438330
3500.00	5.81	151.150	3490.50	167.34S	92.19E	==>	-70.16	39.99289847	-104.73436615
3600.00	5.81	151.150	3589.99	176.20S	97.07E	==>	-73.88	39.99287403	-104.73434900
3700.00	5.81	151.150	3689.48	185.06S	101.95E	==>	-77.59	39.99284959	-104.73433185
3800.00	5.81	151.150	3788.96	193.92S	106.83E	==>	-81.31	39.99282515	-104.73431470
3900.00	5.81	151.150	3888.45	202.79S	111.72E	==>	-85.02	39.99280071	-104.73429755
4000.00	5.81	151.150	3987.94	211.65S	116.60E	==>	-88.74	39.99277627	-104.73428040
4100.00	5.81	151.150	4087.42	220.51S	121.48E	==>	-92.45	39.99275183	-104.73426326
4200.00	5.81	151.150	4186.91	229.37S	126.36E	==>	-96.17	39.99272739	-104.73424611
4300.00	5.81	151.150	4286.40	238.23S	131.24E	==>	-99.88	39.99270295	-104.73422896
4400.00	5.81	151.150	4385.88	247.09S	136.12E	==>	-103.60	39.99267851	-104.73421181
4500.00	5.81	151.150	4485.37	255.95S	141.01E	==>	-107.32	39.99265407	-104.73419466
4600.00	5.81	151.150	4584.86	264.81S	145.89E	==>	-111.03	39.99262963	-104.73417751
4700.00	5.81	151.150	4684.34	273.68S	150.77E	==>	-114.75	39.99260519	-104.73416036
4800.00	5.81	151.150	4783.83	282.54S	155.65E	==>	-118.46	39.99258075	-104.73414321
4900.00	5.81	151.150	4883.32	291.40S	160.53E	==>	-122.18	39.99255631	-104.73412606
5000.00	5.81	151.150	4982.81	300.26S	165.41E	==>	-125.89	39.99253187	-104.73410891
5100.00	5.81	151.150	5082.29	309.12S	170.30E	==>	-129.61	39.99250743	-104.73409177
5200.00	5.81	151.150	5181.78	317.98S	175.18E	==>	-133.32	39.99248299	-104.73407462
5300.00	5.81	151.150	5281.27	326.84S	180.06E	==>	-137.04	39.99245855	-104.73405747
5400.00	5.81	151.150	5380.75	335.71S	184.94E	==>	-140.75	39.99243411	-104.73404032
5500.00	5.81	151.150	5480.24	344.57S	189.82E	==>	-144.47	39.99240967	-104.73402317
5600.00	5.81	151.150	5579.73	353.43S	194.70E	==>	-148.18	39.99238523	-104.73400602
5700.00	5.81	151.150	5679.21	362.29S	199.59E	==>	-151.90	39.99236079	-104.73398887
5800.00	5.81	151.150	5778.70	371.15S	204.47E	==>	-155.61	39.99233635	-104.73397172
5900.00	5.81	151.150	5878.19	380.01S	209.35E	==>	-159.33	39.99231191	-104.73395458
6000.00	5.81	151.150	5977.67	388.87S	214.23E	==>	-163.05	39.99228747	-104.73393743
6100.00	5.81	151.150	6077.16	397.73S	219.11E	==>	-166.76	39.99226303	-104.73392028
6200.00	5.81	151.150	6176.65	406.60S	224.00E	==>	-170.48	39.99223859	-104.73390313
6300.00	5.81	151.150	6276.14	415.46S	228.88E	==>	-174.19	39.99221415	-104.73388598
6400.00	5.81	151.150	6375.62	424.32S	233.76E	==>	-177.91	39.99218971	-104.73386883
6500.00	5.81	151.150	6475.11	433.18S	238.64E	==>	-181.62	39.99216527	-104.73385168
6600.00	5.81	151.150	6574.60	442.04S	243.52E	==>	-185.34	39.99214083	-104.73383453
6700.00	5.81	151.150	6674.08	450.90S	248.40E	==>	-189.05	39.99211639	-104.73381739
6800.00	5.81	151.150	6773.57	459.76S	253.29E	==>	-192.77	39.99209195	-104.73380024
6900.00	5.81	151.150	6873.06	468.63S	258.17E	==>	-196.48	39.99206751	-104.73378309
7000.00	5.13	176.810	6972.56	477.49S	262.59E	12.00	-199.74	39.99204306	-104.73376758
7100.00	12.82	246.170	7071.47	486.47S	252.65E	12.00	-188.74	39.99201865	-104.73380333
7200.00	24.29	257.900	7166.15	495.30S	222.28E	12.00	-157.49	39.99199514	-104.73391199
7300.00	36.09	262.290	7252.44	503.59S	172.80E	12.00	-107.37	39.99197355	-104.73408882
7400.00	47.98	264.720	7326.59	510.99S	106.38E	12.00	-40.55	39.99195483	-104.73432607
7500.00	59.91	266.380	7385.34	517.16S	25.93E	12.00	40.04	39.99193979	-104.73461340
7600.00	71.85	267.670	7426.14	521.84S	65.05W	12.00	130.88	39.99192909	-104.73493823
7700.00	83.80	268.800	7447.19	524.83S	162.58W	12.00	227.99	39.99192320	-104.73528637
7800.00	90.00	269.350	7450.00	526.21S	262.47W	==>	327.24	39.99192178	-104.73564289
7900.00	90.00	269.350	7450.00	527.34S	362.46W	==>	426.57	39.99192105	-104.73599978
8000.00	90.00	269.350	7450.00	528.46S	462.45W	==>	525.90	39.99192031	-104.73635667
8100.00	90.00	269.350	7450.00	529.59S	562.45W	==>	625.22	39.99191958	-104.73671357
8200.00	90.00	269.350	7450.00	530.72S	662.44W	==>	724.55	39.99191885	-104.73707046
8300.00	90.00	269.350	7450.00	531.85S	762.43W	==>	823.87	39.99191811	-104.73742735
8400.00	90.00	269.350	7450.00	532.98S	862.43W	==>	923.20	39.99191737	-104.73778424
8500.00	90.00	269.350	7450.00	534.11S	962.42W	==>	1022.52	39.99191664	-104.73814113
8600.00	90.00	269.350	7450.00	535.23S	1062.41W	==>	1121.85	39.99191590	-104.73849802
8700.00	90.00	269.350	7450.00	536.36S	1162.41W	==>	1221.17	39.99191516	-104.73885491
8800.00	90.00	269.350	7450.00	537.49S	1262.40W	==>	1320.50	39.99191441	-104.73921180
8900.00	90.00	269.350	7450.00	538.62S	1362.40W	==>	1419.82	39.99191367	-104.73956869
9000.00	90.00	269.350	7450.00	539.75S	1462.39W	==>	1519.15	39.99191293	-104.73992558

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 262.690 degrees
Bottom hole distance is 4512.19 Feet on azimuth 262.69 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 21-Feb-2018



SYS DRILL
Well Design Combined Report
Wellbore: W BEF West 9 (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	540.87S	1562.38W	==>	1618.48	39.99191218	-104.74028247
9200.00	90.00	269.350	7450.00	542.00S	1662.38W	==>	1717.80	39.99191144	-104.74063937
9300.00	90.00	269.350	7450.00	543.13S	1762.37W	==>	1817.13	39.99191069	-104.74099626
9400.00	90.00	269.350	7450.00	544.26S	1862.36W	==>	1916.45	39.99190994	-104.74135315
9500.00	90.00	269.350	7450.00	545.39S	1962.36W	==>	2015.78	39.99190919	-104.74171004
9600.00	90.00	269.350	7450.00	546.52S	2062.35W	==>	2115.10	39.99190844	-104.74206693
9700.00	90.00	269.350	7450.00	547.64S	2162.34W	==>	2214.43	39.99190769	-104.74242382
9800.00	90.00	269.350	7450.00	548.77S	2262.34W	==>	2313.75	39.99190694	-104.74278071
9900.00	90.00	269.350	7450.00	549.90S	2362.33W	==>	2413.08	39.99190619	-104.74313760
10000.00	90.00	269.350	7450.00	551.03S	2462.33W	==>	2512.40	39.99190543	-104.74349449
10100.00	90.00	269.350	7450.00	552.16S	2562.32W	==>	2611.73	39.99190467	-104.74385138
10200.00	90.00	269.350	7450.00	553.29S	2662.31W	==>	2711.06	39.99190392	-104.74420827
10300.00	90.00	269.350	7450.00	554.41S	2762.31W	==>	2810.38	39.99190316	-104.74456516
10400.00	90.00	269.350	7450.00	555.54S	2862.30W	==>	2909.71	39.99190240	-104.74492206
10500.00	90.00	269.350	7450.00	556.67S	2962.29W	==>	3009.03	39.99190164	-104.74527895
10600.00	90.00	269.350	7450.00	557.80S	3062.29W	==>	3108.36	39.99190088	-104.74563584
10700.00	90.00	269.350	7450.00	558.93S	3162.28W	==>	3207.68	39.99190012	-104.74599273
10800.00	90.00	269.350	7450.00	560.05S	3262.27W	==>	3307.01	39.99189935	-104.74634962
10900.00	90.00	269.350	7450.00	561.18S	3362.27W	==>	3406.33	39.99189859	-104.74670651
11000.00	90.00	269.350	7450.00	562.31S	3462.26W	==>	3505.66	39.99189782	-104.74706340
11100.00	90.00	269.350	7450.00	563.44S	3562.26W	==>	3604.98	39.99189706	-104.74742029
11200.00	90.00	269.350	7450.00	564.57S	3662.25W	==>	3704.31	39.99189629	-104.74777718
11300.00	90.00	269.350	7450.00	565.70S	3762.24W	==>	3803.64	39.99189552	-104.74813407
11400.00	90.00	269.350	7450.00	566.82S	3862.24W	==>	3902.96	39.99189475	-104.74849096
11500.00	90.00	269.350	7450.00	567.95S	3962.23W	==>	4002.29	39.99189398	-104.74884785
11600.00	90.00	269.350	7450.00	569.08S	4062.22W	==>	4101.61	39.99189320	-104.74920474
11700.00	90.00	269.350	7450.00	570.21S	4162.22W	==>	4200.94	39.99189243	-104.74956164
11800.00	90.00	269.350	7450.00	571.34S	4262.21W	==>	4300.26	39.99189166	-104.74991853
11900.00	90.00	269.350	7450.00	572.47S	4362.20W	==>	4399.59	39.99189088	-104.75027542
12000.00	90.00	269.350	7450.00	573.59S	4462.20W	==>	4498.91	39.99189010	-104.75063231
12013.36	90.00	269.350	7450.00	573.74S	4475.56W	==>	4512.19	39.99189000	-104.75068000

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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 262.690 degrees
Bottom hole distance is 4512.19 Feet on azimuth 262.69 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 21-Feb-2018



SYS DRILL
Well Design Combined Report
Wellbore: W BEF West 9 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 9 BHL	573.74S	4475.56W	7450.00	39.99189000	-104.75068000	1240779.62	3209947.15
BEF WEST 9 EP	525.66S	124.36W	7450.00	39.99192000	-104.73515000	1240827.70	3214298.20

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577612	Planned	2000.00	1998.20	WdW Rate Gyro	Standard	
577611	Planned	12013.36	7450.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes