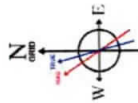


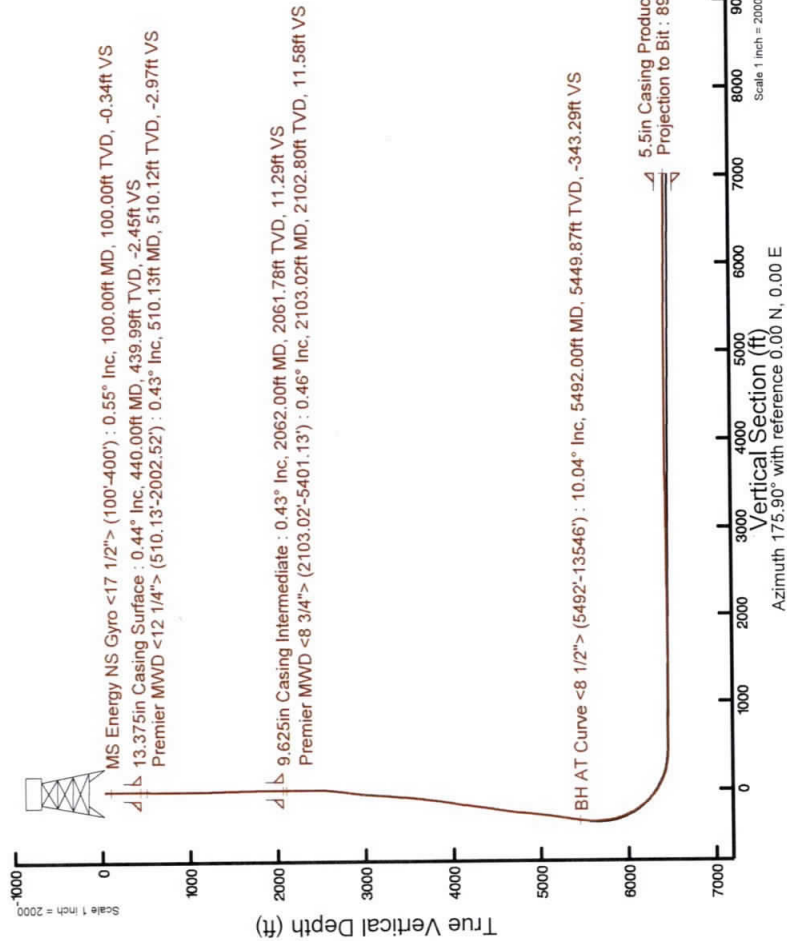
SOUTHWESTERN ENERGY

Location: Brooke County, WV
 Slot: Slot 8H
 Well: Sandra Parr BRK 8H
 Field: Brooke
 Wellbore: Sandra Parr BRK 8H PWB
 Facility: Sandra Parr BRK Pad

Grid System: NAD83 / UTM Zone 17 North, US feet
North Reference: Grid north
Scale: True distance
Depths are in feet
SDC 42 (KB) to Mean Sea Level: 1302.1 feet
Mean Sea Level to Ground level (At Slot: Slot 8H): -1276.1 feet
Coordinates are in feet referenced to Slot



User specified Dip: 67.57° Field: 52638 nT
 Magnetic North is 0.31 degrees East of True North (Mar 2019)
 To correct azimuth from True to Grid subtract 0.31 degrees
 To correct azimuth from Magnetic to Grid subtract 67.7 degrees



Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Sandra Parr BRK Pad	1774090.396	14592474.069	40°10'46.360"N	80°31'17.133"W
Slot	Local E (ft)	Grid East (US ft)	Latitude	Longitude
Slot 8H	-25.02	1774078.510	40°10'46.113"N	80°31'17.288"W
SDC 42 (KB) to Ground level (At Slot: Slot 8H)	-11.89	14592449.060	26ft	
Mean Sea Level to Ground level (At Slot: Slot 8H)			-1276.1ft	
SDC 42 (KB) to Mean Sea Level			1302.1ft	

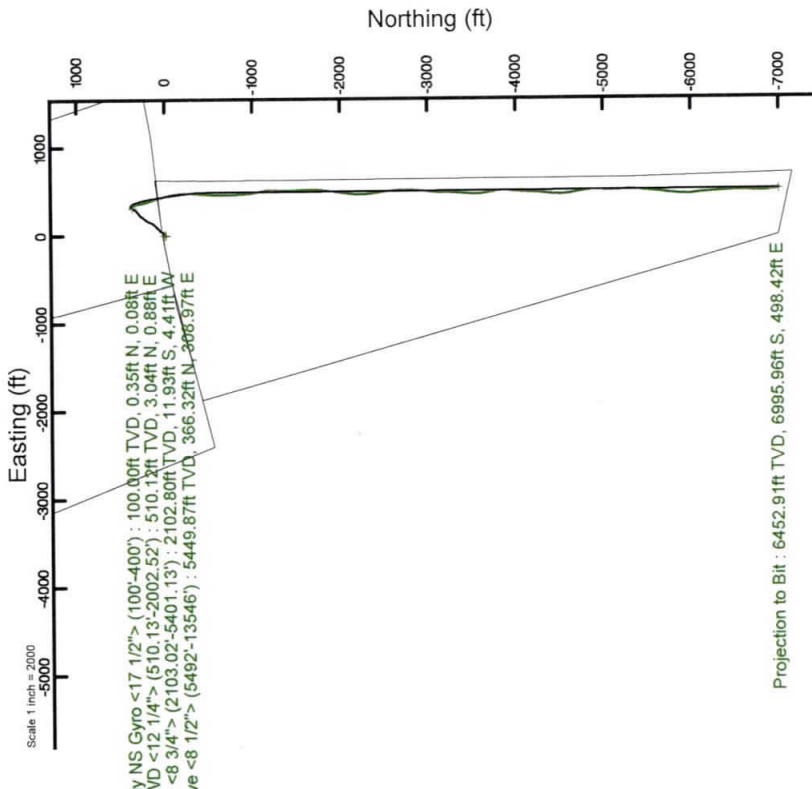
Comments

API: 47-009-00259-0000

BH Job #: 109522328

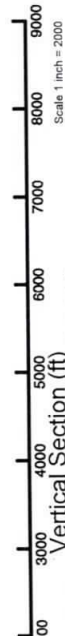
Rig: SDC 42

Duration: 03/11/2019 - 03/15/2019



Projection to Bit : 6452.91ft TVD, 6995.96ft S, 498.42ft E

5.5in Casing Production : 89.60° Inc, 13571.00ft MD, 6452.91ft TVD, 7013.69ft VS
 Projection to Bit : 89.60° Inc, 13571.00ft MD, 6452.91ft TVD, 7013.69ft VS



Vertical Section (ft)
 Azimuth 175.90° with reference 0.00 N, 0.00 E

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 8H
Area	Brooke County, WV	Well	Sandra Parr BRK 8H
Field	Brooke	Wellbore	Sandra Parr BRK 8H AWB
Facility	Sandra Parr BRK Pad		

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Atenjen
Scale	0.999620	Report Generated	01/Apr/2019 at 12:50
Convergence at slot	0.31° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Sandra_Parr_BRK_8H_AWP_Proj_13571_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-25.02	-11.89	1774078.51	14592449.06	40°10'46.113"N	80°31'17.288"W
Facility Reference Pt			1774090.40	14592474.07	40°10'46.360"N	80°31'17.133"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC 42 (KB) to Facility Vertical Datum	1302.10ft
Horizontal Reference Pt	Slot	SDC 42 (KB) to Mean Sea Level	1302.10ft
Vertical Reference Pt	SDC 42 (KB)	SDC 42 (KB) to Ground Level at Slot (Slot 8H)	26.00ft
MD Reference Pt	SDC 42 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	175.90°



REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 8H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 8H
Brooke County, WV	Wellbore	Sandra Parr BRK 8H AWB
Brooke		
Sandra Parr BRK Pad		

