

# SOUTHWESTERN ENERGY

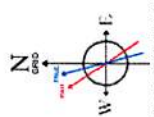
Location: Brooke County, WV  
 Field: Brooke  
 Facility: Thomas Parkinson BRK Pad

Slot: Slot #1H  
 Well: Thomas Parkinson BRK 1H  
 Wellbore: Thomas Parkinson BRK 1H.PWB

Plot reference wellpath is Thomas Parkinson BRK 1H PNP Rev:A 0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 46 (RKB)	* = Wellpath was transformed from a different geoidic datum
Measured depths are referenced to SDC 46 (RKB)	North Reference: Grid north
SDC 46 (RKB) to Mean Sea Level: 1187 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot, Slot #1H): -1161 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: thomsuzc on 2018-03-22
	Database: WA, Pennsylvania



Location information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude
Thomas Parkinson BRK Pad	1762113.450	14604537.070	40°12'46.222"N
Slot	Local N (ft)	Local E (ft)	Latitude
Slot #1H	-23.76	-7.70	40°12'45.987"N
SDC 46 (RKB) to Ground level (At Slot, Slot #1H)	14604513.323		80°33'50.632"W
Mean Sea Level to Ground level (At Slot, Slot #1H)	26ft		
SDC 46 (RKB) to Mean Sea Level	-1161ft		



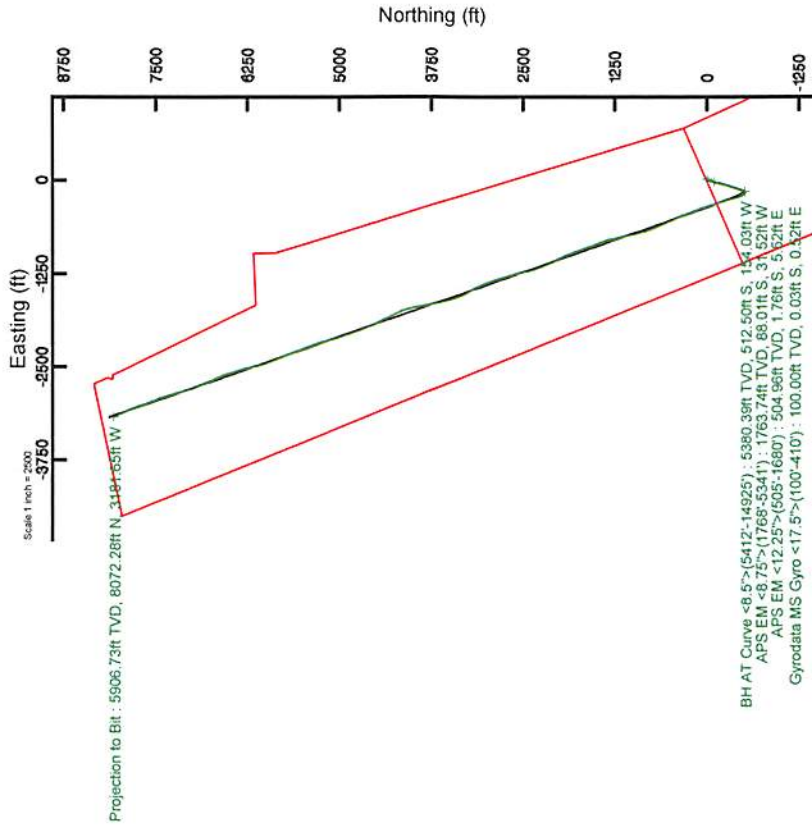
User specified Dip: 67.67° Field: 52058 nT  
 Magnetic North is 6.34 degrees West of True North (at 3/16/2018)  
 Grid North is 0.00 degrees West of True North  
 To correct azimuth from True to Grid subtract 0.28 degrees  
 To correct azimuth from Magnetic to Grid subtract 6.62 degrees



4 1/2in Gyrodata MS Gyro <17.5°> (100-410): 0.90° Inc, 100.00ft MD, 100.00ft TVD, -0.22ft VS  
 20in Conductor: 0.98° Inc, 125.00ft MD, 125.99ft TVD, -0.35ft VS  
 4 1/2in APS EM <12.25°> (505-1680): 0.54° Inc, 505.00ft MD, 504.96ft TVD, -3.65ft VS  
 13 3/8in Casing Surface: 0.56° Inc, -481.00ft MD, 460.96ft TVD, -3.42ft VS

API: 47-009-00234-0000  
 Job #: 9033631  
 Rig: SDC 46  
 Duration: 03/10/2018 - 03/19/2018  
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BH AT Curve <8.5°> (5412-14925): 9.68° Inc, 5412.00ft MD, 5380.39ft TVD, -421.14ft VS



BH AT Curve <8.5°> (5412-14925): 5380.39ft TVD, 512.50ft S, 154.03ft W  
 APS EM <8.75°> (1768-5341): 1763.74ft TVD, 88.01ft S, 3.52ft W  
 APS EM <12.25°> (505-1680): 504.96ft TVD, 1.76ft S, 5.62ft E  
 Gyrodata MS Gyro <17.5°> (100-410): 100.00ft TVD, 0.03ft S, 0.42ft E

Projection to Bit: 90.65° Inc, 14950.00ft MD, 5906.73ft TVD, 8676.64ft VS



Azimuth 338.63° with reference 0.00 N, 0.00 E

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #1H
Area	Brooke County, WV	Well	Thomas Parkinson BRK 1H
Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWB
Facility	Thomas Parkinson BRK Pad		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Thomsuzc
Scale	0.999617	Report Generated	3/22/2018 at 3:47:52 PM
Convergence at slot	0.29° East	Database/Source file	WA_Pennsylvania/Thomas_Parkinson_BRK_1H_AWP_Proj__14950_MD.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-23.76	-7.70	1762105.75	14604513.32	40°12'45.986"N	80°33'50.832"W
Facility Reference Pt			1762113.45	14604537.07	40°12'46.220"N	80°33'50.731"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM			
Calculation method	Minimum curvature	SDC 46 (RKB) to Facility Vertical Datum	1187.00ft
Horizontal Reference Pt	Slot	SDC 46 (RKB) to Mean Sea Level	1187.00ft
Vertical Reference Pt	SDC 46 (RKB)	SDC 46 (RKB) to Ground Level at Slot (Slot #1H)	26.00ft
MD Reference Pt	SDC 46 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	338.63°

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# Actual Wellpath Report

Thomas Parkinson BRK 1H AWP Proj: 14950'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #1H
Area	Brooke County, WV	Well	Thomas Parkinson BRK 1H
Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWP
Facility	Thomas Parkinson BRK Pad		

WELLPATH DATA (180 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	93.870	0.00	0.00	0.00	0.00	1762105.75	14604513.32	40°12'45.986"N	80°33'50.832"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	93.870	26.00	0.00	0.00	0.00	1762105.75	14604513.32	40°12'45.986"N	80°33'50.832"W	0.00	0.000	0.00	0.00	0.00
100.00	0.800	93.870	100.00	-0.22	-0.03	0.52	1762106.26	14604513.29	40°12'45.986"N	80°33'50.825"W	0.52	93.870	1.08	1.08	126.85
125.00	0.980	83.580	124.99	-0.35	-0.02	0.90	1762106.65	14604513.30	40°12'45.986"N	80°33'50.820"W	0.90	91.444	0.96	0.72	-41.16
150.00	0.970	91.050	149.99	-0.49	0.00	1.33	1762107.07	14604513.32	40°12'45.986"N	80°33'50.815"W	1.33	90.117	0.51	-0.04	29.88
175.00	0.980	95.330	174.99	-0.66	-0.03	1.75	1762107.50	14604513.30	40°12'45.986"N	80°33'50.809"W	1.75	90.866	0.29	0.04	17.12
200.00	0.990	100.300	199.98	-0.87	-0.08	2.18	1762107.92	14604513.24	40°12'45.985"N	80°33'50.804"W	2.18	92.235	0.34	0.04	19.88
225.00	1.010	100.600	224.98	-1.10	-0.16	2.60	1762108.35	14604513.16	40°12'45.984"N	80°33'50.798"W	2.61	93.604	0.08	0.08	1.20
250.00	1.040	101.770	249.98	-1.34	-0.25	3.04	1762108.79	14604513.07	40°12'45.983"N	80°33'50.793"W	3.05	94.712	0.15	0.12	4.68
275.00	0.930	106.620	274.97	-1.59	-0.36	3.46	1762109.21	14604512.97	40°12'45.982"N	80°33'50.787"W	3.48	95.861	0.55	-0.44	19.40
300.00	0.940	105.200	299.97	-1.84	-0.47	3.85	1762109.60	14604512.86	40°12'45.981"N	80°33'50.782"W	3.88	96.912	0.10	0.04	-5.68
325.00	0.580	114.190	324.97	-2.05	-0.57	4.17	1762109.91	14604512.75	40°12'45.980"N	80°33'50.778"W	4.20	97.827	1.51	-1.44	35.96
350.00	0.480	118.430	349.97	-2.22	-0.67	4.37	1762110.12	14604512.65	40°12'45.979"N	80°33'50.776"W	4.42	98.765	0.43	-0.40	16.96
375.00	0.610	122.180	374.96	-2.41	-0.80	4.58	1762110.33	14604512.53	40°12'45.978"N	80°33'50.773"W	4.65	99.852	0.54	0.52	15.00
400.00	0.610	121.670	399.96	-2.62	-0.94	4.80	1762110.55	14604512.39	40°12'45.977"N	80°33'50.770"W	4.89	101.023	0.02	0.00	-2.04
410.00	0.700	125.190	409.96	-2.72	-1.00	4.90	1762110.65	14604512.32	40°12'45.976"N	80°33'50.769"W	5.00	101.525	0.99	0.90	35.20
505.00	0.540	160.710	504.96	-3.65	-1.76	5.52	1762111.27	14604511.57	40°12'45.968"N	80°33'50.761"W	5.79	107.642	0.43	-0.17	37.39
597.00	0.910	166.680	596.95	-4.80	-2.88	5.83	1762111.58	14604510.45	40°12'45.957"N	80°33'50.757"W	6.50	116.247	0.41	0.40	6.49
693.00	1.600	188.410	692.93	-6.72	-4.94	5.81	1762111.56	14604508.38	40°12'45.937"N	80°33'50.757"W	7.63	130.383	0.86	0.72	22.64
786.00	2.890	194.600	785.85	-9.75	-8.50	5.03	1762110.78	14604504.83	40°12'45.902"N	80°33'50.768"W	9.87	149.368	1.41	1.39	6.66
879.00	3.450	198.950	878.71	-13.78	-13.41	3.53	1762109.28	14604499.92	40°12'45.853"N	80°33'50.787"W	13.87	165.248	0.65	0.60	4.68
972.00	4.100	207.820	971.51	-18.08	-19.00	1.07	1762106.82	14604494.33	40°12'45.798"N	80°33'50.819"W	19.03	176.772	0.94	0.70	9.54
1065.00	4.890	210.190	1064.22	-22.72	-25.37	-2.47	1762103.28	14604487.97	40°12'45.735"N	80°33'50.865"W	25.49	185.569	0.87	0.85	2.55
1157.00	4.740	212.390	1155.90	-27.41	-31.97	-6.48	1762099.27	14604481.37	40°12'45.670"N	80°33'50.918"W	32.62	191.462	0.26	-0.16	2.39
1250.00	4.930	210.110	1248.57	-32.17	-38.67	-10.54	1762095.21	14604474.67	40°12'45.604"N	80°33'50.970"W	40.08	195.254	0.29	0.20	-2.45
1343.00	5.610	210.860	1341.17	-37.44	-46.03	-14.88	1762090.87	14604467.31	40°12'45.532"N	80°33'51.027"W	48.37	197.917	0.73	0.73	0.81
1435.00	5.780	208.410	1432.72	-43.18	-53.96	-19.39	1762086.36	14604459.38	40°12'45.454"N	80°33'51.085"W	57.34	199.767	0.32	0.18	-2.66
1528.00	6.070	202.360	1525.22	-49.76	-62.63	-23.49	1762082.27	14604450.72	40°12'45.368"N	80°33'51.139"W	66.89	200.560	0.74	0.31	-6.51
1621.00	6.520	197.280	1617.66	-57.44	-72.22	-26.93	1762078.83	14604441.13	40°12'45.274"N	80°33'51.184"W	77.07	200.450	0.77	0.48	-5.46
1680.00	6.590	195.790	1676.28	-62.75	-78.67	-28.85	1762076.91	14604434.68	40°12'45.210"N	80°33'51.209"W	83.79	200.136	0.31	0.12	-2.53

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# Actual Wellpath Report

Thomas Parkinson BRK 1H AWP Proj: 14950'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #1H
Area	Brooke County, WV	Well	Thomas Parkinson BRK 1H
Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWB
Facility	Thomas Parkinson BRK Pad		

WELLPATH DATA (180 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]
1768.00	6.090	196.200	1763.74	-70.48	-88.01	-31.52	1762074.24	14604425.34	40°12'45.118"N	80°33'51.244"W	93.49	199.705	0.57	-0.57	0.47
1815.00	5.680	196.560	1810.49	-74.29	-92.64	-32.88	1762072.88	14604420.72	40°12'45.072"N	80°33'51.262"W	98.30	199.542	0.88	-0.87	0.77
1907.00	6.890	194.510	1901.94	-82.35	-102.34	-35.56	1762070.20	14604411.02	40°12'44.976"N	80°33'51.297"W	108.35	199.160	1.34	1.32	-2.23
2000.00	6.540	192.040	1994.30	-91.29	-112.92	-38.06	1762067.70	14604400.44	40°12'44.872"N	80°33'51.330"W	119.17	198.627	0.49	-0.38	-2.66
2093.00	5.580	185.260	2086.78	-99.75	-122.61	-39.58	1762066.18	14604390.76	40°12'44.776"N	80°33'51.350"W	128.84	197.892	1.29	-1.03	-7.29
2185.00	6.640	186.760	2178.26	-108.44	-132.34	-40.62	1762065.15	14604381.03	40°12'44.680"N	80°33'51.364"W	138.44	197.062	1.17	1.15	1.63
2278.00	7.540	190.200	2270.54	-118.38	-143.69	-42.33	1762063.43	14604369.69	40°12'44.568"N	80°33'51.387"W	149.79	196.416	1.07	0.97	3.70
2371.00	7.170	183.370	2362.78	-128.85	-155.49	-43.75	1762062.01	14604357.89	40°12'44.452"N	80°33'51.406"W	161.53	195.716	1.02	-0.40	-7.34
2463.00	6.580	194.180	2454.12	-138.36	-166.33	-45.38	1762060.38	14604347.06	40°12'44.345"N	80°33'51.427"W	172.41	195.262	1.54	-0.64	11.75
2556.00	7.800	196.060	2546.39	-147.70	-177.56	-48.43	1762057.33	14604335.83	40°12'44.234"N	80°33'51.468"W	184.05	195.258	1.34	1.31	2.02
2652.00	7.180	194.110	2641.57	-157.76	-189.64	-51.70	1762054.07	14604323.76	40°12'44.115"N	80°33'51.510"W	196.56	195.249	0.70	-0.65	-2.03
2744.00	6.930	199.000	2732.87	-166.67	-200.46	-54.91	1762050.86	14604312.94	40°12'44.008"N	80°33'51.552"W	207.85	195.318	0.71	-0.27	5.32
2837.00	6.290	191.990	2825.26	-175.20	-210.75	-57.79	1762047.98	14604302.65	40°12'43.906"N	80°33'51.590"W	218.53	195.335	1.11	-0.69	-7.54
2930.00	6.640	204.720	2917.67	-183.19	-220.62	-61.10	1762044.67	14604292.79	40°12'43.809"N	80°33'51.634"W	228.92	195.480	1.58	0.38	13.69
3023.00	7.560	202.970	3009.96	-191.29	-231.14	-65.74	1762040.04	14604282.27	40°12'43.705"N	80°33'51.694"W	240.30	195.876	1.02	0.99	-1.88
3116.00	7.380	201.080	3102.17	-200.08	-242.34	-70.27	1762035.50	14604271.07	40°12'43.595"N	80°33'51.753"W	252.33	196.170	0.33	-0.19	-2.03
3208.00	6.490	192.700	3193.50	-208.74	-252.93	-73.54	1762032.24	14604260.49	40°12'43.490"N	80°33'51.796"W	263.40	196.212	1.46	-0.97	-9.11
3301.00	6.180	198.380	3285.93	-216.95	-262.81	-76.27	1762029.50	14604250.62	40°12'43.393"N	80°33'51.832"W	273.65	196.184	0.75	-0.33	6.11
3394.00	7.310	203.040	3378.28	-225.02	-273.00	-80.17	1762025.61	14604240.43	40°12'43.292"N	80°33'51.883"W	284.53	196.365	1.35	1.22	5.01
3486.00	7.180	194.580	3469.55	-233.86	-283.95	-83.91	1762021.88	14604229.48	40°12'43.184"N	80°33'51.931"W	296.09	196.462	1.17	-0.14	-9.20
3579.00	6.370	184.840	3561.90	-243.19	-294.72	-85.80	1762019.98	14604218.72	40°12'43.078"N	80°33'51.957"W	306.96	196.232	1.51	-0.87	-10.47
3672.00	6.600	194.050	3654.31	-252.17	-305.05	-87.54	1762018.25	14604208.40	40°12'42.976"N	80°33'51.980"W	317.36	196.012	1.14	0.25	9.90
3764.00	7.370	199.040	3745.63	-260.98	-315.75	-90.75	1762015.04	14604197.69	40°12'42.870"N	80°33'52.022"W	328.53	196.034	1.06	0.84	5.42
3857.00	7.380	194.720	3837.86	-270.34	-327.17	-94.21	1762011.58	14604186.28	40°12'42.758"N	80°33'52.067"W	340.46	196.064	0.60	0.01	-4.65
3950.00	7.050	199.800	3930.13	-279.47	-338.31	-97.66	1762008.13	14604175.14	40°12'42.648"N	80°33'52.112"W	352.13	196.102	0.77	-0.35	5.46
4043.00	7.920	205.310	4022.33	-288.16	-349.48	-102.33	1762003.46	14604163.98	40°12'42.537"N	80°33'52.173"W	364.15	196.321	1.21	0.94	5.92
4135.00	7.410	202.940	4113.51	-296.75	-360.67	-107.36	1761998.44	14604152.79	40°12'42.427"N	80°33'52.239"W	376.31	196.576	0.65	-0.55	-2.58
4228.00	6.740	196.760	4205.80	-305.34	-371.42	-111.27	1761994.53	14604142.05	40°12'42.321"N	80°33'52.290"W	387.73	196.677	1.09	-0.72	-6.65
4321.00	6.280	185.480	4298.21	-314.17	-381.71	-113.33	1761992.47	14604131.76	40°12'42.220"N	80°33'52.317"W	398.18	196.536	1.46	-0.49	-12.13
4414.00	6.340	199.310	4390.65	-322.60	-391.62	-115.51	1761990.28	14604121.86	40°12'42.122"N	80°33'52.346"W	408.30	196.434	1.63	0.06	14.87

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Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWB
Facility	Thomas Parkinson BRK Pad		

WELLPATH DATA (180 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]
4506.00	6.130	195.970	4482.11	-330.36	-401.13	-118.54	1761987.25	14604112.34	40°12'42.028"N	80°33'52.385"W	418.28	196.463	0.46	-0.23	-3.63
4602.00	6.880	203.650	4577.49	-338.50	-411.33	-122.26	1761983.54	14604102.15	40°12'41.927"N	80°33'52.434"W	429.11	196.553	1.19	0.78	8.00
4695.00	6.380	196.250	4669.87	-346.53	-421.39	-125.94	1761979.86	14604092.09	40°12'41.828"N	80°33'52.482"W	439.81	196.639	1.06	-0.54	-7.96
4784.00	7.250	197.330	4758.24	-354.83	-431.50	-129.00	1761976.80	14604081.99	40°12'41.728"N	80°33'52.522"W	450.37	196.644	0.99	0.98	1.21
4877.00	7.270	194.340	4850.49	-364.19	-442.80	-132.20	1761973.60	14604070.69	40°12'41.617"N	80°33'52.564"W	462.12	196.623	0.41	0.02	-3.22
4969.00	6.880	197.330	4941.79	-373.22	-453.70	-135.28	1761970.52	14604059.79	40°12'41.509"N	80°33'52.604"W	473.44	196.603	0.58	-0.42	3.25
5062.00	6.480	192.690	5034.16	-381.91	-464.14	-138.10	1761967.71	14604049.36	40°12'41.406"N	80°33'52.641"W	484.25	196.569	0.72	-0.43	-4.99
5155.00	7.860	202.980	5126.44	-390.81	-475.12	-141.73	1761964.07	14604038.39	40°12'41.298"N	80°33'52.689"W	495.81	196.610	2.02	1.48	11.06
5248.00	8.740	199.400	5218.46	-400.70	-487.64	-146.56	1761959.24	14604025.87	40°12'41.174"N	80°33'52.752"W	509.18	196.728	1.10	0.95	-3.85
5341.00	9.080	195.560	5310.34	-411.92	-501.37	-150.88	1761954.93	14604012.15	40°12'41.039"N	80°33'52.808"W	523.58	196.748	0.74	0.37	-4.13
5412.00	9.680	196.070	5380.39	-421.14	-512.50	-154.03	1761951.78	14604001.02	40°12'40.929"N	80°33'52.850"W	535.15	196.728	0.85	0.85	0.72
5505.00	9.720	260.260	5472.31	-425.78	-521.37	-163.96	1761941.85	14603992.16	40°12'40.842"N	80°33'52.978"W	546.54	197.457	11.05	0.04	69.02
5598.00	14.020	306.840	5563.49	-414.59	-515.93	-180.76	1761925.06	14603997.59	40°12'40.896"N	80°33'53.195"W	546.68	199.308	10.90	4.62	50.09
5691.00	18.900	324.840	5652.71	-390.36	-496.84	-198.47	1761907.36	14604016.68	40°12'41.086"N	80°33'53.422"W	535.01	201.775	7.53	5.25	19.35
5783.00	26.940	334.560	5737.41	-355.03	-465.77	-216.04	1761889.80	14604047.73	40°12'41.394"N	80°33'53.646"W	513.44	204.883	9.63	8.74	10.57
5876.00	36.850	346.150	5816.34	-306.20	-419.51	-231.82	1761874.02	14604093.97	40°12'41.852"N	80°33'53.847"W	479.30	208.924	12.48	10.66	12.46
5969.00	46.450	344.620	5885.75	-244.89	-359.80	-247.47	1761858.38	14604153.66	40°12'42.443"N	80°33'54.044"W	436.69	214.520	10.38	10.32	-1.65
6016.00	52.580	343.490	5916.25	-209.32	-325.45	-257.30	1761848.55	14604188.00	40°12'42.782"N	80°33'54.169"W	414.87	218.330	13.17	13.04	-2.40
6062.00	59.770	342.690	5941.84	-171.24	-288.92	-268.42	1761837.44	14604224.52	40°12'43.144"N	80°33'54.310"W	394.36	222.893	15.70	15.63	-1.74
6108.00	66.800	342.580	5962.51	-130.28	-249.72	-280.67	1761825.18	14604263.69	40°12'43.532"N	80°33'54.466"W	375.69	228.339	15.28	15.28	-0.24
6155.00	72.370	342.230	5978.90	-86.35	-207.75	-293.99	1761811.88	14604305.65	40°12'43.947"N	80°33'54.634"W	359.99	234.752	11.87	11.85	-0.74
6201.00	76.810	342.360	5991.12	-42.10	-165.52	-307.47	1761798.40	14604347.87	40°12'44.365"N	80°33'54.806"W	349.19	241.705	9.66	9.65	0.28
6247.00	80.790	342.270	6000.05	2.92	-122.54	-321.17	1761784.70	14604390.83	40°12'44.791"N	80°33'54.980"W	343.76	249.117	8.65	8.65	-0.20
6294.00	84.330	342.290	6006.14	49.42	-78.15	-335.36	1761770.52	14604435.20	40°12'45.230"N	80°33'55.160"W	344.34	256.882	7.53	7.53	0.04
6340.00	87.690	342.510	6009.34	95.21	-34.42	-349.23	1761756.65	14604478.92	40°12'45.663"N	80°33'55.336"W	350.92	264.372	7.32	7.30	0.48
6387.00	90.060	341.420	6010.26	142.11	10.26	-363.78	1761742.11	14604523.58	40°12'46.105"N	80°33'55.520"W	363.92	271.616	5.55	5.04	-2.32
6433.00	90.000	340.110	6010.24	188.08	53.69	-378.93	1761726.96	14604567.00	40°12'46.535"N	80°33'55.713"W	382.72	278.065	2.85	-0.13	-2.85
6526.00	90.090	340.900	6010.16	281.03	141.36	-409.97	1761695.94	14604654.63	40°12'47.403"N	80°33'56.107"W	433.65	289.025	0.85	0.10	0.85
6618.00	90.250	339.910	6009.89	372.98	228.03	-440.82	1761665.10	14604741.27	40°12'48.261"N	80°33'56.500"W	496.31	297.352	1.09	0.17	-1.08
6711.00	90.650	338.880	6009.16	465.97	315.08	-473.55	1761632.38	14604828.28	40°12'49.122"N	80°33'56.916"W	568.79	303.638	1.19	0.43	-1.11

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# Actual Wellpath Report

Thomas Parkinson BRK 1H AWP Proj: 14950'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #1H
Area	Brooke County, WV	Well	Thomas Parkinson BRK 1H
Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWB
Facility	Thomas Parkinson BRK Pad		

WELLPATH DATA (180 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]
6804.00	90.710	336.970	6008.06	558.95	401.25	-508.49	1761597.45	14604914.42	40°12'49.976"N	80°33'57.361"W	647.74	308.277	2.05	0.06	-2.05
6896.00	90.710	336.380	6006.92	650.89	485.72	-544.92	1761561.04	14604998.86	40°12'50.812"N	80°33'57.825"W	729.98	311.713	0.64	0.00	-0.64
6989.00	91.380	335.920	6005.22	743.79	570.77	-582.52	1761523.46	14605083.87	40°12'51.654"N	80°33'58.304"W	815.54	314.416	0.87	0.72	-0.49
7082.00	91.290	336.560	6003.05	836.68	655.86	-619.98	1761486.01	14605168.93	40°12'52.497"N	80°33'58.782"W	902.51	316.611	0.69	-0.10	0.69
7175.00	91.380	338.520	6000.89	929.64	741.78	-655.49	1761450.51	14605254.82	40°12'53.348"N	80°33'59.234"W	989.90	318.534	2.11	0.10	2.11
7267.00	90.950	342.340	5999.02	1021.55	828.43	-686.30	1761419.72	14605341.44	40°12'54.206"N	80°33'59.626"W	1075.78	320.361	4.18	-0.47	4.15
7360.00	90.890	346.920	5997.52	1114.01	918.07	-710.94	1761395.08	14605431.04	40°12'55.093"N	80°33'59.938"W	1161.16	322.246	4.92	-0.06	4.92
7453.00	90.830	347.940	5996.13	1205.90	1008.83	-731.18	1761374.86	14605521.76	40°12'55.990"N	80°34'00.193"W	1245.93	324.066	1.10	-0.06	1.10
7546.00	90.890	347.040	5994.73	1297.78	1099.61	-751.32	1761354.72	14605612.51	40°12'56.889"N	80°34'00.447"W	1331.77	325.657	0.97	0.06	-0.97
7638.00	91.020	346.650	5993.20	1388.82	1189.18	-772.25	1761333.79	14605702.05	40°12'57.775"N	80°34'00.711"W	1417.93	327.000	0.45	0.14	-0.42
7731.00	90.860	347.770	5991.67	1480.77	1279.86	-792.84	1761313.22	14605792.69	40°12'58.672"N	80°34'00.971"W	1505.54	328.223	1.22	-0.17	1.20
7824.00	90.830	343.760	5990.30	1573.02	1369.98	-815.70	1761290.36	14605882.77	40°12'59.563"N	80°34'01.260"W	1594.43	329.230	4.31	-0.03	-4.31
7917.00	90.980	340.970	5988.83	1665.80	1458.59	-843.87	1761262.21	14605971.35	40°13'00.440"N	80°34'01.617"W	1685.11	329.948	3.00	0.16	-3.00
8010.00	91.010	338.430	5987.21	1758.76	1545.79	-876.12	1761229.96	14606058.52	40°13'01.304"N	80°34'02.028"W	1776.81	330.456	2.73	0.03	-2.73
8102.00	90.920	340.170	5985.66	1850.74	1631.84	-908.64	1761197.46	14606144.53	40°13'02.155"N	80°34'02.441"W	1867.76	330.890	1.89	-0.10	1.89
8195.00	90.890	340.120	5984.20	1943.70	1719.30	-940.22	1761165.89	14606231.96	40°13'03.021"N	80°34'02.843"W	1959.59	331.327	0.06	-0.03	-0.05
8288.00	91.080	339.450	5982.60	2036.66	1806.56	-972.35	1761133.77	14606319.18	40°13'03.885"N	80°34'03.252"W	2051.61	331.709	0.75	0.20	-0.72
8380.00	90.950	338.720	5980.97	2128.65	1892.48	-1005.19	1761100.95	14606405.07	40°13'04.736"N	80°34'03.670"W	2142.87	332.025	0.81	-0.14	-0.79
8473.00	90.770	335.070	5979.57	2221.58	1978.00	-1041.67	1761064.48	14606490.56	40°13'05.583"N	80°34'04.135"W	2235.52	332.227	3.93	-0.19	-3.92
8566.00	90.770	333.490	5978.32	2314.30	2061.77	-1082.03	1761024.14	14606574.30	40°13'06.412"N	80°34'04.650"W	2328.45	332.309	1.70	0.00	-1.70
8659.00	90.860	336.030	5977.00	2407.07	2145.88	-1121.68	1760984.50	14606658.37	40°13'07.245"N	80°34'05.155"W	2421.35	332.403	2.73	0.10	2.73
8751.00	90.860	338.820	5975.62	2499.03	2230.81	-1156.99	1760949.21	14606743.27	40°13'08.086"N	80°34'05.605"W	2512.99	332.587	3.03	0.00	3.03
8844.00	90.890	342.430	5974.20	2591.95	2318.52	-1187.83	1760918.37	14606830.95	40°13'08.955"N	80°34'05.997"W	2605.09	332.873	3.88	0.03	3.88
8937.00	90.890	345.220	5972.75	2684.54	2407.82	-1213.73	1760892.48	14606920.21	40°13'09.838"N	80°34'06.326"W	2696.43	333.248	3.00	0.00	3.00
9030.00	90.800	346.610	5971.38	2776.78	2498.01	-1236.36	1760869.86	14607010.37	40°13'10.731"N	80°34'06.612"W	2787.23	333.667	1.50	-0.10	1.49
9122.00	90.860	346.030	5970.05	2867.94	2587.39	-1258.12	1760848.12	14607099.72	40°13'11.615"N	80°34'06.886"W	2877.06	334.069	0.63	0.07	-0.63
9215.00	90.890	343.920	5968.63	2960.36	2677.19	-1282.22	1760824.02	14607189.49	40°13'12.504"N	80°34'07.192"W	2968.41	334.408	2.27	0.03	-2.27
9308.00	90.890	343.420	5967.18	3052.99	2766.43	-1308.37	1760797.88	14607278.69	40°13'13.387"N	80°34'07.523"W	3060.22	334.688	0.54	0.00	-0.54
9400.00	90.860	342.360	5965.78	3144.72	2854.35	-1335.43	1760770.83	14607366.57	40°13'14.257"N	80°34'07.866"W	3151.30	334.927	1.15	-0.03	-1.15
9493.00	90.830	341.330	5964.41	3237.56	2942.71	-1364.41	1760741.87	14607454.90	40°13'15.131"N	80°34'08.234"W	3243.63	335.125	1.11	-0.03	-1.11

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# Actual Wellpath Report

Thomas Parkinson BRK 1H AWP Proj: 14950 MD  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY
Area	Brooke County, WV
Field	Brooke
Facility	Thomas Parkinson BRK Pad
Slot	Wellbore
Slot #1H	Thomas Parkinson BRK 1H

WELLPATH DATA (180 stations)														
MD	Inclination	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)	(ft)	(ft)	(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)
9586.00	90.800	338.540	5963.08	3330.52	-1396.31	1760709.98	14607542.20	40°13'15.996"N	80°34'08.640"W	3336.29	335.259	3.00	-0.03	-3.00
9678.00	90.800	334.180	5961.80	3422.42	-1433.19	1760673.12	14607626.42	40°13'16.830"N	80°34'09.110"W	3428.25	335.288	4.74	0.00	-4.74
9771.00	90.580	331.440	5960.68	3514.92	-1475.67	1760630.64	14607709.10	40°13'17.649"N	80°34'09.653"W	3521.15	335.223	2.96	-0.24	-2.96
9864.00	90.770	331.450	5959.58	3607.18	-1520.13	1760586.21	14607790.75	40°13'18.459"N	80°34'10.221"W	3613.94	335.126	0.20	0.20	0.01
9957.00	90.520	337.080	5958.53	3699.87	-1560.49	1760545.86	14607874.45	40°13'19.288"N	80°34'10.736"W	3706.89	335.104	6.06	-0.27	6.05
10049.00	90.740	343.210	5957.52	3791.79	-1591.72	1760514.64	14607960.90	40°13'20.144"N	80°34'11.133"W	3798.49	335.226	6.67	0.24	6.66
10142.00	90.550	346.790	5956.47	3884.19	-1615.78	1760490.59	14608050.68	40°13'21.033"N	80°34'11.438"W	3890.15	335.459	3.85	-0.20	3.85
10235.00	90.460	346.090	5955.65	3976.33	-1637.59	1760468.79	14608141.05	40°13'21.927"N	80°34'11.713"W	3981.49	335.713	0.76	-0.10	-0.75
10327.00	90.460	347.570	5954.92	4067.38	-1658.55	1760447.84	14608230.59	40°13'22.814"N	80°34'11.978"W	4071.79	335.963	1.61	0.00	1.61
10420.00	90.520	347.860	5954.12	4159.21	-1678.33	1760428.06	14608321.42	40°13'23.712"N	80°34'12.227"W	4162.88	336.224	0.32	0.06	0.31
10513.00	90.460	350.430	5953.32	4250.64	-1695.85	1760410.56	14608412.71	40°13'24.616"N	80°34'12.447"W	4253.57	336.504	2.76	-0.06	2.76
10605.00	90.520	349.510	5952.54	4340.84	-1711.87	1760394.54	14608503.27	40°13'25.512"N	80°34'12.648"W	4343.09	336.786	1.00	0.07	-1.00
10698.00	90.490	342.990	5951.72	4432.96	-1733.96	1760372.46	14608593.51	40°13'26.405"N	80°34'12.927"W	4434.79	336.984	7.01	-0.03	-7.01
10790.00	90.310	336.360	5950.07	4524.90	-1765.90	1760340.53	14608679.70	40°13'27.258"N	80°34'13.334"W	4526.64	337.039	7.21	-0.20	-7.21
10883.00	90.550	333.680	5950.38	4617.75	-1804.51	1760301.94	14608764.27	40°13'28.096"N	80°34'13.826"W	4619.60	337.007	1.93	0.26	-1.91
10976.00	90.580	333.630	5949.46	4710.45	-1845.12	1760261.34	14608847.89	40°13'28.925"N	80°34'14.344"W	4712.48	336.950	1.02	0.03	-1.02
11069.00	90.580	334.510	5948.52	4803.15	-1885.78	1760220.69	14608931.49	40°13'29.753"N	80°34'14.863"W	4805.36	336.894	0.95	0.00	0.95
11162.00	90.620	335.240	5947.54	4895.95	-1925.27	1760181.22	14609015.66	40°13'30.587"N	80°34'15.367"W	4898.30	336.856	0.79	0.04	0.78
11254.00	90.550	337.290	5946.60	4987.86	-1962.29	1760144.21	14609099.83	40°13'31.421"N	80°34'15.839"W	4990.28	336.845	2.23	-0.08	2.23
11347.00	90.830	339.920	5945.48	5080.84	-1996.21	1760110.30	14609186.38	40°13'32.278"N	80°34'16.271"W	5083.22	336.877	2.84	0.30	2.83
11440.00	90.830	341.470	5944.14	5173.77	-2026.96	1760079.57	14609274.10	40°13'33.147"N	80°34'16.662"W	5176.01	336.946	1.67	0.00	1.67
11533.00	90.830	341.290	5942.79	5266.65	-2056.65	1760049.89	14609362.19	40°13'34.019"N	80°34'17.039"W	5268.72	337.024	0.19	0.00	-0.19
11626.00	90.770	339.720	5941.49	5359.59	-2087.68	1760018.87	14609449.82	40°13'34.887"N	80°34'17.434"W	5361.54	337.084	1.69	-0.06	-1.69
11718.00	90.180	343.860	5940.73	5451.43	-2116.42	1759990.14	14609537.15	40°13'35.752"N	80°34'17.799"W	5453.22	337.163	4.55	-0.64	4.50
11811.00	90.220	345.420	5940.40	5543.91	-2141.06	1759965.52	14609626.79	40°13'36.639"N	80°34'18.111"W	5545.43	337.288	1.68	0.04	1.68
11904.00	90.310	343.720	5939.97	5636.41	-2165.80	1759940.79	14609716.40	40°13'37.526"N	80°34'18.424"W	5637.69	337.408	1.83	0.10	-1.83
11997.00	90.370	341.810	5939.42	5729.16	-2193.35	1759913.24	14609805.19	40°13'38.405"N	80°34'18.774"W	5730.29	337.495	2.05	0.06	-2.05
12089.00	90.460	341.190	5938.76	5821.04	-2222.54	1759884.06	14609892.40	40°13'39.268"N	80°34'19.145"W	5822.06	337.558	0.68	0.10	-0.67
12182.00	90.620	339.380	5937.88	5914.00	-2253.91	1759852.70	14609979.90	40°13'40.135"N	80°34'19.544"W	5914.95	337.601	1.95	0.17	-1.95
12275.00	90.550	338.700	5936.93	6006.99	-2287.18	1759819.45	14610066.71	40°13'40.995"N	80°34'19.968"W	6007.92	337.623	0.74	-0.08	-0.73

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<b>HOLE &amp; CASING SECTIONS - Ref Wellbore: Thomas Parkinson BRK 1H AWB Ref Wellpath: Thomas Parkinson BRK 1H AWP Proj: 14950'MD</b>									
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	125.99	0.00	0.00	-0.02	0.92
17.5in Open Hole	126.00	501.00	375.00	125.99	500.96	-0.02	0.92	-1.72	5.51
13.375in Casing Surface	26.00	481.00	455.00	26.00	480.96	0.00	0.00	-1.55	5.43
12.25in Open Hole	501.00	1755.00	1254.00	500.96	1750.81	-1.72	5.51	-86.68	-31.14
9.625in Casing Intermediate	26.00	1735.00	1709.00	26.00	1730.93	0.00	0.00	-84.60	-30.54
8.75in Open Hole	1755.00	5412.00	3657.00	1750.81	5380.39	-86.68	-31.14	-512.50	-154.03
8.5in Open Hole	5412.00	14950.00	9538.00	5380.39	5906.73	-512.50	-154.03	8072.28	-3181.65

<b>TARGETS</b>									
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape	
Thomas Parkinson BRK 1H BHL Rev-2	5904.00	8125.48	-3179.72	1758927.26	14612635.68	40°14'06.433"N	80°34'31.316"W	point	
Thomas Parkinson BRK 1H LP Rev-2	6010.00	28.31	-376.72	1761729.17	14604541.62	40°12'46.284"N	80°33'55.686"W	point	

<b>WELLPATH COMPOSITION - Ref Wellbore: Thomas Parkinson BRK 1H AWB Ref Wellpath: Thomas Parkinson BRK 1H AWP Proj: 14950'MD</b>				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	410.00	Gyrodata standard - Drop gyro or Multi-shot	02_Gyrodata MS Gyro <17-1/2"> (100'-410')	Thomas Parkinson BRK 1H AWB
410.00	1680.00	BHI NaviTrak (Axial)	03_APS EM <12-1/4"> (410')(505'-1680')	Thomas Parkinson BRK 1H AWB
1680.00	5341.00	BHI NaviTrak (Axial)	04_APS EM <8-3/4"> (1680')(1768'-5341')	Thomas Parkinson BRK 1H AWB
5341.00	14925.00	BHI AutoTrak Curve (Short)	05_BH AT Curve <8-1/2"> (5341')(5412'-14925')	Thomas Parkinson BRK 1H AWB
14925.00	14950.00	Blind Drilling (std)	Projection to bit	Thomas Parkinson BRK 1H AWB

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #1H
Area	Brooke County, WV	Well	Thomas Parkinson BRK 1H
Field	Brooke	Wellbore	Thomas Parkinson BRK 1H AWB
Facility	Thomas Parkinson BRK Pad		

COMMENTS
<p><b>Wellpath general comments</b>            API: 47-009-00234-0000            Job #: 9033631            Rig: SDC 46            Duration: 03/10/2018 - 03/19/2018</p>

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