

SOUTHWESTERN ENERGY

Location: Brooke County, WV
 Field: Brooke
 Facility: Kathy Mayhew BRK Pad Wellbore: Kathy Mayhew BRK 3H PWB

Slot: Slot 3H
 Well: Kathy Mayhew BRK 3H
 Plot reference wellpath is Kathy Mayhew BRK 3H PWP Rev-B.0
 Grid System: NAD83 / UTM Zone 17 North, US feet
 North Reference: Grid north
 Scale: True distance
 Measured depths are referenced to SDC 41 (KB)
 SDC 41 (KB) to Mean Sea Level: 1306.9 feet
 Depths are in feet
 Mean Sea Level to Ground level (At Slot: Slot 3H): -1280.9 feet
 Coordinates are in feet referenced to Slot

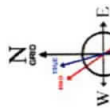


Location Information

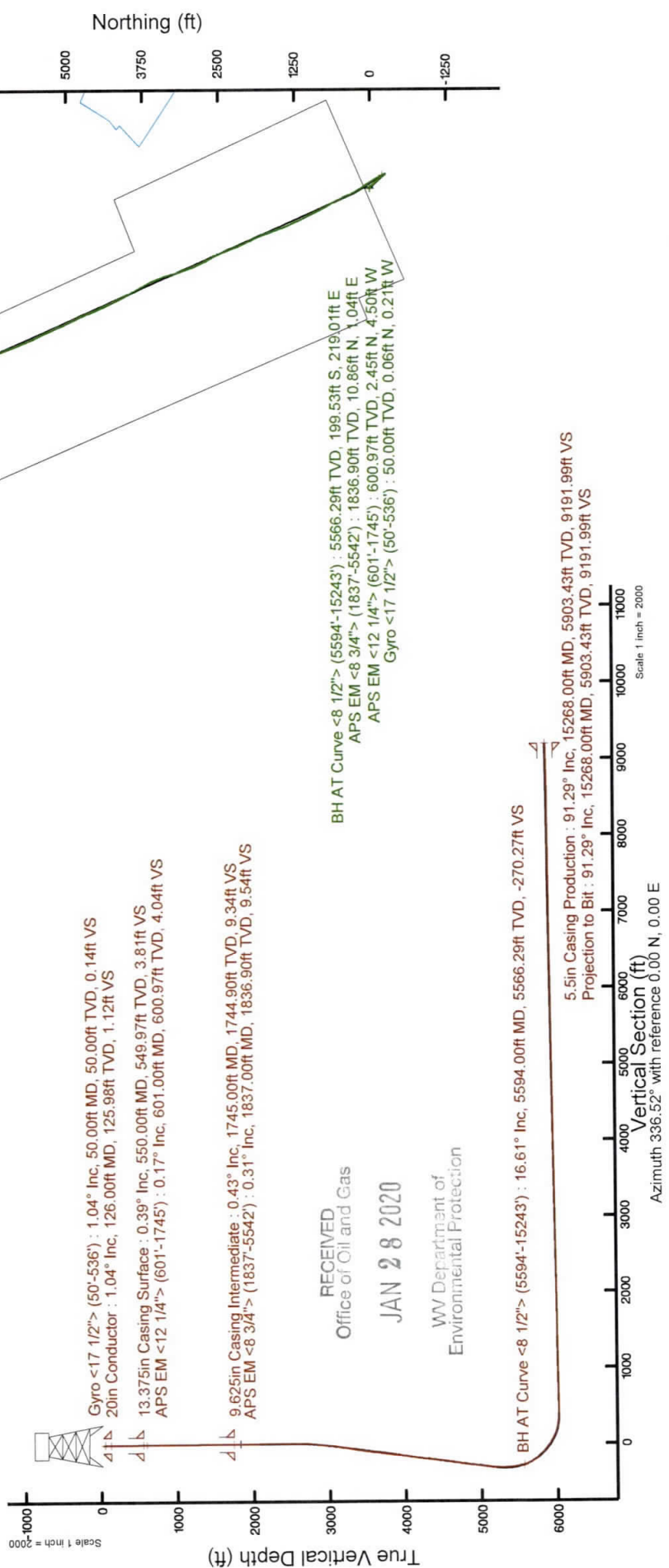
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Kathy Mayhew BRK Pad	1745806.480	14597023.540	40°11'32.662"N	80°37'21.416"W
Slot	Local N (ft)	Local E (ft)	Grid North (US ft)	Grid East (US ft)
Slot 3H	-97.78	-20.02	1745786.450	14596925.797
SDC 41 (KB) to Ground level (At Slot: Slot 3H)				
Mean Sea Level to Ground level (At Slot: Slot 3H)				
SDC 41 (KB) to Mean Sea Level				
-1280.9ft				
1306.9ft				

Comments

API: 47-009-00271-0000
 BH Job #: 109899866
 Rig: SDC 41
 Duration: 07/14/2019 - 07/27/2019



Users specified Dip: 67.47° Field: 52482 nT
 Magnetic North is 8.14 degrees West of True North (at 20 Jul 2019)
 True vertical depths are referenced to SDC 41 (KB)
 Grid North is 0.24 degrees East of True North
 To convert azimuth from Magnetic to Grid subtract 8.38 degrees
 To correct azimuth from Magnetic to Grid subtract 8.38 degrees



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
Field	Brooke	Wellbore	Kathy Mayhew BRK 3H AWB
Facility	Kathy Mayhew 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	0.999613	Report Generated	8/7/2019 at 12:26:32 PM
Convergence at slot	0.24° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Kathy_Mayhew_BRK_3H_AWP_Proj_15268_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-97.78	-20.02	1745786.45	14596925.80	40°11'31.717"N	80°37'21.679"W
Facility Reference Pt			1745806.46	14597023.54	40°11'32.682"N	80°37'21.416"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC 41 (KB) to Facility Vertical Datum	1306.90ft
Horizontal Reference Pt	Slot	SDC 41 (KB) to Mean Sea Level	1306.90ft
Vertical Reference Pt	SDC 41 (KB)	SDC 41 (KB) to Ground Level at Slot (Slot 3H)	26.00ft
MD Reference Pt	SDC 41 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	336.52°

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Environmental Protection

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Actual Wellpath Report

Kathy Mayhew BRK 3H AWP Proj: 15268'

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REFERENCE WELLPATH IDENTIFICATION

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Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
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Facility	Kathy Mayhew BRK Pad		

WELLPATH DATA (179 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	287.000	0.00	0.00	0.00	0.00	1745786.45	14596925.80	40°11'31.717"N	80°37'21.679"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	287.000	26.00	0.00	0.00	0.00	1745786.45	14596925.80	40°11'31.717"N	80°37'21.679"W	0.00	0.000	0.00	0.00	0.00
50.00	1.040	287.000	50.00	0.14	0.06	-0.21	1745786.24	14596925.86	40°11'31.718"N	80°37'21.682"W	0.22	287.000	4.33	4.33	-304.17
100.00	1.170	289.590	99.99	0.78	0.37	-1.12	1745785.33	14596926.16	40°11'31.721"N	80°37'21.693"W	1.18	288.118	0.28	0.26	5.18
150.00	0.920	285.670	149.98	1.39	0.65	-1.99	1745784.46	14596926.44	40°11'31.723"N	80°37'21.705"W	2.09	288.008	0.52	-0.50	-7.84
200.00	0.520	290.010	199.98	1.80	0.83	-2.59	1745783.86	14596926.63	40°11'31.725"N	80°37'21.712"W	2.72	287.830	0.81	-0.80	8.68
250.00	0.430	285.640	249.98	2.07	0.96	-2.98	1745783.47	14596926.76	40°11'31.727"N	80°37'21.717"W	3.14	287.857	0.19	-0.18	-8.74
300.00	0.420	298.640	299.97	2.33	1.10	-3.33	1745783.13	14596926.90	40°11'31.728"N	80°37'21.722"W	3.50	288.299	0.19	-0.02	26.00
350.00	0.410	294.300	349.97	2.61	1.26	-3.65	1745782.80	14596927.06	40°11'31.730"N	80°37'21.726"W	3.86	289.065	0.07	-0.02	-8.68
400.00	0.360	311.300	399.97	2.89	1.44	-3.93	1745782.52	14596927.23	40°11'31.731"N	80°37'21.729"W	4.19	290.102	0.25	-0.10	34.00
450.00	0.370	317.830	449.97	3.18	1.66	-4.16	1745782.29	14596927.46	40°11'31.734"N	80°37'21.732"W	4.48	291.790	0.09	0.02	13.06
500.00	0.300	334.870	499.97	3.46	1.90	-4.32	1745782.13	14596927.70	40°11'31.736"N	80°37'21.734"W	4.72	293.736	0.24	-0.14	34.08
536.00	0.460	335.850	535.97	3.70	2.12	-4.42	1745782.03	14596927.91	40°11'31.738"N	80°37'21.736"W	4.90	295.594	0.44	0.44	2.72
601.00	0.170	13.410	600.97	4.04	2.45	-4.50	1745781.95	14596928.25	40°11'31.741"N	80°37'21.737"W	5.13	298.533	0.53	-0.45	57.78
693.00	0.060	331.280	692.97	4.20	2.62	-4.50	1745781.96	14596928.42	40°11'31.743"N	80°37'21.737"W	5.21	300.270	0.14	-0.12	-45.79
784.00	0.380	324.960	783.97	4.54	2.91	-4.69	1745781.76	14596928.71	40°11'31.746"N	80°37'21.739"W	5.52	301.833	0.35	0.35	-6.95
874.00	0.450	359.870	873.96	5.16	3.51	-4.86	1745781.59	14596929.31	40°11'31.752"N	80°37'21.741"W	6.00	305.819	0.29	0.08	38.79
964.00	0.580	22.120	963.96	5.80	4.29	-4.69	1745781.76	14596930.08	40°11'31.760"N	80°37'21.739"W	6.36	312.402	0.26	0.14	24.72
1054.00	0.410	57.700	1053.96	6.17	4.88	-4.25	1745782.20	14596930.68	40°11'31.765"N	80°37'21.733"W	6.47	318.950	0.38	-0.19	39.53
1145.00	0.650	62.190	1144.95	6.26	5.30	-3.52	1745782.93	14596931.09	40°11'31.769"N	80°37'21.724"W	6.36	326.399	0.27	0.26	4.93
1237.00	0.850	48.910	1236.95	6.50	5.99	-2.54	1745783.91	14596931.78	40°11'31.776"N	80°37'21.711"W	6.50	336.993	0.29	0.22	-14.43
1330.00	0.750	54.460	1329.94	6.84	6.79	-1.53	1745784.92	14596932.59	40°11'31.784"N	80°37'21.698"W	6.96	347.333	0.14	-0.11	5.97
1421.00	0.970	26.490	1420.93	7.46	7.83	-0.70	1745785.75	14596933.62	40°11'31.794"N	80°37'21.687"W	7.86	354.900	0.51	0.24	-30.74
1513.00	1.050	24.330	1512.91	8.53	9.29	0.00	1745786.45	14596935.09	40°11'31.809"N	80°37'21.678"W	9.29	359.974	0.10	0.09	-2.35
1606.00	0.410	51.400	1605.90	9.19	10.28	0.61	1745787.06	14596936.07	40°11'31.819"N	80°37'21.671"W	10.30	3.379	0.76	-0.69	29.11
1699.00	0.330	76.320	1698.90	9.23	10.55	1.13	1745787.58	14596936.34	40°11'31.821"N	80°37'21.664"W	10.61	6.099	0.19	-0.09	26.80
1745.00	0.430	296.990	1744.90	9.34	10.66	1.10	1745787.55	14596936.45	40°11'31.822"N	80°37'21.664"W	10.72	5.903	1.55	0.22	-302.89
1837.00	0.310	80.880	1836.90	9.54	10.86	1.04	1745787.49	14596936.65	40°11'31.824"N	80°37'21.665"W	10.91	5.474	0.77	-0.13	156.40
1893.00	0.390	62.330	1892.90	9.52	10.97	1.36	1745787.81	14596936.76	40°11'31.825"N	80°37'21.661"W	11.05	7.061	0.25	0.14	-33.12
1976.00	0.300	48.140	1975.90	9.61	11.24	1.77	1745788.22	14596937.04	40°11'31.828"N	80°37'21.655"W	11.38	8.949	0.15	-0.11	-17.10

Actual Wellpath Report
Kathy Mayhew BRK 3H AWP Proj: 15268'
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Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
Field	Brooke	Wellbore	Kathy Mayhew BRK 3H AWB
Facility	Kathy Mayhew BRK Pad		

WELLPATH DATA (179 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]
2069.00	0.420	22.850	2068.90	9.92	11.72	2.08	1745788.53	14596937.51	40°11'31.833"N	80°37'21.651"W	11.90	10.083	0.21	0.13	-27.19
2162.00	0.350	26.100	2161.90	10.34	12.29	2.34	1745788.79	14596938.08	40°11'31.838"N	80°37'21.648"W	12.51	10.787	0.08	-0.08	3.49
2254.00	0.440	30.470	2253.89	10.73	12.85	2.64	1745789.09	14596938.64	40°11'31.844"N	80°37'21.644"W	13.12	11.631	0.10	0.10	4.75
2347.00	0.590	26.210	2346.89	11.25	13.58	3.04	1745789.49	14596939.38	40°11'31.851"N	80°37'21.639"W	13.92	12.602	0.17	0.16	-4.58
2440.00	0.530	9.170	2439.89	11.92	14.44	3.32	1745789.77	14596940.23	40°11'31.860"N	80°37'21.635"W	14.81	12.938	0.19	-0.06	-18.32
2533.00	0.700	10.150	2532.88	12.76	15.42	3.49	1745789.93	14596941.21	40°11'31.869"N	80°37'21.633"W	15.81	12.736	0.18	0.18	1.05
2625.00	0.500	71.650	2624.88	13.19	16.10	3.97	1745790.41	14596941.89	40°11'31.876"N	80°37'21.627"W	16.58	13.836	0.69	-0.22	66.85
2718.00	2.990	129.220	2717.83	11.00	14.70	6.23	1745792.68	14596940.29	40°11'31.862"N	80°37'21.598"W	15.96	22.975	2.96	2.68	61.90
2811.00	6.230	136.580	2810.52	4.10	9.50	11.58	1745798.02	14596935.25	40°11'31.810"N	80°37'21.529"W	14.97	50.647	3.53	3.48	7.91
2903.00	6.400	133.220	2901.96	-5.31	2.36	18.75	1745805.19	14596928.15	40°11'31.740"N	80°37'21.437"W	18.89	82.831	0.44	0.18	-3.65
2995.00	6.770	132.630	2993.35	-14.97	-4.83	26.47	1745812.91	14596920.97	40°11'31.668"N	80°37'21.338"W	26.91	100.331	0.41	0.40	-0.64
3086.00	8.190	133.130	3083.57	-25.83	-12.89	35.15	1745821.59	14596912.91	40°11'31.588"N	80°37'21.227"W	37.44	110.139	1.56	1.56	0.55
3179.00	9.630	136.640	3175.45	-39.22	-23.08	45.33	1745831.76	14596902.73	40°11'31.487"N	80°37'21.096"W	50.86	116.980	1.65	1.55	3.77
3274.00	9.700	131.690	3269.10	-53.96	-34.18	56.76	1745843.19	14596891.63	40°11'31.377"N	80°37'20.949"W	66.25	121.053	0.88	0.07	-5.21
3367.00	9.000	136.710	3360.87	-67.91	-44.68	67.60	1745854.02	14596881.13	40°11'31.273"N	80°37'20.810"W	81.03	123.464	1.16	-0.75	5.40
3459.00	8.540	132.300	3451.79	-80.91	-54.52	77.58	1745864.00	14596871.30	40°11'31.175"N	80°37'20.682"W	94.82	125.095	0.89	-0.50	-4.79
3552.00	8.170	145.880	3543.82	-93.71	-64.64	86.40	1745872.82	14596861.19	40°11'31.075"N	80°37'20.569"W	107.90	126.800	2.15	-0.40	14.60
3645.00	7.940	147.090	3635.90	-106.54	-75.50	93.60	1745880.01	14596850.33	40°11'30.967"N	80°37'20.477"W	120.25	128.891	0.31	-0.25	1.30
3737.00	7.530	143.160	3727.06	-118.67	-85.66	100.66	1745887.07	14596840.17	40°11'30.866"N	80°37'20.386"W	132.18	130.396	0.73	-0.45	-4.27
3830.00	7.040	141.110	3819.31	-130.10	-94.97	107.89	1745894.30	14596830.86	40°11'30.774"N	80°37'20.294"W	143.74	131.355	0.60	-0.53	-2.20
3922.00	6.490	138.080	3910.67	-140.46	-103.23	114.91	1745901.31	14596822.61	40°11'30.692"N	80°37'20.204"W	154.47	131.935	0.71	-0.60	-3.29
4015.00	7.820	137.450	4002.94	-151.43	-111.80	122.70	1745909.10	14596814.04	40°11'30.607"N	80°37'20.104"W	165.99	132.339	1.43	1.43	-0.68
4108.00	7.650	135.570	4095.10	-163.19	-120.88	131.31	1745917.71	14596804.96	40°11'30.517"N	80°37'19.994"W	178.48	132.632	0.33	-0.18	-2.02
4200.00	8.830	139.620	4186.15	-175.67	-130.63	140.17	1745926.57	14596795.21	40°11'30.420"N	80°37'19.880"W	191.61	132.983	1.43	1.28	4.40
4293.00	8.520	137.820	4278.08	-189.02	-141.18	149.42	1745935.81	14596784.68	40°11'30.316"N	80°37'19.761"W	205.57	133.375	0.44	-0.33	-1.94
4386.00	7.680	136.100	4370.15	-201.37	-150.76	158.36	1745944.74	14596775.10	40°11'30.221"N	80°37'19.647"W	218.64	133.592	0.94	-0.90	-1.85
4478.00	6.750	131.340	4461.43	-212.02	-158.76	166.68	1745953.06	14596767.10	40°11'30.141"N	80°37'19.540"W	230.19	133.606	1.20	-1.01	-5.17
4569.00	7.580	134.760	4551.72	-222.44	-166.52	174.96	1745961.34	14596759.34	40°11'30.064"N	80°37'19.434"W	241.53	133.585	1.03	0.91	3.76
4662.00	9.170	139.390	4643.72	-235.22	-176.46	184.14	1745970.51	14596749.40	40°11'29.965"N	80°37'19.316"W	255.04	133.781	1.86	1.71	4.98
4755.00	9.320	136.940	4735.51	-249.40	-187.59	194.10	1745980.48	14596738.28	40°11'29.855"N	80°37'19.188"W	269.94	134.023	0.45	0.16	-2.63

JAN 28 2020



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WELLPATH DATA (179 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]
4847.00	8.480	132.370	4826.41	-262.60	-197.61	204.20	1745990.57	14596728.27	40°11'29.756"N	80°37'19.058"W	284.16	134.060	1.19	-0.91	-4.97
4940.00	8.400	138.690	4918.40	-275.33	-207.33	213.75	1746000.12	14596718.55	40°11'29.659"N	80°37'18.936"W	297.78	134.127	1.00	-0.09	6.80
5033.00	7.960	137.500	5010.45	-287.88	-217.18	222.58	1746008.95	14596708.70	40°11'29.561"N	80°37'18.823"W	310.98	134.296	0.51	-0.47	-1.28
5126.00	6.980	133.690	5102.67	-299.18	-225.83	231.02	1746017.38	14596700.05	40°11'29.476"N	80°37'18.714"W	323.06	134.349	1.18	-1.05	-4.10
5218.00	4.240	132.060	5194.22	-307.43	-231.97	237.59	1746023.95	14596693.91	40°11'29.415"N	80°37'18.630"W	332.05	134.315	2.98	-2.98	-1.77
5311.00	0.470	352.480	5287.14	-310.19	-233.90	240.09	1746026.45	14596691.99	40°11'29.396"N	80°37'18.598"W	335.19	134.251	4.95	-4.05	-150.09
5402.00	5.250	324.510	5378.00	-305.76	-230.14	237.63	1746023.98	14596695.75	40°11'29.433"N	80°37'18.630"W	330.80	134.083	5.32	5.25	-30.74
5495.00	10.350	326.840	5470.11	-293.35	-219.67	230.58	1746016.94	14596706.21	40°11'29.537"N	80°37'18.720"W	318.47	133.612	5.49	5.48	2.51
5542.00	13.530	330.400	5516.09	-283.72	-211.36	225.56	1746011.92	14596714.52	40°11'29.619"N	80°37'18.784"W	309.11	133.138	6.94	6.77	7.57
5594.00	16.610	331.600	5586.29	-270.27	-199.53	219.01	1746005.38	14596726.35	40°11'29.736"N	80°37'18.868"W	296.27	132.334	5.95	5.92	2.31
5687.00	27.650	330.200	5652.31	-235.47	-169.01	201.91	1745988.29	14596756.85	40°11'30.038"N	80°37'19.086"W	263.31	129.931	11.88	11.87	-1.51
5778.00	37.500	330.800	5728.90	-186.80	-126.41	177.85	1745964.23	14596799.44	40°11'30.460"N	80°37'19.394"W	218.19	125.403	10.83	10.82	0.66
5870.00	45.620	330.350	5797.68	-126.15	-73.30	147.87	1745934.26	14596852.53	40°11'30.986"N	80°37'19.777"W	165.04	116.368	8.83	8.83	-0.49
5963.00	50.900	328.820	5859.58	-57.29	-13.50	112.72	1745899.13	14596912.30	40°11'31.579"N	80°37'20.227"W	113.53	96.829	5.81	5.68	-1.65
6053.00	57.020	325.820	5912.51	14.48	47.67	73.39	1745859.81	14596973.45	40°11'32.185"N	80°37'20.731"W	87.52	56.993	7.31	6.80	-3.33
6146.00	65.160	325.020	5957.43	94.30	114.63	27.21	1745813.65	14597040.38	40°11'32.849"N	80°37'21.322"W	117.82	13.352	8.78	8.75	-0.86
6192.00	69.640	326.480	5975.11	136.01	149.73	3.32	1745789.77	14597075.47	40°11'33.196"N	80°37'21.628"W	149.77	1.271	10.17	9.74	3.17
6239.00	73.750	328.660	5989.87	180.08	187.39	-20.59	1745765.87	14597113.11	40°11'33.570"N	80°37'21.934"W	188.52	353.729	9.79	8.74	4.64
6285.00	77.780	330.610	6001.18	224.33	225.85	-43.12	1745743.35	14597151.56	40°11'33.951"N	80°37'22.222"W	229.93	349.191	9.68	8.76	4.24
6330.00	81.160	333.020	6009.48	268.42	264.84	-64.01	1745722.47	14597190.54	40°11'34.337"N	80°37'22.489"W	272.47	346.413	9.17	7.51	5.36
6376.00	85.190	335.030	6014.87	314.03	305.89	-84.00	1745702.48	14597231.57	40°11'34.743"N	80°37'22.745"W	317.22	344.644	9.78	8.76	4.37
6423.00	89.050	336.120	6017.23	360.96	348.62	-103.41	1745683.08	14597274.29	40°11'35.166"N	80°37'22.992"W	363.64	343.479	8.53	8.21	2.32
6516.00	89.940	334.950	6018.05	453.94	433.27	-141.92	1745644.58	14597358.90	40°11'36.004"N	80°37'23.484"W	455.92	341.863	1.58	0.96	-1.26
6608.00	89.880	333.310	6018.19	545.86	516.05	-182.06	1745604.46	14597441.64	40°11'36.824"N	80°37'23.997"W	547.22	340.567	1.78	-0.07	-1.78
6701.00	90.740	333.320	6017.69	638.71	599.14	-223.83	1745562.71	14597524.70	40°11'37.647"N	80°37'24.530"W	639.58	339.515	0.92	0.92	0.01
6794.00	90.710	331.150	6016.51	731.44	681.42	-267.14	1745519.41	14597606.95	40°11'38.462"N	80°37'25.084"W	731.91	338.593	2.33	-0.03	-2.33
6887.00	90.620	329.780	6015.43	823.91	762.33	-312.98	1745473.59	14597687.83	40°11'39.263"N	80°37'25.670"W	824.08	337.679	1.48	-0.10	-1.47
6979.00	90.460	332.910	6014.56	915.52	843.05	-357.09	1745429.49	14597768.51	40°11'40.063"N	80°37'26.234"W	915.56	337.044	3.41	-0.17	3.40
7072.00	90.680	336.160	6013.64	1008.44	927.00	-397.07	1745389.53	14597852.43	40°11'40.894"N	80°37'26.745"W	1008.46	336.812	3.50	0.24	3.49
7165.00	90.680	332.740	6012.63	1101.36	1010.88	-437.18	1745349.45	14597936.29	40°11'41.725"N	80°37'27.257"W	1101.37	336.613	3.68	0.00	-3.68

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Actual Wellpath Report

Kathy Mayhew BRK 3H AWP Proj: 15268'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
Field	Brooke	Wellbore	Kathy Mayhew BRK 3H AWB
Facility	Kathy Mayhew BRK Pad		

WELLPATH DATA (179 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]
7258.00	90.890	334.280	6011.26	1194.22	1094.11	-478.65	1745307.98	14598019.48	40°11'42.549"N	80°37'27.787"W	1194.23	336.372	1.67	0.23	1.66
7350.00	90.920	335.020	6009.81	1286.16	1177.24	-518.04	1745288.62	14598102.58	40°11'43.372"N	80°37'28.290"W	1286.18	336.248	0.80	0.03	0.80
7443.00	91.050	335.470	6008.21	1379.13	1261.68	-556.97	1745229.69	14598186.99	40°11'44.208"N	80°37'28.787"W	1379.15	336.181	0.50	0.14	0.48
7536.00	91.050	336.950	6006.50	1472.11	1346.76	-594.48	1745192.20	14598272.03	40°11'45.050"N	80°37'29.266"W	1472.13	336.183	1.59	0.00	1.59
7628.00	91.110	340.600	6004.77	1564.00	1432.49	-627.78	1745158.92	14598357.73	40°11'45.899"N	80°37'29.690"W	1564.01	336.335	3.97	0.07	3.97
7721.00	91.390	339.610	6002.74	1656.80	1519.92	-659.42	1745127.29	14598445.12	40°11'46.764"N	80°37'30.093"W	1656.80	336.546	1.11	0.30	-1.06
7814.00	90.680	339.570	6001.06	1749.65	1607.06	-691.84	1745094.88	14598532.24	40°11'47.627"N	80°37'30.506"W	1749.66	336.708	0.76	-0.76	-0.04
7907.00	90.620	340.630	6000.71	1842.46	1694.50	-723.50	1745063.24	14598619.64	40°11'48.492"N	80°37'30.909"W	1842.50	336.879	1.14	-0.06	1.14
7999.00	90.920	339.950	5998.77	1934.25	1781.11	-754.52	1745032.22	14598706.21	40°11'49.349"N	80°37'31.305"W	1934.33	337.041	0.81	0.33	-0.74
8091.00	91.260	337.410	5997.02	2026.16	1866.79	-787.96	1744998.80	14598791.86	40°11'50.197"N	80°37'31.731"W	2026.27	337.116	2.78	0.37	-2.76
8183.00	90.830	332.610	5995.34	2118.09	1950.14	-826.81	1744959.96	14598875.17	40°11'51.023"N	80°37'32.227"W	2118.17	337.024	5.24	-0.47	-5.22
8275.00	90.710	333.770	5994.10	2209.92	2032.24	-868.30	1744918.49	14598957.24	40°11'51.836"N	80°37'32.757"W	2209.96	336.865	1.27	-0.13	1.26
8368.00	90.710	336.300	5992.95	2302.88	2116.53	-907.55	1744879.26	14599041.51	40°11'52.670"N	80°37'33.258"W	2302.90	336.791	2.72	0.00	2.72
8460.00	90.310	338.130	5992.13	2394.86	2201.35	-943.17	1744843.65	14599126.29	40°11'53.510"N	80°37'33.713"W	2394.89	336.807	2.04	-0.43	1.99
8553.00	90.460	338.310	5991.51	2487.82	2287.71	-977.68	1744809.15	14599212.61	40°11'54.365"N	80°37'34.153"W	2487.86	336.860	0.25	0.16	0.19
8645.00	90.430	339.610	5990.79	2579.73	2373.57	-1010.71	1744776.14	14599298.44	40°11'55.215"N	80°37'34.574"W	2579.80	336.935	1.41	-0.03	1.41
8738.00	90.800	337.900	5989.79	2672.65	2460.24	-1044.40	1744742.45	14599385.08	40°11'56.073"N	80°37'35.003"W	2672.74	336.998	1.88	0.40	-1.84
8831.00	90.740	333.840	5988.54	2765.62	2545.09	-1082.41	1744704.46	14599469.90	40°11'56.913"N	80°37'35.489"W	2765.70	336.960	4.37	-0.06	-4.37
8922.00	90.800	330.620	5987.32	2856.34	2625.59	-1124.80	1744662.09	14599550.37	40°11'57.710"N	80°37'36.030"W	2856.38	336.810	3.54	0.07	-3.54
9014.00	90.650	330.980	5986.16	2947.88	2705.89	-1169.68	1744617.23	14599630.64	40°11'58.505"N	80°37'36.604"W	2947.88	336.623	0.42	-0.16	0.39
9107.00	90.740	335.410	5985.03	3040.69	2788.87	-1211.60	1744575.32	14599713.58	40°11'59.327"N	80°37'37.140"W	3040.69	336.518	4.76	0.10	4.76
9199.00	90.770	336.010	5983.82	3132.67	2872.72	-1249.45	1744537.49	14599797.40	40°12'00.157"N	80°37'37.623"W	3132.67	336.494	0.65	0.03	0.65
9291.00	90.830	339.730	5982.53	3224.62	2957.92	-1284.09	1744502.86	14599882.57	40°12'01.000"N	80°37'38.065"W	3224.62	336.533	4.04	0.07	4.04
9384.00	90.680	341.260	5981.31	3317.39	3045.57	-1315.14	1744471.82	14599970.18	40°12'01.868"N	80°37'38.461"W	3317.39	336.644	1.65	-0.16	1.65
9477.00	90.830	341.320	5980.08	3410.06	3133.65	-1344.97	1744442.00	14600058.23	40°12'02.740"N	80°37'38.840"W	3410.09	336.771	0.17	0.16	0.06
9569.00	90.710	342.580	5978.84	3501.63	3221.11	-1373.47	1744413.51	14600145.66	40°12'03.605"N	80°37'39.222"W	3501.71	336.907	1.38	-0.13	1.37
9660.00	90.890	345.380	5977.57	3591.85	3308.56	-1398.58	1744388.41	14600233.07	40°12'04.470"N	80°37'39.522"W	3592.02	337.085	3.08	0.20	3.08
9751.00	91.020	343.020	5976.06	3682.01	3396.11	-1423.35	1744363.65	14600320.58	40°12'05.336"N	80°37'39.836"W	3682.32	337.261	2.60	0.14	-2.59
9844.00	91.020	338.770	5974.40	3774.70	3483.95	-1453.78	1744333.23	14600408.39	40°12'06.206"N	80°37'40.224"W	3775.10	337.350	4.57	0.00	-4.57
9936.00	90.980	336.350	5972.79	3866.67	3568.96	-1488.89	1744298.14	14600493.37	40°12'07.047"N	80°37'40.672"W	3867.08	337.355	2.63	-0.04	-2.63



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Southwestern Energy Environmental Protection

Actual Wellpath Report

Kathy Mayhew BRK 3H AWP Proj: 15268'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
Field	Brooke	Wellbore	Kathy Mayhew BRK 3H AWB
Facility	Kathy Mayhew BRK Pad		

WELLPATH DATA (179 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]
10028.00	90.920	333.560	5971.27	3958.61	3652.29	-1527.83	1744259.22	14600576.67	40°12'07.872"N	80°37'41.169"W	3958.98	337.299	3.03	-0.07	-3.03
10121.00	90.770	329.110	5969.90	4051.20	3733.87	-1572.42	1744214.64	14600658.21	40°12'08.680"N	80°37'41.739"W	4051.45	337.163	4.79	-0.16	-4.78
10213.00	90.800	330.690	5968.64	4142.57	3813.45	-1618.56	1744168.52	14600737.76	40°12'09.469"N	80°37'42.329"W	4142.72	337.002	1.72	0.03	1.72
10306.00	90.520	332.900	5967.56	4235.24	3895.40	-1662.51	1744124.59	14600819.68	40°12'10.280"N	80°37'42.891"W	4235.33	336.888	2.40	-0.30	2.38
10399.00	90.310	330.450	5966.89	4327.90	3977.25	-1706.63	1744080.49	14600901.50	40°12'11.091"N	80°37'43.456"W	4327.95	336.776	2.64	-0.23	-2.63
10492.00	90.490	332.360	5966.24	4420.53	4058.90	-1751.13	1744036.00	14600983.12	40°12'11.900"N	80°37'44.025"W	4420.54	336.663	2.06	0.19	2.03
10583.00	90.920	334.210	5965.12	4511.37	4140.18	-1792.04	1743995.11	14601064.36	40°12'12.704"N	80°37'44.548"W	4511.37	336.595	2.09	0.47	2.03
10676.00	91.020	333.960	5963.55	4604.27	4232.82	-1832.68	1743954.49	14601147.97	40°12'13.533"N	80°37'45.067"W	4604.27	336.544	2.09	0.11	-0.27
10769.00	90.950	335.060	5961.95	4697.20	4307.75	-1872.69	1743914.48	14601231.87	40°12'14.364"N	80°37'45.578"W	4697.20	336.504	1.19	-0.08	1.18
10862.00	90.920	335.190	5960.43	4790.16	4392.11	-1911.81	1743875.39	14601316.20	40°12'15.199"N	80°37'46.078"W	4790.16	336.477	0.14	-0.03	0.14
10954.00	90.650	336.190	5959.17	4882.14	4475.94	-1949.68	1743837.53	14601400.00	40°12'16.029"N	80°37'46.561"W	4882.14	336.463	1.13	-0.29	1.09
11045.00	90.650	337.580	5958.14	4973.13	4559.63	-1985.40	1743801.82	14601483.65	40°12'16.857"N	80°37'47.017"W	4973.13	336.470	1.53	0.00	1.53
11137.00	90.710	338.060	5957.05	5065.10	4644.82	-2020.13	1743767.11	14601568.81	40°12'17.701"N	80°37'47.460"W	5065.10	336.495	0.53	0.07	0.52
11229.00	90.710	337.920	5955.91	5157.06	4730.11	-2054.60	1743732.65	14601654.06	40°12'18.545"N	80°37'47.900"W	5157.06	336.521	0.15	0.00	-0.15
11322.00	90.770	335.060	5954.70	5250.05	4815.37	-2091.70	1743695.57	14601739.29	40°12'19.389"N	80°37'48.373"W	5250.05	336.521	3.08	0.06	-3.08
11415.00	90.680	333.650	5953.53	5342.97	4899.20	-2131.94	1743655.34	14601823.09	40°12'20.219"N	80°37'48.888"W	5342.97	336.483	1.52	-0.10	-1.52
11508.00	90.680	334.560	5952.42	5435.88	4982.86	-2172.55	1743614.74	14601906.71	40°12'21.047"N	80°37'49.406"W	5435.88	336.443	0.98	0.00	0.98
11600.00	90.680	337.080	5951.33	5527.86	5066.77	-2210.23	1743577.08	14601990.60	40°12'21.878"N	80°37'49.888"W	5527.86	336.432	2.74	0.00	2.74
11693.00	90.620	337.590	5950.28	5620.84	5152.58	-2246.07	1743541.26	14602076.37	40°12'22.728"N	80°37'50.345"W	5620.85	336.447	0.55	-0.06	0.55
11785.00	90.460	336.070	5949.41	5712.83	5237.16	-2282.26	1743505.08	14602160.91	40°12'23.565"N	80°37'50.807"W	5712.84	336.453	1.66	-0.17	-1.65
11877.00	90.550	335.120	5948.60	5804.82	5320.27	-2320.27	1743467.08	14602244.66	40°12'24.394"N	80°37'51.292"W	5804.82	336.440	1.04	0.10	-1.03
11970.00	90.580	335.180	5947.68	5897.79	5405.32	-2359.35	1743428.01	14602329.01	40°12'25.230"N	80°37'51.791"W	5897.80	336.419	0.07	0.03	0.06
12063.00	91.020	333.980	5946.38	5990.72	5489.30	-2399.27	1743388.11	14602412.96	40°12'26.061"N	80°37'52.301"W	5990.74	336.391	1.37	0.47	-1.29
12156.00	90.620	334.630	5945.05	6083.64	5573.10	-2439.59	1743347.81	14602496.72	40°12'26.891"N	80°37'52.816"W	6083.67	336.359	0.82	-0.43	0.70
12248.00	90.920	338.550	5943.82	6175.62	5657.50	-2476.13	1743311.28	14602581.09	40°12'27.727"N	80°37'53.283"W	6175.64	336.362	4.27	0.33	4.26
12341.00	91.020	338.380	5942.24	6268.55	5744.00	-2510.26	1743277.16	14602667.56	40°12'28.583"N	80°37'53.718"W	6268.56	336.394	0.21	0.11	-0.18
12434.00	91.050	336.730	5940.56	6361.52	5829.93	-2545.76	1743241.68	14602753.46	40°12'29.433"N	80°37'54.171"W	6361.53	336.411	1.77	0.03	-1.77
12527.00	90.740	338.510	5939.11	6454.48	5915.91	-2581.17	1743206.29	14602839.41	40°12'30.285"N	80°37'54.623"W	6454.49	336.428	1.94	-0.33	1.91
12619.00	90.830	340.240	5937.85	6546.36	6002.01	-2613.57	1743173.90	14602925.47	40°12'31.137"N	80°37'55.036"W	6546.36	336.469	1.88	0.10	1.88
12712.00	90.830	339.060	5936.50	6639.21	6089.19	-2645.91	1743141.57	14603012.62	40°12'32.000"N	80°37'55.448"W	6639.21	336.514	1.27	0.00	-1.27

Actual Wellpath Report

Kathy Mayhew BRK 3H AWP Proj: 15268'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Brooke County, WV	Well	Kathy Mayhew BRK 3H
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Facility	Kathy Mayhew BRK Pad		

WELLPATH DATA (179 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]
12805.00	90.490	338.110	5935.43	6732.14	6175.76	-2679.86	1743107.63	14603099.16	40°12'32.856"N	80°37'55.881"W	6732.14	336.542	1.08	-0.37	-1.02
12898.00	90.680	337.670	5934.48	6825.11	6261.92	-2714.86	1743072.65	14603185.28	40°12'33.709"N	80°37'56.328"W	6825.11	336.561	0.52	0.20	-0.47
12990.00	90.370	336.630	5933.64	6917.10	6346.70	-2750.58	1743036.94	14603270.02	40°12'34.548"N	80°37'56.784"W	6917.10	336.569	1.18	-0.34	-1.13
13083.00	90.310	335.710	5933.08	7010.09	6431.76	-2788.16	1742999.38	14603355.06	40°12'35.391"N	80°37'57.263"W	7010.09	336.563	0.99	-0.06	-0.99
13176.00	90.550	337.740	5932.39	7103.08	6517.19	-2824.90	1742962.65	14603440.45	40°12'36.236"N	80°37'57.732"W	7103.09	336.565	2.20	0.26	2.18
13268.00	90.770	340.120	5931.33	7194.99	6603.03	-2857.97	1742929.59	14603526.25	40°12'37.086"N	80°37'58.154"W	7195.00	336.596	2.60	0.24	2.59
13361.00	90.950	340.290	5929.93	7287.79	6690.52	-2889.47	1742898.11	14603613.71	40°12'37.952"N	80°37'58.555"W	7287.80	336.642	0.27	0.19	0.18
13454.00	90.740	338.620	5928.56	7380.65	6777.59	-2922.10	1742865.49	14603700.75	40°12'38.814"N	80°37'58.971"W	7380.68	336.677	1.81	-0.23	-1.80
13545.00	90.460	333.560	5926.46	7564.57	6945.50	-2997.18	1742790.43	14603868.59	40°12'39.644"N	80°37'59.421"W	7471.66	336.683	3.15	-0.03	-3.15
13638.00	90.430	333.580	5925.74	7657.44	7028.77	-3038.58	1742749.06	14603951.83	40°12'40.476"N	80°37'59.930"W	7564.59	336.658	2.37	-0.27	-2.35
13731.00	90.550	332.940	5924.95	7749.29	7110.93	-3078.97	1742707.68	14604033.96	40°12'42.114"N	80°38'00.988"W	7657.45	336.621	0.04	-0.03	0.02
13823.00	90.460	338.950	5924.13	7842.24	7195.81	-3117.86	1742669.80	14604118.81	40°12'42.954"N	80°38'01.472"W	7749.29	336.581	0.71	0.13	-0.70
13916.00	90.370	335.620	5923.45	7935.22	7281.59	-3153.76	1742633.91	14604204.55	40°12'43.803"N	80°38'01.930"W	7842.24	336.573	6.46	-0.10	6.46
14009.00	90.830	338.310	5922.49	8027.20	7366.24	-3189.76	1742597.93	14604289.17	40°12'44.641"N	80°38'02.390"W	7935.22	336.582	3.58	-0.10	-3.58
14101.00	90.800	339.950	5921.17	8120.09	7453.12	-3222.89	1742564.82	14604376.02	40°12'45.501"N	80°38'02.812"W	8027.20	336.586	2.97	0.50	2.92
14194.00	90.770	340.170	5919.91	8211.91	7539.60	-3254.26	1742533.46	14604462.46	40°12'46.357"N	80°38'03.212"W	8120.10	336.615	1.76	-0.03	1.76
14286.00	90.800	337.470	5918.63	8304.81	7626.30	-3287.85	1742499.88	14604549.13	40°12'47.215"N	80°38'03.640"W	8211.93	336.654	0.24	-0.03	0.24
14379.00	90.580	339.250	5917.54	8395.76	7710.88	-3321.41	1742466.34	14604633.67	40°12'48.052"N	80°38'04.068"W	8304.85	336.678	2.90	0.03	-2.90
14470.00	90.720	341.330	5916.47	8488.54	7798.42	-3352.77	1742434.99	14604721.18	40°12'48.919"N	80°38'04.468"W	8395.80	336.696	1.97	-0.24	1.96
14563.00	91.020	337.410	5915.04	8581.40	7885.43	-3385.52	1742402.24	14604808.16	40°12'49.780"N	80°38'04.886"W	8488.60	336.736	2.24	0.17	2.24
14656.00	90.800	337.890	5913.59	8672.37	7969.58	-3420.12	1742367.66	14604892.28	40°12'50.613"N	80°38'05.327"W	8581.48	336.764	4.23	0.30	-4.22
14747.00	90.860	338.140	5912.24	8765.33	8055.81	-3454.94	1742332.86	14604978.47	40°12'51.466"N	80°38'05.771"W	8672.46	336.774	0.58	-0.24	0.53
14833.00	91.200	336.040	5910.57	8858.30	8141.45	-3491.13	1742296.68	14605064.08	40°12'52.314"N	80°38'06.233"W	8765.42	336.787	0.28	0.06	0.27
15026.00	91.350	332.250	5908.50	8951.18	8225.11	-3531.67	1742256.15	14605147.70	40°12'53.143"N	80°38'06.751"W	8858.40	336.790	2.29	0.37	-2.26
15118.00	91.110	329.690	5906.53	9042.72	8305.53	-3576.30	1742211.54	14605228.09	40°12'53.939"N	80°38'07.322"W	8951.26	336.762	4.08	0.16	-4.08
15210.00	91.170	331.410	5904.70	9134.20	8385.62	-3621.52	1742166.34	14605308.15	40°12'54.732"N	80°38'07.901"W	9042.77	336.704	2.79	-0.26	-2.78
15243.00	91.290	331.930	5903.99	9167.08	8414.66	-3637.18	1742150.69	14605337.18	40°12'55.020"N	80°38'08.101"W	9134.22	336.642	1.87	0.07	1.87
15268.00	91.290	331.930	5903.43	9191.99	8436.71	-3648.94	1742138.93	14605359.23	40°12'55.238"N	80°38'08.252"W	9167.09	336.624	1.62	0.36	1.58
											9192.00	336.611	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Kathy Mayhew BRK 3H AWP Proj: 15268'

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]
20in Conductor	26.00	126.00	100.00	26.00	125.98	0.00	0.00	0.53	-1.60
17.5in Open Hole	126.00	550.00	424.00	125.98	549.97	0.53	-1.60	2.21	-4.46
13.375in Casing Surface	26.00	550.00	524.00	26.00	549.97	0.00	0.00	2.21	-4.46
12.25in Open Hole	550.00	1812.00	1262.00	549.97	1811.90	2.21	-4.46	10.83	0.95
9.625in Casing Intermediate	26.00	1745.00	1719.00	26.00	1744.90	0.00	0.00	10.66	1.10
8.75in Open Hole	1812.00	5610.00	3798.00	1811.90	5581.55	10.83	0.95	-195.29	216.70
8.5in Open Hole	5610.00	15268.00	9658.00	5581.55	5903.43	-195.29	216.70	8436.71	-3648.94
5.5in Casing Production	26.00	15268.00	15242.00	26.00	5903.43	0.00	0.00	8436.71	-3648.94

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Kathy Mahew BRK 3H BHL Rev-6	5895.69	8431.55	-3662.04	1742125.84	14605354.07	40°12'55.188"N	80°38'08.421"W	point
Kathy Mahew BRK 3H LP Rev-5	6020.48	339.37	-110.83	1745675.66	14597265.03	40°11'35.075"N	80°37'23.088"W	point

WELLPATH COMPOSITION - Ref Wellbore: Kathy Mayhew BRK 3H AWP Proj: 15268'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	536.00	Gyrodatta standard - Drop gyro or Multi-shot	01 Gyro <17 1/2"> (50'-536')	Kathy Mayhew BRK 3H AWP
536.00	1745.00	BHI NaviTrak (Axial)	02 APS EM BH NaviTrak <12 1/4"> (601'-1745')	Kathy Mayhew BRK 3H AWP
1745.00	5542.00	BHI NaviTrak (Axial)	03 APS EM BH NaviTrak <8 3/4"> (1837'-5542')	Kathy Mayhew BRK 3H AWP
5542.00	15243.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8 1/2"> (5594'-15243')	Kathy Mayhew BRK 3H AWP
15243.00	15268.00	Blind Drilling (std)	Projection to bit	Kathy Mayhew BRK 3H AWP

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Environmental Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 3H
SOUTHWESTERN ENERGY	Well	Kathy Mayhew BRK 3H
Brooke County, WV	Wellbore	Kathy Mayhew BRK 3H AWB
Brooke		
Kathy Mayhew BRK Pad		

COMMENTS

Wellpath general comments
API: 47-009-00271-0000
BH Job #: 109899866
Rig: SDC 41
Duration: 07/14/2019 - 07/27/2019

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