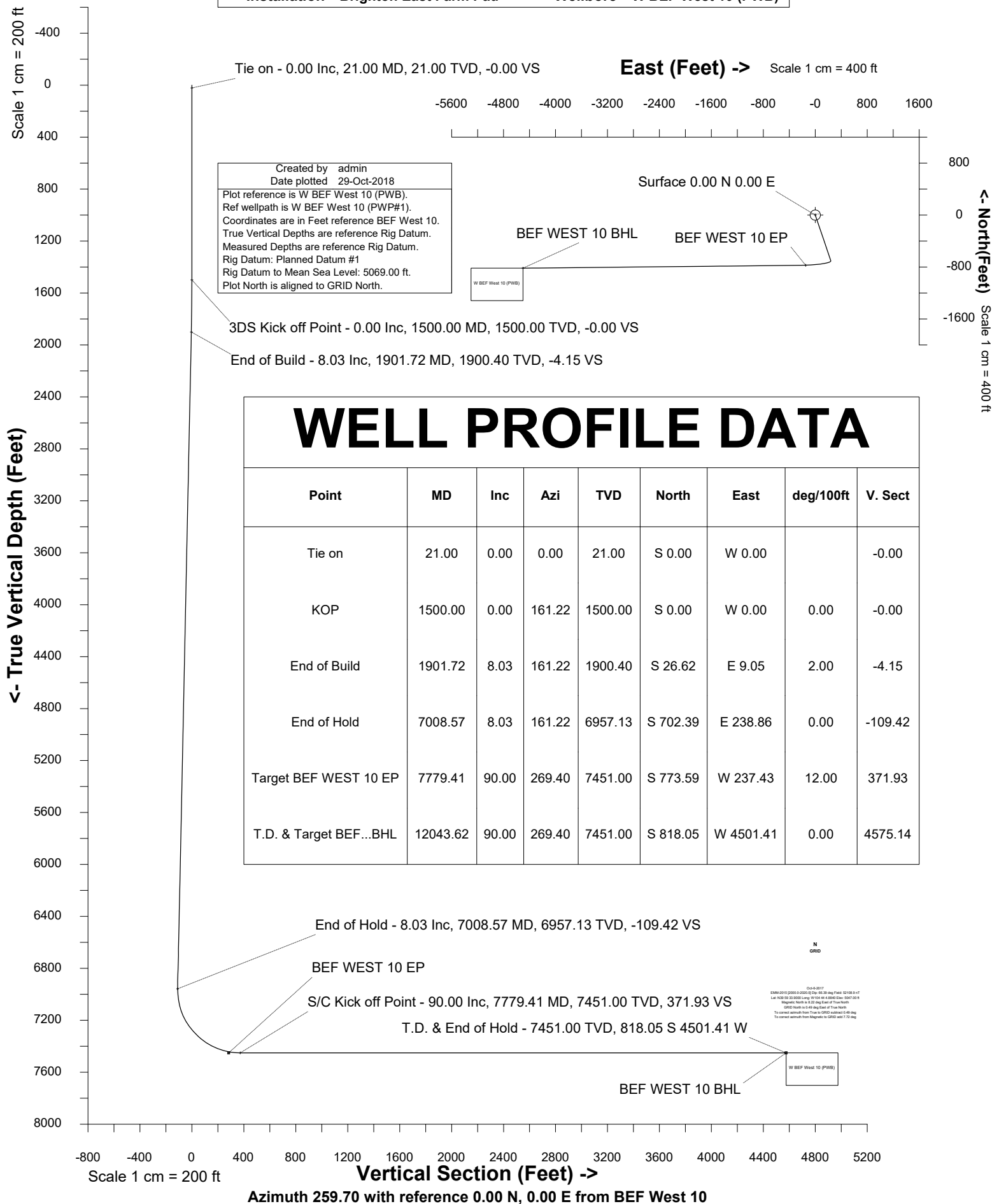


Petro Operating Company

Location Weld County, CO Slot BEF West 10
Field Wattenberg Well W BEF West 10
Installation Brighton East Farm Pad Wellbore W BEF West 10 (PWB)





SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 10 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 10	39.99494000	-104.73461000	1241929.0711	3214440.0039	797.95N	15.53E	1.00

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	-5048.00	0.00N	0.00E		0.00
1500.00	0.00	161.220	1500.00	-3569.00	0.00N	0.00E	==>	0.00
1901.72	8.03	161.220	1900.40	-3168.60	26.62S	9.05E	2.00	-4.15
7008.57	8.03	161.220	6957.13	1888.13	702.39S	238.86E	==>	-109.42
7779.41	90.00	269.400	7451.00	2382.00	773.59S	237.43W	12.00	371.93
12043.62	90.00	269.400	7451.00	2382.00	818.05S	4501.41W	==>	4575.14

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	-104.73461000
21.00	0.00	0.000	21.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1500.00	0.00	161.220	1500.00	0.00N	0.00E	==>	0.00	39.99494000	-104.73461000
1600.00	2.00	161.220	1599.98	1.65S	0.56E	2.00	-0.26	39.99493545	-104.73460805
1700.00	4.00	161.220	1699.84	6.61S	2.25E	2.00	-1.03	39.99492181	-104.73460218
1800.00	6.00	161.220	1799.45	14.86S	5.05E	2.00	-2.31	39.99489910	-104.73459242
1900.00	8.00	161.220	1898.70	26.40S	8.98E	2.00	-4.11	39.99486733	-104.73457878
1901.72	8.03	161.220	1900.40	26.62S	9.05E	2.00	-4.15	39.99486671	-104.73457851
2000.00	8.03	161.220	1997.72	39.63S	13.48E	==>	-6.17	39.99483090	-104.73456313
2100.00	8.03	161.220	2096.74	52.86S	17.98E	==>	-8.23	39.99479447	-104.73454747
2200.00	8.03	161.220	2195.76	66.09S	22.48E	==>	-10.30	39.99475804	-104.73453182
2300.00	8.03	161.220	2294.78	79.33S	26.98E	==>	-12.36	39.99472161	-104.73451617
2400.00	8.03	161.220	2393.79	92.56S	31.48E	==>	-14.42	39.99468518	-104.73450052
2500.00	8.03	161.220	2492.81	105.79S	35.98E	==>	-16.48	39.99464875	-104.73448486
2600.00	8.03	161.220	2591.83	119.02S	40.48E	==>	-18.54	39.99461232	-104.73446921
2700.00	8.03	161.220	2690.85	132.26S	44.98E	==>	-20.60	39.99457590	-104.73445356
2800.00	8.03	161.220	2789.87	145.49S	49.48E	==>	-22.66	39.99453947	-104.73443791
2900.00	8.03	161.220	2888.89	158.72S	53.98E	==>	-24.73	39.99450304	-104.73442225

