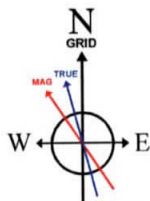
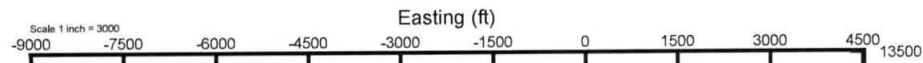


SWN PRODUCTION COMPANY, LLC

Location: Brooke County, WV Slot: Slot #405H
 Field: Brooke Well: State of WV DNR A BRK 405H
 Facility: State of WV DNR A BRK Pad Wellbore: State of WV DNR A BRK 405H PWB



User specified (HDGM) Dip: 67.47° Field: 52281 nT
 Magnetic North is 8.64 degrees West of True North (at 27/Sep/2020)
 Grid North is 0.30 degrees East of True North
 To correct azimuth from True to Grid subtract 0.30 degrees
 To correct azimuth from Magnetic to Grid subtract 8.94 degrees

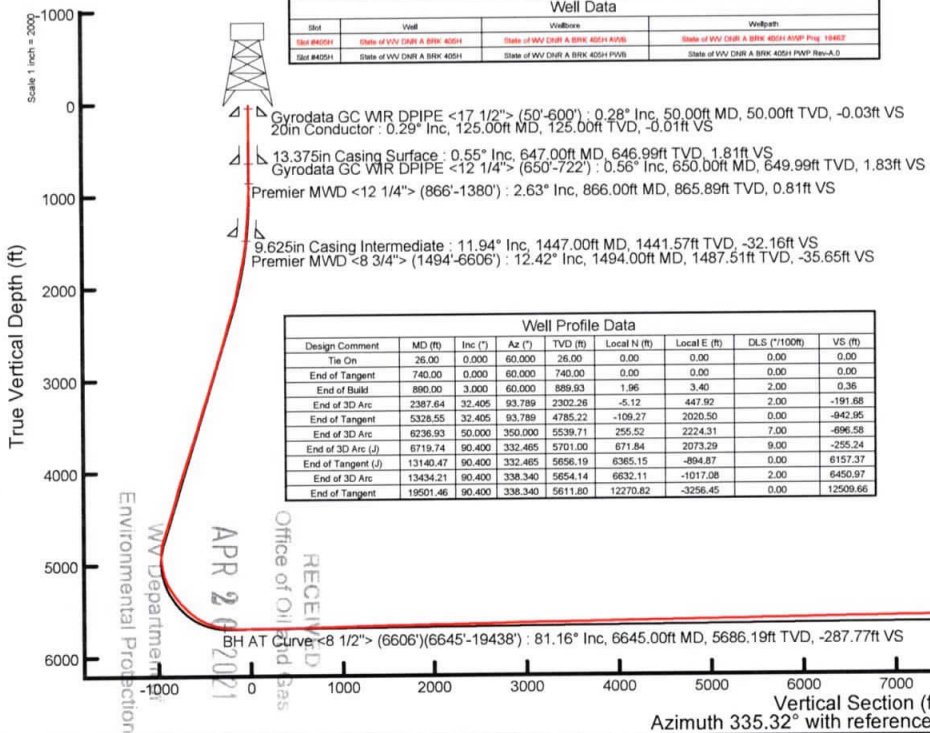


Projected MD at TD: 19463' : 5515.21ft TVD, 12271.72ft N, 3253.10ft E

Plot reference wellpath is State of WV DNR A BRK 405H PWB Rev-A.0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 40 (KB)	North Reference: Grid north
Reference wellpath measured depths are referenced to SDC 40 (KB)	Scale: True distance
SDC 40 (KB) to Mean Sea Level: 1163.9 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot #405H): -1139.9 feet	Depths are in feet
Other wellpath MDs are referenced to each path's default MD datum	Created by: Jdphipps on 2020-10-06 Database: WA_MPS_EASTERNUS, Dats

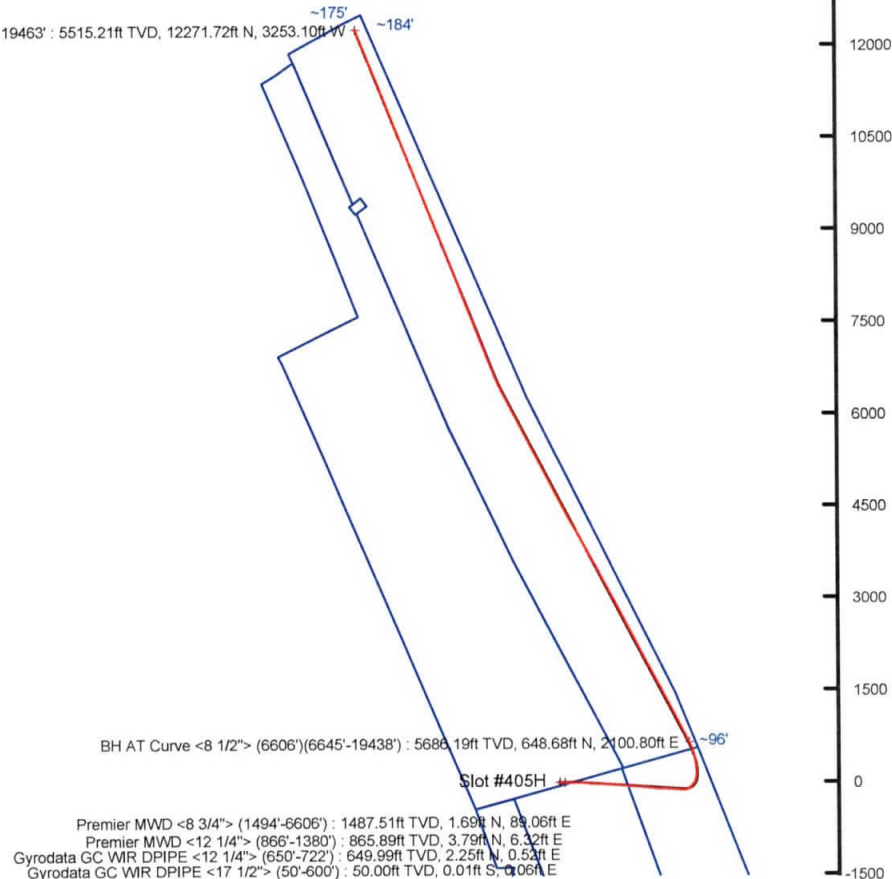
Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
State of WV DNR A BRK Pad	1769998.690	14644013.310	40°19'16.06807N	80°32'8.38527W	
Slot	Local N (ft)	Local E (ft)	Grid North (US ft)	Latitude	Longitude
Slot #405H	-0.33	6.14	1770004.830	40°19'16.06447N	80°32'6.30597W
SDC 40 (KB) to Ground level (At Slot #405H)	26ft				
Mean Sea Level to Ground level (At Slot #405H)	-1139.9ft				
SDC 40 (KB) to Mean Sea Level	1165.9ft				

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #405H	State of WV DNR A BRK 405H	State of WV DNR A BRK 405H PWB	State of WV DNR A BRK 405H PWB Rev-A.0
Slot #405H	State of WV DNR A BRK 405H	State of WV DNR A BRK 405H PWB	State of WV DNR A BRK 405H PWB Rev-A.0



Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VDLS (°/100ft)	VS (ft)
Tie On	26.00	0.000	60.000	26.00	0.00	0.00	0.00	0.00
End of Tangent	740.00	0.000	60.000	740.00	0.00	0.00	0.00	0.00
End of Build	890.00	3.000	60.000	899.93	1.96	3.40	2.00	0.36
End of 3D Arc	2387.64	32.405	93.789	2302.26	-5.12	-447.92	2.00	-191.68
End of Tangent	5328.55	32.405	93.789	4785.22	-109.27	2020.50	0.00	-942.95
End of 3D Arc	6236.93	50.000	350.000	5539.71	255.52	2224.31	7.00	-696.58
End of 3D Arc (J)	6719.74	90.400	332.465	5701.00	671.84	2073.29	9.00	-255.24
End of Tangent (J)	13140.47	90.400	332.465	6566.19	6385.15	-864.87	0.00	6157.37
End of 3D Arc	13434.21	90.400	338.340	5654.14	6632.11	-1017.08	2.00	6450.97
End of Tangent	19501.46	90.400	338.340	5611.80	12270.82	-3256.45	0.00	12509.66

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BH AT Curve <8 1/2"> (6606)(6645-19438) : 5686.19ft TVD, 648.68ft N, 2100.80ft E, -96°

Slot #405H

Premier MWD <8 3/4"> (1494-6606) : 1487.51ft TVD, 1.69ft N, 89.06ft E
 Premier MWD <12 1/4"> (866-1380) : 865.89ft TVD, 3.79ft N, 6.32ft E
 Gyrodatta GC WR DPIPE <12 1/4"> (650-722) : 649.99ft TVD, 2.25ft N, 0.53ft E
 Gyrodatta GC WR DPIPE <17 1/2"> (50-600) : 50.00ft TVD, 0.01ft S, 0.06ft E

API: 47-009-00300-0000
 BH Job #: 110580531
 Rig: SDC 40
 Duration: 10/3/20 - 10/6/20

BH AT Curve <8 1/2"> (6606)(6645-19438) : 81.16° Inc, 6645.00ft MD, 5686.19ft TVD, -287.77ft VS
 Projected MD at TD: 19463' : 90.46° Inc, 19463.00ft MD, 5515.21ft TVD, 12509.08ft VS



Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
Page 1 of 12



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Hilpthop
Scale	0.999619	Report Generated	06/Oct/2020 at 12:55
Convergence at slot	0.30° East	Database	WA_MPL_EASTERNUS_Defn

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-0.33	6.14	1770004.83	14644012.98	40°19'16.0644"N	80°32'6.3059"W
Facility Reference Pt			1769998.69	14644013.31	40°19'16.0680"N	80°32'6.3852"W
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.4780"W

WELLPATH DATUM			
Calculation method	Minimum curvature	SDC 40 (KB) to Facility Vertical Datum	1165.90ft
Horizontal Reference Pt	Slot	SDC 40 (KB) to Mean Sea Level	1165.90ft
Vertical Reference Pt	SDC 40 (KB)	SDC 40 (KB) to Ground Level at Slot (Slot #405H)	26.00ft
MD Reference Pt	SDC 40 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	335.32°

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 Environmental Protection



Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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	100.580	0.00	0.00	0.00	0.00	1770004.83	14644012.98	40°19'16.0644"N	80°32'6.3059"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	100.580	26.00	0.00	0.00	0.00	1770004.83	14644012.98	40°19'16.0644"N	80°32'6.3059"W	0.00	0.000	0.00	0.00	0.00
50.00	0.280	100.580	50.00	-0.03	-0.01	0.06	1770004.89	14644012.97	40°19'16.0643"N	80°32'6.3052"W	0.06	100.580	1.17	1.17	0.00
100.00	0.370	48.310	100.00	-0.06	0.07	0.30	1770005.13	14644013.05	40°19'16.0651"N	80°32'6.3021"W	0.31	76.036	0.59	0.18	-104.54
150.00	0.220	27.680	150.00	0.05	0.27	0.46	1770005.29	14644013.25	40°19'16.0670"N	80°32'6.2999"W	0.53	60.094	0.36	-0.30	-41.26
200.00	0.150	75.420	200.00	0.10	0.37	0.57	1770005.40	14644013.35	40°19'16.0680"N	80°32'6.2985"W	0.68	57.213	0.33	-0.14	95.48
250.00	0.050	78.270	250.00	0.08	0.39	0.66	1770005.49	14644013.37	40°19'16.0682"N	80°32'6.2974"W	0.76	59.339	0.20	-0.20	5.70
300.00	0.160	12.270	300.00	0.13	0.46	0.69	1770005.52	14644013.44	40°19'16.0689"N	80°32'6.2970"W	0.83	56.305	0.29	0.22	-132.00
350.00	0.210	314.190	350.00	0.27	0.59	0.64	1770005.47	14644013.57	40°19'16.0702"N	80°32'6.2976"W	0.87	47.213	0.37	0.10	-116.16
400.00	0.130	338.030	400.00	0.41	0.71	0.55	1770005.38	14644013.69	40°19'16.0714"N	80°32'6.2987"W	0.90	37.983	0.21	-0.16	47.68
450.00	0.320	16.430	450.00	0.58	0.90	0.57	1770005.40	14644013.88	40°19'16.0732"N	80°32'6.2985"W	1.06	32.569	0.47	0.38	76.80
500.00	0.310	0.090	500.00	0.80	1.17	0.61	1770005.44	14644014.15	40°19'16.0759"N	80°32'6.2979"W	1.32	27.714	0.18	-0.02	-32.68
550.00	0.370	355.280	550.00	1.08	1.46	0.60	1770005.43	14644014.44	40°19'16.0788"N	80°32'6.2981"W	1.58	22.292	0.13	0.12	-9.62
600.00	0.450	350.480	599.99	1.42	1.82	0.55	1770005.38	14644014.80	40°19'16.0823"N	80°32'6.2987"W	1.90	16.950	0.17	0.16	-9.60
650.00	0.560	358.680	649.99	1.83	2.25	0.52	1770005.35	14644015.23	40°19'16.0867"N	80°32'6.2991"W	2.31	12.880	0.26	0.22	16.40
700.00	1.160	52.080	699.99	2.17	2.81	0.91	1770005.74	14644015.79	40°19'16.0921"N	80°32'6.2940"W	2.95	17.930	1.88	1.20	106.80
722.00	1.500	62.940	721.98	2.24	3.08	1.34	1770006.17	14644016.06	40°19'16.0948"N	80°32'6.2884"W	3.36	23.548	1.92	1.55	49.36
866.00	2.630	92.500	865.89	0.81	3.79	6.32	1770011.15	14644016.77	40°19'16.1015"N	80°32'6.2241"W	7.37	59.045	1.05	0.78	20.53
956.00	3.930	90.460	955.74	-1.45	3.68	11.47	1770016.29	14644016.65	40°19'16.1001"N	80°32'6.1576"W	12.04	72.226	1.45	1.44	-2.27
1047.00	5.160	97.080	1046.45	-4.93	3.15	18.65	1770023.47	14644016.13	40°19'16.0945"N	80°32'6.0650"W	18.91	80.422	1.47	1.35	7.27
1138.00	6.670	93.900	1136.97	-9.61	2.28	27.98	1770032.80	14644015.26	40°19'16.0855"N	80°32'5.9445"W	28.07	85.336	1.70	1.66	-3.49
1230.00	8.550	93.880	1228.15	-15.44	1.46	40.14	1770044.95	14644014.44	40°19'16.0767"N	80°32'5.7877"W	40.16	87.922	2.04	2.04	-0.02
1320.00	10.000	92.580	1316.97	-22.21	0.65	54.62	1770059.43	14644013.63	40°19'16.0680"N	80°32'5.6008"W	54.62	89.316	1.63	1.61	-1.44
1380.00	11.280	89.220	1375.94	-26.98	0.50	65.69	1770070.50	14644013.48	40°19'16.0659"N	80°32'5.4578"W	65.69	89.566	2.37	2.13	-5.60
1494.00	12.420	85.120	1487.51	-35.65	1.69	89.06	1770093.85	14644014.67	40°19'16.0765"N	80°32'5.1561"W	89.07	88.911	1.24	1.00	-3.60
1540.00	15.140	91.410	1532.19	-39.97	1.97	99.99	1770104.78	14644014.94	40°19'16.0786"N	80°32'5.0149"W	100.01	88.874	6.74	5.91	13.67
1630.00	19.570	93.270	1618.07	-52.21	0.82	126.80	1770131.59	14644013.80	40°19'16.0659"N	80°32'4.6688"W	126.81	89.631	4.96	4.92	2.07
1721.00	22.400	92.510	1703.02	-67.27	-0.81	159.35	1770164.12	14644012.17	40°19'16.0481"N	80°32'4.2488"W	159.35	90.292	3.12	3.11	-0.84
1812.00	24.160	90.640	1786.61	-83.16	-1.78	195.29	1770200.05	14644011.20	40°19'16.0367"N	80°32'3.7848"W	195.30	90.522	2.10	1.93	-2.05
1903.00	25.770	89.330	1869.11	-99.18	-1.76	233.70	1770238.44	14644011.22	40°19'16.0349"N	80°32'3.2890"W	233.71	90.431	1.87	1.77	-1.44

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 2021



Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]	
1994.00	26.220	89.480	1950.90	-115.45	-1.34	273.58	1770278.31	14644011.64	40°19'16.0369"N	80°32'2.7740"W	273.59	90.281	0.50	0.49	0.16	
2085.00	25.700	89.310	2032.72	-131.71	-0.92	313.41	1770318.12	14644012.06	40°19'16.0390"N	80°32'2.2598"W	313.42	90.169	0.58	-0.57	-0.19	
2178.00	26.630	93.380	2116.19	-149.71	-1.91	354.39	1770359.08	14644011.07	40°19'16.0271"N	80°32'1.7309"W	354.39	90.309	2.17	1.00	4.38	
2269.00	28.490	95.660	2196.87	-170.27	-5.25	396.35	1770401.03	14644007.73	40°19'15.9919"N	80°32'1.1894"W	396.38	90.759	2.35	2.04	2.51	
2361.00	30.440	97.210	2276.97	-193.67	-10.34	441.31	1770445.97	14644002.64	40°19'15.9393"N	80°32'0.6093"W	441.43	91.343	2.28	2.12	1.68	
2453.00	31.790	96.080	2355.73	-218.37	-15.83	488.53	1770493.17	14643997.15	40°19'15.8825"N	80°32'0.0000"W	488.79	91.856	1.60	1.47	-1.23	
2546.00	31.970	91.880	2434.71	-241.91	-19.24	537.50	1770542.13	14643993.75	40°19'15.8464"N	80°31'59.3680"W	537.85	92.050	2.39	0.19	-4.52	
2639.00	31.170	91.770	2513.95	-263.64	-20.79	586.17	1770590.77	14643992.20	40°19'15.8285"N	80°31'58.7398"W	586.54	92.031	0.86	-0.86	-0.12	
2732.00	31.810	92.360	2593.25	-285.51	-22.54	634.71	1770639.30	14643990.45	40°19'15.8087"N	80°31'58.1132"W	635.11	92.034	0.76	0.69	0.63	
2824.00	32.650	92.760	2671.07	-307.97	-24.73	683.73	1770688.30	14643988.25	40°19'15.7844"N	80°31'57.4806"W	684.18	92.072	0.94	0.91	0.43	
2916.00	33.240	94.030	2748.28	-331.52	-27.70	733.67	1770738.22	14643985.29	40°19'15.7525"N	80°31'56.8360"W	734.19	92.162	0.99	0.64	1.38	
3008.00	32.400	93.130	2825.59	-355.13	-30.82	783.44	1770787.97	14643982.17	40°19'15.7191"N	80°31'56.1938"W	784.04	92.253	1.06	-0.91	-0.98	
3101.00	32.440	93.970	2904.10	-378.71	-33.91	833.20	1770837.71	14643979.09	40°19'15.6860"N	80°31'55.5515"W	833.89	92.330	0.49	0.04	0.90	
3193.00	32.300	94.310	2981.80	-402.46	-37.46	882.33	1770886.82	14643975.53	40°19'15.6483"N	80°31'54.9175"W	883.12	92.431	0.25	-0.15	0.37	
3286.00	32.220	94.570	3060.45	-426.61	-41.31	931.82	1770936.29	14643971.69	40°19'15.6077"N	80°31'54.2789"W	932.73	92.538	0.17	-0.09	0.28	
3379.00	32.370	94.290	3139.06	-450.78	-45.14	981.36	1770985.81	14643967.85	40°19'15.5672"N	80°31'53.6396"W	982.39	92.634	0.23	0.16	-0.30	
3470.00	32.250	94.270	3215.97	-474.34	-48.77	1029.86	1771034.30	14643964.23	40°19'15.5288"N	80°31'53.0136"W	1031.01	92.711	0.13	-0.13	-0.02	
3562.00	32.590	95.080	3293.63	-498.52	-52.79	1079.02	1771083.43	14643960.21	40°19'15.4865"N	80°31'52.3793"W	1080.31	92.801	0.60	0.37	0.88	
3652.00	31.560	94.060	3369.89	-521.87	-56.61	1126.66	1771131.05	14643956.39	40°19'15.4463"N	80°31'51.7645"W	1128.08	92.876	1.29	-1.14	-1.13	
3743.00	31.510	94.070	3447.45	-544.76	-59.98	1174.13	1771178.51	14643953.02	40°19'15.4105"N	80°31'51.1519"W	1175.66	92.925	0.06	-0.05	0.01	
3834.00	31.770	94.990	3524.93	-568.06	-63.75	1221.72	1771226.08	14643949.25	40°19'15.3707"N	80°31'50.5378"W	1223.38	92.987	0.60	0.29	1.01	
3924.00	32.240	96.900	3601.25	-592.36	-68.70	1269.15	1771273.50	14643944.31	40°19'15.3194"N	80°31'49.9257"W	1271.01	93.098	1.24	0.52	2.12	
4015.00	32.360	95.080	3678.17	-617.16	-73.77	1317.51	1771321.84	14643939.24	40°19'15.2667"N	80°31'49.3018"W	1319.57	93.205	1.08	0.13	-2.00	
4106.00	32.520	94.770	3754.97	-641.27	-77.96	1366.14	1771370.45	14643935.05	40°19'15.2228"N	80°31'48.6742"W	1368.37	93.266	0.25	0.18	-0.34	
4196.00	32.610	96.050	3830.82	-665.56	-82.53	1414.37	1771418.66	14643930.48	40°19'15.1751"N	80°31'48.0519"W	1416.77	93.339	0.77	0.10	1.42	
4287.00	32.580	96.180	3907.49	-690.66	-87.75	1463.11	1771467.38	14643925.26	40°19'15.1209"N	80°31'47.4230"W	1465.74	93.432	0.08	-0.03	0.14	
4377.00	32.450	95.520	3983.38	-715.23	-92.68	1511.23	1771515.49	14643920.33	40°19'15.0697"N	80°31'46.8021"W	1514.07	93.510	0.42	-0.14	-0.73	
4468.00	32.890	95.770	4059.99	-740.03	-97.52	1560.12	1771564.35	14643915.50	40°19'15.0194"N	80°31'46.1713"W	1563.16	93.577	0.51	0.48	0.27	
4559.00	33.400	93.360	4136.18	-764.33	-101.47	1609.71	1771613.92	14643911.55	40°19'14.9777"N	80°31'45.5314"W	1612.90	93.607	1.55	0.56	-2.65	
4649.00	32.360	90.680	4211.77	-786.29	-103.21	1658.52	1771662.72	14643909.81	40°19'14.9580"N	80°31'44.9013"W	1661.73	93.561	1.99	-1.16	-2.98	

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Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]
4740.00	31.320	90.320	4289.07	-806.72	-103.63	1706.53	1771710.70	14643909.39	40°19'14.9513"N	80°31'44.2816"W	1709.67	93.475	1.16	-1.14	-0.40
4832.00	32.220	92.380	4367.29	-827.99	-104.78	1754.95	1771759.10	14643908.24	40°19'14.9374"N	80°31'43.6565"W	1758.07	93.417	1.53	0.98	2.24
4922.00	33.190	94.560	4443.02	-850.93	-107.73	1803.48	1771807.62	14643905.29	40°19'14.9056"N	80°31'43.0302"W	1806.69	93.419	1.70	1.08	2.42
5013.00	33.280	94.350	4519.14	-875.22	-111.61	1853.20	1771857.32	14643901.42	40°19'14.8647"N	80°31'42.3885"W	1856.56	93.446	0.16	0.10	-0.23
5104.00	32.190	94.840	4595.69	-899.28	-115.55	1902.25	1771906.35	14643897.48	40°19'14.8232"N	80°31'41.7556"W	1905.76	93.476	1.23	-1.20	0.54
5195.00	32.280	95.730	4672.66	-923.52	-120.02	1950.58	1771954.67	14643893.01	40°19'14.7765"N	80°31'41.1319"W	1954.27	93.521	0.53	0.10	0.98
5287.00	32.210	93.350	4750.47	-947.48	-123.90	1999.50	1772003.57	14643889.12	40°19'14.7355"N	80°31'40.5006"W	2003.34	93.546	1.38	-0.08	-2.59
5332.00	30.460	86.250	4788.92	-957.19	-123.86	2022.87	1772026.92	14643889.17	40°19'14.7347"N	80°31'40.1990"W	2026.66	93.504	9.07	-3.89	-15.78
5378.00	29.020	78.150	4828.88	-963.84	-120.80	2045.43	1772049.48	14643892.22	40°19'14.7637"N	80°31'39.9074"W	2049.00	93.380	9.27	-3.13	-17.61
5469.00	27.290	62.120	4909.22	-967.58	-106.49	2085.54	1772089.57	14643906.53	40°19'14.9030"N	80°31'39.3887"W	2088.25	92.923	8.50	-1.90	-17.62
5561.00	27.350	50.730	4991.02	-961.08	-83.24	2120.57	1772124.58	14643929.77	40°19'15.1310"N	80°31'38.9349"W	2122.20	92.248	5.68	0.07	-12.38
5653.00	28.110	41.560	5072.49	-947.01	-53.63	2151.32	1772155.33	14643959.37	40°19'15.4219"N	80°31'38.5358"W	2151.99	91.428	4.71	0.83	-9.97
5744.00	33.470	31.920	5150.68	-924.53	-16.24	2178.85	1772182.84	14643996.75	40°19'15.7899"N	80°31'38.1779"W	2178.91	90.427	7.99	5.89	-10.59
5835.00	36.140	18.960	5225.50	-891.25	30.51	2200.87	1772204.85	14644043.48	40°19'16.2507"N	80°31'37.8904"W	2201.08	89.206	8.63	2.93	-14.24
5926.00	38.310	7.730	5298.04	-847.96	83.91	2213.40	1772217.38	14644096.86	40°19'16.7777"N	80°31'37.7249"W	2214.99	87.829	7.83	2.38	-12.34
6017.00	40.980	1.800	5368.13	-797.41	141.71	2218.13	1772222.11	14644154.64	40°19'17.3487"N	80°31'37.6598"W	2222.65	86.344	5.09	2.93	-6.52
6108.00	43.500	355.880	5435.52	-741.35	202.81	2216.82	1772220.80	14644215.71	40°19'17.9525"N	80°31'37.6726"W	2226.07	84.773	5.17	2.77	-6.51
6199.00	48.580	351.550	5498.69	-679.21	267.86	2209.54	1772213.53	14644280.74	40°19'18.5957"N	80°31'37.7620"W	2225.72	83.088	6.55	5.58	-4.76
6244.00	51.230	351.410	5527.67	-646.14	301.90	2204.44	1772208.43	14644314.76	40°19'18.9323"N	80°31'37.8255"W	2225.02	82.202	5.89	5.89	-0.31
6289.00	54.400	350.330	5554.86	-611.61	337.29	2198.75	1772202.74	14644350.14	40°19'19.2823"N	80°31'37.8965"W	2224.47	81.279	7.30	7.04	-2.40
6334.00	58.030	349.070	5579.88	-575.38	374.08	2192.05	1772196.05	14644386.92	40°19'19.6462"N	80°31'37.9804"W	2223.74	80.316	8.40	8.07	-2.80
6380.00	61.810	346.860	5602.93	-536.55	412.99	2183.74	1772187.74	14644425.82	40°19'20.0312"N	80°31'38.0851"W	2222.45	79.291	9.21	8.22	-4.80
6425.00	65.080	344.770	5623.05	-496.98	452.01	2173.87	1772177.87	14644464.82	40°19'20.4173"N	80°31'38.2098"W	2220.37	78.254	8.37	7.27	-4.64
6470.00	68.780	342.220	5640.68	-456.01	491.69	2162.10	1772166.10	14644504.48	40°19'20.8100"N	80°31'38.3591"W	2217.30	77.188	9.73	8.22	-5.67
6516.00	72.410	340.530	5655.97	-412.87	532.79	2148.24	1772152.25	14644545.57	40°19'21.2169"N	80°31'38.5352"W	2213.32	76.071	8.62	7.89	-3.67
6561.00	74.920	339.020	5668.62	-369.82	573.31	2133.31	1772137.32	14644586.07	40°19'21.6180"N	80°31'38.7251"W	2209.00	74.958	6.44	5.58	-3.36
6606.00	78.030	336.370	5679.15	-326.12	613.78	2116.70	1772120.72	14644626.52	40°19'22.0188"N	80°31'38.9368"W	2203.89	73.830	8.97	6.91	-5.89
6645.00	81.160	334.660	5686.19	-287.77	648.68	2100.80	1772104.83	14644661.41	40°19'22.3645"N	80°31'39.1396"W	2198.67	72.841	9.11	8.03	-4.38
6670.00	82.660	333.710	5689.71	-263.02	670.96	2090.02	1772094.05	14644683.68	40°19'22.5852"N	80°31'39.2772"W	2195.08	72.202	7.08	6.00	-3.80
6761.00	88.580	333.510	5696.65	-172.37	752.20	2049.71	1772053.76	14644764.89	40°19'23.3902"N	80°31'39.7921"W	2183.38	69.848	6.51	6.51	-0.22

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]	
6852.00	90.650	332.770	5697.27	-81.44	833.38	2008.60	1772012.66	14644846.04	40°19'24.1945"N	80°31'40.3173"W	2174.62	67.466	2.42	2.27	-0.81	
6943.00	90.680	333.060	5696.21	9.47	914.39	1967.17	1771971.25	14644927.02	40°19'24.9972"N	80°31'40.8466"W	2169.30	65.070	0.32	0.03	0.32	
7034.00	90.620	332.870	5695.18	100.39	995.44	1925.81	1771929.90	14645008.04	40°19'25.8003"N	80°31'41.3750"W	2167.87	62.666	0.22	-0.07	-0.21	
7125.00	90.650	332.630	5694.17	191.29	1076.34	1884.15	1771888.26	14645088.90	40°19'26.6019"N	80°31'41.9073"W	2169.91	60.262	0.27	0.03	-0.26	
7215.00	90.650	332.470	5693.15	281.18	1156.20	1842.66	1771846.79	14645168.74	40°19'27.3932"N	80°31'42.4374"W	2175.36	57.893	0.18	0.00	-0.18	
7307.00	90.710	332.450	5692.06	373.06	1237.77	1800.13	1771804.27	14645250.27	40°19'28.2015"N	80°31'42.9810"W	2184.61	55.488	0.07	0.07	-0.02	
7398.00	90.800	332.180	5690.86	463.93	1318.34	1757.85	1771762.01	14645330.82	40°19'29.0000"N	80°31'43.5213"W	2197.29	53.131	0.31	0.10	-0.30	
7488.00	91.020	332.290	5689.43	553.79	1397.97	1715.93	1771720.10	14645410.42	40°19'29.7890"N	80°31'44.0570"W	2213.31	50.830	0.27	0.24	0.12	
7580.00	90.710	332.680	5688.04	645.66	1479.56	1673.43	1771677.62	14645491.97	40°19'30.5974"N	80°31'44.6001"W	2233.71	48.519	0.54	-0.34	0.42	
7670.00	91.230	331.590	5686.51	735.51	1559.11	1631.37	1771635.58	14645571.49	40°19'31.3857"N	80°31'45.1376"W	2256.59	46.298	1.34	0.58	-1.21	
7763.00	91.200	332.070	5684.54	828.31	1641.07	1587.48	1771591.70	14645653.42	40°19'32.1980"N	80°31'45.6987"W	2283.25	44.049	0.52	-0.03	0.52	
7854.00	91.820	332.450	5682.14	919.15	1721.59	1545.14	1771549.38	14645733.91	40°19'32.9958"N	80°31'46.2399"W	2313.29	41.908	0.80	0.68	0.42	
7944.00	91.880	332.320	5679.24	1008.99	1801.29	1503.44	1771507.70	14645813.58	40°19'33.7856"N	80°31'46.7728"W	2346.27	39.850	0.16	0.07	-0.14	
8036.00	91.350	331.460	5676.65	1100.79	1882.41	1460.11	1771464.38	14645894.67	40°19'34.5895"N	80°31'47.3266"W	2382.31	37.799	1.10	-0.58	-0.93	
8127.00	91.720	332.510	5674.21	1191.60	1962.71	1417.39	1771421.67	14645974.94	40°19'35.3853"N	80°31'47.8728"W	2421.00	35.835	1.22	0.41	1.15	
8217.00	91.020	332.360	5672.06	1281.46	2042.47	1375.75	1771380.05	14646054.67	40°19'36.1756"N	80°31'48.4049"W	2462.60	33.963	0.80	-0.78	-0.17	
8308.00	90.950	332.210	5670.49	1372.32	2123.02	1333.44	1771337.75	14646135.19	40°19'36.9738"N	80°31'48.9457"W	2507.04	32.132	0.18	-0.08	-0.16	
8399.00	91.260	332.830	5668.74	1463.19	2203.74	1291.45	1771295.79	14646215.87	40°19'37.7736"N	80°31'49.4822"W	2554.27	30.371	0.76	0.34	0.68	
8489.00	90.920	333.630	5667.03	1553.11	2284.08	1250.92	1771255.27	14646296.18	40°19'38.5696"N	80°31'50.0000"W	2604.19	28.708	0.97	-0.38	0.89	
8580.00	90.180	331.050	5666.15	1643.98	2364.67	1208.68	1771213.05	14646376.74	40°19'39.3681"N	80°31'50.5398"W	2655.67	27.074	2.95	-0.81	-2.84	
8671.00	90.770	332.490	5665.40	1734.80	2444.84	1165.64	1771170.03	14646456.88	40°19'40.1626"N	80°31'51.0901"W	2708.50	25.491	1.71	0.65	1.58	
8761.00	91.420	334.300	5663.68	1824.73	2525.29	1125.35	1771129.75	14646537.30	40°19'40.9597"N	80°31'51.6049"W	2764.69	24.019	2.14	0.72	2.01	
8852.00	90.980	332.490	5661.77	1915.65	2606.63	1084.60	1771089.02	14646618.61	40°19'41.7657"N	80°31'52.1253"W	2823.28	22.592	2.05	-0.48	-1.99	
8944.00	90.680	332.270	5660.44	2007.52	2688.14	1041.96	1771046.39	14646700.09	40°19'42.5733"N	80°31'52.6704"W	2883.01	21.187	0.40	-0.33	-0.24	
9034.00	90.890	332.060	5659.21	2097.37	2767.72	999.94	1771004.39	14646779.64	40°19'43.3619"N	80°31'53.2075"W	2942.81	19.864	0.33	0.23	-0.23	
9125.00	90.490	331.950	5658.11	2188.21	2848.06	957.23	1770961.69	14646859.95	40°19'44.1581"N	80°31'53.7535"W	3004.62	18.577	0.46	-0.44	-0.12	
9216.00	91.290	332.200	5656.70	2279.06	2928.46	914.61	1770919.09	14646940.32	40°19'44.9547"N	80°31'54.2982"W	3067.96	17.345	0.92	0.88	0.27	
9308.00	90.950	331.750	5654.90	2370.88	3009.65	871.40	1770875.89	14647021.48	40°19'45.7593"N	80°31'54.8507"W	3133.26	16.148	0.61	-0.37	-0.49	
9401.00	91.080	331.830	5653.25	2463.69	3091.59	827.44	1770831.96	14647103.39	40°19'46.5713"N	80°31'55.4126"W	3200.41	14.984	0.16	0.14	0.09	
9492.00	90.890	331.350	5651.69	2554.48	3171.62	784.15	1770788.68	14647183.39	40°19'47.3644"N	80°31'55.9661"W	3267.12	13.887	0.57	-0.21	-0.53	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]
9582.00	91.260	331.590	5650.00	2644.27	3250.68	741.17	1770745.72	14647262.42	40°19'48.1478"N	80°31'56.5156"W	3334.11	12.844	0.49	0.41	0.27
9673.00	91.320	331.920	5647.95	2735.07	3330.82	698.12	1770702.68	14647342.53	40°19'48.9420"N	80°31'57.0661"W	3403.20	11.837	0.37	0.07	0.36
9764.00	91.290	332.730	5645.88	2825.92	3411.39	655.87	1770660.45	14647423.07	40°19'49.7404"N	80°31'57.6061"W	3473.87	10.883	0.89	-0.03	0.89
9854.00	91.540	332.500	5643.65	2915.79	3491.28	614.48	1770619.08	14647502.93	40°19'50.5320"N	80°31'58.1350"W	3544.95	9.982	0.38	0.28	-0.26
9945.00	90.680	330.040	5641.89	3006.54	3571.06	570.75	1770575.36	14647582.67	40°19'51.3226"N	80°31'58.6943"W	3616.38	9.081	2.86	-0.95	-2.70
10035.00	90.800	331.530	5640.73	3096.25	3649.60	526.83	1770531.46	14647661.18	40°19'52.1010"N	80°31'59.2560"W	3687.43	8.214	1.66	0.13	1.66
10126.00	90.680	330.970	5639.55	3187.01	3729.37	483.06	1770487.71	14647740.93	40°19'52.8916"N	80°31'59.8157"W	3760.53	7.380	0.63	-0.13	-0.62
10216.00	90.550	331.630	5638.59	3276.78	3808.31	439.84	1770444.51	14647819.84	40°19'53.6739"N	80°32'0.3684"W	3833.63	6.588	0.75	-0.14	0.73
10307.00	90.180	332.000	5638.01	3367.61	3888.52	396.86	1770401.54	14647900.01	40°19'54.4687"N	80°32'0.9179"W	3908.72	5.827	0.58	-0.41	0.41
10398.00	90.710	331.260	5637.30	3458.42	3968.59	353.63	1770358.32	14647980.05	40°19'55.2621"N	80°32'1.4707"W	3984.31	5.092	1.00	0.58	-0.81
10488.00	90.980	332.290	5635.97	3548.23	4047.88	311.07	1770315.78	14648059.31	40°19'56.0479"N	80°32'2.0149"W	4059.81	4.394	1.18	0.30	1.14
10579.00	90.740	329.730	5634.61	3638.96	4127.46	266.97	1770271.70	14648138.86	40°19'56.8366"N	80°32'2.5788"W	4136.09	3.701	2.83	-0.26	-2.81
10670.00	90.830	329.790	5633.36	3729.52	4206.07	221.15	1770225.89	14648217.44	40°19'57.6157"N	80°32'3.1652"W	4211.88	3.010	0.12	0.10	0.07
10760.00	91.020	331.010	5631.91	3819.18	4284.31	176.70	1770181.46	14648295.65	40°19'58.3912"N	80°32'3.7338"W	4287.95	2.362	1.37	0.21	1.36
10852.00	91.200	332.590	5630.13	3910.98	4365.37	133.23	1770138.01	14648376.68	40°19'59.1945"N	80°32'4.2896"W	4367.41	1.748	1.73	0.20	1.72
10943.00	91.350	332.290	5628.10	4001.85	4446.03	91.14	1770095.94	14648457.31	40°19'59.9937"N	80°32'4.8276"W	4446.96	1.174	0.37	0.16	-0.33
11033.00	91.290	332.530	5626.03	4091.71	4525.77	49.47	1770054.28	14648537.02	40°20'0.7838"N	80°32'5.3603"W	4526.04	0.626	0.27	-0.07	0.27
11126.00	90.550	332.550	5624.53	4184.58	4608.28	6.59	1770011.42	14648619.50	40°20'1.6014"N	80°32'5.9084"W	4608.29	0.082	0.80	-0.80	0.02
11218.00	90.740	332.280	5623.50	4276.46	4689.82	-36.01	1769968.83	14648701.00	40°20'2.4093"N	80°32'6.4529"W	4689.96	359.560	0.36	0.21	-0.29
11309.00	90.680	332.620	5622.37	4367.34	4770.49	-78.10	1769926.76	14648781.65	40°20'3.2087"N	80°32'6.9909"W	4771.13	359.062	0.38	-0.07	0.37
11401.00	90.710	332.540	5621.25	4459.23	4852.15	-120.46	1769884.42	14648863.28	40°20'4.0178"N	80°32'7.5324"W	4853.65	358.578	0.09	0.03	-0.09
11492.00	90.830	332.500	5620.03	4550.11	4932.88	-162.45	1769842.45	14648943.97	40°20'4.8177"N	80°32'8.0691"W	4935.55	358.114	0.14	0.13	-0.04
11584.00	90.950	332.580	5618.60	4641.99	5014.50	-204.87	1769800.04	14649025.56	40°20'5.6265"N	80°32'8.6113"W	5018.69	357.661	0.16	0.13	0.09
11674.00	90.650	332.290	5617.35	4731.87	5094.28	-246.51	1769758.42	14649105.31	40°20'6.4169"N	80°32'9.1436"W	5100.24	357.230	0.46	-0.33	-0.32
11765.00	90.770	332.700	5616.22	4822.75	5174.99	-288.53	1769716.41	14649185.99	40°20'7.2166"N	80°32'9.6808"W	5183.02	356.809	0.47	0.13	0.45
11856.00	90.460	332.480	5615.24	4913.64	5255.77	-330.42	1769674.54	14649266.73	40°20'8.0170"N	80°32'10.2162"W	5266.14	356.403	0.42	-0.34	-0.24
11947.00	90.890	332.540	5614.17	5004.52	5336.49	-372.42	1769632.55	14649347.42	40°20'8.8169"N	80°32'10.7531"W	5349.47	356.008	0.48	0.47	0.07
12038.00	90.680	332.800	5612.92	5095.42	5417.32	-414.20	1769590.79	14649428.23	40°20'9.6178"N	80°32'11.2871"W	5433.13	355.628	0.37	-0.23	0.29
12129.00	90.860	332.540	5611.70	5186.31	5498.16	-455.97	1769549.03	14649509.03	40°20'10.4187"N	80°32'11.8211"W	5517.03	355.259	0.35	0.20	-0.29
12217.00	90.520	332.510	5610.64	5274.20	5576.22	-496.57	1769508.45	14649587.07	40°20'11.1923"N	80°32'12.3401"W	5598.29	354.911	0.39	-0.39	-0.03

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Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]
12308.00	90.890	332.730	5609.52	5365.09	5657.02	-538.42	1769466.62	14649667.84	40°20'11.9929"N	80°32'12.8750"W	5682.59	354.563	0.47	0.41	0.24
12399.00	90.950	332.830	5608.06	5455.99	5737.94	-580.04	1769425.02	14649748.72	40°20'12.7946"N	80°32'13.4069"W	5767.18	354.228	0.13	0.07	0.11
12490.00	91.110	332.920	5606.42	5546.89	5818.91	-621.52	1769383.55	14649829.67	40°20'13.5969"N	80°32'13.9371"W	5852.01	353.903	0.20	0.18	0.10
12580.00	90.830	332.380	5604.90	5636.78	5898.84	-662.86	1769342.22	14649909.56	40°20'14.3889"N	80°32'14.4656"W	5935.97	353.588	0.68	-0.31	-0.60
12671.00	90.740	332.150	5603.65	5727.65	5979.38	-705.21	1769299.89	14649990.07	40°20'15.1869"N	80°32'15.0070"W	6020.82	353.274	0.27	-0.10	-0.25
12762.00	90.860	332.440	5602.38	5818.51	6059.94	-747.51	1769257.60	14650070.60	40°20'15.9851"N	80°32'15.5478"W	6105.87	352.968	0.34	0.13	0.32
12852.00	90.860	332.690	5601.03	5908.40	6139.81	-788.97	1769216.16	14650150.44	40°20'16.7765"N	80°32'16.0779"W	6190.29	352.678	0.28	0.00	0.28
12943.00	90.860	332.710	5599.67	5999.29	6220.66	-830.71	1769174.44	14650231.26	40°20'17.5776"N	80°32'16.6113"W	6275.88	352.394	0.02	0.00	0.02
13034.00	90.890	332.590	5598.28	6090.18	6301.48	-872.51	1769132.66	14650312.05	40°20'18.3784"N	80°32'17.1457"W	6361.60	352.117	0.14	0.03	-0.13
13125.00	90.950	332.740	5596.82	6181.07	6382.31	-914.29	1769090.89	14650392.85	40°20'19.1793"N	80°32'17.6798"W	6447.46	351.848	0.18	0.07	0.16
13215.00	91.320	335.010	5595.03	6271.02	6463.09	-953.91	1769051.29	14650473.60	40°20'19.9796"N	80°32'18.1860"W	6533.11	351.604	2.56	0.41	2.52
13306.00	90.830	336.130	5593.33	6362.00	6545.93	-991.54	1769013.67	14650556.40	40°20'20.8001"N	80°32'18.6663"W	6620.60	351.387	1.34	-0.54	1.23
13397.00	90.620	338.340	5592.17	6452.94	6629.83	-1026.75	1768978.48	14650640.27	40°20'21.6309"N	80°32'19.1153"W	6708.86	351.197	2.44	-0.23	2.43
13487.00	90.800	338.680	5591.06	6542.79	6713.56	-1059.71	1768945.52	14650723.97	40°20'22.4601"N	80°32'19.5354"W	6796.69	351.030	0.43	0.20	0.38
13578.00	90.580	338.650	5589.96	6633.63	6798.32	-1092.82	1768912.43	14650808.70	40°20'23.2993"N	80°32'19.9572"W	6885.60	350.868	0.24	-0.24	-0.03
13668.00	90.740	338.460	5588.93	6723.48	6882.09	-1125.72	1768879.54	14650892.43	40°20'24.1288"N	80°32'20.3765"W	6973.55	350.710	0.28	0.18	-0.21
13759.00	90.740	338.410	5587.75	6814.34	6966.71	-1159.17	1768846.11	14650977.02	40°20'24.9667"N	80°32'20.8027"W	7062.49	350.553	0.05	0.00	-0.05
13850.00	90.740	338.580	5586.58	6905.19	7051.37	-1192.52	1768812.76	14651061.65	40°20'25.8050"N	80°32'21.2277"W	7151.49	350.401	0.19	0.00	0.19
13940.00	90.770	338.530	5585.39	6995.04	7135.13	-1225.42	1768779.88	14651145.38	40°20'26.6344"N	80°32'21.6470"W	7239.59	350.255	0.06	0.03	-0.06
14031.00	90.620	338.520	5584.29	7085.89	7219.80	-1258.74	1768746.58	14651230.02	40°20'27.4728"N	80°32'22.0715"W	7328.71	350.110	0.17	-0.16	-0.01
14121.00	90.680	338.410	5583.26	7175.75	7303.52	-1291.77	1768713.55	14651313.70	40°20'28.3017"N	80°32'22.4925"W	7416.87	349.970	0.14	0.07	-0.12
14212.00	90.800	338.420	5582.09	7266.61	7388.13	-1325.24	1768680.09	14651398.28	40°20'29.1395"N	80°32'22.9191"W	7506.05	349.831	0.13	0.13	0.01
14303.00	90.830	338.580	5580.79	7357.46	7472.79	-1358.59	1768646.76	14651482.91	40°20'29.9778"N	80°32'23.3441"W	7595.28	349.696	0.18	0.03	0.18
14393.00	90.980	338.540	5579.37	7447.30	7556.55	-1391.49	1768613.88	14651566.64	40°20'30.8072"N	80°32'23.7632"W	7683.60	349.566	0.17	0.17	-0.04
14484.00	91.080	338.370	5577.74	7538.15	7641.18	-1424.90	1768580.48	14651651.23	40°20'31.6452"N	80°32'24.1890"W	7772.90	349.437	0.22	0.11	-0.19
14575.00	90.830	338.300	5576.22	7629.01	7725.74	-1458.49	1768546.90	14651735.76	40°20'32.4825"N	80°32'24.6172"W	7862.20	349.309	0.29	-0.27	-0.08
14665.00	90.740	338.510	5574.99	7718.88	7809.41	-1491.61	1768513.79	14651819.40	40°20'33.3110"N	80°32'25.0393"W	7950.59	349.187	0.25	-0.10	0.23
14756.00	90.830	338.730	5573.74	7809.72	7894.14	-1524.78	1768480.63	14651904.10	40°20'34.1500"N	80°32'25.4620"W	8040.05	349.068	0.26	0.10	0.24
14847.00	91.140	338.500	5572.18	7900.55	7978.86	-1557.96	1768447.47	14651988.79	40°20'34.9889"N	80°32'25.8847"W	8129.54	348.951	0.42	0.34	-0.25
14937.00	91.540	341.730	5570.07	7990.20	8063.46	-1588.56	1768416.88	14652073.36	40°20'35.8264"N	80°32'26.2743"W	8218.45	348.855	3.62	0.44	3.59

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Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]
15028.00	91.050	339.250	5568.01	8080.80	8149.21	-1618.94	1768386.51	14652159.07	40°20'36.6753"N	80°32'26.6609"W	8308.46	348.764	2.78	-0.54	-2.73
15119.00	91.660	339.310	5565.86	8171.56	8234.30	-1651.13	1768354.34	14652244.13	40°20'37.5178"N	80°32'27.0708"W	8398.21	348.662	0.67	0.67	0.07
15209.00	91.110	338.400	5563.69	8261.36	8318.21	-1683.58	1768321.89	14652328.01	40°20'38.3487"N	80°32'27.4844"W	8486.88	348.558	1.18	-0.61	-1.01
15300.00	91.200	338.460	5561.85	8352.20	8402.82	-1717.03	1768288.46	14652412.59	40°20'39.1865"N	80°32'27.9107"W	8576.46	348.451	0.12	0.10	0.07
15391.00	91.140	338.370	5559.99	8443.05	8487.42	-1750.50	1768255.00	14652497.16	40°20'40.0242"N	80°32'28.3373"W	8666.06	348.346	0.12	-0.07	-0.10
15481.00	91.080	338.030	5558.25	8532.92	8570.97	-1783.92	1768221.60	14652580.67	40°20'40.8515"N	80°32'28.7632"W	8754.65	348.243	0.38	-0.07	-0.38
15572.00	91.320	338.400	5556.35	8623.79	8655.45	-1817.68	1768187.84	14652665.12	40°20'41.6880"N	80°32'29.1936"W	8844.26	348.140	0.48	0.26	0.41
15663.00	91.110	338.280	5554.42	8714.64	8740.01	-1851.26	1768154.28	14652749.64	40°20'42.5253"N	80°32'29.6217"W	8933.92	348.041	0.27	-0.23	-0.13
15753.00	90.740	337.930	5552.96	8804.52	8823.51	-1884.82	1768120.73	14652833.11	40°20'43.3521"N	80°32'30.0495"W	9022.57	347.942	0.57	-0.41	-0.39
15844.00	90.680	337.740	5551.84	8895.43	8907.78	-1919.15	1768086.42	14652917.35	40°20'44.1865"N	80°32'30.4872"W	9112.17	347.842	0.22	-0.07	-0.21
15935.00	90.830	338.060	5550.64	8986.33	8992.08	-1953.38	1768052.20	14653001.62	40°20'45.0214"N	80°32'30.9237"W	9201.81	347.744	0.39	0.16	0.35
16025.00	90.950	338.250	5549.24	9076.21	9075.61	-1986.87	1768018.72	14653085.12	40°20'45.8485"N	80°32'31.3505"W	9290.55	347.651	0.25	0.13	0.21
16116.00	90.650	338.100	5547.97	9167.08	9160.08	-2020.69	1767984.91	14653169.55	40°20'46.6849"N	80°32'31.7818"W	9380.31	347.560	0.37	-0.33	-0.16
16207.00	90.800	338.080	5546.82	9257.97	9244.50	-2054.65	1767950.97	14653253.94	40°20'47.5208"N	80°32'32.2146"W	9470.08	347.469	0.17	0.16	-0.02
16297.00	90.890	338.210	5545.49	9347.85	9328.02	-2088.15	1767917.48	14653337.43	40°20'48.3479"N	80°32'32.6417"W	9558.89	347.382	0.18	0.10	0.14
16388.00	91.020	338.400	5543.97	9438.71	9412.56	-2121.78	1767883.86	14653421.94	40°20'49.1850"N	80°32'33.0705"W	9648.75	347.297	0.25	0.14	0.21
16478.00	90.680	338.520	5542.64	9528.57	9496.27	-2154.82	1767850.83	14653505.61	40°20'50.0138"N	80°32'33.4916"W	9737.68	347.215	0.40	-0.38	0.13
16570.00	90.460	338.210	5541.72	9620.43	9581.78	-2188.74	1767816.93	14653591.10	40°20'50.8606"N	80°32'33.9239"W	9828.59	347.133	0.41	-0.24	-0.34
16661.00	90.430	338.210	5541.02	9711.32	9666.28	-2222.52	1767783.16	14653675.56	40°20'51.6973"N	80°32'34.3546"W	9918.50	347.051	0.03	-0.03	0.00
16752.00	90.710	338.520	5540.11	9802.18	9750.86	-2256.07	1767749.62	14653760.11	40°20'52.5348"N	80°32'34.7822"W	10008.46	346.973	0.46	0.31	0.34
16842.00	91.050	338.780	5538.73	9892.02	9834.68	-2288.83	1767716.88	14653843.89	40°20'53.3647"N	80°32'35.1997"W	10097.51	346.899	0.48	0.38	0.29
16933.00	90.400	338.320	5537.58	9982.87	9919.37	-2322.11	1767683.61	14653928.55	40°20'54.2033"N	80°32'35.6239"W	10187.54	346.824	0.88	-0.71	-0.51
17024.00	90.550	338.370	5536.82	10073.74	10003.94	-2355.68	1767650.05	14654013.09	40°20'55.0407"N	80°32'36.0519"W	10277.55	346.750	0.17	0.16	0.05
17115.00	90.710	338.410	5535.82	10164.60	10088.54	-2389.20	1767616.55	14654097.66	40°20'55.8784"N	80°32'36.4791"W	10367.59	346.677	0.18	0.18	0.04
17206.00	90.520	338.460	5534.84	10255.46	10173.17	-2422.64	1767583.11	14654182.25	40°20'56.7163"N	80°32'36.9054"W	10457.65	346.605	0.22	-0.21	0.05
17296.00	90.430	338.560	5534.10	10345.32	10256.91	-2455.61	1767550.16	14654265.96	40°20'57.5455"N	80°32'37.3257"W	10546.76	346.536	0.15	-0.10	0.11
17387.00	90.460	338.690	5533.39	10436.16	10341.64	-2488.78	1767517.00	14654350.67	40°20'58.3845"N	80°32'37.7484"W	10636.90	346.469	0.15	0.03	0.14
17477.00	90.490	338.650	5532.65	10526.01	10425.48	-2521.51	1767484.28	14654434.47	40°20'59.2146"N	80°32'38.1656"W	10726.07	346.404	0.06	0.03	-0.04
17568.00	90.680	338.420	5531.72	10616.86	10510.16	-2554.81	1767451.00	14654519.12	40°21'0.0531"N	80°32'38.5900"W	10816.22	346.338	0.33	0.21	-0.25
17659.00	90.650	338.470	5530.66	10707.72	10594.79	-2588.24	1767417.58	14654603.71	40°21'0.8911"N	80°32'39.0162"W	10906.35	346.272	0.06	-0.03	0.05

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Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH DATA (231 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]
17749.00	90.620	338.350	5529.66	10797.58	10678.47	-2621.36	1767384.48	14654687.36	40°21'1.7197"N	80°32'39.4383"W	10995.51	346.208	0.14	-0.03	-0.13
17840.00	90.460	338.520	5528.81	10888.44	10763.10	-2654.80	1767351.04	14654771.96	40°21'2.5576"N	80°32'39.8647"W	11085.68	346.144	0.26	-0.18	0.19
17930.00	90.460	338.480	5528.08	10978.30	10846.83	-2687.79	1767318.07	14654855.66	40°21'3.3867"N	80°32'40.2851"W	11174.88	346.083	0.04	0.00	-0.04
18021.00	90.650	338.420	5527.20	11069.16	10931.47	-2721.21	1767284.66	14654940.26	40°21'4.2248"N	80°32'40.7112"W	11265.08	346.021	0.22	0.21	-0.07
18112.00	90.460	338.440	5526.32	11160.02	11016.09	-2754.66	1767251.22	14655024.85	40°21'5.0627"N	80°32'41.1376"W	11355.28	345.961	0.21	-0.21	0.02
18203.00	90.550	338.650	5525.52	11250.88	11100.78	-2787.95	1767217.95	14655109.51	40°21'5.9012"N	80°32'41.5619"W	11445.52	345.902	0.25	0.10	0.23
18293.00	90.520	338.480	5524.68	11340.73	11184.55	-2820.84	1767185.07	14655193.25	40°21'6.7307"N	80°32'41.9811"W	11534.79	345.845	0.19	-0.03	-0.19
18384.00	90.400	338.430	5523.95	11431.59	11269.19	-2854.25	1767151.67	14655277.86	40°21'7.5688"N	80°32'42.4071"W	11625.03	345.787	0.14	-0.13	-0.05
18476.00	90.710	338.850	5523.06	11523.43	11354.87	-2887.76	1767118.17	14655363.50	40°21'8.4171"N	80°32'42.8342"W	11716.32	345.731	0.57	0.34	0.46
18567.00	90.460	338.450	5522.13	11614.27	11439.62	-2920.89	1767085.06	14655448.22	40°21'9.2562"N	80°32'43.2565"W	11806.63	345.677	0.52	-0.27	-0.44
18658.00	90.400	337.990	5521.44	11705.15	11524.12	-2954.65	1767051.31	14655532.69	40°21'10.0930"N	80°32'43.6870"W	11896.86	345.620	0.51	-0.07	-0.51
18749.00	90.370	338.090	5520.83	11796.05	11608.51	-2988.68	1767017.29	14655617.05	40°21'10.9287"N	80°32'44.1209"W	11987.07	345.562	0.11	-0.03	0.11
18841.00	90.280	338.090	5520.31	11887.94	11693.87	-3023.01	1766982.98	14655702.37	40°21'11.7738"N	80°32'44.5586"W	12078.29	345.506	0.10	-0.10	0.00
18933.00	90.460	338.290	5519.72	11979.82	11779.28	-3057.19	1766948.81	14655787.75	40°21'12.6196"N	80°32'44.9945"W	12169.55	345.450	0.29	0.20	0.22
19024.00	90.550	338.410	5518.91	12070.69	11863.86	-3090.76	1766915.25	14655872.30	40°21'13.4570"N	80°32'45.4225"W	12259.85	345.398	0.16	0.10	0.13
19116.00	90.520	338.290	5518.05	12162.56	11949.36	-3124.70	1766881.32	14655957.77	40°21'14.3037"N	80°32'45.8552"W	12351.16	345.346	0.13	-0.03	-0.13
19209.00	90.460	337.980	5517.26	12255.44	12035.67	-3159.34	1766846.70	14656044.04	40°21'15.1583"N	80°32'46.2968"W	12443.42	345.292	0.34	-0.06	-0.33
19301.00	90.490	338.420	5516.50	12347.32	12121.09	-3193.50	1766812.55	14656129.43	40°21'16.0041"N	80°32'46.7325"W	12534.72	345.240	0.48	0.03	0.48
19392.00	90.430	338.320	5515.77	12438.19	12205.68	-3227.04	1766779.02	14656213.99	40°21'16.8417"N	80°32'47.1601"W	12625.07	345.190	0.13	-0.07	-0.11
19438.00	90.460	338.540	5515.41	12484.12	12248.46	-3243.96	1766762.12	14656256.75	40°21'17.2652"N	80°32'47.3757"W	12670.75	345.166	0.48	0.07	0.48
19463.00†	90.460	338.540	5515.21	12509.08	12271.72	-3253.10	1766752.97	14656280.00	40°21'17.4956"N	80°32'47.4923"W	12695.58	345.153	0.00	0.00	0.00

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Actual Wellpath Report

State of WV DNR A BRK 405H AWP Proj: 19463'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

HOLE & CASING SECTIONS - Ref Wellbore: State of WV DNR A BRK 405H AWB Ref Wellpath: State of WV DNR A BRK 405H AWP Proj: 19463'									
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	125.00	99.00	26.00	125.00	0.00	0.00	0.18	0.40
17.5in Open Hole	125.00	647.00	522.00	125.00	646.99	0.18	0.40	2.23	0.52
13.375in Casing Surface	26.00	647.00	621.00	26.00	646.99	0.00	0.00	2.23	0.52
12.25in Open Hole	647.00	1447.00	800.00	646.99	1441.57	2.23	0.52	0.98	79.16
9.625in Casing Intermediate	26.00	1447.00	1421.00	26.00	1441.57	0.00	0.00	0.98	79.16
8.75in Open Hole	1447.00	6673.00	5226.00	1441.57	5690.09	0.98	79.16	673.63	2088.71
8.5in Open Hole	6673.00	19463.00	12790.00	5690.09	5515.21	673.63	2088.71	12271.72	-3253.10
5.5in Casing Production	26.00	19463.00	19437.00	26.00	5515.21	0.00	0.00	12271.72	-3253.10

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
State of WV DNR A BRK 405H BHL Rev-4	5611.80	12270.82	-3256.45	1766749.63	14656279.10	40°21'17.4868"N	80°32'47.5356"W	point
State of WV DNR A BRK 405H LP Rev-4	5701.00	671.84	2073.29	1772077.33	14644684.56	40°19'22.5948"N	80°31'39.4932"W	point

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

WELLPATH COMPOSITION - Ref Wellbore: State of WV DNR A BRK 405H AWB Ref Wellpath: State of WV DNR A BRK 405H AWP Proj: 19463'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	600.00	Gyrodata 2015 - GC+WIR+DPIPE	01_Gyrodata GC WIR DPIPE <17 1/2"> (50'-600')	State of WV DNR A BRK 405H AWB	02/Oct/2020
600.00	722.00	Gyrodata 2015 - GC+WIR+DPIPE	02_Gyrodata GC WIR DPIPE <12 1/4"> (650'-722')	State of WV DNR A BRK 405H AWB	02/Oct/2020
722.00	1380.00	OWSG MWD rev2 + HRGM	03_Premier MWD <12 1/4"> (866'-1380')	State of WV DNR A BRK 405H AWB	02/Oct/2020
1380.00	6606.00	OWSG MWD rev2 + HRGM	04_Premier MWD <8 3/4"> (1494'-6606')	State of WV DNR A BRK 405H AWB	02/Oct/2020
6606.00	19463.00	BH AutoTrak Curve (2019) (Short spacing)	05_BH AT Curve <8 1/2"> (6606')(6645'-19438')	State of WV DNR A BRK 405H AWB	02/Oct/2020

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	State of WV DNR A BRK 405H
Field	Brooke	API	047-009-00300
Facility	State of WV DNR A BRK Pad	Wellbore	State of WV DNR A BRK 405H AWB
Slot	Slot #405H		

COMMENTS
<p>Wellpath general comments API: 47-009-00300-0000 BH Job #: 110580531 Rig: SDC 40 Duration: 10/3/20 - 10/6/20</p> <p>Gyrodata GC WIR DPIPE <17 1/2"> (50'-600') Gyrodata GC WIR DPIPE <12 1/4"> (650'-722') Premier MWD <12 1/4"> (866'-1380') Premier MWD <8 3/4"> (1494'-6606') BH AT Curve <8 1/2"> (6606')(6645'-19438') Projected MD at TD: 19463'</p>

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