WELLPATH DATA (151 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	13.130	0.00	0.00	0.00	0.00	1774078.51	14592449.06	40°10'46.113"N	80°31'17.288"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	13.130	26.00	0.00	0.00	0.00	1774078.51	14592449.06	40°10'46.113"N	80°31'17.288"W	0.00	0.000	0.00	0.00	0.00
100.00	0.550	13.130	100.00	-0.34	0.35	0.08	1774078.59	14592449.41	40°10'46.117"N	80°31'17.287"W	0.36	13.130	0.74	0.74	17.74
200.00	0.370	37.920	200.00	-1.04	1.07	0.39	1774078.90	14592450.13	40°10'46.124"N	80°31'17.283"W	1.14	19.972	0.26	-0.18	24.79
300.00	0.300	21.270	299.99	-1.51	1.57	0.68	1774079.19	14592450.63	40°10'46.129"N	80°31'17.279"W	1.71	23.510	0.12	-0.07	-16.65
400.00	0.450	5.230	399.99	-2.14	2.20	0.81	1774079.32	14592451.26	40°10'46.135"N	80°31'17.277"W	2.35	20.251	0.18	0.15	-16.04
510.13	0.430	3.860	510.12	-2.97	3.04	0.88	1774079.39	14592452.10	40°10'46.143"N	80°31'17.276"W	3.17	16.113	0.02	-0.02	-1.24
599.01	0.570	351.630	599.00	-3.75	3.81	0.84	1774079.35	14592452.87	40°10'46.151"N	80°31'17.277"W	3.91	12.384	0.20	0.16	-13.76
699.62	0.720	6.730	699.60	-4.87	4.94	0.84	1774079.35	14592454.00	40°10'46.162"N	80°31'17.277"W	5.01	9.642	0.22	0.15	15.01
791.69	0.200	345.450	791.67	-5.59	5.67	0.87	1774079.38	14592454.73	40°10'46.169"N	80°31'17.276"W	5.73	8.690	0.58	-0.56	-23.11
888.02	0.250	333.610	887.99	-5.95	6.02	0.73	1774079.24	14592455.08	40°10'46.173"N	80°31'17.278"W	6.06	6.922	0.07	0.05	-12.29
983.55	0.450	269.090	983.52	-6.16	6.20	0.26	1774078.77	14592455.26	40°10'46.175"N	80°31'17.284"W	6.21	2.428	0.43	0.21	-67.54
1077.60	0.610	208.220	1077.57	-5.76	5.75	-0.34	1774078.17	14592454.81	40°10'46.170"N	80°31'17.292"W	5.76	356.587	0.59	0.17	-64.72
1173.76	1.120	190.560	1173.72	-4.42	4.38	-0.76	1774077.75	14592453.44	40°10'46.157"N	80°31'17.297"W	4.44	350.184	0.59	0.53	-18.37
1268.91	1.330	198.090	1268.85	-2.50	2.41	-1.27	1774077.24	14592451.47	40°10'46.137"N	80°31'17.304"W	2.73	332.236	0.28	0.22	7.91
1365.71	1.500	191.440	1365.62	-0.24	0.10	-1.87	1774076.64	14592449.16	40°10'46.115"N	80°31'17.312"W	1.87	273.184	0.24	0.18	-6.87
1461.25	1.250	196.290	1461.13	1.94	-2.12	-2.41	1774076.10	14592446.94	40°10'46.093"N	80°31'17.319"W	3.21	228.652	0.29	-0.26	5.08
1556.18	1.220	200.630	1556.04	3.83	-4.06	-3.06	1774075.45	14592445.00	40°10'46.073"N	80°31'17.328"W	5.08	216.974	0.10	-0.03	4.57
1652.42	1.220	208.110	1652.26	5.63	-5.92	-3.90	1774074.61	14592443.14	40°10'46.055"N	80°31'17.339"W	7.09	213.367	0.17	0.00	7.77
1749.01	1.350	200.090	1748.82	7.54	-7.90	-4.78	1774073.74	14592441.16	40°10'46.036"N	80°31'17.350"W	9.23	211.160	0.23	0.13	-8.30
1845.61	0.860	178.860	1845.40	9.30	-9.69	-5.15	1774073.36	14592439.37	40°10'46.018"N	80°31'17.355"W	10.98	207.996	0.65	-0.51	-21.98
1941.88	0.540	145.830	1941.67	10.41	-10.79	-4.88	1774073.63	14592438.27	40°10'46.007"N	80°31'17.352"W	11.84	204.352	0.52	-0.33	-34.31
2002.52	0.400	168.880	2002.31	10.87	-11.23	-4.68	1774073.83	14592437.83	40°10'46.003"N	80°31'17.349"W	12.17	202.626	0.38	-0.23	38.01
2103.02	0.460	149.330	2102.80	11.58	-11.93	-4.41	1774074.10	14592437.14	40°10'45.996"N	80°31'17.346"W	12.72	200.290	0.16	0.06	-19.45
2139.68	0.320	166.450	2139.46	11.81	-12.15	-4.31	1774074.20	14592436.91	40°10'45.994"N	80°31'17.344"W	12.89	199.529	0.49	-0.38	46.70
2229.39	0.150	172.210	2229.17	12.18	-12.51	-4.24	1774074.28	14592436.55	40°10'45.990"N	80°31'17.343"W	13.21	198.702	0.19	-0.19	6.42
2325.95	0.070	94.500	2325.73	12.31	-12.64	-4.16	1774074.35	14592436.47	40°10'45.989"N	80°31'17.342"W	13.31	198.213	0.16	-0.08	-80.48
2422.36	2.900	63.860	2422.10	11.41	-11.57	-1.91	1774076.60	14592437.49	40°10'45.999"N	80°31'17.313"W	11.73	189.377	2.95	2.94	-31.78
2519.16	6.370	65.250	2518.57	8.59	-8.24	5.17	1774083.67	14592440.82	40°10'46.032"N	80°31'17.222"W	9.73	147.927	3.59	3.58	1.44
2615.23	8.230	44.420	2613.87	2.16	-1.10	14.82	1774093.33	14592447.96	40°10'46.102"N	80°31'17.097"W	14.86	94.244	3.34	1.94	-21.68

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 8H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 8H
Brooke County, WV	Wellbore	Sandra Parr BRK 8H AWB
Brooke		
Sandra Parr BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
2711.89	8.880	34.590	2709.46	-8.25	9.98	23.90	1774102.40	14592459.04	40°10'46.211"N	80°31'16.979"W	25.90	67.327	1.65	0.67	-10.17
2807.30	8.500	29.210	2803.78	-19.89	22.20	31.52	1774110.02	14592471.25	40°10'46.331"N	80°31'16.880"W	38.55	54.842	0.94	-0.40	-5.64
2903.85	8.150	22.410	2899.31	-31.98	34.76	37.61	1774116.11	14592483.80	40°10'46.455"N	80°31'16.801"W	51.21	47.260	1.08	-0.36	-7.04
2999.30	6.620	35.280	2993.97	-42.29	45.50	43.37	1774121.86	14592494.55	40°10'46.561"N	80°31'16.726"W	62.86	43.625	2.35	-1.60	13.48
3094.92	7.170	57.270	3088.92	-49.41	53.23	51.58	1774130.07	14592502.27	40°10'46.637"N	80°31'16.620"W	74.12	44.095	2.80	0.58	23.00
3190.19	7.260	53.120	3183.43	-55.52	60.06	61.39	1774139.88	14592509.10	40°10'46.704"N	80°31'16.493"W	85.88	45.629	0.56	0.09	-4.36
3286.61	7.010	47.960	3279.11	-62.43	67.66	70.63	1774149.12	14592516.69	40°10'46.778"N	80°31'16.373"W	97.81	46.234	0.71	-0.26	-5.35
3382.96	6.780	42.170	3374.76	-69.98	75.81	78.82	1774157.30	14592524.84	40°10'46.858"N	80°31'16.267"W	109.36	46.116	0.76	-0.24	-6.01
3479.27	7.910	43.310	3470.28	-78.39	84.84	87.18	1774165.66	14592533.87	40°10'46.947"N	80°31'16.159"W	121.65	45.779	1.18	1.17	1.18
3575.03	9.770	47.490	3564.90	-87.90	95.13	97.69	1774176.17	14592544.15	40°10'47.048"N	80°31'16.023"W	136.36	45.762	2.05	1.94	4.37
3671.42	9.720	41.540	3659.90	-98.67	106.75	109.12	1774187.59	14592555.77	40°10'47.162"N	80°31'15.875"W	152.65	45.629	1.05	-0.05	-6.17
3767.26	8.770	35.590	3754.50	-109.95	118.74	118.74	1774197.20	14592567.76	40°10'47.280"N	80°31'15.750"W	167.92	44.998	1.40	-0.99	-6.21
3863.91	9.630	34.930	3849.90	-121.90	131.36	127.65	1774206.11	14592580.37	40°10'47.405"N	80°31'15.634"W	183.17	44.179	0.90	0.89	-0.68
3960.14	10.920	29.010	3944.59	-135.79	145.93	136.68	1774215.14	14592594.94	40°10'47.548"N	80°31'15.517"W	199.95	43.125	1.73	1.34	-6.15
4056.65	10.640	22.790	4039.40	-151.39	162.14	144.57	1774223.02	14592611.14	40°10'47.708"N	80°31'15.414"W	217.23	41.720	1.24	-0.29	-6.44
4152.59	9.600	28.330	4133.85	-166.05	177.35	151.79	1774230.25	14592626.34	40°10'47.858"N	80°31'15.320"W	233.44	40.560	1.48	-1.08	5.77
4248.16	10.420	29.710	4227.96	-179.95	191.87	159.86	1774238.31	14592640.86	40°10'48.001"N	80°31'15.215"W	249.74	39.799	0.89	0.86	1.44
4344.16	9.120	34.690	4322.57	-193.10	205.67	168.49	1774246.94	14592654.65	40°10'48.137"N	80°31'15.103"W	265.88	39.326	1.61	-1.35	5.19
4440.06	11.020	41.090	4416.99	-205.48	218.83	178.84	1774257.28	14592667.81	40°10'48.266"N	80°31'14.989"W	282.61	39.258	2.30	1.98	6.67
4536.46	12.520	36.990	4511.36	-219.85	234.12	191.19	1774269.62	14592683.09	40°10'48.417"N	80°31'14.809"W	302.27	39.236	1.78	1.56	-4.25
4632.92	10.690	39.560	4605.85	-234.21	249.37	203.18	1774281.61	14592698.33	40°10'48.567"N	80°31'14.653"W	321.66	39.172	1.97	-1.90	2.66
4729.25	10.100	32.880	4700.60	-247.42	263.35	213.45	1774291.88	14592712.31	40°10'48.704"N	80°31'14.520"W	338.99	39.025	1.39	-0.61	-6.93
4824.53	8.730	35.080	4794.60	-259.70	276.29	222.14	1774300.57	14592725.24	40°10'48.832"N	80°31'14.407"W	354.52	38.801	1.49	-1.44	2.31
4920.53	9.480	52.960	4889.40	-269.64	287.01	232.64	1774311.06	14592735.96	40°10'48.937"N	80°31'14.271"W	369.46	39.027	3.04	0.78	18.62
5017.33	12.050	56.700	4984.49	-278.91	297.36	247.45	1774325.87	14592746.31	40°10'49.039"N	80°31'14.079"W	386.86	39.766	2.75	2.65	3.86
5113.28	12.030	49.390	5078.34	-289.75	309.37	263.42	1774341.83	14592758.31	40°10'49.157"N	80°31'13.873"W	406.32	40.413	1.59	-0.02	-7.62
5209.65	11.680	43.430	5172.66	-302.31	322.99	277.75	1774356.15	14592771.93	40°10'49.290"N	80°31'13.687"W	425.99	40.593	1.32	-0.36	-6.18
5306.06	11.330	38.230	5267.13	-315.90	337.52	290.32	1774368.72	14592786.45	40°10'49.433"N	80°31'13.524"W	445.20	40.700	1.13	-0.36	-5.39
5401.13	10.620	32.920	5360.47	-329.80	352.21	300.86	1774379.25	14592801.14	40°10'49.578"N	80°31'13.387"W	463.21	40.504	1.30	-0.75	-5.59
5492.00	10.040	26.680	5449.87	-343.29	366.32	308.97	1774387.36	14592815.24	40°10'49.717"N	80°31'13.282"W	479.22	40.146	1.39	-0.64	-6.87

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 8H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 8H
Brooke County, WV	Wellbore	Sandra Parr BRK 8H AWB
Brooke		
Sandra Parr BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5588.00	9.880	41.850	5544.43	-356.21	379.93	318.22	1774396.61	14592828.85	40°10'49.851"N	80°31'13.162"W	495.59	39.949	2.73	-0.17	15.80
5683.00	4.940	136.920	5638.87	-358.70	383.03	326.48	1774404.86	14592831.94	40°10'49.881"N	80°31'13.055"W	503.29	40.443	12.02	-5.20	100.07
5779.00	8.540	136.590	5734.19	-349.97	374.83	334.20	1774412.59	14592823.74	40°10'49.800"N	80°31'12.956"W	502.18	41.721	3.75	3.75	-0.34
5876.00	13.820	153.810	5829.34	-333.65	359.18	344.28	1774422.65	14592808.11	40°10'49.644"N	80°31'12.828"W	497.53	43.786	6.38	5.44	17.75
5972.00	19.870	164.820	5921.20	-306.98	333.12	353.62	1774431.99	14592782.05	40°10'49.386"N	80°31'12.709"W	485.81	46.710	7.10	6.30	11.47
6068.00	25.690	171.690	6009.69	-270.18	296.75	360.91	1774439.28	14592745.69	40°10'49.027"N	80°31'12.618"W	467.24	50.572	6.66	6.06	7.16
6163.00	32.970	168.520	6092.46	-223.95	250.97	369.04	1774447.41	14592699.94	40°10'48.574"N	80°31'12.516"W	446.29	55.781	7.83	7.66	-3.34
6259.00	39.190	161.480	6170.04	-168.59	196.54	383.89	1774462.26	14592645.52	40°10'48.035"N	80°31'12.328"W	431.28	62.889	7.78	6.48	-7.33
6356.00	46.880	161.620	6240.89	-104.50	133.79	404.82	1774483.18	14592582.80	40°10'47.414"N	80°31'12.063"W	426.36	71.712	7.93	7.93	0.14
6404.00	49.400	162.330	6272.92	-69.81	99.79	415.88	1774494.23	14592548.82	40°10'47.077"N	80°31'11.923"W	427.68	76.506	5.36	5.25	1.48
6451.00	53.010	164.160	6302.36	-34.07	64.72	426.42	1774504.77	14592513.76	40°10'46.730"N	80°31'11.790"W	431.30	81.369	8.26	7.68	3.89
6497.00	58.710	166.080	6328.17	3.32	27.94	436.17	1774514.52	14592476.99	40°10'46.366"N	80°31'11.667"W	437.07	86.335	12.86	12.39	4.17
6548.00	60.510	167.280	6353.97	46.74	-14.87	446.30	1774524.64	14592434.20	40°10'45.943"N	80°31'11.539"W	446.55	91.908	4.07	3.53	2.35
6600.00	64.980	168.570	6377.78	92.51	-60.06	455.96	1774534.30	14592389.02	40°10'45.496"N	80°31'11.418"W	459.90	97.504	8.87	8.60	2.48
6644.00	68.320	170.780	6395.22	132.66	-99.80	463.19	1774541.52	14592349.30	40°10'45.103"N	80°31'11.328"W	473.82	102.159	8.88	7.59	5.02
6689.00	70.910	173.850	6410.89	174.75	-141.59	468.82	1774547.15	14592307.52	40°10'44.689"N	80°31'11.258"W	489.73	106.805	8.60	5.76	6.82
6740.00	74.260	177.600	6426.16	223.39	-190.10	472.43	1774550.76	14592259.03	40°10'44.210"N	80°31'11.215"W	509.24	111.919	9.61	6.57	7.35
6785.00	79.010	179.210	6436.56	267.12	-233.85	473.64	1774551.97	14592215.30	40°10'43.777"N	80°31'11.202"W	528.23	116.277	11.11	10.56	3.58
6836.00	82.810	180.380	6444.62	317.35	-284.20	473.82	1774552.15	14592164.97	40°10'43.280"N	80°31'11.203"W	552.52	120.956	7.79	7.45	2.29
6888.00	85.410	182.270	6449.95	368.84	-335.91	472.62	1774550.95	14592113.28	40°10'42.769"N	80°31'11.222"W	579.83	125.402	6.17	5.00	3.63
6932.00	88.580	184.640	6452.26	412.39	-379.76	469.97	1774548.30	14592069.45	40°10'42.336"N	80°31'11.260"W	604.23	128.940	8.99	7.20	5.39
7029.00	89.170	183.750	6454.16	508.35	-476.48	462.88	1774541.21	14591972.76	40°10'41.380"N	80°31'11.358"W	664.30	135.829	1.10	0.61	-0.92
7124.00	89.570	182.290	6455.21	602.61	-571.34	457.88	1774536.21	14591877.94	40°10'40.443"N	80°31'11.429"W	732.17	141.291	1.59	0.42	-1.54
7221.00	89.910	179.920	6455.65	699.20	-668.31	456.00	1774534.34	14591781.00	40°10'39.485"N	80°31'11.460"W	809.06	145.693	2.47	0.35	-2.44
7317.00	89.630	177.840	6456.03	795.07	-764.29	457.88	1774536.22	14591685.07	40°10'38.536"N	80°31'11.442"W	890.95	149.074	2.19	-0.29	-2.17
7413.00	89.630	176.120	6456.65	891.04	-860.15	462.94	1774541.27	14591589.24	40°10'37.589"N	80°31'11.384"W	976.81	151.710	1.79	0.00	-1.79
7509.00	89.630	173.580	6457.27	987.02	-955.75	471.55	1774549.88	14591493.67	40°10'36.644"N	80°31'11.279"W	1065.75	153.739	2.65	0.00	-2.65
7606.00	89.880	169.170	6457.69	1083.69	-1051.63	486.10	1774564.42	14591397.83	40°10'35.695"N	80°31'11.099"W	1158.54	155.192	4.55	0.26	-4.55
7702.00	89.850	174.440	6457.91	1179.41	-1146.61	499.78	1774578.10	14591302.88	40°10'34.756"N	80°31'10.929"W	1250.80	156.449	5.49	-0.03	5.49
7798.00	89.970	181.910	6458.07	1275.27	-1242.50	502.83	1774581.15	14591207.04	40°10'33.808"N	80°31'10.896"W	1340.39	157.967	7.78	0.13	7.78



Actual Wellpath Report

Sandra Parr BRK 8H AWP Proj: 13571'

Page 5 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 8H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 8H
Brooke County, WV	Wellbore	Sandra Parr BRK 8H AWB
Brooke		
Sandra Parr BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
7894.00	90.370	182.650	6457.78	1370.67	-1338.42	499.01	1774577.33	1459111.15	40°10'32.861"N	80°31'10.952"W	1428.42	159.553	0.88	0.42	0.77
7990.00	90.950	177.710	6456.67	1466.37	-1434.38	498.71	1774577.03	14591015.22	40°10'31.912"N	80°31'10.963"W	1518.61	160.828	5.18	0.60	-5.15
8086.00	89.940	175.850	6455.93	1562.35	-1530.22	504.10	1774582.42	14590919.42	40°10'30.965"N	80°31'10.900"W	1611.12	161.767	2.20	-1.05	-1.94
8182.00	89.910	178.940	6456.05	1658.30	-1626.11	508.47	1774586.78	14590823.57	40°10'30.017"N	80°31'10.851"W	1703.75	162.636	3.22	-0.03	3.22
8278.00	89.940	183.110	6456.18	1753.90	-1722.08	506.75	1774585.07	14590727.64	40°10'29.069"N	80°31'10.879"W	1795.09	163.603	4.34	0.03	4.34
8374.00	91.510	186.330	6454.96	1848.74	-1817.73	498.85	1774577.17	14590632.03	40°10'28.124"N	80°31'10.988"W	1884.94	164.654	3.73	1.64	3.35
8470.00	89.720	185.450	6453.93	1943.28	-1913.21	489.00	1774567.33	14590536.58	40°10'27.181"N	80°31'11.121"W	1974.71	165.663	2.08	-1.86	-0.92
8565.00	89.200	187.430	6454.83	2036.66	-2007.60	478.35	1774556.67	14590442.22	40°10'26.249"N	80°31'11.265"W	2063.80	166.598	2.15	-0.55	2.08
8661.00	91.140	188.520	6454.55	2130.53	-2102.67	465.03	1774543.36	14590347.20	40°10'25.310"N	80°31'11.443"W	2153.48	167.529	2.32	2.02	1.14
8758.00	90.060	181.840	6453.53	2226.20	-2199.21	456.28	1774534.61	14590250.69	40°10'24.357"N	80°31'11.563"W	2246.04	168.279	6.98	-1.11	-6.89
8854.00	90.330	174.790	6452.78	2322.05	-2295.10	459.10	1774537.43	14590154.83	40°10'23.409"N	80°31'11.533"W	2340.57	168.688	7.39	0.80	-7.34
8950.00	90.680	171.570	6451.52	2417.92	-2390.40	470.50	1774548.83	14590059.57	40°10'22.467"N	80°31'11.393"W	2436.27	168.865	3.36	-0.16	-3.35
9046.00	90.680	172.750	6450.38	2513.71	-2485.50	483.59	1774561.92	14589964.51	40°10'21.526"N	80°31'11.231"W	2532.11	168.990	1.23	0.00	1.23
9142.00	90.370	175.450	6449.50	2609.65	-2580.98	493.46	1774571.78	14589869.07	40°10'20.582"N	80°31'11.110"W	2627.72	169.176	2.83	-0.32	2.81
9239.00	89.720	178.190	6449.42	2706.63	-2677.82	498.84	1774577.16	14589772.27	40°10'19.625"N	80°31'11.048"W	2723.88	169.448	2.90	-0.67	2.82
9335.00	90.310	179.940	6449.40	2802.48	-2773.80	500.40	1774578.72	14589676.32	40°10'18.676"N	80°31'11.034"W	2818.58	169.774	1.92	0.61	1.82
9430.00	89.880	183.620	6449.24	2896.96	-2868.74	497.45	1774575.77	14589581.42	40°10'17.738"N	80°31'11.079"W	2911.55	170.162	3.90	-0.45	3.87
9527.00	90.180	185.420	6449.19	2992.86	-2965.43	489.81	1774568.13	14589484.76	40°10'16.783"N	80°31'11.184"W	3005.61	170.621	1.88	0.31	1.86
9623.00	90.710	184.990	6448.44	3087.60	-3061.03	481.10	1774559.43	14589389.20	40°10'15.839"N	80°31'11.303"W	3098.61	171.068	0.71	0.55	-0.45
9719.00	90.800	181.830	6447.18	3182.75	-3156.84	475.39	1774553.72	14589293.42	40°10'14.893"N	80°31'11.383"W	3192.44	171.436	3.29	0.09	-3.29
9814.00	89.850	180.280	6446.64	3277.36	-3251.82	473.64	1774551.97	14589198.48	40°10'13.954"N	80°31'11.412"W	3286.13	171.713	1.91	-1.00	-1.63
9911.00	90.740	184.860	6446.14	3373.68	-3348.69	469.29	1774547.63	14589101.64	40°10'12.997"N	80°31'11.475"W	3381.42	172.022	4.81	0.92	4.72
10007.00	90.890	183.830	6444.77	3468.63	-3444.41	462.02	1774540.36	14589005.97	40°10'12.052"N	80°31'11.575"W	3475.26	172.360	1.08	0.16	-1.07
10104.00	92.030	180.700	6442.30	3564.98	-3541.29	458.19	1774536.52	14588909.12	40°10'11.094"N	80°31'11.632"W	3570.81	172.628	3.43	1.18	-3.23
10199.00	90.800	172.580	6439.95	3659.86	-3636.01	463.75	1774542.09	14588814.43	40°10'10.158"N	80°31'11.567"W	3665.47	172.731	8.64	-1.29	-8.55
10295.00	89.690	168.640	6439.54	3755.43	-3730.71	479.41	1774557.74	14588719.78	40°10'09.221"N	80°31'11.371"W	3761.38	172.677	4.26	-1.16	-4.10
10391.00	89.780	176.930	6439.98	3851.21	-3825.86	491.46	1774569.78	14588624.66	40°10'08.280"N	80°31'11.223"W	3857.30	172.680	8.64	0.09	8.64
10487.00	89.820	183.480	6440.32	3946.88	-3921.81	491.12	1774569.44	14588528.75	40°10'07.332"N	80°31'11.234"W	3952.44	172.862	6.82	0.04	6.82
10583.00	89.880	185.310	6440.57	4041.83	-4017.52	483.76	1774562.08	14588433.07	40°10'06.387"N	80°31'11.335"W	4046.54	173.134	1.91	0.06	1.91
10680.00	89.880	181.800	6440.77	4137.95	-4114.32	477.75	1774556.07	14588336.31	40°10'05.431"N	80°31'11.420"W	4141.96	173.377	3.62	0.00	-3.62

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 8H
Area	Brooke County, WV	Well	Sandra Parr BRK 8H
Field	Brooke	Wellbore	Sandra Parr BRK 8H AWB
Facility	Sandra Parr BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
10776.00	89.940	182.030	6440.93	4233.42	-4210.27	474.54	1774552.87	14588240.40	40°10'04.483"N	80°31'11.468"W	4236.92	173.569	0.25	0.06	0.24
10872.00	90.030	186.150	6440.95	4328.42	-4306.00	467.69	1774546.02	14588144.70	40°10'03.537"N	80°31'11.562"W	4331.32	173.801	4.29	0.09	4.29
10968.00	90.220	185.870	6440.74	4422.93	-4401.47	457.64	1774535.98	14588049.27	40°10'02.594"N	80°31'11.699"W	4425.20	174.064	0.35	0.20	-0.29
11064.00	90.310	180.600	6440.30	4518.11	-4497.28	452.22	1774530.56	14587953.49	40°10'01.648"N	80°31'11.775"W	4519.96	174.258	5.49	0.09	-5.49
11160.00	90.340	172.180	6439.75	4614.02	-4593.01	458.26	1774536.60	14587857.81	40°10'00.701"N	80°31'11.704"W	4615.81	174.302	8.77	0.03	-8.77
11258.00	90.090	170.160	6439.38	4711.68	-4689.84	473.31	1774551.64	14587761.01	40°09'59.744"N	80°31'11.517"W	4713.66	174.237	2.08	-0.26	-2.06
11353.00	89.970	172.430	6439.33	4806.36	-4783.74	487.68	1774566.01	14587667.15	40°09'58.815"N	80°31'11.338"W	4808.53	174.179	2.39	-0.13	2.39
11449.00	89.850	178.080	6439.48	4902.32	-4879.37	495.62	1774573.94	14587571.55	40°09'57.870"N	80°31'11.243"W	4904.48	174.200	5.89	-0.13	5.89
11545.00	90.150	182.010	6439.48	4998.05	-4975.35	495.55	1774573.87	14587475.61	40°09'56.921"N	80°31'11.250"W	4999.97	174.312	4.11	0.31	4.09
11641.00	90.150	181.560	6439.23	5093.54	-5071.30	492.56	1774570.88	14587379.69	40°09'55.973"N	80°31'11.295"W	5095.17	174.452	0.47	0.00	-0.47
11738.00	89.540	176.890	6439.50	5190.35	-5168.27	493.87	1774572.19	14587282.76	40°09'55.015"N	80°31'11.285"W	5191.81	174.542	4.86	-0.63	-4.81
11834.00	89.600	178.070	6440.22	5286.31	-5264.17	498.09	1774576.41	14587186.90	40°09'54.067"N	80°31'11.238"W	5287.68	174.595	1.23	0.06	1.23
11931.00	89.510	182.340	6440.97	5383.01	-5361.14	497.74	1774576.06	14587089.96	40°09'53.109"N	80°31'11.249"W	5384.20	174.696	4.40	-0.09	4.40
12027.00	89.540	185.030	6441.77	5478.11	-5456.93	491.57	1774569.89	14586994.21	40°09'52.162"N	80°31'11.335"W	5479.03	174.853	2.80	0.03	2.80
12123.00	89.540	184.960	6442.54	5572.90	-5552.57	483.21	1774561.54	14586898.61	40°09'51.218"N	80°31'11.449"W	5573.55	175.028	0.07	0.00	-0.07
12220.00	89.540	186.590	6443.32	5668.46	-5649.07	473.45	1774551.78	14586802.15	40°09'50.265"N	80°31'11.582"W	5668.87	175.209	1.68	0.00	1.68
12316.00	89.570	186.400	6444.06	5762.82	-5744.45	462.59	1774540.93	14586706.80	40°09'49.323"N	80°31'11.728"W	5763.04	175.396	0.20	0.03	-0.20
12412.00	89.540	184.170	6444.81	5857.53	-5840.03	453.75	1774532.09	14586611.26	40°09'48.379"N	80°31'11.849"W	5857.63	175.557	2.32	-0.03	-2.32
12508.00	89.630	181.840	6445.50	5952.78	-5935.89	448.72	1774527.06	14586515.43	40°09'47.432"N	80°31'11.920"W	5952.83	175.677	2.43	0.09	-2.43
12604.00	89.570	172.810	6446.17	6048.65	-6031.68	453.20	1774531.53	14586419.68	40°09'46.485"N	80°31'11.869"W	6048.69	175.703	9.41	-0.06	-9.41
12700.00	89.570	175.770	6446.89	6144.60	-6127.19	462.75	1774541.08	14586324.20	40°09'45.540"N	80°31'11.753"W	6144.64	175.681	3.08	0.00	3.08
12796.00	89.570	176.250	6447.62	6240.60	-6222.96	469.43	1774547.76	14586228.48	40°09'44.594"N	80°31'11.674"W	6240.64	175.686	0.50	0.00	0.50
12892.00	89.480	176.840	6448.41	6336.59	-6318.78	475.21	1774553.54	14586132.69	40°09'43.647"N	80°31'11.606"W	6336.63	175.699	0.62	-0.09	0.61
12989.00	89.600	176.100	6449.19	6433.58	-6415.59	481.18	1774559.51	14586035.91	40°09'42.690"N	80°31'11.536"W	6433.61	175.711	0.77	0.12	-0.76
13085.00	89.510	178.360	6449.94	6529.54	-6511.47	485.82	1774564.15	14585940.07	40°09'41.742"N	80°31'11.482"W	6529.57	175.733	2.36	-0.09	2.35
13181.00	89.660	181.770	6450.63	6625.27	-6607.46	485.71	1774564.04	14585844.13	40°09'40.793"N	80°31'11.491"W	6625.28	175.796	3.56	0.16	3.55
13277.00	89.630	184.650	6451.23	6720.48	-6703.29	480.34	1774558.67	14585748.33	40°09'39.847"N	80°31'11.566"W	6720.48	175.901	3.00	-0.03	3.00
13374.00	89.780	178.770	6451.73	6816.94	-6800.21	477.45	1774555.77	14585651.45	40°09'38.889"N	80°31'11.610"W	6816.95	175.984	6.06	0.15	-6.06
13470.00	89.630	172.130	6452.22	6912.88	-6895.85	485.06	1774563.38	14585555.84	40°09'37.944"N	80°31'11.519"W	6912.89	175.976	6.92	-0.16	-6.92
13546.00	89.600	172.560	6452.73	6988.73	-6971.17	495.18	1774573.50	14585480.55	40°09'37.199"N	80°31'11.394"W	6988.73	175.937	0.57	-0.04	0.57



Actual Wellpath Report

Sandra Parr BRK 8H AWP Proj: 13571'

Page 7 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 8H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 8H
Brooke County, WV	Wellbore	Sandra Parr BRK 8H AWB
Brooke		
Sandra Parr BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
13571.00	89.600	172.560	6452.91	7013.69	-6995.96	498.42	1774576.74	14585455.77	40°09'36.954"N	80°31'11.354"W	7013.69	175.925	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Sandra Parr BRK 8H AWB Ref Wellpath: Sandra Parr BRK 8H AWP Proj: 13571'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
17.5in Open Hole	26.00	440.00	414.00	26.00	439.99	0.00	0.00	2.51	0.84
13.375in Casing Surface	26.00	440.00	414.00	26.00	439.99	0.00	0.00	2.51	0.84
12.25in Open Hole	440.00	2062.00	1622.00	439.99	2061.78	2.51	0.84	-11.64	-4.55
9.625in Casing Intermediate	26.00	2062.00	2036.00	26.00	2061.78	0.00	0.00	-11.64	-4.55
8.75in Open Hole	2062.00	5480.00	3418.00	2061.78	5438.05	-11.64	-4.55	364.45	308.01
8.5in Open Hole	5480.00	13571.00	8091.00	5438.05	6452.91	364.45	308.01	-6995.96	498.42
5.5in Casing Production	26.00	13571.00	13545.00	26.00	6452.91	0.00	0.00	-6995.96	498.42

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Sandra Parr BRK 8H LP Rev-3	6450.00	-418.87	483.69	1774562.02	14592030.35	40°10'41.948"N	80°31'11.086"W	point
Sandra Parr BRK 8H BHL Rev-3	6492.10	-6997.09	501.17	1774579.49	14585454.64	40°09'36.942"N	80°31'11.319"W	point

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 8H
Area	Brooke County, WV	Well	Sandra Parr BRK 8H
Field	Brooke	Wellbore	Sandra Parr BRK 8H AWB
Facility	Sandra Parr BRK Pad		

WELLPATH COMPOSITION - Ref Wellbore: Sandra Parr BRK 8H AWB

Ref Wellpath: Sandra Parr BRK 8H AWP Proj: 13571'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	400.00	BHI Generic gyro - northseeking (Standard)	01_MS_Energy_NS_Gyro <17 1/2"> (100'-400')	Sandra Parr BRK 8H AWB
400.00	2002.52	OWSG MWD rev2 + HRGM	02_Premier_MWD <12 1/4"> (510.13'-2002.52')	Sandra Parr BRK 8H AWB
2002.52	5401.13	OWSG MWD rev2 + HRGM	03_Premier_MWD <8 3/4"> (2103.02'-5401.13')	Sandra Parr BRK 8H AWB
5401.13	13546.00	BHI AutoTrak Curve (Short)	04_BH_AT_Curve <8 1/2"> (5492'-13546')	Sandra Parr BRK 8H AWB
13546.00	13571.00	Blind Drilling (std)	Projection to bit	Sandra Parr BRK 8H AWB

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 8H
Area	Brooke County, WV	Well	Sandra Parr BRK 8H
Field	Brooke	Wellbore	Sandra Parr BRK 8H AWB
Facility	Sandra Parr BRK Pad		

COMMENTS

Wellpath general comments
 API: 47-009-00259-0000
 BH Job #: 109522328
 Rig: SDC 42
 Duration: 03/11/2019 - 03/15/2019