

# SWN PRODUCTION COMPANY, LLC

Location: Marshall County, WV  
 Field: Marshall  
 Facility: Betty Schafer MSH Pad

Slot: Slot 8H  
 Well: Betty Schafer MSH BH  
 Wellbore: Betty Schafer MSH 8H PWB

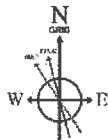


Plot reference wellpath is Betty Schafer MSH BH PWB Row-C-D	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 41 (KB)	North Reference: Grid north
Reference wellpath measured depths are referenced to SDC 41 (KB)	Scale: True distance
SDC 41 (KB) to Mean Sea Level: 874.3 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Mud line (At Slot: Slot 8H): -848.3 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: stonjon on 2020-03-30; Database: WA_MPL_EASTERNUS_Defn

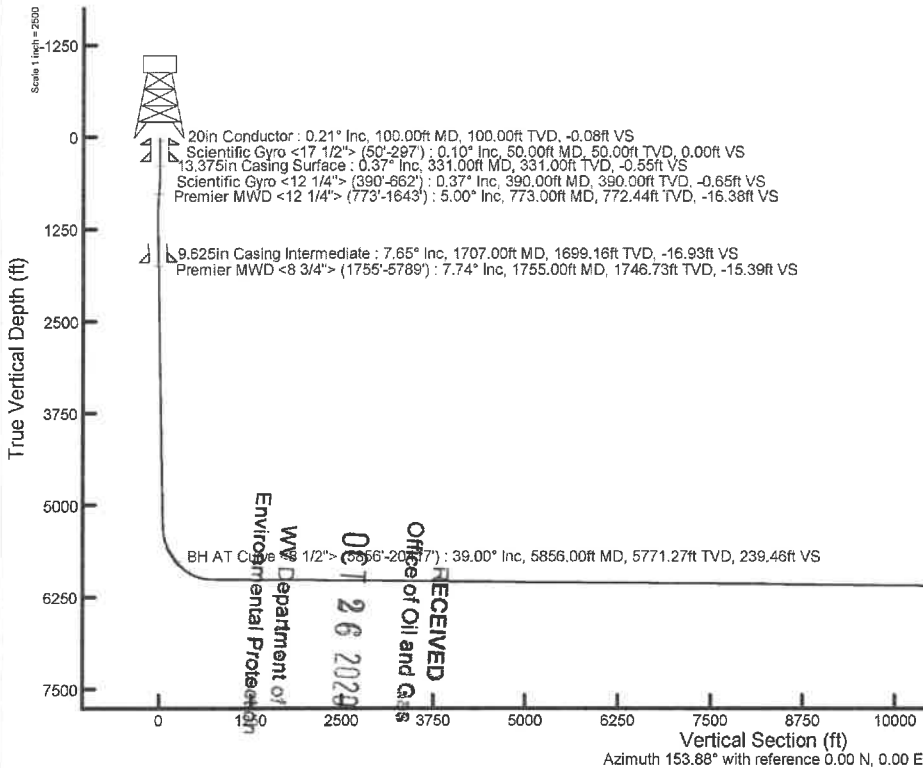
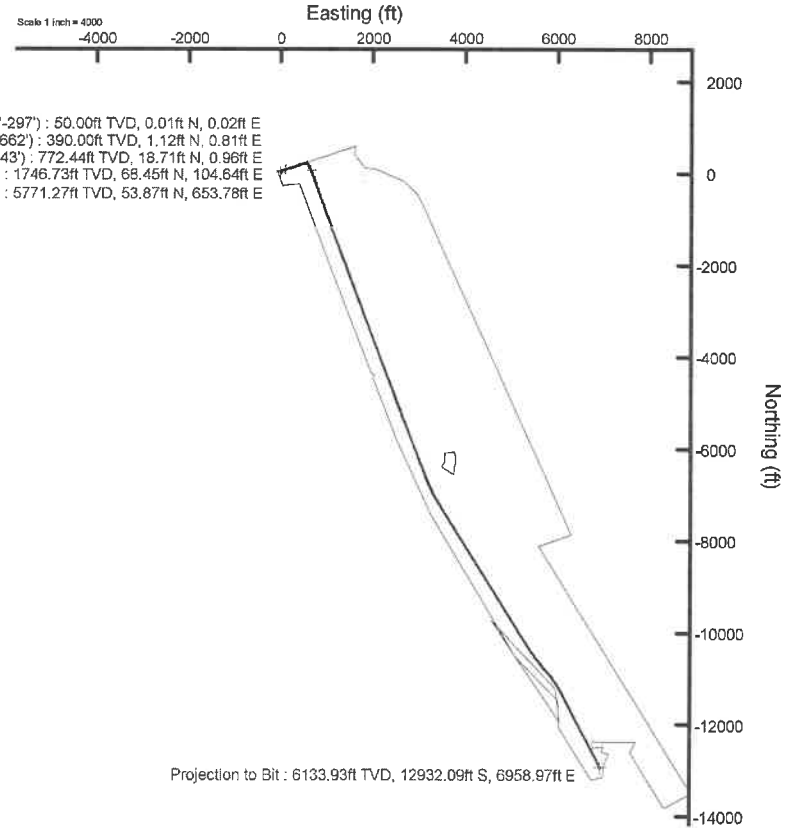
## Location Information

Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
Betty Schafer MSH Pad		1742482.899	14523614.942	39°59'27.1070"N	80°38'8.1350"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot 8H	23.69	-6.25	1742476.650	14523638.620	39°59'27.3413"N	80°38'8.2141"W
SDC 41 (KB) to Mud line (At Slot: Slot 8H)				26ft		
Mean Sea Level to Mud line (At Slot: Slot 8H)				-848.3ft		
SDC 41 (KB) to Mean Sea Level				874.3ft		

API: 47-051-02297-0000  
 BH Job #: 110238795A  
 Rig: SDC 41  
 Duration: 03/24/2020 - 03/27/2020



User specified Dip: 67.04° Field: 52503 nT  
 Magnetic North is 8.10 degrees West of True North (at 3/20/2020)  
 Grid North is 0.23 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.23 degrees  
 To correct azimuth from Magnetic to Grid subtract 5.33 degrees



RECEIVED  
 Office of Oil and Gas  
 WV Department of Environmental Protection  
 03/26/2020

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Atenjen
Scale	0.999612	Report Generated	3/30/2020 at 2:57:49 PM
Convergence at slot	0.23° 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	23.69	-6.25	1742476.65	14523638.62	39°59'27.3413"N	80°38'8.2141"W
Facility Reference Pt			1742482.90	14523614.94	39°59'27.1070"N	80°38'8.1350"W
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.4780"W

WELLPATH DATUM			
Calculation method	Minimum curvature	SDC 41 (KB) to Facility Vertical Datum	874.30ft
Horizontal Reference Pt	Slot	SDC 41 (KB) to Mean Sea Level	874.30ft
Vertical Reference Pt	SDC 41 (KB)	SDC 41 (KB) to Mud Line at Slot (Slot 8H)	26.00ft
MD Reference Pt	SDC 41 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	153.88°

**RECEIVED**  
 Office of Oil and Gas  
**OCT 26 2020**  
 WV Department of  
 Environmental Protection



# Actual Wellpath Report

Betty Schafer MSH 8H AWP Proj: 20442'  
Page 2 of 12



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH DATA (233 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	53.680	0.00	0.00	0.00	0.00	1742476.65	14523638.62	39°59'27.3413"N	80°38'8.2141"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	53.680	26.00	0.00	0.00	0.00	1742476.65	14523638.62	39°59'27.3413"N	80°38'8.2141"W	0.00	0.000	0.00	0.00	0.00
50.00	0.100	53.680	50.00	0.00	0.01	0.02	1742476.67	14523638.63	39°59'27.3415"N	80°38'8.2139"W	0.02	53.680	0.42	0.42	0.00
100.00	0.210	18.690	100.00	-0.08	0.13	0.08	1742476.73	14523638.74	39°59'27.3426"N	80°38'8.2130"W	0.15	33.060	0.28	0.22	-69.98
150.00	0.200	24.940	150.00	-0.20	0.29	0.15	1742476.80	14523638.91	39°59'27.3442"N	80°38'8.2122"W	0.33	26.890	0.05	-0.02	12.50
200.00	0.140	13.230	200.00	-0.30	0.43	0.20	1742476.85	14523639.05	39°59'27.3456"N	80°38'8.2115"W	0.47	24.783	0.14	-0.12	-23.42
250.00	0.150	24.070	250.00	-0.39	0.55	0.24	1742476.89	14523639.17	39°59'27.3468"N	80°38'8.2110"W	0.60	23.534	0.06	0.02	21.68
297.00	0.370	43.990	297.00	-0.48	0.71	0.37	1742477.02	14523639.33	39°59'27.3484"N	80°38'8.2093"W	0.80	27.357	0.50	0.47	42.38
390.00	0.370	50.940	390.00	-0.65	1.12	0.81	1742477.46	14523639.74	39°59'27.3524"N	80°38'8.2036"W	1.38	35.930	0.95	0.00	7.47
480.00	0.970	14.240	479.99	-1.29	2.04	1.22	1742477.87	14523640.66	39°59'27.3615"N	80°38'8.1982"W	2.38	30.958	0.79	0.67	-40.78
571.00	2.430	356.570	570.95	-3.66	4.71	1.30	1742477.95	14523643.33	39°59'27.3879"N	80°38'8.1971"W	4.89	15.400	1.69	1.60	-19.42
662.00	4.120	356.480	661.80	-8.46	9.90	0.98	1742477.63	14523648.52	39°59'27.4392"N	80°38'8.2009"W	9.95	5.664	1.86	1.86	-0.10
773.00	5.000	2.640	772.44	-16.38	18.71	0.96	1742477.61	14523657.33	39°59'27.5262"N	80°38'8.2007"W	18.74	2.937	0.91	0.79	5.55
864.00	4.770	22.070	863.12	-22.38	26.18	2.56	1742479.21	14523664.79	39°59'27.6000"N	80°38'8.1797"W	26.31	5.594	1.83	-0.25	21.35
954.00	5.560	41.600	952.76	-26.53	32.91	6.87	1742483.51	14523671.52	39°59'27.6663"N	80°38'8.1241"W	33.62	11.784	2.13	0.88	21.70
1045.00	6.450	55.730	1043.27	-28.92	39.09	14.02	1742490.66	14523677.69	39°59'27.7270"N	80°38'8.0319"W	41.52	19.729	1.89	0.98	15.53
1136.00	7.020	62.190	1133.64	-29.81	44.56	23.16	1742499.80	14523683.16	39°59'27.7807"N	80°38'7.9142"W	50.22	27.463	1.04	0.63	7.10
1226.00	7.800	66.890	1222.89	-29.65	49.52	33.64	1742510.28	14523688.12	39°59'27.8294"N	80°38'7.7792"W	59.87	34.189	1.10	0.87	5.22
1317.00	7.670	75.280	1313.06	-28.13	53.49	45.19	1742521.83	14523692.09	39°59'27.8681"N	80°38'7.6306"W	70.03	40.196	1.25	-0.14	9.22
1408.00	7.400	77.320	1403.28	-25.57	56.32	56.79	1742533.41	14523694.92	39°59'27.8956"N	80°38'7.4815"W	79.98	45.237	0.42	-0.30	2.24
1498.00	9.010	73.650	1492.35	-23.02	59.57	69.20	1742545.83	14523698.17	39°59'27.9273"N	80°38'7.3218"W	91.31	49.276	1.88	1.79	-4.08
1589.00	8.740	74.450	1582.26	-20.55	63.43	82.70	1742559.32	14523702.03	39°59'27.9649"N	80°38'7.1482"W	104.23	52.511	0.33	-0.30	0.88
1643.00	7.520	77.690	1635.72	-18.95	65.29	90.11	1742566.72	14523703.88	39°59'27.9829"N	80°38'7.0530"W	111.27	54.074	2.41	-2.26	6.00
1755.00	7.740	77.750	1746.73	-15.39	68.45	104.64	1742581.25	14523707.04	39°59'28.0136"N	80°38'6.8661"W	125.04	56.809	0.20	0.20	0.05
1800.00	7.700	75.980	1791.32	-14.03	69.82	110.52	1742587.13	14523708.42	39°59'28.0269"N	80°38'6.7904"W	130.73	57.717	0.54	-0.09	-3.93
1891.00	7.510	73.460	1881.52	-11.77	72.99	122.14	1742598.74	14523711.58	39°59'28.0577"N	80°38'6.6410"W	142.29	59.136	0.42	-0.21	-2.77
1981.00	7.240	71.220	1976.78	-10.06	76.49	133.15	1742609.74	14523715.08	39°59'28.0919"N	80°38'6.4994"W	153.56	60.122	0.44	-0.30	-2.49
2072.00	6.920	69.300	2066.05	-8.81	80.28	143.70	1742620.30	14523718.87	39°59'28.1289"N	80°38'6.3636"W	164.61	60.811	0.44	-0.35	-2.11
2163.00	6.570	65.550	2155.46	-8.14	84.07	153.57	1742630.16	14523722.96	39°59'28.1689"N	80°38'6.2366"W	175.22	61.216	0.62	-0.38	-4.12
2253.00	6.300	61.790	2246.88	-7.17	88.84	162.61	1742639.20	14523727.42	39°59'28.2127"N	80°38'6.1202"W	185.29	61.352	0.56	-0.30	-4.18

Department of  
 Protection  
 2020  
 and Gas  
 DIVISION

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH DATA (233 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)
2344.00	7.260	67.650	2331.25	-7.98	93.38	172.33	1742648.91	14523731.97	39°59'28.2572"N	80°38'5.9951"W	196.00	61.547	1.30	1.05	6.44
2434.00	7.290	67.010	2420.52	-7.29	97.77	182.84	1742659.42	14523736.36	39°59'28.3002"N	80°38'5.8598"W	207.34	61.865	0.10	0.03	-0.71
2525.00	7.280	76.930	2510.79	-5.67	101.33	193.78	1742670.35	14523739.91	39°59'28.3349"N	80°38'5.7191"W	218.67	62.393	1.38	-0.01	10.90
2616.00	6.960	78.820	2601.09	-2.95	103.71	204.80	1742681.37	14523742.29	39°59'28.3579"N	80°38'5.5774"W	229.56	63.143	0.44	-0.35	2.08
2706.00	7.020	76.530	2690.42	-0.34	106.04	215.50	1742692.06	14523744.62	39°59'28.3806"N	80°38'5.4398"W	240.18	63.799	0.32	0.07	-2.54
2797.00	6.800	73.390	2780.76	1.77	108.88	226.07	1742702.63	14523747.46	39°59'28.4082"N	80°38'5.3038"W	250.92	64.283	0.48	-0.24	-3.45
2887.00	6.860	68.360	2870.12	3.07	112.39	236.17	1742712.73	14523750.96	39°59'28.4424"N	80°38'5.1739"W	261.55	64.552	0.67	0.07	-5.59
2978.00	7.660	75.820	2960.40	4.75	115.88	247.10	1742723.66	14523754.45	39°59'28.4765"N	80°38'5.0332"W	272.92	64.876	1.36	0.88	8.20
3069.00	7.860	76.200	3050.56	7.33	118.85	259.03	1742735.57	14523757.42	39°59'28.5053"N	80°38'4.8799"W	284.99	65.354	0.23	0.22	0.42
3159.00	7.650	71.190	3139.74	9.40	122.24	270.67	1742747.22	14523760.82	39°59'28.5384"N	80°38'4.7301"W	297.00	65.694	0.78	-0.23	-5.57
3250.00	7.490	64.600	3229.95	10.25	126.74	281.76	1742758.30	14523765.31	39°59'28.5824"N	80°38'4.5873"W	308.96	65.781	0.97	-0.18	-7.24
3340.00	8.050	72.950	3319.13	11.32	131.11	293.09	1742769.62	14523769.67	39°59'28.6251"N	80°38'4.4416"W	321.08	65.900	1.40	0.62	9.28
3431.00	7.790	71.770	3409.26	13.17	134.90	305.04	1742781.57	14523773.47	39°59'28.6621"N	80°38'4.2879"W	333.54	66.142	0.34	-0.29	-1.30
3522.00	7.350	65.440	3499.47	14.17	139.25	316.19	1742792.72	14523777.82	39°59'28.7047"N	80°38'4.1444"W	345.50	66.231	1.04	-0.48	-6.96
3613.00	7.710	73.890	3589.68	15.39	143.37	327.35	1742803.87	14523781.93	39°59'28.7449"N	80°38'4.0008"W	357.37	66.349	1.28	0.40	9.29
3703.00	7.840	73.360	3678.86	17.45	146.80	339.03	1742815.55	14523785.36	39°59'28.7783"N	80°38'3.8505"W	369.45	66.588	0.16	0.14	-0.59
3794.00	7.450	67.470	3769.05	18.84	150.84	350.43	1742826.94	14523789.40	39°59'28.8178"N	80°38'3.7039"W	381.51	66.711	0.96	-0.43	-6.47
3885.00	8.330	65.110	3859.19	19.35	155.87	361.86	1742838.36	14523794.43	39°59'28.8671"N	80°38'3.5568"W	394.00	66.696	1.03	0.97	-2.59
3975.00	8.340	61.890	3948.24	19.27	161.69	373.53	1742850.03	14523800.25	39°59'28.9241"N	80°38'3.4065"W	407.02	66.593	0.52	0.01	-3.58
4066.00	8.740	69.060	4038.23	19.66	167.27	385.81	1742862.30	14523805.83	39°59'28.9787"N	80°38'3.2485"W	420.51	66.560	1.25	0.44	7.88
4157.00	8.380	67.610	4128.22	20.72	172.27	398.39	1742874.89	14523810.82	39°59'29.0276"N	80°38'3.0865"W	434.04	66.616	0.46	-0.40	-1.59
4247.00	7.760	78.750	4217.33	22.70	175.95	410.42	1742886.91	14523814.50	39°59'29.0635"N	80°38'2.9318"W	446.54	66.795	1.87	-0.69	12.38
4338.00	7.030	77.730	4307.57	25.61	178.33	421.88	1742898.37	14523816.88	39°59'29.0866"N	80°38'2.7844"W	458.03	67.086	0.82	-0.80	-1.12
4429.00	6.400	74.170	4397.95	27.85	180.90	432.21	1742908.69	14523819.45	39°59'29.1116"N	80°38'2.6516"W	468.54	67.288	0.83	-0.69	-3.91
4519.00	5.960	66.150	4487.43	28.93	184.16	441.31	1742917.78	14523822.71	39°59'29.1434"N	80°38'2.5345"W	478.19	67.349	1.08	-0.49	-8.91
4610.00	6.520	81.960	4577.89	30.73	186.79	450.74	1742927.22	14523825.34	39°59'29.1690"N	80°38'2.4131"W	487.91	67.490	1.98	0.62	17.37
4701.00	6.660	81.250	4668.29	33.90	188.32	461.07	1742937.54	14523826.86	39°59'29.1837"N	80°38'2.2803"W	498.05	67.783	0.18	0.15	-0.78
4792.00	7.470	75.700	4758.60	36.69	190.58	472.02	1742948.49	14523829.13	39°59'29.2056"N	80°38'2.1396"W	509.04	68.013	1.16	0.89	-6.10
4882.00	7.190	71.270	4847.87	38.61	193.83	483.03	1742959.49	14523832.38	39°59'29.2373"N	80°38'1.9980"W	520.47	68.135	0.70	-0.31	-4.92
4973.00	6.640	66.620	4938.22	39.60	197.75	493.25	1742969.71	14523836.29	39°59'29.2756"N	80°38'1.8665"W	531.41	68.153	0.86	-0.60	-5.11

Department of Environmental Protection

OCT 26 2020

RECEIVED  
Office of Oil and Gas



# Actual Wellpath Report

Betty Schafer MSH 8H AWP Proj: 20442'  
Page 4 of 12



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH DATA (233 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]
5063.00	6.910	75.500	5027.58	40.94	201.17	503.27	1742979.72	14523839.71	39°59'29.3090"N	80°38'1.7376"W	541.98	68.212	1.20	0.30	9.87
5154.00	6.530	74.230	5117.95	42.97	203.95	513.55	1742990.00	14523842.49	39°59'29.3360"N	80°38'1.6054"W	552.56	68.340	0.45	-0.42	-1.40
5245.00	5.540	70.390	5208.45	44.40	206.83	522.66	1742999.11	14523845.37	39°59'29.3641"N	80°38'1.4881"W	562.10	68.410	1.17	-1.09	-4.22
5335.00	6.800	90.020	5297.94	47.24	208.29	532.09	1743008.53	14523846.82	39°59'29.3781"N	80°38'1.3669"W	571.40	68.622	2.71	1.40	21.81
5426.00	13.290	118.440	5387.54	58.15	203.29	546.69	1743023.13	14523841.84	39°59'29.3282"N	80°38'1.1795"W	583.27	69.602	8.77	7.13	31.23
5517.00	19.710	129.410	5474.77	80.67	188.55	567.77	1743044.20	14523827.10	39°59'29.1817"N	80°38'0.9095"W	598.26	71.629	7.81	7.05	12.05
5607.00	25.870	137.190	5557.72	113.33	164.48	592.87	1743069.29	14523803.04	39°59'28.9428"N	80°38'0.5883"W	615.27	74.494	7.61	6.84	8.64
5698.00	28.360	148.700	5638.77	153.90	131.42	617.61	1743094.02	14523769.99	39°59'28.6151"N	80°38'0.2721"W	631.44	77.987	6.37	2.74	12.65
5789.00	32.950	157.170	5717.07	200.18	90.11	638.47	1743114.87	14523728.69	39°59'28.2059"N	80°38'0.0064"W	644.79	81.967	6.92	5.04	9.31
5856.00	39.000	157.020	5771.27	239.46	53.87	653.78	1743130.17	14523692.47	39°59'27.8472"N	80°37'59.8116"W	656.00	85.290	9.03	9.03	-0.22
5947.00	46.970	159.480	5837.79	301.26	-3.74	676.66	1743153.04	14523634.88	39°59'27.2770"N	80°37'59.5207"W	676.67	90.317	8.95	8.76	2.70
6037.00	54.700	159.320	5894.58	370.66	-69.01	701.19	1743177.57	14523569.64	39°59'26.6310"N	80°37'59.2089"W	704.58	95.620	8.59	8.59	-0.18
6128.00	62.910	159.050	5941.68	448.10	-141.70	728.84	1743205.20	14523496.97	39°59'25.9115"N	80°37'58.8576"W	742.49	101.002	9.03	9.02	-0.30
6219.00	69.050	160.240	5978.70	530.76	-219.60	757.72	1743234.07	14523419.11	39°59'25.1405"N	80°37'58.4907"W	788.90	106.163	6.85	6.75	1.31
6264.00	74.200	160.720	5992.88	573.17	-259.84	771.98	1743248.33	14523378.88	39°59'24.7423"N	80°37'58.3096"W	814.54	108.603	11.49	11.44	1.07
6309.00	79.010	160.730	6003.31	616.62	-301.15	786.43	1743262.77	14523337.59	39°59'24.3334"N	80°37'58.1261"W	842.11	110.953	10.69	10.69	0.02
6400.00	88.460	161.860	6013.22	706.21	-386.73	815.39	1743291.73	14523252.04	39°59'23.4865"N	80°37'57.7585"W	902.46	115.374	10.46	10.38	1.24
6490.00	89.450	159.990	6014.87	795.52	-471.77	844.80	1743321.12	14523167.03	39°59'22.6449"N	80°37'57.3852"W	967.60	119.181	2.35	1.10	-2.08
6581.00	89.600	160.490	6015.62	885.95	-557.41	875.56	1743351.87	14523081.43	39°59'21.7974"N	80°37'56.9945"W	1037.94	122.482	0.57	0.16	0.55
6671.00	89.320	159.720	6016.47	975.42	-642.03	906.19	1743382.49	14522996.84	39°59'20.9598"N	80°37'56.6055"W	1110.58	125.317	0.91	-0.31	-0.86
6762.00	89.660	159.570	6017.28	1065.95	-727.35	937.84	1743414.13	14522911.56	39°59'20.1155"N	80°37'56.2034"W	1186.84	127.796	0.41	0.37	-0.16
6853.00	89.690	160.130	6017.80	1156.46	-812.77	969.19	1743445.46	14522826.16	39°59'19.2700"N	80°37'55.8052"W	1264.88	129.984	0.62	0.03	0.62
6943.00	90.150	159.540	6017.92	1245.97	-897.26	1000.21	1743476.47	14522741.71	39°59'18.4338"N	80°37'55.4111"W	1343.69	131.894	0.83	0.51	-0.66
7034.00	90.770	160.010	6017.19	1336.49	-982.64	1031.67	1743507.92	14522656.36	39°59'17.5887"N	80°37'55.0115"W	1424.76	133.606	0.85	0.68	0.52
7124.00	89.260	156.850	6017.17	1426.19	-1066.33	1064.75	1743540.99	14522572.71	39°59'16.7604"N	80°37'54.5909"W	1506.90	135.042	3.89	-1.68	-3.51
7215.00	89.320	158.590	6018.29	1516.97	-1150.52	1099.25	1743575.47	14522488.54	39°59'15.9269"N	80°37'54.1522"W	1591.24	136.306	1.91	0.07	1.91
7306.00	89.750	160.010	6019.03	1607.56	-1235.64	1131.41	1743607.62	14522403.46	39°59'15.0844"N	80°37'53.7434"W	1675.39	137.521	1.63	0.47	1.56
7396.00	90.490	159.940	6018.84	1697.05	-1320.20	1162.23	1743638.43	14522318.93	39°59'14.2476"N	80°37'53.3520"W	1758.90	138.641	0.83	0.82	-0.08
7487.00	89.480	157.180	6018.87	1787.74	-1404.90	1195.49	1743671.68	14522234.27	39°59'13.4092"N	80°37'52.9292"W	1844.70	139.604	3.23	-1.11	-3.03
7577.00	90.060	159.140	6018.23	1877.48	-1488.43	1228.97	1743705.14	14522150.77	39°59'12.5823"N	80°37'52.5035"W	1930.23	140.454	2.27	0.64	2.18

