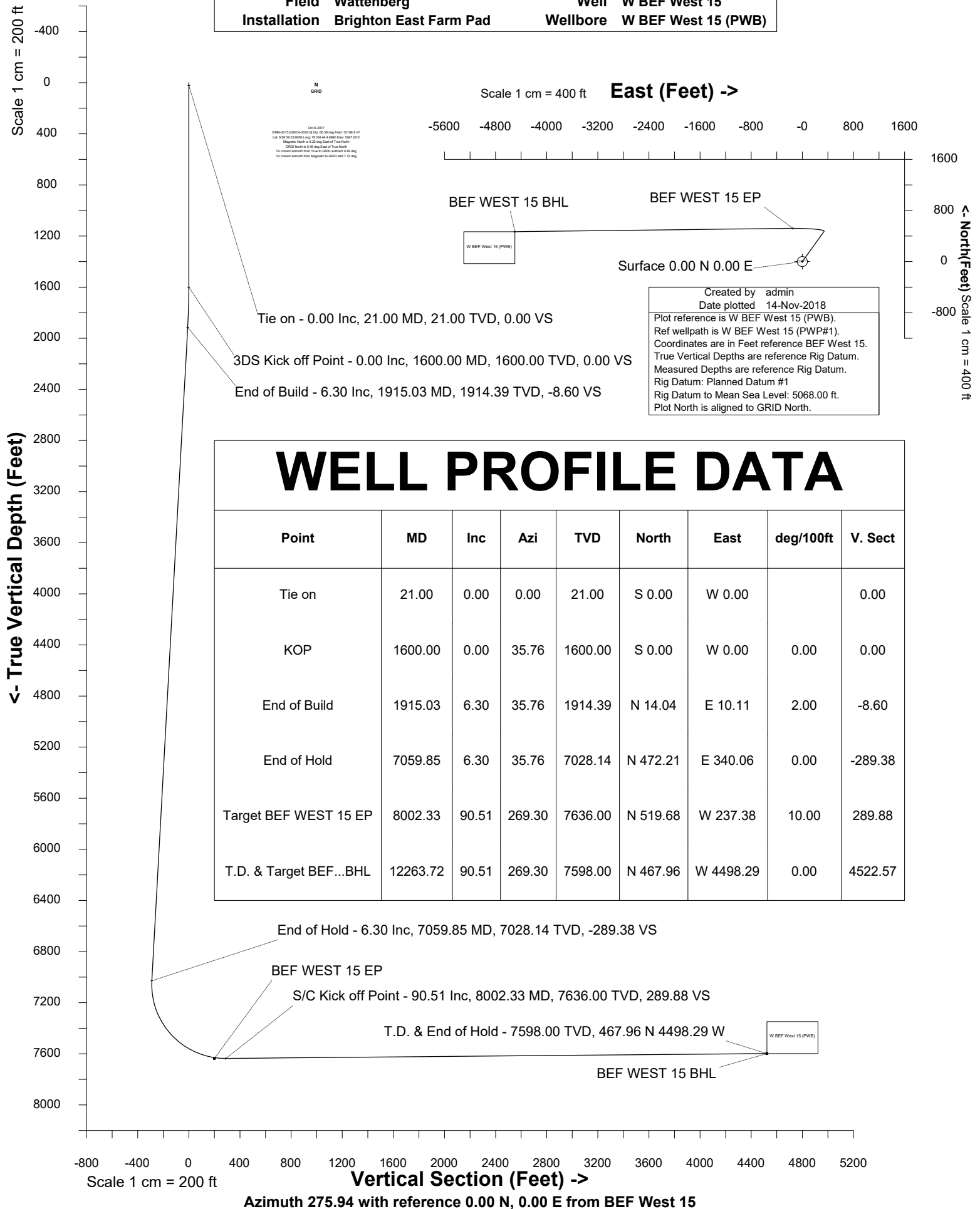


Petro Operating Company

Location	Weld County, CO	Slot	BEF West 15
Field	Wattenberg	Well	W BEF West 15
Installation	Brighton East Farm Pad	Wellbore	W BEF West 15 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 15 (PWB)



Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 15	39.99463000	-104.73470000	1241815.9329	3214415.7637	684.81N	8.71W	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
1600.00	0.00	35.760	1600.00	-3468.00	0.00N	0.00E	==>	0.00
1915.03	6.30	35.760	1914.39	-3153.61	14.04N	10.11E	2.00	-8.60
7059.85	6.30	35.760	7028.14	1960.14	472.21N	340.06E	==>	-289.38
8002.33	90.51	269.300	7636.00	2568.00	519.68N	237.38W	10.00	289.88
12263.72	90.51	269.300	7598.00	2530.00	467.96N	4498.29W	==>	4522.57

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	39.99463000	-104.73470000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1500.00	0.00	0.000	1500.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1600.00	0.00	35.760	1600.00	0.00N	0.00E	==>	0.00	39.99463000	-104.73470000
1700.00	2.00	35.760	1699.98	1.42N	1.02E	2.00	-0.87	39.99463386	-104.73469632
1800.00	4.00	35.760	1799.84	5.66N	4.08E	2.00	-3.47	39.99464545	-104.73468527
1900.00	6.00	35.760	1899.45	12.73N	9.17E	2.00	-7.80	39.99466474	-104.73466688
1915.03	6.30	35.760	1914.39	14.04N	10.11E	2.00	-8.60	39.99466830	-104.73466348
2000.00	6.30	35.760	1998.85	21.61N	15.56E	==>	-13.24	39.99468895	-104.73464380
2100.00	6.30	35.760	2098.25	30.51N	21.97E	==>	-18.70	39.99471324	-104.73462063
2200.00	6.30	35.760	2197.64	39.42N	28.39E	==>	-24.16	39.99473753	-104.73459747
2300.00	6.30	35.760	2297.04	48.33N	34.80E	==>	-29.61	39.99476183	-104.73457431
2400.00	6.30	35.760	2396.44	57.23N	41.21E	==>	-35.07	39.99478612	-104.73455114
2500.00	6.30	35.760	2495.83	66.14N	47.63E	==>	-40.53	39.99481041	-104.73452798
2600.00	6.30	35.760	2595.23	75.04N	54.04E	==>	-45.99	39.99483471	-104.73450482
2700.00	6.30	35.760	2694.62	83.95N	60.45E	==>	-51.44	39.99485900	-104.73448166
2800.00	6.30	35.760	2794.02	92.85N	66.87E	==>	-56.90	39.99488329	-104.73445849
2900.00	6.30	35.760	2893.42	101.76N	73.28E	==>	-62.36	39.99490759	-104.73443533

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 275.940 degrees
Bottom hole distance is 4522.57 Feet on azimuth 275.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 14-Nov-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 15 (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)
3000.00	6.30	35.760	2992.81	110.66N	79.69E	==>	-67.82	39.99493188	-104.73441217
3100.00	6.30	35.760	3092.21	119.57N	86.11E	==>	-73.27	39.99495617	-104.73438900
3200.00	6.30	35.760	3191.60	128.47N	92.52E	==>	-78.73	39.99498047	-104.73436584
3300.00	6.30	35.760	3291.00	137.38N	98.93E	==>	-84.19	39.99500476	-104.73434268
3400.00	6.30	35.760	3390.40	146.29N	105.35E	==>	-89.65	39.99502906	-104.73431951
3500.00	6.30	35.760	3489.79	155.19N	111.76E	==>	-95.10	39.99505335	-104.73429635
3600.00	6.30	35.760	3589.19	164.10N	118.17E	==>	-100.56	39.99507764	-104.73427319
3700.00	6.30	35.760	3688.58	173.00N	124.59E	==>	-106.02	39.99510194	-104.73425002
3800.00	6.30	35.760	3787.98	181.91N	131.00E	==>	-111.48	39.99512623	-104.73422686
3900.00	6.30	35.760	3887.38	190.81N	137.41E	==>	-116.93	39.99515052	-104.73420370
4000.00	6.30	35.760	3986.77	199.72N	143.83E	==>	-122.39	39.99517482	-104.73418053
4100.00	6.30	35.760	4086.17	208.62N	150.24E	==>	-127.85	39.99519911	-104.73415737
4200.00	6.30	35.760	4185.56	217.53N	156.65E	==>	-133.30	39.99522340	-104.73413421
4300.00	6.30	35.760	4284.96	226.43N	163.07E	==>	-138.76	39.99524770	-104.73411105
4400.00	6.30	35.760	4384.36	235.34N	169.48E	==>	-144.22	39.99527199	-104.73408788
4500.00	6.30	35.760	4483.75	244.25N	175.89E	==>	-149.68	39.99529628	-104.73406472
4600.00	6.30	35.760	4583.15	253.15N	182.31E	==>	-155.13	39.99532058	-104.73404156
4700.00	6.30	35.760	4682.54	262.06N	188.72E	==>	-160.59	39.99534487	-104.73401839
4800.00	6.30	35.760	4781.94	270.96N	195.13E	==>	-166.05	39.99536916	-104.73399523
4900.00	6.30	35.760	4881.34	279.87N	201.55E	==>	-171.51	39.99539346	-104.73397206
5000.00	6.30	35.760	4980.73	288.77N	207.96E	==>	-176.96	39.99541775	-104.73394890
5100.00	6.30	35.760	5080.13	297.68N	214.37E	==>	-182.42	39.99544204	-104.73392574
5200.00	6.30	35.760	5179.52	306.58N	220.79E	==>	-187.88	39.99546634	-104.73390257
5300.00	6.30	35.760	5278.92	315.49N	227.20E	==>	-193.34	39.99549063	-104.73387941
5400.00	6.30	35.760	5378.32	324.39N	233.61E	==>	-198.79	39.99551492	-104.73385625
5500.00	6.30	35.760	5477.71	333.30N	240.03E	==>	-204.25	39.99553922	-104.73383308
5600.00	6.30	35.760	5577.11	342.21N	246.44E	==>	-209.71	39.99556351	-104.73380992
5700.00	6.30	35.760	5676.50	351.11N	252.85E	==>	-215.17	39.99558780	-104.73378676
5800.00	6.30	35.760	5775.90	360.02N	259.27E	==>	-220.62	39.99561210	-104.73376359
5900.00	6.30	35.760	5875.30	368.92N	265.68E	==>	-226.08	39.99563639	-104.73374043
6000.00	6.30	35.760	5974.69	377.83N	272.09E	==>	-231.54	39.99566068	-104.73371727
6100.00	6.30	35.760	6074.09	386.73N	278.51E	==>	-237.00	39.99568498	-104.73369410
6200.00	6.30	35.760	6173.48	395.64N	284.92E	==>	-242.45	39.99570927	-104.73367094
6300.00	6.30	35.760	6272.88	404.54N	291.33E	==>	-247.91	39.99573356	-104.73364778
6400.00	6.30	35.760	6372.28	413.45N	297.75E	==>	-253.37	39.99575785	-104.73362461
6500.00	6.30	35.760	6471.67	422.35N	304.16E	==>	-258.82	39.99578215	-104.73360145
6600.00	6.30	35.760	6571.07	431.26N	310.57E	==>	-264.28	39.99580644	-104.73357828
6700.00	6.30	35.760	6670.46	440.17N	316.99E	==>	-269.74	39.99583073	-104.73355512
6800.00	6.30	35.760	6769.86	449.07N	323.40E	==>	-275.20	39.99585503	-104.73353196
6900.00	6.30	35.760	6869.26	457.98N	329.81E	==>	-280.65	39.99587932	-104.73350879
7000.00	6.30	35.760	6968.65	466.88N	336.23E	==>	-286.11	39.99590361	-104.73348563
7059.85	6.30	35.760	7028.14	472.21N	340.06E	==>	-289.38	39.99591815	-104.73347177
7100.00	5.09	356.190	7068.11	475.78N	341.23E	10.00	-290.17	39.99592791	-104.73346748
7200.00	11.45	295.360	7167.17	484.47N	331.94E	10.00	-280.03	39.99595201	-104.73350037
7300.00	20.88	282.820	7263.13	492.70N	305.53E	10.00	-252.91	39.99597522	-104.73359440
7400.00	30.66	277.970	7353.08	500.21N	262.79E	10.00	-209.62	39.99599684	-104.73374670
7500.00	40.54	275.310	7434.29	506.77N	205.03E	10.00	-151.49	39.99601622	-104.73395265
7600.00	50.47	273.560	7504.29	512.19N	133.99E	10.00	-80.28	39.99603277	-104.73420600
7700.00	60.41	272.240	7560.95	516.29N	51.85E	10.00	1.85	39.99604598	-104.73449904
7800.00	70.36	271.170	7602.55	518.96N	38.91W	10.00	92.39	39.99605545	-104.73482287
7900.00	80.32	270.220	7627.83	520.11N	135.52W	10.00	188.61	39.99606090	-104.73516765
8000.00	90.28	269.330	7636.02	519.71N	235.06W	10.00	287.57	39.99606215	-104.73552291
8002.33	90.51	269.300	7636.00	519.68N	237.38W	10.00	289.88	39.99606213	-104.73553121
8100.00	90.51	269.300	7635.13	518.49N	335.04W	==>	386.90	39.99606119	-104.73587981
8200.00	90.51	269.300	7634.24	517.28N	435.03W	==>	486.22	39.99606022	-104.73623670
8300.00	90.51	269.300	7633.35	516.06N	535.02W	==>	585.55	39.99605925	-104.73659360
8400.00	90.51	269.300	7632.45	514.85N	635.01W	==>	684.88	39.99605828	-104.73695050
8500.00	90.51	269.300	7631.56	513.64N	735.00W	==>	784.20	39.99605731	-104.73730740