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5069.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 259.700 degrees
Bottom hole distance is 4575.14 Feet on azimuth 259.70 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-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)
3000.00	8.03	161.220	2987.90	171.95S	58.48E	==>	-26.79	39.99446661	-104.73440660
3100.00	8.03	161.220	3086.92	185.19S	62.98E	==>	-28.85	39.99443018	-104.73439095
3200.00	8.03	161.220	3185.94	198.42S	67.48E	==>	-30.91	39.99439375	-104.73437530
3300.00	8.03	161.220	3284.96	211.65S	71.98E	==>	-32.97	39.99435732	-104.73435965
3400.00	8.03	161.220	3383.98	224.88S	76.48E	==>	-35.03	39.99432089	-104.73434399
3500.00	8.03	161.220	3483.00	238.12S	80.98E	==>	-37.09	39.99428446	-104.73432834
3600.00	8.03	161.220	3582.02	251.35S	85.48E	==>	-39.16	39.99424803	-104.73431269
3700.00	8.03	161.220	3681.03	264.58S	89.98E	==>	-41.22	39.99421160	-104.73429704
3800.00	8.03	161.220	3780.05	277.81S	94.48E	==>	-43.28	39.99417517	-104.73428138
3900.00	8.03	161.220	3879.07	291.05S	98.98E	==>	-45.34	39.99413874	-104.73426573
4000.00	8.03	161.220	3978.09	304.28S	103.48E	==>	-47.40	39.99410231	-104.73425008
4100.00	8.03	161.220	4077.11	317.51S	107.98E	==>	-49.46	39.99406588	-104.73423443
4200.00	8.03	161.220	4176.13	330.74S	112.48E	==>	-51.52	39.99402945	-104.73421878
4300.00	8.03	161.220	4275.14	343.98S	116.97E	==>	-53.59	39.99399302	-104.73420312
4400.00	8.03	161.220	4374.16	357.21S	121.47E	==>	-55.65	39.99395659	-104.73418747
4500.00	8.03	161.220	4473.18	370.44S	125.97E	==>	-57.71	39.99392016	-104.73417182
4600.00	8.03	161.220	4572.20	383.67S	130.47E	==>	-59.77	39.99388373	-104.73415617
4700.00	8.03	161.220	4671.22	396.91S	134.97E	==>	-61.83	39.99384730	-104.73414052
4800.00	8.03	161.220	4770.24	410.14S	139.47E	==>	-63.89	39.99381087	-104.73412486
4900.00	8.03	161.220	4869.25	423.37S	143.97E	==>	-65.95	39.99377444	-104.73410921
5000.00	8.03	161.220	4968.27	436.60S	148.47E	==>	-68.02	39.99373801	-104.73409356
5100.00	8.03	161.220	5067.29	449.84S	152.97E	==>	-70.08	39.99370158	-104.73407791
5200.00	8.03	161.220	5166.31	463.07S	157.47E	==>	-72.14	39.99366515	-104.73406226
5300.00	8.03	161.220	5265.33	476.30S	161.97E	==>	-74.20	39.99362872	-104.73404661
5400.00	8.03	161.220	5364.35	489.53S	166.47E	==>	-76.26	39.99359229	-104.73403095
5500.00	8.03	161.220	5463.37	502.77S	170.97E	==>	-78.32	39.99355586	-104.73401530
5600.00	8.03	161.220	5562.38	516.00S	175.47E	==>	-80.38	39.99351943	-104.73399965
5700.00	8.03	161.220	5661.40	529.23S	179.97E	==>	-82.45	39.99348300	-104.73398400
5800.00	8.03	161.220	5760.42	542.46S	184.47E	==>	-84.51	39.99344657	-104.73396835
5900.00	8.03	161.220	5859.44	555.70S	188.97E	==>	-86.57	39.99341014	-104.73395269
6000.00	8.03	161.220	5958.46	568.93S	193.47E	==>	-88.63	39.99337371	-104.73393704
6100.00	8.03	161.220	6057.48	582.16S	197.97E	==>	-90.69	39.99333728	-104.73392139
6200.00	8.03	161.220	6156.49	595.39S	202.47E	==>	-92.75	39.99330085	-104.73390574
6300.00	8.03	161.220	6255.51	608.63S	206.97E	==>	-94.81	39.99326442	-104.73389009
6400.00	8.03	161.220	6354.53	621.86S	211.47E	==>	-96.88	39.99322799	-104.73387444
6500.00	8.03	161.220	6453.55	635.09S	215.97E	==>	-98.94	39.99319156	-104.73385878
6600.00	8.03	161.220	6552.57	648.32S	220.47E	==>	-101.00	39.99315513	-104.73384313
6700.00	8.03	161.220	6651.59	661.56S	224.97E	==>	-103.06	39.99311870	-104.73382748
6800.00	8.03	161.220	6750.60	674.79S	229.47E	==>	-105.12	39.99308227	-104.73381183
6900.00	8.03	161.220	6849.62	688.02S	233.97E	==>	-107.18	39.99304584	-104.73379618
7000.00	8.03	161.220	6948.64	701.25S	238.47E	==>	-109.24	39.99300941	-104.73378053
7008.57	8.03	161.220	6957.13	702.39S	238.86E	==>	-109.42	39.99300629	-104.73377918
7100.00	11.39	227.660	7047.49	714.55S	234.23E	12.00	-102.69	39.99297300	-104.73379608
7200.00	21.79	249.810	7143.28	727.66S	209.42E	12.00	-75.94	39.99293762	-104.73388502
7300.00	33.26	257.610	7231.84	740.00S	165.06E	12.00	-30.08	39.99290480	-104.73404374
7400.00	44.99	261.690	7309.29	751.03S	103.07E	12.00	32.88	39.99287598	-104.73426530
7500.00	56.81	264.370	7372.26	760.28S	26.17E	12.00	110.19	39.99285242	-104.73454002
7600.00	68.67	266.400	7417.98	767.33S	62.28W	12.00	198.47	39.99283515	-104.73485589
7700.00	80.56	268.120	7444.47	771.89S	158.41W	12.00	293.87	39.99282493	-104.73519911
7779.41	90.00	269.400	7451.00	773.59S	237.43W	12.00	371.93	39.99282213	-104.73548119
7800.00	90.00	269.400	7451.00	773.80S	258.03W	==>	392.23	39.99282203	-104.73555470
7900.00	90.00	269.400	7451.00	774.85S	358.02W	==>	490.80	39.99282153	-104.73591159
8000.00	90.00	269.400	7451.00	775.89S	458.02W	==>	589.37	39.99282103	-104.73626849
8100.00	90.00	269.400	7451.00	776.93S	558.01W	==>	687.94	39.99282054	-104.73662539
8200.00	90.00	269.400	7451.00	777.97S	658.01W	==>	786.51	39.99282004	-104.73698228
8300.00	90.00	269.400	7451.00	779.02S	758.00W	==>	885.08	39.99281954	-104.73733918
8400.00	90.00	269.400	7451.00	780.06S	858.00W	==>	983.65	39.99281903	-104.73769608
8500.00	90.00	269.400	7451.00	781.10S	957.99W	==>	1082.22	39.99281853	-104.73805297

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Vertical Section is from 0.00N 0.00E on azimuth 259.700 degrees
Bottom hole distance is 4575.14 Feet on azimuth 259.70 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018



SYSDRILL
Well Design Combined Report
Wellbore: W BEF West 10 (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	90.00	269.400	7451.00	782.14S	1057.98W	==>	1180.78	39.99281803	-104.73840987
8700.00	90.00	269.400	7451.00	783.19S	1157.98W	==>	1279.35	39.99281752	-104.73876676
8800.00	90.00	269.400	7451.00	784.23S	1257.97W	==>	1377.92	39.99281702	-104.73912366
8900.00	90.00	269.400	7451.00	785.27S	1357.97W	==>	1476.49	39.99281651	-104.73948056
9000.00	90.00	269.400	7451.00	786.31S	1457.96W	==>	1575.06	39.99281600	-104.73983745
9100.00	90.00	269.400	7451.00	787.36S	1557.96W	==>	1673.63	39.99281549	-104.74019435
9200.00	90.00	269.400	7451.00	788.40S	1657.95W	==>	1772.20	39.99281498	-104.74055125
9300.00	90.00	269.400	7451.00	789.44S	1757.95W	==>	1870.77	39.99281447	-104.74090814
9400.00	90.00	269.400	7451.00	790.48S	1857.94W	==>	1969.34	39.99281396	-104.74126504
9500.00	90.00	269.400	7451.00	791.53S	1957.94W	==>	2067.91	39.99281344	-104.74162193
9600.00	90.00	269.400	7451.00	792.57S	2057.93W	==>	2166.48	39.99281293	-104.74197883
9700.00	90.00	269.400	7451.00	793.61S	2157.92W	==>	2265.05	39.99281241	-104.74233573
9800.00	90.00	269.400	7451.00	794.66S	2257.92W	==>	2363.62	39.99281189	-104.74269262
9900.00	90.00	269.400	7451.00	795.70S	2357.91W	==>	2462.19	39.99281138	-104.74304952
10000.00	90.00	269.400	7451.00	796.74S	2457.91W	==>	2560.76	39.99281086	-104.74340642
10100.00	90.00	269.400	7451.00	797.78S	2557.90W	==>	2659.33	39.99281034	-104.74376331
10200.00	90.00	269.400	7451.00	798.83S	2657.90W	==>	2757.90	39.99280981	-104.74412021
10300.00	90.00	269.400	7451.00	799.87S	2757.89W	==>	2856.47	39.99280929	-104.74447710
10400.00	90.00	269.400	7451.00	800.91S	2857.89W	==>	2955.04	39.99280877	-104.74483400
10500.00	90.00	269.400	7451.00	801.95S	2957.88W	==>	3053.61	39.99280824	-104.74519090
10600.00	90.00	269.400	7451.00	803.00S	3057.88W	==>	3152.18	39.99280772	-104.74554779
10700.00	90.00	269.400	7451.00	804.04S	3157.87W	==>	3250.75	39.99280719	-104.74590469
10800.00	90.00	269.400	7451.00	805.08S	3257.87W	==>	3349.32	39.99280666	-104.74626158
10900.00	90.00	269.400	7451.00	806.12S	3357.86W	==>	3447.88	39.99280613	-104.74661848
11000.00	90.00	269.400	7451.00	807.17S	3457.85W	==>	3546.45	39.99280560	-104.74697538
11100.00	90.00	269.400	7451.00	808.21S	3557.85W	==>	3645.02	39.99280507	-104.74733227
11200.00	90.00	269.400	7451.00	809.25S	3657.84W	==>	3743.59	39.99280454	-104.74768917
11300.00	90.00	269.400	7451.00	810.29S	3757.84W	==>	3842.16	39.99280400	-104.74804607
11400.00	90.00	269.400	7451.00	811.34S	3857.83W	==>	3940.73	39.99280347	-104.74840296
11500.00	90.00	269.400	7451.00	812.38S	3957.83W	==>	4039.30	39.99280293	-104.74875986
11600.00	90.00	269.400	7451.00	813.42S	4057.82W	==>	4137.87	39.99280240	-104.74911675
11700.00	90.00	269.400	7451.00	814.47S	4157.82W	==>	4236.44	39.99280186	-104.74947365
11800.00	90.00	269.400	7451.00	815.51S	4257.81W	==>	4335.01	39.99280132	-104.74983055
11900.00	90.00	269.400	7451.00	816.55S	4357.81W	==>	4433.58	39.99280078	-104.75018744
12000.00	90.00	269.400	7451.00	817.59S	4457.80W	==>	4532.15	39.99280024	-104.75054434
12043.62	90.00	269.400	7451.00	818.05S	4501.41W	==>	4575.14	39.99280000	-104.75070000

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Vertical Section is from 0.00N 0.00E on azimuth 259.700 degrees
Bottom hole distance is 4575.14 Feet on azimuth 259.70 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Oct-2018



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF WEST 10 BHL	818.05S	4501.41W	7451.00	39.99280000	-104.75070000	1241111.05	3209938.75
BEF WEST 10 EP	773.59S	147.43W	7451.00	39.99282000	-104.73516000	1241155.51	3214292.57

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
577619	Planned	2000.00	1997.72	WdW Rate Gyro	Standard	
577618	Planned	12043.62	7451.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes