

SOUTHWESTERN ENERGY

Location: Brooke County, WV
 Slot: Slot 5H
 Well: Samuel Jones BRK 5H
 Facility: Samuel Jones BRK Pad Wellbore: Samuel Jones BRK 5H PWB

Plot reference wellpath is Samuel Jones BRK 5H PWP Rev-C.d Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 42 (KB)
North Reference: Grid north
Measured depths are referenced to SDC 42 (KB)
Scale: True distance
SDC 42 (KB) to Mean Sea Level: 1230 feet
Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot 5H): -1204 feet
Created by: atenjen on 2019-07-09
Coordinates are in feet referenced to Slot
Database: WA_MPL_EASTERNUS_Defn

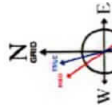
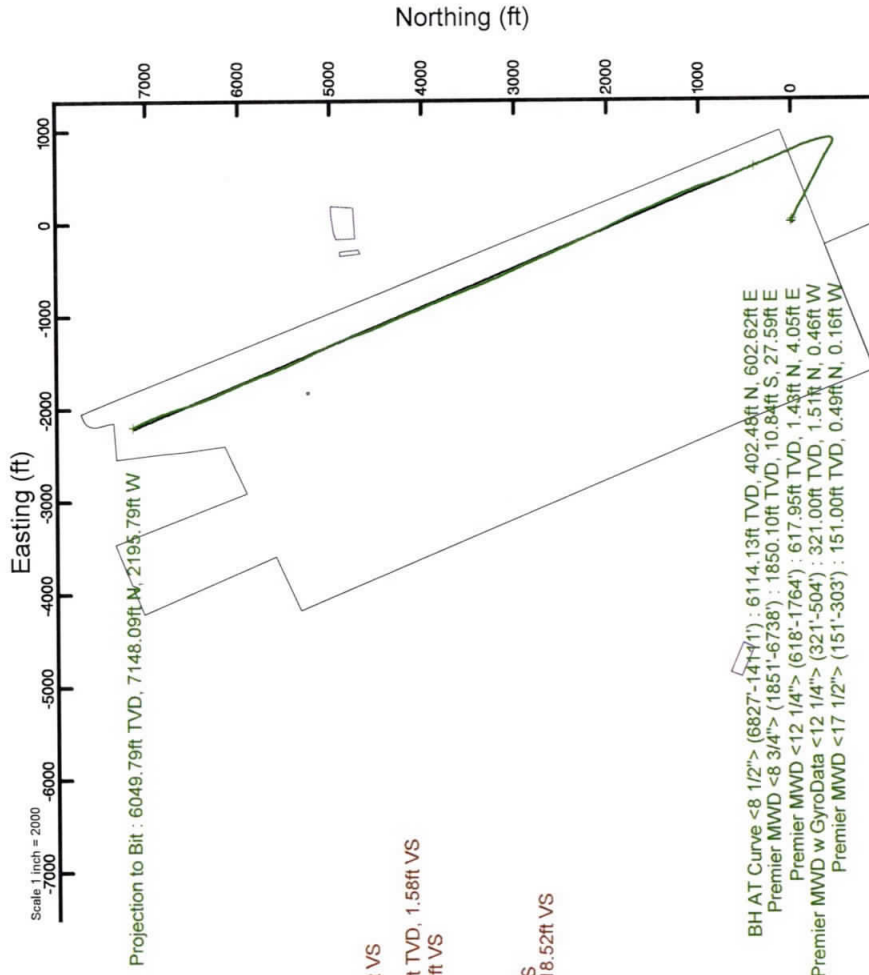


Location Information

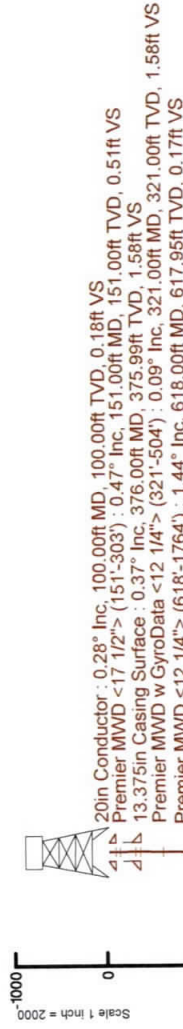
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Samuel Jones BRK Pad	1762985.776	14596395.998	40°11'25.698"N	80°33'40.002"W
Slot	Local E (ft)	Grid North (US ft)	Latitude	Longitude
Slot 5H	22.05	1762999.538	40°11'25.915"N	80°33'39.823"W
Slot 5H	13.77	1762999.538	40°11'25.915"N	80°33'39.823"W
SDC 42 (KB) to Ground level (At Slot: Slot 5H)				26ft
Mean Sea Level to Ground level (At Slot: Slot 5H)				-1204ft
SDC 42 (KB) to Mean Sea Level				1230ft

Comments

API 47-006-00263-0000
 BH Job #: 109901003
 Rig: SDC 42
 Duration: 07/03/2019 - 07/05/2019



User specified Dip: 67.50° Field: 52552 nT
 Magnetic North is 8.33 degrees West of True North (at 04/Jul/2019)
 Grid North is 0.28 degrees East of True North (at 04/Jul/2019)
 To convert from Grid North to True North, add 0.28 degrees
 To correct azimuth from Magnetic to Grid subtract 8.61 degrees



9.625in Casing Intermediate : 0.79° Inc, 1817.00ft MD, 1816.11ft TVD, -18.52ft VS
 Premier MWD <8 3/4"> (1851-6738) : 0.81° Inc, 1851.00ft MD, 1850.10ft TVD, -18.52ft VS



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Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'

Page 1 of 9

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones 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	0.999617	Report Generated	7/9/2019 at 3:08:38 PM
Convergence at slot	0.28° East	Database/Source file	WA_MPL_EASTERNUUS_Defn/Samuel_Jones_BRK_5H_AWP_Proj_14136_.xml

	Local coordinates			Grid coordinates			Geographic coordinates	
	North[ft]	East[ft]	Northing[US ft]	Easting[US ft]	Latitude	Longitude		
Slot Location	22.05	13.77	14596418.04	1762999.54	40°11'25.915"N	80°33'39.823"W		
Facility Reference Pt			14596396.00	1762985.78	40°11'25.698"N	80°33'40.002"W		
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W		

WELLPATH DATUM	
Calculation method	SDC 42 (KB) to Facility Vertical Datum
Horizontal Reference Pt	SDC 42 (KB) to Mean Sea Level
Vertical Reference Pt	SDC 42 (KB) to Ground Level at Slot (Slot 5H)
MD Reference Pt	Section Origin
Field Vertical Reference	Section Azimuth
	1230.00ft
	1230.00ft
	26.00ft
	N 0.00, E 0.00 ft
	342.79°

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Page 2 of 9



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Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

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

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
0.00†	0.000	342.020	0.00	0.00	0.00	0.00	1762999.54	14596418.04	40°11'25.915"N	80°33'39.823"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	342.020	26.00	0.00	0.00	0.00	1762999.54	14596418.04	40°11'25.915"N	80°33'39.823"W	0.00	0.000	0.00	0.00	0.00
151.00	0.470	342.020	151.00	0.51	0.49	-0.16	1762999.38	14596418.52	40°11'25.920"N	80°33'39.825"W	0.51	342.020	0.38	0.38	-14.38
212.00	0.420	340.160	212.00	0.99	0.94	-0.31	1762999.23	14596418.97	40°11'25.924"N	80°33'39.827"W	0.99	341.598	0.09	-0.08	-3.05
303.00	0.260	351.260	303.00	1.52	1.45	-0.46	1762999.08	14596419.49	40°11'25.930"N	80°33'39.829"W	1.52	342.587	0.19	-0.18	12.20
321.00	0.090	18.560	321.00	1.58	1.51	-0.46	1762999.08	14596419.54	40°11'25.930"N	80°33'39.829"W	1.58	343.113	1.03	-0.94	151.67
412.00	0.590	88.850	411.99	1.50	1.58	0.03	1762999.57	14596419.62	40°11'25.931"N	80°33'39.823"W	1.59	1.212	0.62	0.55	77.24
504.00	1.180	94.950	503.98	1.02	1.51	1.45	1763000.99	14596419.55	40°11'25.930"N	80°33'39.804"W	2.10	43.810	0.65	0.64	6.63
618.00	1.440	89.090	617.95	0.17	1.43	4.05	1763003.59	14596419.47	40°11'25.929"N	80°33'39.771"W	4.30	70.515	0.26	0.23	-5.14
713.00	1.770	90.440	712.91	-0.61	1.44	6.71	1763006.25	14596419.48	40°11'25.929"N	80°33'39.737"W	6.87	77.880	0.35	0.35	1.42
808.00	2.610	93.340	807.84	-1.81	1.30	10.34	1763009.87	14596419.34	40°11'25.928"N	80°33'39.690"W	10.42	82.810	0.89	0.88	3.05
903.00	3.310	102.580	902.72	-3.94	0.58	15.18	1763014.71	14596418.62	40°11'25.920"N	80°33'39.628"W	15.19	87.808	0.89	0.74	9.73
999.00	4.020	102.050	998.52	-6.96	-0.73	21.17	1763020.70	14596417.31	40°11'25.907"N	80°33'39.550"W	21.18	91.962	0.74	0.74	-0.55
1094.00	3.320	108.450	1093.33	-10.19	-2.29	27.04	1763026.57	14596415.75	40°11'25.891"N	80°33'39.475"W	27.13	94.843	0.85	-0.74	6.74
1190.00	2.370	126.040	1189.21	-13.40	-4.34	31.28	1763030.81	14596413.70	40°11'25.871"N	80°33'39.420"W	31.58	97.897	1.33	-0.99	18.32
1286.00	1.180	157.860	1285.16	-15.97	-6.42	33.26	1763032.78	14596411.62	40°11'25.850"N	80°33'39.395"W	33.87	100.930	1.56	-1.24	33.15
1381.00	0.560	203.330	1380.15	-17.30	-7.75	33.44	1763032.97	14596410.29	40°11'25.837"N	80°33'39.393"W	34.33	103.055	0.93	-0.65	47.86
1477.00	0.650	251.180	1476.15	-17.67	-8.36	32.74	1763032.27	14596409.68	40°11'25.831"N	80°33'39.402"W	33.79	104.325	0.52	0.09	49.84
1572.00	0.770	239.860	1571.14	-17.83	-8.86	31.68	1763031.20	14596409.19	40°11'25.826"N	80°33'39.416"W	32.89	105.617	0.19	0.13	-11.92
1668.00	1.220	245.000	1667.13	-18.11	-9.61	30.20	1763029.72	14596408.43	40°11'25.819"N	80°33'39.435"W	31.69	107.656	0.48	0.47	5.35
1764.00	0.790	238.710	1763.11	-18.41	-10.39	28.70	1763028.23	14596407.65	40°11'25.811"N	80°33'39.454"W	30.52	109.894	0.46	-0.45	-6.55
1851.00	0.810	256.640	1850.10	-18.52	-10.84	27.59	1763027.12	14596407.20	40°11'25.807"N	80°33'39.468"W	29.65	111.449	0.29	0.02	20.61
1942.00	0.730	262.740	1941.09	-18.38	-11.06	26.39	1763025.92	14596406.98	40°11'25.805"N	80°33'39.484"W	28.62	112.741	0.13	-0.09	6.70
2037.00	0.700	272.660	2036.09	-18.07	-11.11	25.21	1763024.74	14596406.93	40°11'25.804"N	80°33'39.499"W	27.55	113.785	0.13	-0.03	10.44
2133.00	1.950	130.570	2132.07	-19.26	-12.15	25.87	1763025.39	14596405.89	40°11'25.794"N	80°33'39.491"W	28.58	115.155	2.64	1.30	-148.01
2230.00	4.280	125.450	2228.92	-23.53	-15.32	30.07	1763029.60	14596402.72	40°11'25.762"N	80°33'39.437"W	33.75	116.999	2.42	2.40	-5.28
2326.00	6.040	120.400	2324.53	-30.11	-19.95	37.34	1763036.87	14596398.09	40°11'25.716"N	80°33'39.343"W	42.34	118.117	1.89	1.83	-5.26
2423.00	6.080	116.990	2420.99	-37.46	-24.87	46.32	1763045.84	14596393.18	40°11'25.667"N	80°33'39.228"W	52.58	118.228	0.37	0.04	-3.52
2518.00	7.670	115.990	2515.30	-45.31	-29.93	56.51	1763056.02	14596388.12	40°11'25.617"N	80°33'39.097"W	63.94	117.909	1.68	1.67	-1.05
2614.00	9.660	112.250	2610.20	-54.81	-35.79	69.72	1763069.23	14596382.26	40°11'25.558"N	80°33'38.927"W	78.37	117.171	2.15	2.07	-3.90

Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'

Page 3 of 9



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Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
2709.00	11.980	113.140	2703.51	-66.26	-42.68	86.17	1763085.67	14596375.37	40°11'25.489"N	80°33'38.716"W	96.16	116.351	2.45	2.44	0.94
2805.00	13.690	117.150	2797.11	-80.66	-51.78	105.44	1763104.94	14596366.28	40°11'25.398"N	80°33'38.468"W	117.47	116.156	2.01	1.78	4.18
2900.00	15.250	117.110	2889.09	-97.25	-62.61	126.56	1763126.05	14596355.46	40°11'25.290"N	80°33'38.196"W	141.20	116.319	1.64	1.64	-0.04
2996.00	17.360	118.500	2981.22	-116.32	-75.19	150.39	1763149.87	14596342.87	40°11'25.165"N	80°33'37.890"W	168.14	116.564	2.24	2.20	1.45
3092.00	19.350	119.470	3072.33	-138.15	-89.85	176.83	1763176.30	14596328.22	40°11'25.019"N	80°33'37.550"W	198.35	116.937	2.10	2.07	1.01
3188.00	21.120	120.180	3162.41	-162.45	-106.37	205.63	1763205.09	14596311.70	40°11'24.854"N	80°33'37.180"W	231.51	117.353	1.86	1.84	0.74
3284.00	20.490	117.500	3252.15	-187.00	-122.83	235.48	1763234.93	14596295.26	40°11'24.690"N	80°33'36.797"W	265.59	117.547	1.19	-0.66	-2.79
3379.00	20.690	120.070	3341.08	-211.03	-138.91	264.76	1763264.19	14596279.18	40°11'24.530"N	80°33'36.421"W	298.99	117.686	0.97	0.21	2.71
3475.00	19.500	115.890	3431.24	-234.44	-154.41	293.85	1763293.27	14596263.69	40°11'24.375"N	80°33'36.047"W	331.95	117.721	1.94	-1.24	-4.35
3572.00	20.070	117.900	3522.52	-257.29	-169.27	323.12	1763322.54	14596248.84	40°11'24.227"N	80°33'35.670"W	364.77	117.648	0.91	0.59	2.07
3668.00	19.520	117.370	3612.84	-280.22	-184.35	351.92	1763351.33	14596233.76	40°11'24.076"N	80°33'35.300"W	397.28	117.647	0.60	-0.57	-0.55
3764.00	19.780	117.680	3703.25	-302.94	-199.27	380.55	1763379.94	14596218.85	40°11'23.927"N	80°33'34.932"W	429.57	117.638	0.29	0.27	0.32
3861.00	19.730	119.680	3794.54	-326.48	-215.00	409.31	1763408.69	14596203.12	40°11'23.771"N	80°33'34.563"W	462.34	117.712	0.70	-0.05	2.06
3956.00	20.940	120.890	3883.62	-350.82	-231.66	437.81	1763437.18	14596186.47	40°11'23.605"N	80°33'34.197"W	495.32	117.884	1.35	1.27	1.27
4052.00	21.660	118.430	3973.07	-376.26	-248.90	468.12	1763467.47	14596169.24	40°11'23.433"N	80°33'33.807"W	530.17	118.000	1.20	0.75	-2.56
4148.00	21.530	116.280	4062.33	-401.05	-265.13	499.49	1763498.84	14596153.01	40°11'23.271"N	80°33'33.404"W	565.50	117.960	0.84	-0.14	-2.24
4244.00	21.260	117.900	4151.71	-425.50	-281.08	530.67	1763530.00	14596137.07	40°11'23.112"N	80°33'33.003"W	600.51	117.909	0.68	-0.28	1.69
4340.00	22.020	116.000	4240.95	-450.16	-297.11	562.23	1763561.55	14596121.04	40°11'22.952"N	80°33'32.598"W	635.90	117.854	1.08	0.79	-1.98
4435.00	21.100	118.040	4329.30	-474.49	-312.96	593.33	1763592.64	14596105.20	40°11'22.794"N	80°33'32.198"W	670.80	117.810	1.25	-0.97	2.15
4530.00	20.790	118.290	4418.02	-498.66	-328.98	623.26	1763622.56	14596089.18	40°11'22.634"N	80°33'31.813"W	704.76	117.827	0.34	-0.33	0.26
4627.00	20.300	117.250	4508.85	-522.73	-344.85	653.38	1763652.67	14596073.32	40°11'22.475"N	80°33'31.426"W	738.80	117.825	0.63	-0.51	-1.07
4722.00	19.400	117.260	4598.21	-545.32	-359.62	682.06	1763681.33	14596058.56	40°11'22.328"N	80°33'31.058"W	771.06	117.801	0.95	-0.95	0.01
4818.00	20.550	118.870	4688.43	-568.63	-375.06	710.99	1763710.25	14596043.12	40°11'22.174"N	80°33'30.686"W	803.85	117.812	1.33	1.20	1.68
4915.00	19.420	122.940	4779.60	-593.27	-392.05	739.43	1763738.69	14596026.14	40°11'22.005"N	80°33'30.320"W	836.94	117.933	1.85	-1.16	4.20
5011.00	21.110	123.290	4869.65	-618.87	-410.22	767.28	1763766.52	14596007.98	40°11'21.824"N	80°33'29.963"W	870.06	118.131	1.76	1.76	0.36
5107.00	19.850	120.580	4959.58	-644.28	-428.00	795.76	1763795.00	14595990.20	40°11'21.647"N	80°33'29.597"W	903.56	118.273	1.64	-1.31	-2.82
5204.00	18.360	118.400	5051.24	-667.40	-443.64	823.38	1763822.60	14595974.56	40°11'21.491"N	80°33'29.242"W	935.30	118.316	1.70	-1.54	-2.25
5300.00	16.240	110.990	5142.90	-686.51	-455.65	849.22	1763848.43	14595962.57	40°11'21.371"N	80°33'28.910"W	963.74	118.216	3.18	-2.21	-7.72
5396.00	12.770	81.380	5235.95	-696.41	-458.87	872.28	1763871.48	14595959.34	40°11'21.338"N	80°33'28.613"W	985.62	117.747	8.41	-3.61	-30.84
5492.00	12.160	37.500	5329.89	-692.15	-449.24	888.96	1763888.16	14595968.97	40°11'21.432"N	80°33'28.397"W	996.03	116.810	9.66	-0.64	-45.71



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Page 4 of 9



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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]
5587.00	13.620	7.100	5422.60	-676.15	-430.18	896.45	1763895.64	14595988.03	40°11'21.620"N	80°33'28.300"W	994.32	115.635	7.21	1.54	-32.00
5682.00	17.400	354.530	5514.15	-652.04	-404.92	896.47	1763895.67	14596013.27	40°11'21.870"N	80°33'28.298"W	983.68	114.308	5.30	3.98	-13.23
5777.00	22.190	351.190	5603.52	-620.36	-373.03	892.37	1763891.57	14596045.15	40°11'22.185"N	80°33'28.349"W	967.20	112.686	5.18	5.04	-3.52
5872.00	25.390	347.970	5690.44	-582.32	-335.38	885.38	1763884.57	14596082.79	40°11'22.558"N	80°33'28.436"W	946.77	110.746	3.63	3.37	-3.39
5969.00	33.710	345.100	5770.75	-534.63	-288.94	874.10	1763873.30	14596129.21	40°11'23.017"N	80°33'28.579"W	920.62	108.292	8.70	8.58	-2.96
6064.00	42.000	343.660	5849.69	-476.40	-232.82	858.35	1763857.56	14596185.26	40°11'23.572"N	80°33'28.778"W	889.38	105.179	8.78	8.73	-1.52
6160.00	48.010	340.910	5917.54	-408.56	-168.26	837.63	1763836.84	14596249.84	40°11'24.211"N	80°33'29.041"W	854.36	101.359	6.58	6.26	-2.86
6257.00	56.800	336.960	5976.68	-331.99	-96.69	809.89	1763809.12	14596321.38	40°11'24.920"N	80°33'29.394"W	815.64	96.808	9.62	9.06	-4.07
6353.00	61.310	337.060	6026.03	-250.10	-20.92	777.74	1763776.98	14596397.13	40°11'25.670"N	80°33'29.803"W	778.03	91.541	4.70	4.70	0.10
6450.00	67.530	336.670	6067.99	-163.12	59.50	743.38	1763742.63	14596477.51	40°11'26.467"N	80°33'30.241"W	745.76	85.424	6.42	6.41	-0.40
6546.00	75.860	336.860	6098.02	-72.56	143.17	707.46	1763706.72	14596561.16	40°11'27.295"N	80°33'30.698"W	721.80	78.559	8.68	8.68	0.20
6642.00	86.890	337.640	6112.39	21.77	230.57	670.82	1763670.10	14596648.52	40°11'28.161"N	80°33'31.165"W	709.34	71.031	11.52	11.49	0.81
6738.00	90.150	338.820	6114.87	117.42	319.68	635.23	1763634.53	14596737.60	40°11'29.043"N	80°33'31.618"W	711.14	63.286	3.61	3.40	1.23
6827.00	90.800	338.180	6114.13	206.17	402.48	602.62	1763601.92	14596820.37	40°11'29.863"N	80°33'32.033"W	724.67	56.261	1.02	0.73	-0.72
6921.00	90.520	337.210	6113.05	299.79	489.44	566.94	1763566.26	14596907.29	40°11'30.724"N	80°33'32.487"W	748.99	49.196	1.07	-0.30	-1.03
7016.00	90.650	336.880	6112.08	394.30	576.92	529.89	1763529.23	14596994.73	40°11'31.590"N	80°33'32.958"W	783.34	42.567	0.37	0.14	-0.35
7111.00	90.830	340.000	6110.85	489.01	665.25	494.99	1763494.34	14597083.03	40°11'32.465"N	80°33'33.403"W	829.20	36.652	3.29	0.19	3.28
7206.00	90.860	341.590	6109.45	583.94	754.95	463.74	1763463.10	14597172.70	40°11'33.353"N	80°33'33.799"W	886.01	31.561	1.67	0.03	1.67
7300.00	91.630	341.160	6107.41	677.89	844.01	433.73	1763433.10	14597261.72	40°11'34.234"N	80°33'34.180"W	948.93	27.198	0.94	0.82	-0.46
7395.00	91.720	341.980	6104.63	772.83	934.10	403.71	1763403.09	14597351.77	40°11'35.126"N	80°33'34.562"W	1017.60	23.374	0.87	0.09	0.86
7491.00	90.740	340.060	6102.57	868.75	1024.85	372.50	1763371.89	14597442.49	40°11'36.024"N	80°33'34.958"W	1090.45	19.974	2.25	-1.02	-2.00
7587.00	90.310	337.550	6101.69	964.51	1114.34	337.79	1763337.20	14597531.95	40°11'36.910"N	80°33'35.399"W	1164.42	16.864	2.65	-0.45	-2.61
7684.00	90.370	337.210	6101.12	1061.07	1203.88	300.48	1763299.91	14597621.46	40°11'37.797"N	80°33'35.874"W	1240.82	14.014	0.36	0.06	-0.35
7780.00	90.280	336.310	6100.57	1156.54	1292.09	262.61	1763262.04	14597709.63	40°11'38.671"N	80°33'36.357"W	1318.51	11.488	0.94	-0.09	-0.94
7877.00	90.090	336.310	6100.26	1252.92	1380.92	223.63	1763223.08	14597798.42	40°11'39.550"N	80°33'36.853"W	1398.91	9.199	0.20	-0.20	0.00
7973.00	90.710	336.060	6099.59	1348.28	1468.74	184.87	1763184.34	14597886.21	40°11'40.420"N	80°33'37.347"W	1480.33	7.174	0.70	0.65	-0.26
8069.00	89.940	337.320	6099.04	1443.73	1556.90	146.88	1763146.37	14597974.34	40°11'41.293"N	80°33'37.831"W	1563.81	5.390	1.54	-0.80	1.31
8165.00	90.220	337.800	6098.91	1539.33	1645.63	110.24	1763109.73	14598063.03	40°11'42.172"N	80°33'38.298"W	1649.32	3.832	0.58	0.29	0.50
8260.00	89.970	335.540	6098.75	1633.78	1732.86	72.62	1763072.13	14598150.23	40°11'43.036"N	80°33'38.777"W	1734.38	2.400	2.39	-0.26	-2.38
8357.00	89.940	333.880	6098.83	1729.82	1820.56	31.18	1763030.71	14598237.89	40°11'43.904"N	80°33'39.305"W	1820.82	0.981	1.71	-0.03	-1.71



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Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'

Page 5 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
8452.00	89.940	333.900	6098.93	1823.67	1905.86	-10.63	1762988.92	14598323.17	40°11'44.749"N	80°33'39.839"W	1905.89	359.681	0.02	0.00	0.02
8549.00	89.940	334.700	6099.03	1919.61	1993.27	-52.69	1762946.87	14598410.54	40°11'45.615"N	80°33'40.375"W	1993.96	358.486	0.82	0.00	0.82
8645.00	89.940	335.410	6099.13	2014.74	2080.31	-93.18	1762906.40	14598497.55	40°11'46.477"N	80°33'40.891"W	2082.40	357.435	0.74	0.00	0.74
8742.00	90.650	335.190	6098.63	2110.91	2168.43	-133.71	1762865.88	14598585.64	40°11'47.350"N	80°33'41.408"W	2172.55	356.471	0.77	0.73	-0.23
8837.00	90.620	335.220	6097.58	2205.07	2254.67	-173.55	1762826.06	14598671.84	40°11'48.204"N	80°33'41.916"W	2261.34	355.598	0.04	-0.03	0.03
8932.00	90.580	335.550	6096.58	2299.27	2341.03	-213.12	1762786.50	14598758.17	40°11'49.059"N	80°33'42.420"W	2350.71	354.798	0.35	-0.04	0.35
9028.00	90.680	336.340	6095.53	2394.58	2428.69	-252.24	1762747.39	14598845.79	40°11'49.928"N	80°33'42.919"W	2441.75	354.071	0.83	0.10	0.82
9124.00	90.550	336.190	6094.50	2489.95	2516.56	-290.88	1762708.77	14598933.63	40°11'50.798"N	80°33'43.411"W	2533.32	353.407	0.21	-0.14	-0.16
9220.00	90.620	336.270	6093.52	2585.32	2604.42	-329.57	1762670.09	14599021.45	40°11'51.668"N	80°33'43.904"W	2625.19	352.788	0.11	0.07	0.08
9315.00	90.770	336.230	6092.36	2679.70	2691.36	-367.83	1762631.85	14599108.37	40°11'52.529"N	80°33'44.392"W	2716.38	352.218	0.16	0.16	-0.04
9411.00	90.650	337.420	6091.17	2775.17	2779.61	-405.61	1762594.08	14599196.58	40°11'53.403"N	80°33'44.873"W	2809.05	351.698	1.25	-0.12	1.24
9506.00	90.550	336.260	6090.18	2869.65	2866.95	-442.97	1762556.74	14599283.88	40°11'54.268"N	80°33'45.349"W	2900.97	351.217	1.23	-0.11	-1.22
9602.00	90.280	335.210	6089.48	2964.92	2954.46	-482.42	1762517.30	14599371.36	40°11'55.134"N	80°33'45.852"W	2993.59	350.726	1.13	-0.28	-1.09
9699.00	90.370	335.070	6088.93	3061.05	3042.47	-523.20	1762476.54	14599459.34	40°11'56.006"N	80°33'46.372"W	3087.13	350.243	0.17	0.09	-0.14
9795.00	90.340	336.120	6088.34	3156.29	3129.89	-562.86	1762436.89	14599546.72	40°11'56.872"N	80°33'46.877"W	3180.10	349.805	1.09	-0.03	1.09
9891.00	90.370	336.780	6087.74	3251.70	3217.89	-601.22	1762398.55	14599634.69	40°11'57.743"N	80°33'47.366"W	3273.58	349.417	0.69	0.03	0.69
9987.00	90.400	337.370	6087.10	3347.22	3306.31	-638.61	1762361.17	14599723.07	40°11'58.619"N	80°33'47.842"W	3367.42	349.068	0.62	0.03	0.61
10083.00	90.370	339.040	6086.45	3442.91	3395.14	-674.25	1762325.54	14599812.17	40°11'59.501"N	80°33'48.296"W	3461.74	348.769	1.74	-0.03	1.74
10179.00	90.400	339.230	6085.81	3538.71	3485.14	-708.44	1762291.37	14599901.84	40°12'00.389"N	80°33'48.731"W	3556.42	348.510	0.20	0.03	0.20
10275.00	90.370	338.760	6085.16	3634.50	3574.76	-742.86	1762256.97	14599991.42	40°12'01.277"N	80°33'49.169"W	3651.13	348.261	0.49	-0.03	-0.49
10371.00	90.340	338.250	6084.57	3730.23	3664.08	-778.03	1762221.81	14600080.71	40°12'02.161"N	80°33'49.616"W	3745.78	348.012	0.53	-0.03	-0.53
10466.00	90.400	337.740	6083.96	3824.90	3752.16	-813.63	1762186.23	14600168.75	40°12'03.033"N	80°33'50.070"W	3839.36	347.765	0.54	0.06	-0.54
10562.00	90.400	338.100	6083.29	3920.55	3841.12	-849.71	1762150.15	14600257.68	40°12'03.914"N	80°33'50.529"W	3933.98	347.526	0.37	0.00	0.37
10659.00	90.370	337.050	6082.63	4017.14	3930.78	-886.71	1762113.17	14600347.30	40°12'04.802"N	80°33'51.000"W	4029.55	347.288	1.08	-0.03	-1.08
10755.00	90.340	337.300	6082.04	4112.68	4019.26	-923.95	1762075.94	14600435.75	40°12'05.678"N	80°33'51.474"W	4124.09	347.054	0.26	-0.03	0.26
10852.00	90.340	338.880	6081.46	4209.35	4109.25	-960.15	1762039.76	14600525.71	40°12'06.569"N	80°33'51.935"W	4219.93	346.849	1.63	0.00	1.63
10948.00	90.310	338.020	6080.92	4305.07	4198.54	-995.41	1762004.51	14600614.96	40°12'07.453"N	80°33'52.384"W	4314.92	346.662	0.90	-0.03	-0.90
11044.00	90.370	337.010	6080.35	4400.66	4287.24	-1032.12	1761967.82	14600702.62	40°12'08.331"N	80°33'52.852"W	4409.72	346.464	1.05	0.06	-1.05
11141.00	90.370	335.830	6079.72	4497.06	4376.13	-1070.92	1761929.03	14600792.49	40°12'09.212"N	80°33'53.346"W	4505.27	346.249	1.22	0.00	-1.22
11237.00	90.550	335.800	6078.95	4592.34	4463.70	-1110.25	1761889.72	14600880.02	40°12'10.079"N	80°33'53.847"W	4599.71	346.032	0.19	0.19	-0.03



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Environmental Protection

Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'

Page 6 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

WELLPATH DATA (151 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
11334.00	90.460	337.880	6078.10	4688.81	4552.88	-1148.40	1761851.58	1460099.16	40°12'10.962"N	80°33'54.333"W	4695.48	345.843	2.15	-0.09	2.14
11430.00	90.430	341.280	6077.35	4784.65	4642.83	-1181.88	1761818.11	14601059.08	40°12'11.853"N	80°33'54.759"W	4790.90	345.718	3.54	-0.03	3.54
11527.00	90.430	341.550	6076.62	4881.61	4734.77	-1212.80	1761787.21	14601150.98	40°12'12.763"N	80°33'55.152"W	4887.63	345.633	0.28	0.00	0.28
11623.00	90.400	340.080	6075.93	4977.55	4825.43	-1244.34	1761755.67	14601241.61	40°12'13.660"N	80°33'55.553"W	4983.29	345.540	1.53	-0.03	-1.53
11718.00	90.430	338.090	6075.24	5072.35	4914.17	-1278.26	1761721.77	14601330.31	40°12'14.538"N	80°33'55.984"W	5077.69	345.420	2.09	0.03	-2.09
11814.00	90.340	336.100	6074.59	5167.87	5002.59	-1315.62	1761684.43	14601418.70	40°12'15.414"N	80°33'56.460"W	5172.69	345.266	2.07	-0.09	-2.07
11911.00	90.430	334.410	6073.94	5264.02	5090.68	-1356.22	1761643.84	14601506.76	40°12'16.287"N	80°33'56.978"W	5268.24	345.082	1.74	0.09	-1.74
12007.00	90.340	334.200	6073.30	5358.97	5177.18	-1397.84	1761602.24	14601593.23	40°12'17.143"N	80°33'57.509"W	5362.57	344.890	0.24	-0.09	-0.22
12104.00	90.310	334.070	6072.75	5454.86	5264.47	-1440.15	1761559.94	14601680.48	40°12'18.008"N	80°33'58.049"W	5457.90	344.700	0.14	-0.03	-0.13
12200.00	90.310	334.930	6072.23	5549.86	5351.11	-1481.48	1761518.63	14601767.09	40°12'18.866"N	80°33'58.576"W	5552.40	344.525	0.90	0.00	0.90
12296.00	90.460	335.740	6071.58	5645.04	5438.35	-1521.54	1761478.58	14601854.29	40°12'19.730"N	80°33'59.087"W	5647.19	344.369	0.86	0.16	0.84
12392.00	90.370	337.850	6070.89	5740.51	5526.58	-1559.37	1761440.77	14601942.49	40°12'20.604"N	80°33'59.568"W	5742.36	344.243	2.20	-0.09	2.20
12488.00	91.020	339.320	6069.72	5836.24	5615.94	-1594.41	1761405.74	14602031.82	40°12'21.489"N	80°34'00.015"W	5837.89	344.150	1.67	0.68	1.53
12584.00	90.920	339.800	6068.10	5932.08	5705.88	-1627.93	1761372.23	14602121.72	40°12'22.379"N	80°34'00.441"W	5933.57	344.076	0.51	-0.10	0.50
12680.00	90.890	339.430	6066.58	6027.92	5795.86	-1661.37	1761338.81	14602211.66	40°12'23.270"N	80°34'00.866"W	6029.27	344.005	0.39	-0.03	-0.39
12776.00	90.920	338.100	6065.07	6123.66	5885.33	-1696.14	1761304.05	14602301.10	40°12'24.156"N	80°34'01.309"W	6124.86	343.923	1.39	0.03	-1.39
12871.00	90.860	335.620	6063.59	6218.14	5972.67	-1733.46	1761266.74	14602388.41	40°12'25.020"N	80°34'01.784"W	6219.13	343.816	2.61	-0.06	-2.61
12968.00	90.830	336.790	6062.16	6314.49	6061.41	-1772.59	1761227.63	14602477.11	40°12'25.899"N	80°34'02.283"W	6315.28	343.699	1.21	-0.03	1.21
13064.00	90.710	335.780	6060.87	6409.86	6149.29	-1811.20	1761189.04	14602564.96	40°12'26.770"N	80°34'02.775"W	6410.48	343.588	1.06	-0.13	-1.05
13159.00	90.860	335.960	6059.57	6504.16	6235.98	-1850.03	1761150.22	14602651.62	40°12'27.628"N	80°34'03.270"W	6504.62	343.476	0.25	0.16	0.19
13255.00	90.890	338.920	6058.10	6599.72	6324.62	-1886.85	1761113.41	14602740.22	40°12'28.506"N	80°34'03.739"W	6600.08	343.368	3.08	0.03	3.08
13352.00	90.580	340.610	6056.86	6696.57	6415.62	-1920.40	1761079.88	14602831.19	40°12'29.407"N	80°34'04.166"W	6696.87	343.336	1.77	-0.32	1.74
13447.00	90.460	342.080	6055.99	6791.53	6505.62	-1950.78	1761049.50	14602921.16	40°12'30.297"N	80°34'04.552"W	6791.81	343.308	1.55	-0.13	1.55
13543.00	90.680	343.560	6055.04	6887.53	6597.33	-1979.14	1761021.16	14603012.83	40°12'31.205"N	80°34'04.911"W	6887.80	343.301	1.56	0.23	1.54
13639.00	90.460	343.610	6054.08	6983.51	6689.42	-2006.27	1760994.04	14603104.88	40°12'32.116"N	80°34'05.255"W	6983.79	343.305	0.24	-0.23	0.05
13736.00	90.520	339.680	6053.25	7080.47	6781.46	-2036.80	1760963.52	14603196.89	40°12'33.027"N	80°34'05.643"W	7080.73	343.282	4.05	0.06	-4.05
13832.00	90.490	338.560	6052.41	7176.27	6871.15	-2071.02	1760929.32	14603286.54	40°12'33.915"N	80°34'06.079"W	7176.48	343.227	1.17	-0.03	-1.17
13928.00	90.460	338.130	6051.61	7271.98	6960.37	-2106.44	1760893.91	14603375.73	40°12'34.799"N	80°34'06.529"W	7272.13	343.162	0.45	-0.03	-0.45
14024.00	90.490	334.240	6050.82	7367.32	7048.18	-2145.20	1760855.17	14603463.50	40°12'35.668"N	80°34'07.024"W	7367.41	343.072	4.05	0.03	-4.05
14111.00	90.550	332.450	6050.03	7453.13	7125.92	-2184.22	1760816.15	14603551.22	40°12'36.438"N	80°34'07.522"W	7453.16	342.959	2.06	0.07	-2.06

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Page 7 of 9



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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]
14136.00	90.550	332.450	6049.79	7477.72	7148.09	-2195.79	1760804.60	14603563.38	40°12'36.658"N	80°34'07.669"W	7477.74	342.924	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Samuel Jones BRK 5H AWB Ref Wellpath: Samuel Jones BRK 5H AWP Proj: 14136'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]
20in Conductor	26.00	100.00	74.00	26.00	100.00	0.00	0.17	0.00	0.00
17.5in Open Hole	100.00	376.00	276.00	100.00	375.99	0.17	1.57	-0.06	-0.27
13.375in Casing Surface	26.00	376.00	350.00	26.00	375.99	0.00	1.57	0.00	-0.27
12.25in Open Hole	376.00	1817.00	1441.00	375.99	1816.11	1.57	-10.70	-0.27	28.05
9.625in Casing Intermediate	26.00	1817.00	1791.00	26.00	1816.11	0.00	-10.70	0.00	28.05
8.75in Open Hole	1817.00	6798.00	4981.00	1816.11	6114.48	-10.70	375.55	28.05	613.34
8.5in Open Hole	6798.00	14136.00	7338.00	6114.48	6049.79	375.55	7148.09	613.34	-2195.79
5.5in Casing Production	26.00	14136.00	14110.00	26.00	6049.79	0.00	7148.09	0.00	-2195.79

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Samuel Jones BRK 5H BHL Rev-2	6041.57	7142.26	-2212.79	1760787.60	14603557.55	40°12'36.601"N	80°34'07.889"W	point
Samuel Jones BRK 5H LP Rev-3	6112.00	184.04	680.76	1763680.04	14596602.01	40°11'27.701"N	80°33'31.040"W	point

Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'

Page 8 of 9



**BAKER
HUGHES**
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

WELLPATH COMPOSITION - Ref Wellbore: Samuel Jones BRK 5H AWB Ref Wellpath: Samuel Jones BRK 5H AWP Proj: 14136'			
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment
26.00	303.00	OWSG MWD rev2 + HRGM	01_Premier MWD <17 1/2"> (151'-303')
303.00	504.00	Gyrodata standard - Drop gyro or Multi-shot	02_Premier MWD w GyroData <12 1/4"> (321'-504')
504.00	1764.00	OWSG MWD rev2 + HRGM	03_Premier MWD <12 1/4"> (618'-1764')
1764.00	6738.00	OWSG MWD rev2 + HRGM	04_Premier MWD <8 3/4"> (1851'-6738')
6738.00	14111.00	BHI AutoTrak Curve (Short)	05_BH AT Curve <8 1/2"> (6827'-14111')
14111.00	14136.00	Blind Drilling (std)	Projection to bit
			Wellbore



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Actual Wellpath Report

Samuel Jones BRK 5H AWP Proj: 14136'
Page 9 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Samuel Jones BRK 5H
Field	Brooke	Wellbore	Samuel Jones BRK 5H AWB
Facility	Samuel Jones BRK Pad		

COMMENTS

Wellpath general comments

API: 47-009-00263-0000

BH Job #: 109901003

Rig: SDC 42

Duration: 07/03/2019 - 07/05/2019