

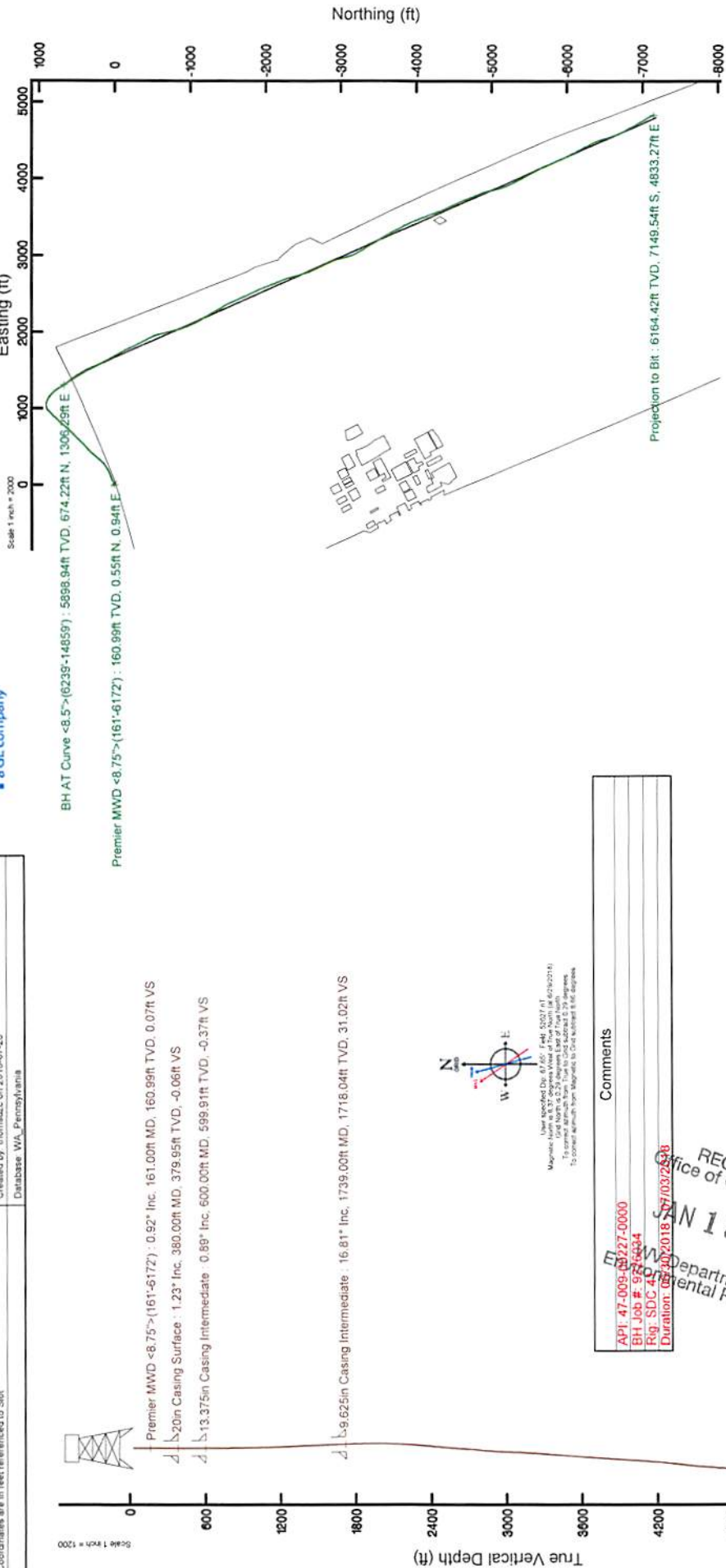
# SOUTHWESTERN ENERGY

Location: Brooke County, WV  
 Field: Brooke  
 Facility: Worthley BRK Pad  
 Slot: Slot #210H  
 Well: Worthley BRK 210H  
 Wellbore: Worthley BRK 210H PWB

Plot reference wellpath is Worthley BRK 210H PWB Rev-A.0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC41 (RKB)	* s Wellpath was transformed from a different geodetic datum
Measured depths are referenced to SDC41 (RKB)	North Reference: Grid north
SDC41 (RKB) to Mean Sea Level: 1152.3 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: Slot #210H): -1156.3 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: thomazuo on 2018-07-26
	Database: WA_Pennsylvania

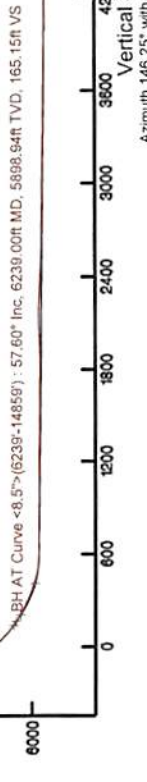


Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Worthley BRK Pad	1764546.204	14605439.176	40°12'55.0147N
Local N (ft)	Local E (ft)	Grid North (US ft)	Longitude
19.22	-47.39	14605458.386	40°12'55.2067N
Slot #210H	20H		
SDC41 (RKB) to Ground level (At Slot: Slot #210H)	26H		
Mean Sea Level to Ground level (At Slot: Slot #210H)	-1156.3ft		
SDC41 (RKB) to Mean Sea Level	1152.3ft		



Comments
API: 47-009-0327-0000
BH Job #: 9725434
Rip: SDC 41 02/01/18
Duration: 02/01/2018 - 07/03/2018

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Projection to Bit : 89.42° Inc. 14884.00ft MD, 6164.42ft TVD, 8629.85ft VS  
 Projection to Bit : 57.60° Inc. 6239.00ft MD, 5898.94ft TVD, 165.15ft VS

### REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley 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	0.999618	Report Generated	7/26/2018 at 7:41:38 AM
Convergence at slot	0.29° East	Database/Source file	WA_Pennsylvania/Worthley_BRK_210H_AWP_Proj_14884_MD.xml

### WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	19.22	-42.38	1764603.93	14605458.39	40°12'55.206"N	80°33'18.558"W
Facility Reference Pt			1764646.29	14605439.18	40°12'55.014"N	80°33'18.013"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

### WELLPATH DATUM

Calculation method	Minimum curvature	SDC41 (RKB) to Facility Vertical Datum	1182.30ft
Horizontal Reference Pt	Slot	SDC41 (RKB) to Mean Sea Level	1182.30ft
Vertical Reference Pt	SDC41 (RKB)	SDC41 (RKB) to Ground Level at Slot (Slot #210H)	26.00ft
MD Reference Pt	SDC41 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	146.25°

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# Actual Wellpath Report

Worthley BRK 210H AWP Proj: 14884'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 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	59.790	0.00	0.00	0.00	0.00	1764603.93	14605458.39	40°12'55.206"N	80°33'18.558"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	59.790	26.00	0.00	0.00	0.00	1764603.93	14605458.39	40°12'55.206"N	80°33'18.558"W	0.00	0.000	0.00	0.00	0.00
161.00	0.920	59.790	160.99	0.07	0.55	0.94	1764604.87	14605458.93	40°12'55.211"N	80°33'18.546"W	1.08	59.790	0.68	0.68	44.29
222.00	1.130	54.890	221.98	0.08	1.14	1.85	1764605.78	14605459.52	40°12'55.217"N	80°33'18.534"W	2.17	58.435	0.37	0.34	-8.03
312.00	1.100	54.500	311.97	0.04	2.15	3.28	1764607.21	14605460.53	40°12'55.227"N	80°33'18.516"W	3.92	56.768	0.03	-0.03	-0.43
321.00	1.210	51.100	320.97	0.02	2.26	3.43	1764607.36	14605460.64	40°12'55.228"N	80°33'18.514"W	4.10	56.589	1.44	1.22	-37.78
405.00	1.240	55.340	404.95	-0.07	3.33	4.86	1764608.79	14605461.72	40°12'55.239"N	80°33'18.495"W	5.90	55.572	0.11	0.04	5.05
498.00	1.200	50.920	497.93	-0.18	4.52	6.45	1764610.38	14605462.90	40°12'55.250"N	80°33'18.475"W	7.87	54.968	0.11	-0.04	-4.75
541.00	1.010	49.790	540.92	-0.26	5.05	7.09	1764611.02	14605463.43	40°12'55.256"N	80°33'18.466"W	8.70	54.533	0.44	-0.44	-2.63
618.00	0.850	49.140	617.91	-0.41	5.86	8.04	1764611.97	14605464.24	40°12'55.264"N	80°33'18.454"W	9.95	53.900	0.21	-0.21	-0.84
708.00	2.830	65.350	707.86	-0.14	7.22	10.56	1764614.49	14605465.61	40°12'55.277"N	80°33'18.421"W	12.79	55.628	2.25	2.20	18.01
799.00	6.030	65.620	798.57	0.99	10.13	16.96	1764620.88	14605468.52	40°12'55.305"N	80°33'18.339"W	19.75	59.137	3.52	3.52	0.30
890.00	8.570	62.720	888.83	2.54	15.22	27.34	1764631.26	14605473.60	40°12'55.355"N	80°33'18.205"W	31.29	60.902	2.82	2.79	-3.19
981.00	10.120	61.960	978.62	4.10	22.08	40.42	1764644.34	14605480.46	40°12'55.422"N	80°33'18.036"W	46.06	61.353	1.71	1.70	-0.84
1072.00	11.230	59.060	1068.04	5.33	30.40	55.08	1764658.99	14605488.77	40°12'55.504"N	80°33'17.846"W	62.91	61.107	1.35	1.22	-3.19
1163.00	11.450	67.850	1157.27	7.58	38.36	71.05	1764674.95	14605496.73	40°12'55.582"N	80°33'17.640"W	80.74	61.635	1.91	0.24	9.66
1254.00	12.450	71.560	1246.30	11.98	44.87	88.72	1764692.62	14605503.24	40°12'55.645"N	80°33'17.412"W	99.42	63.173	1.39	1.10	4.08
1344.00	12.480	69.590	1334.18	16.79	51.33	107.04	1764710.93	14605509.69	40°12'55.708"N	80°33'17.175"W	118.71	64.381	0.47	0.03	-2.19
1434.00	12.030	65.090	1422.13	20.47	58.67	124.66	1764728.54	14605517.03	40°12'55.780"N	80°33'16.947"W	137.77	64.796	1.17	-0.50	-5.00
1527.00	12.480	65.660	1513.01	23.61	66.89	142.60	1764746.48	14605525.25	40°12'55.860"N	80°33'16.716"W	157.51	64.870	0.50	0.48	0.61
1620.00	14.400	64.530	1603.46	26.92	76.01	162.20	1764766.07	14605534.36	40°12'55.949"N	80°33'16.462"W	179.13	64.892	2.08	2.06	-1.22
1687.00	15.850	63.790	1668.14	29.32	83.63	177.93	1764781.80	14605541.99	40°12'56.024"N	80°33'16.259"W	196.61	64.825	2.18	2.16	-1.10
1763.00	17.260	61.450	1740.99	31.70	93.60	197.15	1764801.01	14605551.95	40°12'56.121"N	80°33'16.011"W	218.24	64.602	2.05	1.86	-3.08
1824.00	17.540	61.910	1799.19	33.43	102.26	213.21	1764817.06	14605560.60	40°12'56.206"N	80°33'15.803"W	236.46	64.377	0.51	0.46	0.75
1914.00	15.110	59.250	1885.56	35.38	114.64	235.25	1764839.10	14605572.99	40°12'56.327"N	80°33'15.518"W	261.70	64.019	2.82	-2.70	-2.96
2005.00	13.410	55.470	1973.76	35.86	126.69	254.14	1764857.98	14605585.03	40°12'56.445"N	80°33'15.274"W	283.97	63.504	2.13	-1.87	-4.15
2098.00	15.500	47.780	2063.81	33.88	141.16	272.23	1764876.06	14605596.49	40°12'56.587"N	80°33'15.040"W	306.65	62.593	3.05	2.25	-8.27
2190.00	16.150	45.530	2152.33	29.69	158.38	290.47	1764894.29	14605616.71	40°12'56.757"N	80°33'14.804"W	330.84	61.398	0.97	0.71	-2.45
2283.00	15.920	44.050	2241.71	24.59	176.61	308.57	1764912.38	14605634.93	40°12'56.936"N	80°33'14.569"W	355.53	60.215	0.50	-0.25	-1.59
2376.00	15.600	41.430	2331.22	18.69	195.15	325.71	1764929.52	14605653.46	40°12'57.118"N	80°33'14.347"W	379.70	59.072	0.84	-0.34	-2.82

Office of Oil and Gas

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WV Department of Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 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]
2469.00	15.300	39.420	2420.86	11.94	214.01	341.78	1764945.58	14605672.31	40°12'57.304"N	80°33'14.139"W	403.25	57.947	0.66	-0.32	-2.16
2561.00	15.420	40.960	2509.57	5.20	232.62	357.50	1764961.30	14605690.92	40°12'57.487"N	80°33'13.935"W	426.52	56.949	0.46	0.13	1.67
2654.00	16.970	43.090	2598.88	-1.15	251.87	374.88	1764978.67	14605710.16	40°12'57.676"N	80°33'13.709"W	451.63	56.104	1.78	1.67	2.29
2747.00	17.170	41.250	2687.78	-7.79	272.10	393.20	1764996.98	14605730.38	40°12'57.875"N	80°33'13.472"W	478.17	55.316	0.62	0.22	-1.98
2840.00	16.580	38.460	2776.78	-15.40	292.81	410.51	1765014.28	14605751.09	40°12'58.079"N	80°33'13.248"W	504.24	54.500	1.08	-0.63	-3.00
2932.00	17.380	40.160	2864.77	-23.22	313.59	427.53	1765031.30	14605771.86	40°12'58.284"N	80°33'13.027"W	530.21	53.740	1.02	0.87	1.85
3025.00	18.580	48.620	2953.24	-29.04	334.01	447.61	1765051.37	14605792.26	40°12'58.484"N	80°33'12.767"W	558.50	53.270	3.09	1.29	9.10
3118.00	18.340	49.200	3041.45	-32.80	353.36	469.81	1765073.56	14605811.61	40°12'58.675"N	80°33'12.479"W	587.86	53.052	0.32	-0.26	0.62
3210.00	17.380	45.270	3129.02	-37.19	372.49	490.53	1765094.27	14605830.73	40°12'58.863"N	80°33'12.211"W	615.93	52.788	1.67	-1.04	-4.27
3303.00	18.060	45.690	3217.61	-42.48	392.34	510.71	1765114.45	14605850.57	40°12'59.058"N	80°33'11.949"W	644.01	52.468	0.74	0.73	0.45
3396.00	17.720	44.450	3306.11	-48.02	412.51	530.94	1765134.66	14605870.74	40°12'59.256"N	80°33'11.687"W	672.35	52.155	0.55	-0.37	-1.33
3489.00	18.840	44.790	3394.42	-53.90	433.27	551.43	1765155.15	14605891.49	40°12'59.460"N	80°33'11.422"W	701.28	51.842	1.21	1.20	0.37
3581.00	20.380	44.450	3481.08	-60.12	455.25	573.11	1765176.82	14605913.46	40°12'59.676"N	80°33'11.141"W	731.92	51.538	1.68	1.67	-0.37
3674.00	19.300	41.500	3568.56	-67.35	478.32	594.64	1765198.34	14605936.52	40°12'59.903"N	80°33'10.862"W	763.14	51.187	1.58	-1.16	-3.17
3767.00	18.080	42.470	3656.65	-74.70	500.48	614.56	1765218.26	14605958.67	40°13'00.121"N	80°33'10.604"W	792.57	50.842	1.35	-1.31	1.04
3860.00	19.140	47.260	3744.80	-80.52	521.47	635.51	1765239.20	14605979.66	40°13'00.328"N	80°33'10.332"W	822.07	50.629	2.00	1.14	5.15
3952.00	18.430	45.320	3831.90	-85.63	541.93	656.93	1765260.61	14606000.11	40°13'00.529"N	80°33'10.055"W	851.61	50.479	1.03	-0.77	-2.11
4045.00	18.050	44.590	3920.22	-91.33	562.53	677.49	1765281.17	14606020.70	40°13'00.731"N	80°33'09.789"W	880.59	50.297	0.48	-0.41	-0.78
4138.00	18.980	45.240	4008.41	-97.13	583.44	698.35	1765302.01	14606041.60	40°13'00.937"N	80°33'09.518"W	910.00	50.123	1.02	1.00	0.70
4231.00	17.670	41.660	4096.69	-103.58	604.64	718.47	1765322.13	14606062.79	40°13'01.145"N	80°33'09.258"W	939.03	49.917	1.86	-1.41	-3.85
4323.00	18.360	41.420	4184.18	-110.80	625.93	737.34	1765340.99	14606084.08	40°13'01.355"N	80°33'09.013"W	967.19	49.672	0.75	0.75	-0.26
4416.00	20.980	42.480	4271.75	-118.52	649.20	758.27	1765361.92	14606107.34	40°13'01.584"N	80°33'08.742"W	998.22	49.431	2.84	2.82	1.14
4509.00	20.610	37.380	4358.70	-127.77	674.49	779.46	1765383.09	14606132.61	40°13'01.832"N	80°33'08.467"W	1030.77	49.129	1.99	-0.40	-5.48
4602.00	19.380	37.880	4446.09	-137.93	699.67	798.87	1765402.49	14606157.79	40°13'02.080"N	80°33'08.215"W	1061.95	48.787	1.34	-1.32	0.54
4691.00	19.970	43.760	4529.90	-145.87	722.31	818.45	1765422.07	14606180.42	40°13'02.303"N	80°33'07.961"W	1091.60	48.571	2.32	0.66	6.61
4781.00	20.820	43.370	4614.26	-152.76	745.04	840.06	1765443.67	14606203.14	40°13'02.527"N	80°33'07.681"W	1122.85	48.431	0.96	0.94	-0.43
4873.00	20.020	45.110	4700.48	-159.45	768.04	862.45	1765466.05	14606226.13	40°13'02.753"N	80°33'07.391"W	1154.86	48.314	1.09	-0.87	1.89
4966.00	19.270	40.700	4788.07	-166.64	790.91	883.73	1765487.33	14606248.99	40°13'02.978"N	80°33'07.115"W	1185.97	48.173	1.79	-0.81	-4.74
5059.00	19.810	42.290	4875.71	-174.55	814.20	904.35	1765507.93	14606272.27	40°13'03.207"N	80°33'06.848"W	1216.87	48.003	0.81	0.58	1.71
5151.00	19.360	50.020	4962.40	-179.97	835.53	926.52	1765530.10	14606293.60	40°13'03.417"N	80°33'06.561"W	1247.62	47.956	2.86	-0.49	8.40

Office of Oil and Gas

JAN 15 2019



# Actual Wellpath Report

Worthley BRK 210H AWP Proj: 14884'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 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]	
5244.00	18.490	44.090	5050.38	-184.75	856.03	948.60	1765552.17	14606314.09	40°13'03.618"N	80°33'06.275"W	1277.74	47.936	2.27	-0.94	-6.38	
5337.00	17.050	46.120	5138.95	-190.26	876.08	968.69	1765572.25	14606334.12	40°13'03.815"N	80°33'06.014"W	1306.09	47.874	1.69	-1.55	2.18	
5430.00	16.760	57.160	5227.95	-192.44	892.80	989.79	1765593.34	14606350.84	40°13'03.979"N	80°33'05.741"W	1332.96	47.949	3.46	-0.31	11.87	
5476.00	17.550	66.090	5271.91	-191.15	899.21	1001.70	1765605.25	14606357.25	40°13'04.042"N	80°33'05.587"W	1346.10	48.086	5.97	1.72	19.41	
5522.00	18.270	74.670	5315.69	-187.69	903.93	1015.00	1765618.54	14606361.97	40°13'04.088"N	80°33'05.416"W	1359.16	48.313	5.94	1.57	18.65	
5569.00	19.550	82.900	5360.16	-181.83	906.85	1029.91	1765633.45	14606364.89	40°13'04.116"N	80°33'05.223"W	1372.26	48.636	6.29	2.72	17.51	
5615.00	21.450	91.120	5403.25	-173.57	907.64	1045.96	1765649.49	14606365.67	40°13'04.123"N	80°33'05.016"W	1384.86	49.050	7.49	4.13	17.87	
5662.00	22.770	99.940	5446.81	-162.37	905.90	1063.52	1765667.04	14606363.94	40°13'04.105"N	80°33'04.790"W	1397.04	49.576	7.59	2.81	18.77	
5708.00	24.730	106.500	5488.92	-148.82	901.63	1081.52	1765685.04	14606359.67	40°13'04.062"N	80°33'04.558"W	1408.05	50.183	7.15	4.26	14.26	
5754.00	26.880	112.790	5530.34	-132.74	894.86	1100.34	1765703.85	14606352.91	40°13'03.994"N	80°33'04.316"W	1418.28	50.880	7.56	4.67	13.67	
5801.00	28.940	118.590	5571.88	-113.80	885.30	1120.12	1765723.62	14606343.35	40°13'03.899"N	80°33'04.062"W	1427.74	51.678	7.25	4.38	12.34	
5847.00	31.500	122.920	5611.63	-92.90	873.44	1139.99	1765743.48	14606331.49	40°13'03.780"N	80°33'03.807"W	1436.13	52.541	7.31	5.57	9.41	
5893.00	33.690	127.070	5650.38	-69.81	859.22	1160.26	1765763.75	14606317.27	40°13'03.639"N	80°33'03.546"W	1443.77	53.479	6.80	4.76	9.02	
5940.00	36.050	131.240	5688.95	-44.13	842.24	1181.07	1765784.55	14606300.30	40°13'03.470"N	80°33'03.279"W	1450.62	54.507	7.14	5.02	8.87	
5986.00	38.450	135.780	5725.57	-16.98	823.06	1201.23	1765804.70	14606281.13	40°13'03.280"N	80°33'03.020"W	1456.15	55.582	7.93	5.22	9.87	
6033.00	40.550	140.080	5761.84	12.58	800.86	1221.23	1765824.69	14606258.94	40°13'03.059"N	80°33'02.764"W	1460.40	56.744	7.33	4.47	9.15	
6079.00	43.480	143.380	5796.02	43.27	776.69	1240.27	1765843.73	14606234.77	40°13'02.819"N	80°33'02.520"W	1463.39	57.944	7.97	6.37	7.17	
6125.00	46.170	147.200	5828.65	75.67	750.03	1258.71	1765862.15	14606208.12	40°13'02.555"N	80°33'02.284"W	1465.22	59.210	8.27	5.85	8.30	
6172.00	50.830	147.700	5859.78	110.86	720.36	1277.63	1765881.08	14606178.47	40°13'02.261"N	80°33'02.042"W	1466.72	60.585	9.95	9.91	1.06	
6239.00	57.600	148.580	5898.94	165.15	674.22	1306.29	1765909.72	14606132.34	40°13'01.803"N	80°33'01.676"W	1470.02	62.700	10.16	10.10	1.31	
6332.00	61.870	146.650	5945.80	245.42	606.42	1349.33	1765952.74	14606064.57	40°13'01.131"N	80°33'01.126"W	1479.33	65.800	4.93	4.59	-2.08	
6425.00	67.150	147.510	5985.81	329.33	535.97	1394.92	1765998.32	14605994.15	40°13'00.433"N	80°33'00.542"W	1494.34	68.982	5.74	5.68	0.92	
6518.00	72.880	150.020	6017.59	416.60	461.26	1440.19	1766043.57	14605919.47	40°12'59.692"N	80°32'59.964"W	1512.25	72.241	6.66	6.16	2.70	
6611.00	79.610	152.330	6039.69	506.54	382.16	1483.69	1766087.05	14605840.40	40°12'58.908"N	80°32'59.408"W	1532.12	75.556	7.63	7.24	2.48	
6703.00	89.970	153.310	6048.03	597.43	300.77	1525.48	1766128.82	14605759.04	40°12'58.102"N	80°32'58.875"W	1554.84	78.847	11.31	11.26	1.07	
6796.00	90.030	153.740	6048.03	689.68	217.52	1566.94	1766170.27	14605675.82	40°12'57.277"N	80°32'58.346"W	1581.96	82.097	0.47	0.06	0.46	
6889.00	90.520	153.500	6047.58	781.91	134.20	1608.26	1766211.57	14605592.54	40°12'56.452"N	80°32'57.819"W	1613.85	85.230	0.59	0.53	-0.26	
6982.00	89.480	151.050	6047.58	874.39	51.89	1651.52	1766254.82	14605510.25	40°12'55.636"N	80°32'57.266"W	1652.34	88.200	2.86	-1.12	-2.63	
7074.00	89.420	149.800	6048.47	966.14	-28.12	1696.93	1766300.21	14605430.28	40°12'54.843"N	80°32'56.686"W	1697.16	90.949	1.36	-0.07	-1.36	
7167.00	89.320	152.960	6049.49	1058.82	-109.39	1742.11	1766345.37	14605349.03	40°12'54.038"N	80°32'56.109"W	1745.54	93.593	2.43	-0.11	2.43	