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 275.940 degrees
Bottom hole distance is 4522.57 Feet on azimuth 275.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 14-Nov-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 15 (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	90.51	269.300	7630.67	512.42N	834.99W	==>	883.53	39.99605634	-104.73766429
8700.00	90.51	269.300	7629.78	511.21N	934.98W	==>	982.85	39.99605537	-104.73802119
8800.00	90.51	269.300	7628.89	510.00N	1034.97W	==>	1082.18	39.99605440	-104.73837809
8900.00	90.51	269.300	7628.00	508.78N	1134.95W	==>	1181.51	39.99605342	-104.73873499
9000.00	90.51	269.300	7627.10	507.57N	1234.94W	==>	1280.83	39.99605245	-104.73909188
9100.00	90.51	269.300	7626.21	506.36N	1334.93W	==>	1380.16	39.99605147	-104.73944878
9200.00	90.51	269.300	7625.32	505.14N	1434.92W	==>	1479.49	39.99605049	-104.73980568
9300.00	90.51	269.300	7624.43	503.93N	1534.91W	==>	1578.81	39.99604951	-104.74016258
9400.00	90.51	269.300	7623.54	502.72N	1634.90W	==>	1678.14	39.99604853	-104.74051947
9500.00	90.51	269.300	7622.64	501.50N	1734.89W	==>	1777.47	39.99604755	-104.74087637
9600.00	90.51	269.300	7621.75	500.29N	1834.87W	==>	1876.79	39.99604657	-104.74123327
9700.00	90.51	269.300	7620.86	499.07N	1934.86W	==>	1976.12	39.99604559	-104.74159016
9800.00	90.51	269.300	7619.97	497.86N	2034.85W	==>	2075.44	39.99604460	-104.74194706
9900.00	90.51	269.300	7619.08	496.65N	2134.84W	==>	2174.77	39.99604362	-104.74230396
10000.00	90.51	269.300	7618.19	495.43N	2234.83W	==>	2274.10	39.99604263	-104.74266086
10100.00	90.51	269.300	7617.29	494.22N	2334.82W	==>	2373.42	39.99604164	-104.74301775
10200.00	90.51	269.300	7616.40	493.01N	2434.81W	==>	2472.75	39.99604065	-104.74337465
10300.00	90.51	269.300	7615.51	491.79N	2534.80W	==>	2572.08	39.99603966	-104.74373155
10400.00	90.51	269.300	7614.62	490.58N	2634.78W	==>	2671.40	39.99603867	-104.74408845
10500.00	90.51	269.300	7613.73	489.37N	2734.77W	==>	2770.73	39.99603768	-104.74444534
10600.00	90.51	269.300	7612.84	488.15N	2834.76W	==>	2870.06	39.99603669	-104.74480224
10700.00	90.51	269.300	7611.94	486.94N	2934.75W	==>	2969.38	39.99603569	-104.74515914
10800.00	90.51	269.300	7611.05	485.72N	3034.74W	==>	3068.71	39.99603470	-104.74551603
10900.00	90.51	269.300	7610.16	484.51N	3134.73W	==>	3168.03	39.99603370	-104.74587293
11000.00	90.51	269.300	7609.27	483.30N	3234.72W	==>	3267.36	39.99603270	-104.74622983
11100.00	90.51	269.300	7608.38	482.08N	3334.70W	==>	3366.69	39.99603170	-104.74658673
11200.00	90.51	269.300	7607.49	480.87N	3434.69W	==>	3466.01	39.99603070	-104.74694362
11300.00	90.51	269.300	7606.59	479.66N	3534.68W	==>	3565.34	39.99602970	-104.74730052
11400.00	90.51	269.300	7605.70	478.44N	3634.67W	==>	3664.67	39.99602870	-104.74765742
11500.00	90.51	269.300	7604.81	477.23N	3734.66W	==>	3763.99	39.99602770	-104.74801431
11600.00	90.51	269.300	7603.92	476.02N	3834.65W	==>	3863.32	39.99602669	-104.74837121
11700.00	90.51	269.300	7603.03	474.80N	3934.64W	==>	3962.65	39.99602569	-104.74872811
11800.00	90.51	269.300	7602.14	473.59N	4034.63W	==>	4061.97	39.99602468	-104.74908501
11900.00	90.51	269.300	7601.24	472.37N	4134.61W	==>	4161.30	39.99602367	-104.74944190
12000.00	90.51	269.300	7600.35	471.16N	4234.60W	==>	4260.62	39.99602267	-104.74979880
12100.00	90.51	269.300	7599.46	469.95N	4334.59W	==>	4359.95	39.99602166	-104.75015570
12200.00	90.51	269.300	7598.57	468.73N	4434.58W	==>	4459.28	39.99602064	-104.75051259
12263.72	90.51	269.300	7598.00	467.96N	4498.29W	==>	4522.57	39.99602000	-104.75074000

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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 275.940 degrees
Bottom hole distance is 4522.57 Feet on azimuth 275.94 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 14-Nov-2018



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 15 BHL	467.96N	4498.29W	7598.00	39.99602000	-104.75074000	1242283.88	3209917.63
BEF WEST 15 EP	519.68N	147.38W	7636.00	39.99606000	-104.73521000	1242335.59	3214268.39

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577654	Planned	2000.00	1998.85	WdW Rate Gyro	Standard	
577653	Planned	12263.72	7598.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes