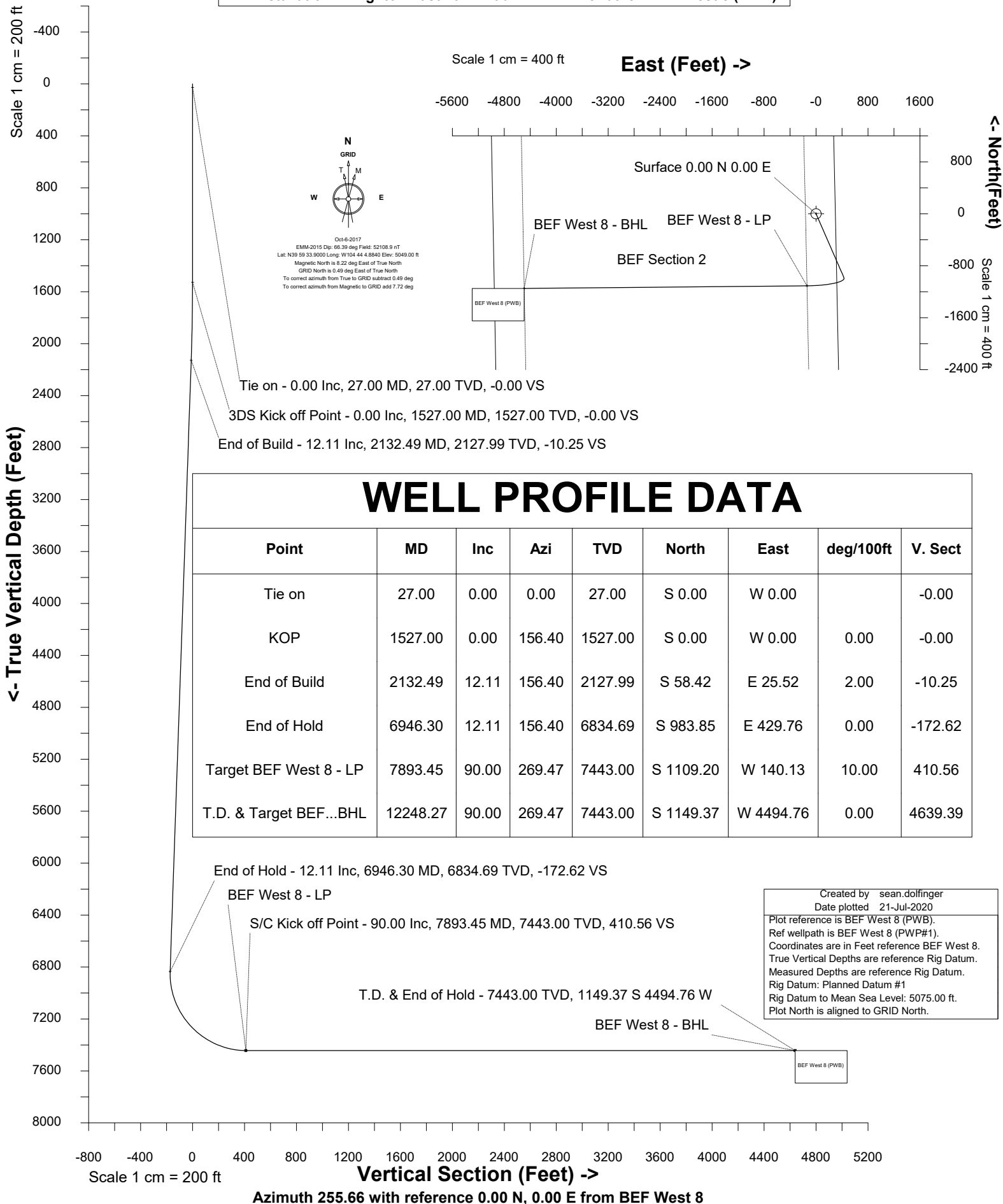


Petro Operating Company

Location	Weld County, CO	Slot	BEF West 8
Field	Wattenberg	Well	BEF West 8
Installation	Brighton East Farm Pad	Wellbore	BEF West 8 (PWB)



SYSDRILL
Well Design Combined Report
Wellbore: BEF West 8 (PWB)



Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
BEF West 8	39.99480630	-104.73461100	1241880.3672	3214440.1441	749.25N	15.67E	0.00

Declination

Date	Source	Time
Jan-28-2019	EMM-2017	08:45
Jan-28-2019	EMM-2017	09:44
May-20-2019	EMM-2017	09:01
May-20-2019	EMM-2017	09:28
May-20-2019	EMM-2017	09:30
May-20-2019	EMM-2017	09:33
May-20-2019	EMM-2017	09:35
Oct-6-2017	EMM-2015	14:35
May-20-2019	EMM-2017	09:36
May-20-2019	EMM-2017	09:36
May-20-2019	EMM-2017	09:38
May-20-2019	EMM-2017	09:38

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	NAD83 Colorado State Planes, North Zone, US Foot	Grid

Summary Wellpath

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	Vertical Depth SS	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]
27.00	0.00	0.00	27.00	-5048.00	0.00N	0.00E		0.00
1527.00	0.00	156.40	1527.00	-3548.00	0.00N	0.00E	==>	0.00
2132.49	12.11	156.40	2127.99	-2947.01	58.42S	25.52E	2.00	-10.25
6946.30	12.11	156.40	6834.69	1759.69	983.85S	429.76E	==>	-172.62
7893.45	90.00	269.47	7443.00	2368.00	1109.20S	140.13W	10.00	410.56
12248.27	90.00	269.47	7443.00	2368.00	1149.37S	4494.76W	==>	4639.39

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	0.00	0.00	0.00N	0.00E		0.00	39.99480630	-104.73461100
27.00	0.00	0.00	27.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
100.00	0.00	0.00	100.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
200.00	0.00	0.00	200.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
300.00	0.00	0.00	300.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
400.00	0.00	0.00	400.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
500.00	0.00	0.00	500.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
600.00	0.00	0.00	600.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
700.00	0.00	0.00	700.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
800.00	0.00	0.00	800.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
900.00	0.00	0.00	900.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1000.00	0.00	0.00	1000.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1100.00	0.00	0.00	1100.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1200.00	0.00	0.00	1200.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1300.00	0.00	0.00	1300.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1400.00	0.00	0.00	1400.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1500.00	0.00	0.00	1500.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1527.00	0.00	156.40	1527.00	0.00N	0.00E	==>	0.00	39.99480630	-104.73461100
1627.00	2.00	156.40	1626.98	1.60S	0.70E	2.00	-0.28	39.99480189	-104.73460856
1727.00	4.00	156.40	1726.84	6.40S	2.79E	2.00	-1.12	39.99478868	-104.73460123
1827.00	6.00	156.40	1826.45	14.38S	6.28E	2.00	-2.52	39.99476667	-104.73458902
1927.00	8.00	156.40	1925.70	25.55S	11.16E	2.00	-4.48	39.99473590	-104.73457196
2027.00	10.00	156.40	2024.47	39.88S	17.42E	2.00	-7.00	39.99469641	-104.73455005

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 5075.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 255.66 degrees
Bottom hole distance is 4639.39 Feet on azimuth 255.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by
Date Printed: 21-Jul-2020

SYSDRILL
Well Design Combined Report
Wellbore: BEF West 8 (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)
2127.00	12.00	156.40	2122.62	57.37S	25.06E	2.00	-10.07	39.99464823	-104.73452333
2132.49	12.11	156.40	2127.99	58.42S	25.52E	2.00	-10.25	39.99464534	-104.73452173
2227.00	12.11	156.40	2220.40	76.59S	33.45E	==>	-13.44	39.99459527	-104.73449396
2327.00	12.11	156.40	2318.17	95.81S	41.85E	==>	-16.81	39.99454230	-104.73446459
2427.00	12.11	156.40	2415.95	115.04S	50.25E	==>	-20.18	39.99448933	-104.73443521
2527.00	12.11	156.40	2513.72	134.26S	58.65E	==>	-23.56	39.99443636	-104.73440583
2627.00	12.11	156.40	2611.50	153.49S	67.04E	==>	-26.93	39.99438339	-104.73437645
2727.00	12.11	156.40	2709.27	172.71S	75.44E	==>	-30.30	39.99433042	-104.73434707
2827.00	12.11	156.40	2807.05	191.94S	83.84E	==>	-33.68	39.99427745	-104.73431770
2927.00	12.11	156.40	2904.82	211.16S	92.24E	==>	-37.05	39.99422448	-104.73428832
3027.00	12.11	156.40	3002.60	230.38S	100.63E	==>	-40.42	39.99417151	-104.73425894
3127.00	12.11	156.40	3100.37	249.61S	109.03E	==>	-43.79	39.99411854	-104.73422957
3227.00	12.11	156.40	3198.15	268.83S	117.43E	==>	-47.17	39.99406557	-104.73420019
3327.00	12.11	156.40	3295.92	288.06S	125.83E	==>	-50.54	39.99401260	-104.73417081
3427.00	12.11	156.40	3393.70	307.28S	134.22E	==>	-53.91	39.99395963	-104.73414143
3527.00	12.11	156.40	3491.47	326.51S	142.62E	==>	-57.29	39.99390666	-104.73411206
3627.00	12.11	156.40	3589.25	345.73S	151.02E	==>	-60.66	39.99385369	-104.73408268
3727.00	12.11	156.40	3687.02	364.96S	159.42E	==>	-64.03	39.99380072	-104.73405330
3827.00	12.11	156.40	3784.79	384.18S	167.81E	==>	-67.41	39.99374775	-104.73402393
3927.00	12.11	156.40	3882.57	403.41S	176.21E	==>	-70.78	39.99369478	-104.73399455
4027.00	12.11	156.40	3980.34	422.63S	184.61E	==>	-74.15	39.99364181	-104.73396517
4127.00	12.11	156.40	4078.12	441.85S	193.01E	==>	-77.52	39.99358884	-104.73393579
4227.00	12.11	156.40	4175.89	461.08S	201.40E	==>	-80.90	39.99353587	-104.73390642
4327.00	12.11	156.40	4273.67	480.30S	209.80E	==>	-84.27	39.99348290	-104.73387704
4427.00	12.11	156.40	4371.44	499.53S	218.20E	==>	-87.64	39.99342993	-104.73384766
4527.00	12.11	156.40	4469.22	518.75S	226.60E	==>	-91.02	39.99337696	-104.73381829
4627.00	12.11	156.40	4566.99	537.98S	234.99E	==>	-94.39	39.99332399	-104.73378891
4727.00	12.11	156.40	4664.77	557.20S	243.39E	==>	-97.76	39.99327102	-104.73375953
4827.00	12.11	156.40	4762.54	576.43S	251.79E	==>	-101.13	39.99321805	-104.73373016
4927.00	12.11	156.40	4860.32	595.65S	260.19E	==>	-104.51	39.99316507	-104.73370078
5027.00	12.11	156.40	4958.09	614.88S	268.58E	==>	-107.88	39.99311210	-104.73367141
5127.00	12.11	156.40	5055.87	634.10S	276.98E	==>	-111.25	39.99305913	-104.73364203
5227.00	12.11	156.40	5153.64	653.33S	285.38E	==>	-114.63	39.99300616	-104.73361265
5327.00	12.11	156.40	5251.42	672.55S	293.78E	==>	-118.00	39.99295319	-104.73358328
5427.00	12.11	156.40	5349.19	691.77S	302.17E	==>	-121.37	39.99290022	-104.73355390
5527.00	12.11	156.40	5446.97	711.00S	310.57E	==>	-124.75	39.99284725	-104.73352452
5627.00	12.11	156.40	5544.74	730.22S	318.97E	==>	-128.12	39.99279428	-104.73349515
5727.00	12.11	156.40	5642.51	749.45S	327.37E	==>	-131.49	39.99274131	-104.73346577
5827.00	12.11	156.40	5740.29	768.67S	335.76E	==>	-134.86	39.99268834	-104.73343640
5927.00	12.11	156.40	5838.06	787.90S	344.16E	==>	-138.24	39.99263537	-104.73340702
6027.00	12.11	156.40	5935.84	807.12S	352.56E	==>	-141.61	39.99258240	-104.73337764
6127.00	12.11	156.40	6033.61	826.35S	360.96E	==>	-144.98	39.99252943	-104.73334827
6227.00	12.11	156.40	6131.39	845.57S	369.35E	==>	-148.36	39.99247646	-104.73331889
6327.00	12.11	156.40	6229.16	864.80S	377.75E	==>	-151.73	39.99242349	-104.73328952
6427.00	12.11	156.40	6326.94	884.02S	386.15E	==>	-155.10	39.99237052	-104.73326014
6527.00	12.11	156.40	6424.71	903.24S	394.55E	==>	-158.48	39.99231755	-104.73323076
6627.00	12.11	156.40	6522.49	922.47S	402.94E	==>	-161.85	39.99226458	-104.73320139
6727.00	12.11	156.40	6620.26	941.69S	411.34E	==>	-165.22	39.99221161	-104.73317201
6827.00	12.11	156.40	6718.04	960.92S	419.74E	==>	-168.59	39.99215864	-104.73314264
6927.00	12.11	156.40	6815.81	980.14S	428.14E	==>	-171.97	39.99210566	-104.73311326
6946.30	12.11	156.40	6834.69	983.85S	429.76E	==>	-172.62	39.99209544	-104.73310759
7027.00	11.65	196.31	6913.78	999.46S	430.86E	10.00	-169.82	39.99205258	-104.73310414
7127.00	17.34	230.26	7010.73	1018.73S	416.52E	10.00	-151.16	39.99200002	-104.73315590
7227.00	25.75	245.31	7103.72	1037.38S	385.24E	10.00	-116.23	39.99194958	-104.73326810
7327.00	34.97	253.08	7189.95	1054.83S	337.97E	10.00	-66.11	39.99190278	-104.73343735
7427.00	44.49	257.88	7266.79	1070.57S	276.14E	10.00	-2.31	39.99186104	-104.73365850
7527.00	54.16	261.27	7331.90	1084.11S	201.63E	10.00	73.24	39.99182564	-104.73392483
7627.00	63.90	263.92	7383.30	1095.05S	116.70E	10.00	158.22	39.99179764	-104.73422825

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 5075.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 255.66 degrees
Bottom hole distance is 4639.39 Feet on azimuth 255.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by
Date Printed: 21-Jul-2020

SYSDRILL
Well Design Combined Report
Wellbore: BEF West 8 (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)
7727.00	73.68	266.16	7419.45	1103.04S	23.94E	10.00	250.07	39.99177791	-104.73455954
7827.00	83.48	268.18	7439.22	1107.84S	73.84W	10.00	345.99	39.99176703	-104.73490863
7893.45	90.00	269.47	7443.00	1109.20S	140.13W	10.00	410.56	39.99176488	-104.73514526
7927.00	90.00	269.47	7443.00	1109.51S	173.68W	==>	443.13	39.99176482	-104.73526499
8027.00	90.00	269.47	7443.00	1110.43S	273.67W	==>	540.24	39.99176466	-104.73562188
8127.00	90.00	269.47	7443.00	1111.35S	373.67W	==>	637.35	39.99176449	-104.73597877
8227.00	90.00	269.47	7443.00	1112.28S	473.66W	==>	734.45	39.99176432	-104.73633566
8327.00	90.00	269.47	7443.00	1113.20S	573.66W	==>	831.56	39.99176415	-104.73669255
8427.00	90.00	269.47	7443.00	1114.12S	673.65W	==>	928.67	39.99176398	-104.73704944
8527.00	90.00	269.47	7443.00	1115.04S	773.65W	==>	1025.78	39.99176381	-104.73740634
8627.00	90.00	269.47	7443.00	1115.97S	873.65W	==>	1122.88	39.99176364	-104.73776323
8727.00	90.00	269.47	7443.00	1116.89S	973.64W	==>	1219.99	39.99176347	-104.73812012
8827.00	90.00	269.47	7443.00	1117.81S	1073.64W	==>	1317.10	39.99176329	-104.73847701
8927.00	90.00	269.47	7443.00	1118.73S	1173.63W	==>	1414.20	39.99176312	-104.73883390
9027.00	90.00	269.47	7443.00	1119.66S	1273.63W	==>	1511.31	39.99176294	-104.73919079
9127.00	90.00	269.47	7443.00	1120.58S	1373.62W	==>	1608.42	39.99176276	-104.73954768
9227.00	90.00	269.47	7443.00	1121.50S	1473.62W	==>	1705.52	39.99176259	-104.73990458
9327.00	90.00	269.47	7443.00	1122.42S	1573.62W	==>	1802.63	39.99176241	-104.74026147
9427.00	90.00	269.47	7443.00	1123.35S	1673.61W	==>	1899.74	39.99176222	-104.74061836
9527.00	90.00	269.47	7443.00	1124.27S	1773.61W	==>	1996.85	39.99176204	-104.74097525
9627.00	90.00	269.47	7443.00	1125.19S	1873.60W	==>	2093.95	39.99176186	-104.74133214
9727.00	90.00	269.47	7443.00	1126.11S	1973.60W	==>	2191.06	39.99176168	-104.74168903
9827.00	90.00	269.47	7443.00	1127.04S	2073.59W	==>	2288.17	39.99176149	-104.74204592
9927.00	90.00	269.47	7443.00	1127.96S	2173.59W	==>	2385.27	39.99176130	-104.74240281
10027.00	90.00	269.47	7443.00	1128.88S	2273.59W	==>	2482.38	39.99176112	-104.74275971
10127.00	90.00	269.47	7443.00	1129.80S	2373.58W	==>	2579.49	39.99176093	-104.74311660
10227.00	90.00	269.47	7443.00	1130.73S	2473.58W	==>	2676.59	39.99176074	-104.74347349
10327.00	90.00	269.47	7443.00	1131.65S	2573.57W	==>	2773.70	39.99176055	-104.74383038
10427.00	90.00	269.47	7443.00	1132.57S	2673.57W	==>	2870.81	39.99176036	-104.74418727
10527.00	90.00	269.47	7443.00	1133.49S	2773.57W	==>	2967.92	39.99176016	-104.74454416
10627.00	90.00	269.47	7443.00	1134.41S	2873.56W	==>	3065.02	39.99175997	-104.74490105
10727.00	90.00	269.47	7443.00	1135.34S	2973.56W	==>	3162.13	39.99175977	-104.74525794
10827.00	90.00	269.47	7443.00	1136.26S	3073.55W	==>	3259.24	39.99175958	-104.74561484
10927.00	90.00	269.47	7443.00	1137.18S	3173.55W	==>	3356.34	39.99175938	-104.74597173
11027.00	90.00	269.47	7443.00	1138.10S	3273.54W	==>	3453.45	39.99175918	-104.74632862
11127.00	90.00	269.47	7443.00	1139.03S	3373.54W	==>	3550.56	39.99175898	-104.74668551
11227.00	90.00	269.47	7443.00	1139.95S	3473.54W	==>	3647.66	39.99175878	-104.74704240
11327.00	90.00	269.47	7443.00	1140.87S	3573.53W	==>	3744.77	39.99175858	-104.74739929
11427.00	90.00	269.47	7443.00	1141.79S	3673.53W	==>	3841.88	39.99175838	-104.74775618
11527.00	90.00	269.47	7443.00	1142.72S	3773.52W	==>	3938.99	39.99175817	-104.74811307
11627.00	90.00	269.47	7443.00	1143.64S	3873.52W	==>	4036.09	39.99175797	-104.74846997
11727.00	90.00	269.47	7443.00	1144.56S	3973.51W	==>	4133.20	39.99175776	-104.74882686
11827.00	90.00	269.47	7443.00	1145.48S	4073.51W	==>	4230.31	39.99175755	-104.74918375
11927.00	90.00	269.47	7443.00	1146.41S	4173.51W	==>	4327.41	39.99175734	-104.74954064
12027.00	90.00	269.47	7443.00	1147.33S	4273.50W	==>	4424.52	39.99175714	-104.74989753
12127.00	90.00	269.47	7443.00	1148.25S	4373.50W	==>	4521.63	39.99175692	-104.75025442
12227.00	90.00	269.47	7443.00	1149.17S	4473.49W	==>	4618.73	39.99175671	-104.75061131
12248.27	90.00	269.47	7443.00	1149.37S	4494.76W	==>	4639.39	39.99175667	-104.75068723

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 5075.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 255.66 degrees
Bottom hole distance is 4639.39 Feet on azimuth 255.66 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by
Date Printed: 21-Jul-2020

SYS DRILL
Well Design Combined Report
Wellbore: BEF West 8 (PWB)



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
BEF West 8 - BHL	1149.37S	4494.76W	7443.00	39.99175667	-104.75068723	1240731.04	3209945.54
BEF West 8 - LP	1109.20S	140.13W	7443.00	39.99176488	-104.73514526	1240771.21	3214300.02

Survey Tool Program						
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model	
992571	Planned	1527.00	1527.00	WdW Rate Gyro	Standard	
992570	Planned	12248.27	7443.00	ISCWSA MWD	Rev 4 + SAG + FLT	

Notes