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# Actual Wellpath Report

Worthley BRK 210H AWP Proj: 14884'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 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]
7260.00	89.350	155.440	6050.57	1151.00	-192.79	1783.23	1766386.48	14605265.67	40°12'53.212"N	80°32'55.585"W	1793.62	96.170	3.63	0.03	3.63
7353.00	89.480	154.700	6051.52	1242.90	-277.11	1822.43	1766425.66	14605181.38	40°12'52.377"N	80°32'55.085"W	1843.38	98.646	0.81	0.14	-0.80
7445.00	89.420	153.010	6052.40	1334.08	-359.69	1862.96	1766466.18	14605098.83	40°12'51.559"N	80°32'54.568"W	1897.37	100.928	1.84	-0.07	-1.84
7538.00	89.450	152.260	6053.32	1426.50	-442.28	1905.71	1766508.91	14605016.27	40°12'50.740"N	80°32'54.022"W	1956.36	103.066	0.81	0.03	-0.81
7631.00	89.450	159.130	6054.21	1518.18	-526.99	1943.96	1766547.15	14604931.60	40°12'49.901"N	80°32'53.535"W	2014.13	105.168	7.39	0.00	7.39
7724.00	89.630	165.600	6054.96	1607.48	-615.57	1972.12	1766575.30	14604843.06	40°12'49.025"N	80°32'53.178"W	2065.96	107.335	6.96	0.19	6.96
7816.00	89.570	166.110	6055.60	1694.14	-704.77	1994.60	1766597.77	14604753.88	40°12'48.142"N	80°32'52.894"W	2115.46	109.460	0.56	-0.07	0.55
7909.00	89.480	165.740	6056.37	1781.71	-794.98	2017.22	1766620.38	14604663.71	40°12'47.249"N	80°32'52.608"W	2168.22	111.509	0.41	-0.10	-0.40
8002.00	90.460	161.580	6056.42	1870.43	-884.20	2043.38	1766646.53	14604574.52	40°12'46.366"N	80°32'52.277"W	2226.48	113.399	4.60	1.05	-4.47
8095.00	92.590	158.970	6053.95	1960.61	-971.70	2074.75	1766677.89	14604487.06	40°12'45.500"N	80°32'51.878"W	2291.02	115.096	3.62	2.29	-2.81
8187.00	93.020	154.770	6049.44	2050.90	-1056.19	2110.84	1766713.96	14604402.61	40°12'44.664"N	80°32'51.419"W	2360.33	116.582	4.58	0.47	-4.57
8280.00	90.220	151.000	6046.81	2143.22	-1138.91	2153.20	1766756.30	14604319.92	40°12'43.844"N	80°32'50.878"W	2435.85	117.876	5.05	-3.01	-4.05
8373.00	87.540	149.440	6048.63	2235.97	-1219.60	2199.37	1766802.46	14604239.25	40°12'43.044"N	80°32'50.288"W	2514.89	119.009	3.33	-2.88	-1.68
8465.00	86.980	149.480	6053.03	2327.72	-1298.75	2246.07	1766849.14	14604160.14	40°12'42.260"N	80°32'49.692"W	2594.53	120.038	0.61	-0.61	0.04
8558.00	86.860	149.390	6058.03	2420.44	-1378.71	2293.29	1766896.34	14604080.21	40°12'41.467"N	80°32'49.088"W	2675.82	121.014	0.16	-0.13	-0.10
8651.00	86.740	151.920	6063.22	2513.01	-1459.64	2338.79	1766941.83	14603999.30	40°12'40.665"N	80°32'48.507"W	2756.90	121.968	2.72	-0.13	2.72
8743.00	88.710	155.460	6066.87	2604.15	-1542.03	2379.53	1766982.55	14603916.95	40°12'39.849"N	80°32'47.987"W	2835.49	122.945	4.40	2.14	3.85
8836.00	88.830	156.700	6068.87	2695.76	-1627.02	2417.23	1767020.23	14603831.99	40°12'39.007"N	80°32'47.507"W	2913.79	123.944	1.34	0.13	1.33
8929.00	88.890	157.070	6070.72	2787.14	-1712.54	2453.73	1767056.72	14603746.51	40°12'38.160"N	80°32'47.042"W	2992.25	124.912	0.40	0.06	0.40
9021.00	89.230	154.560	6072.23	2877.84	-1796.44	2491.41	1767094.39	14603662.63	40°12'37.329"N	80°32'46.562"W	3071.54	125.794	2.75	0.37	-2.73
9114.00	89.510	155.230	6073.25	2969.78	-1880.65	2530.87	1767133.83	14603578.45	40°12'36.495"N	80°32'46.059"W	3153.12	126.616	0.78	0.30	0.72
9207.00	88.800	159.350	6074.62	3061.03	-1966.42	2566.76	1767169.71	14603492.73	40°12'35.646"N	80°32'45.602"W	3233.43	127.456	4.49	-0.76	4.43
9299.00	88.770	160.090	6076.57	3150.48	-2052.69	2598.64	1767201.57	14603406.48	40°12'34.792"N	80°32'45.197"W	3311.57	128.306	0.80	-0.03	0.80
9392.00	88.920	156.490	6078.45	3241.40	-2139.06	2633.03	1767235.95	14603320.14	40°12'33.936"N	80°32'44.759"W	3392.41	129.090	3.87	0.16	-3.87
9484.00	88.980	158.630	6080.13	3331.59	-2224.08	2668.14	1767271.05	14603235.16	40°12'33.094"N	80°32'44.312"W	3473.54	129.814	2.33	0.07	2.33
9577.00	88.770	163.670	6081.96	3421.42	-2312.04	2698.17	1767301.07	14603147.23	40°12'32.224"N	80°32'43.931"W	3553.26	130.593	5.42	-0.23	5.42
9670.00	88.920	165.010	6083.84	3509.80	-2401.57	2723.27	1767326.16	14603057.74	40°12'31.338"N	80°32'43.614"W	3630.94	131.408	1.45	0.16	1.44
9762.00	90.000	163.030	6084.70	3597.40	-2490.01	2748.59	1767351.47	14602969.34	40°12'30.463"N	80°32'43.293"W	3708.76	132.174	2.45	1.17	-2.15
9855.00	90.310	158.900	6084.45	3687.33	-2577.90	2778.92	1767381.78	14602881.47	40°12'29.592"N	80°32'42.908"W	3790.51	132.851	4.45	0.33	-4.44
9948.00	89.350	156.490	6084.73	3778.48	-2663.94	2814.21	1767417.06	14602795.47	40°12'28.740"N	80°32'42.459"W	3875.09	133.429	2.79	-1.03	-2.59

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# Actual Wellpath Report

Worthley BRK 210H AWP Proj: 14884'MD  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 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]	
10040.00	89.290	154.720	6085.82	3869.24	-2747.71	2852.21	1767455.04	14602711.73	40°12'27.911"N	80°32'41.975"W	3960.43	133.931	1.92	-0.07	-1.92	
10133.00	89.170	153.750	6087.07	3961.33	-2831.46	2892.63	1767495.45	14602628.01	40°12'27.081"N	80°32'41.459"W	4047.77	134.388	1.05	-0.13	-1.04	
10226.00	89.290	162.040	6088.32	4052.33	-2917.54	2927.59	1767530.40	14602541.97	40°12'26.229"N	80°32'41.014"W	4133.14	134.901	8.91	0.13	8.91	
10318.00	89.350	166.890	6089.41	4139.69	-3006.15	2952.22	1767555.02	14602453.39	40°12'25.352"N	80°32'40.703"W	4213.38	135.519	5.27	0.07	5.27	
10411.00	89.200	164.970	6090.59	4227.24	-3096.35	2974.83	1767577.62	14602363.23	40°12'24.459"N	80°32'40.417"W	4293.83	136.147	2.07	-0.16	-2.06	
10504.00	89.720	154.280	6091.47	4317.58	-3183.40	3007.16	1767609.94	14602276.21	40°12'23.597"N	80°32'40.006"W	4379.16	136.631	11.51	0.56	-11.49	
10596.00	89.290	148.750	6092.27	4409.16	-3264.22	3051.02	1767653.78	14602195.42	40°12'22.797"N	80°32'39.446"W	4468.09	136.934	6.03	-0.47	-6.01	
10689.00	89.050	148.900	6093.61	4502.05	-3343.79	3099.15	1767701.90	14602115.89	40°12'22.008"N	80°32'38.831"W	4559.13	137.174	0.30	-0.26	0.16	
10782.00	88.950	150.740	6095.24	4594.85	-3424.16	3145.90	1767748.62	14602035.54	40°12'21.211"N	80°32'38.234"W	4649.90	137.425	1.98	-0.11	1.98	
10874.00	89.080	148.770	6096.82	4686.66	-3503.62	3192.23	1767794.93	14601956.11	40°12'20.424"N	80°32'37.642"W	4739.80	137.663	2.15	0.14	-2.14	
10967.00	88.980	149.050	6098.39	4779.55	-3583.25	3240.25	1767842.93	14601876.51	40°12'19.634"N	80°32'37.029"W	4831.04	137.878	0.32	-0.11	0.30	
11060.00	89.050	151.310	6099.99	4872.31	-3663.92	3286.48	1767889.15	14601795.87	40°12'18.835"N	80°32'36.438"W	4921.92	138.108	2.43	0.08	2.43	
11153.00	88.920	153.630	6101.64	4964.74	-3746.37	3329.46	1767932.11	14601713.45	40°12'18.018"N	80°32'35.890"W	5012.05	138.372	2.50	-0.14	2.49	
11245.00	88.580	152.800	6103.65	5056.04	-3828.48	3370.91	1767973.54	14601631.37	40°12'17.204"N	80°32'35.361"W	5101.01	138.637	0.97	-0.37	-0.90	
11338.00	88.770	154.970	6105.80	5148.19	-3911.96	3411.83	1768014.45	14601547.93	40°12'16.377"N	80°32'34.839"W	5190.76	138.907	2.34	0.20	2.33	
11431.00	88.950	157.210	6107.65	5239.80	-3996.96	3449.51	1768052.12	14601462.96	40°12'15.536"N	80°32'34.359"W	5279.66	139.205	2.42	0.19	2.41	
11524.00	88.950	158.710	6109.35	5330.84	-4083.14	3484.40	1768087.00	14601376.81	40°12'14.682"N	80°32'33.915"W	5367.79	139.524	1.61	0.00	1.61	
11617.00	88.770	160.100	6111.20	5421.38	-4170.18	3517.11	1768119.69	14601289.81	40°12'13.820"N	80°32'33.499"W	5455.32	139.856	1.51	-0.19	1.49	
11709.00	88.620	161.040	6113.30	5510.50	-4256.92	3547.71	1768150.28	14601203.10	40°12'12.962"N	80°32'33.111"W	5541.44	140.192	1.03	-0.16	1.02	
11802.00	88.430	156.890	6115.69	5601.17	-4343.67	3581.07	1768183.63	14601116.38	40°12'12.103"N	80°32'32.687"W	5629.53	140.497	4.47	-0.20	-4.46	
11895.00	88.310	154.320	6118.34	5692.89	-4428.33	3619.46	1768222.00	14601031.76	40°12'11.264"N	80°32'32.197"W	5719.32	140.739	2.77	-0.13	-2.76	
11987.00	88.400	155.980	6120.98	5783.74	-4511.77	3658.11	1768260.63	14600948.35	40°12'10.438"N	80°32'31.705"W	5808.43	140.965	1.81	0.10	1.80	
12080.00	88.980	157.090	6123.11	5875.22	-4597.06	3695.13	1768297.64	14600863.09	40°12'09.593"N	80°32'31.233"W	5898.04	141.208	1.35	0.62	1.19	
12173.00	89.050	158.030	6124.70	5966.40	-4683.00	3730.62	1768333.12	14600777.18	40°12'08.742"N	80°32'30.782"W	5987.33	141.458	1.01	0.08	1.01	
12266.00	88.920	157.080	6126.35	6057.58	-4768.94	3766.12	1768368.61	14600691.28	40°12'07.891"N	80°32'30.330"W	6076.72	141.701	1.03	-0.14	-1.02	
12359.00	89.140	159.560	6127.93	6148.50	-4855.35	3800.47	1768402.94	14600604.91	40°12'07.035"N	80°32'29.893"W	6165.87	141.948	2.68	0.24	2.67	
12452.00	89.140	165.200	6129.32	6237.79	-4943.94	3828.61	1768431.07	14600516.35	40°12'06.158"N	80°32'29.536"W	6253.06	142.246	6.06	0.00	6.06	
12544.00	89.290	168.560	6130.58	6323.87	-5033.51	3849.49	1768451.94	14600426.81	40°12'05.272"N	80°32'29.273"W	6336.78	142.592	3.66	0.16	3.65	
12637.00	89.260	163.630	6131.76	6411.32	-5123.75	3871.83	1768474.27	14600336.60	40°12'04.379"N	80°32'28.991"W	6422.14	142.923	5.30	-0.03	-5.30	
12729.00	89.110	154.800	6133.07	6500.87	-5209.67	3904.44	1768506.87	14600250.72	40°12'03.528"N	80°32'28.577"W	6510.40	143.150	9.60	-0.16	-9.60	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

WELLPATH DATA (174 stations)															
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12822.00	89.260	154.660	6134.40	6592.85	-5293.76	3944.14	1768546.55	14600166.66	40°12'02.695"N	80°32'28.071"W	6601.53	143.312	0.22	0.16	-0.15
12915.00	89.110	150.290	6135.72	6685.27	-5376.21	3987.10	1768589.50	14600084.24	40°12'01.879"N	80°32'27.523"W	6693.32	143.439	4.70	-0.16	-4.70
13007.00	89.050	151.800	6137.20	6776.93	-5456.70	4031.63	1768634.02	14600003.79	40°12'01.081"N	80°32'26.954"W	6784.51	143.541	1.64	-0.07	1.64
13100.00	89.200	152.720	6138.62	6869.41	-5539.00	4074.91	1768677.28	14599921.52	40°12'00.265"N	80°32'26.402"W	6876.44	143.659	1.00	0.16	0.99
13193.00	89.110	155.380	6139.99	6961.53	-5622.60	4115.60	1768717.95	14599837.94	40°11'59.437"N	80°32'25.883"W	6967.92	143.797	2.86	-0.10	2.86
13286.00	89.050	156.060	6141.48	7053.25	-5707.37	4153.84	1768756.17	14599753.21	40°11'58.598"N	80°32'25.396"W	7058.92	143.953	0.73	-0.06	0.73
13379.00	89.050	155.170	6143.02	7145.00	-5792.06	4192.23	1768794.55	14599668.55	40°11'57.759"N	80°32'24.907"W	7150.01	144.103	0.96	0.00	-0.96
13471.00	88.980	156.790	6144.60	7235.66	-5876.08	4229.67	1768831.98	14599584.57	40°11'56.927"N	80°32'24.430"W	7240.05	144.253	1.76	-0.08	1.76
13564.00	89.080	156.380	6146.18	7327.14	-5961.41	4266.62	1768868.92	14599499.27	40°11'56.081"N	80°32'23.959"W	7330.92	144.408	0.45	0.11	-0.44
13657.00	89.170	153.120	6147.60	7419.09	-6045.50	4306.28	1768908.56	14599415.21	40°11'55.248"N	80°32'23.454"W	7422.41	144.537	3.51	0.10	-3.51
13750.00	89.140	152.800	6148.97	7511.44	-6128.32	4348.56	1768950.82	14599332.42	40°11'54.428"N	80°32'22.915"W	7514.41	144.641	0.35	-0.03	-0.34
13842.00	89.140	151.360	6150.35	7602.95	-6209.60	4391.63	1768993.87	14599251.17	40°11'53.622"N	80°32'22.365"W	7605.63	144.731	1.57	0.00	-1.57
13935.00	89.080	152.980	6151.80	7695.44	-6291.83	4435.04	1769037.27	14599168.97	40°11'52.808"N	80°32'21.811"W	7697.84	144.820	1.74	-0.06	1.74
14028.00	89.110	155.560	6153.27	7787.52	-6375.60	4475.41	1769077.62	14599085.24	40°11'51.978"N	80°32'21.296"W	7789.57	144.933	2.77	0.03	2.77
14121.00	89.080	163.450	6154.74	7877.96	-6462.63	4507.94	1769110.14	14598998.24	40°11'51.116"N	80°32'20.883"W	7879.54	145.103	8.48	-0.03	8.48
14214.00	89.170	163.690	6156.16	7966.73	-6551.82	4534.24	1769136.43	14598909.08	40°11'50.233"N	80°32'20.550"W	7967.79	145.315	0.28	0.10	0.26
14306.00	89.170	159.480	6157.49	8055.42	-6639.08	4563.29	1769165.47	14598821.86	40°11'49.370"N	80°32'20.182"W	8056.12	145.498	4.58	0.00	-4.58
14399.00	89.080	153.530	6158.91	8146.89	-6724.32	4600.35	1769202.51	14598736.65	40°11'48.525"N	80°32'19.710"W	8147.37	145.623	6.40	-0.10	-6.40
14492.00	89.140	149.590	6160.36	8239.46	-6806.07	4644.62	1769246.77	14598654.93	40°11'47.715"N	80°32'19.145"W	8239.85	145.689	4.24	0.06	-4.24
14585.00	89.420	152.080	6161.53	8332.14	-6887.27	4689.94	1769292.07	14598573.76	40°11'46.911"N	80°32'18.566"W	8332.47	145.747	2.69	0.30	2.68
14677.00	89.570	149.350	6162.34	8423.85	-6967.50	4734.93	1769337.05	14598493.56	40°11'46.115"N	80°32'17.992"W	8424.11	145.801	2.97	0.16	-2.97
14770.00	89.350	150.780	6163.21	8516.64	-7048.09	4781.34	1769383.43	14598413.01	40°11'45.317"N	80°32'17.399"W	8516.85	145.848	1.56	-0.24	1.54
14859.00	89.420	154.250	6164.17	8605.09	-7127.03	4822.40	1769424.48	14598334.10	40°11'44.534"N	80°32'16.875"W	8605.24	145.916	3.90	0.08	3.90
14884.00	89.420	154.250	6164.42	8629.85	-7149.54	4833.27	1769435.34	14598311.59	40°11'44.311"N	80°32'16.737"W	8629.97	145.940	0.00	0.00	0.00

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### REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

### HOLE & CASING SECTIONS - Ref Wellbore: Worthley BRK 210H AWB Ref Wellpath: Worthley BRK 210H AWP Proj: 14884'MD

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 Casing Surface	26.00	380.00	354.00	26.00	379.95	0.00	0.00	3.02	4.42
17.5in Open Hole	380.00	600.00	220.00	379.95	599.91	3.02	4.42	5.68	7.83
13.375in Casing Intermediate	26.00	600.00	574.00	26.00	599.91	0.00	0.00	5.68	7.83
12.25in Open Hole	600.00	1739.00	1139.00	599.91	1718.04	5.68	7.83	90.28	190.95
9.625in Casing Intermediate	26.00	1739.00	1713.00	26.00	1718.04	0.00	0.00	90.28	190.95
8.75in Open Hole	1739.00	6245.00	4506.00	1718.04	5902.14	90.28	190.95	669.89	1308.94
8.5in Open Hole	6245.00	14884.00	8639.00	5902.14	6164.42	669.89	1308.94	-7149.54	4833.27

### TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Worthley BRK 210H LP Rev-4	6046.13	310.44	1528.13	1766131.48	14605768.71	40°12'58.198"N	80°32'58.840"W	point
Worthley BRK 210H BHL Rev-3	6146.00	-7180.70	4798.76	1769400.85	14598280.45	40°11'44.005"N	80°32'17.183"W	point

### WELLPATH COMPOSITION - Ref Wellbore: Worthley BRK 210H AWB Ref Wellpath: Worthley BRK 210H AWP Proj: 14884'MD

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	6172.00	OWSG MWD rev2 - Standard	01 Premier Directional Drilling <8-3/4">(161'-6172')	Worthley BRK 210H AWB
6172.00	14859.00	BHI AutoTrak Curve (Short)	02 BH AT Curve <8-1/2">(6172')(6239'-14859')	Worthley BRK 210H AWB
14859.00	14884.00	Blind Drilling (std)	Projection to bit	Worthley BRK 210H AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210H
Area	Brooke County, WV	Well	Worthley BRK 210H
Field	Brooke	Wellbore	Worthley BRK 210H AWB
Facility	Worthley BRK Pad		

COMMENTS
<p><b>Wellpath general comments</b>                      API: 47-009-00227-0000                      BH Job #: 9226034                      Rig: SDC 41                      Duration: 06/30/2018 - 07/03/2018</p>

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