RECEIVED  
 Office of Oil and Gas  
 Department of Environmental Protection  
 OCT 26 2020



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

### WELLPATH DATA (233 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]
7668.00	89.690	158.270	6019.43	1968.16	-1573.22	1262.02	1743738.18	14522066.02	39°59'11.7431"N	80°37'52.0835"W	2016.86	141.264	1.04	-0.41	-0.96
7759.00	89.350	158.730	6020.19	2058.86	-1657.88	1295.37	1743771.51	14521981.39	39°59'10.9051"N	80°37'51.6595"W	2103.94	141.998	0.63	-0.37	0.51
7849.00	89.350	158.730	6021.21	2148.53	-1741.75	1328.02	1743804.15	14521897.55	39°59'10.0750"N	80°37'51.2446"W	2190.28	142.676	0.00	0.00	0.00
7940.00	89.230	157.340	6022.34	2239.28	-1826.13	1362.05	1743838.17	14521813.20	39°59'9.2397"N	80°37'50.8118"W	2278.14	143.282	1.53	-0.13	-1.53
8030.00	89.290	155.980	6023.50	2329.17	-1908.76	1397.70	1743873.81	14521730.61	39°59'8.4217"N	80°37'50.3582"W	2365.78	143.786	1.51	0.07	-1.51
8121.00	89.380	158.730	6024.56	2419.98	-1992.73	1432.73	1743908.83	14521646.67	39°59'7.5904"N	80°37'49.9126"W	2454.32	144.285	3.02	0.10	3.02
8211.00	89.510	159.850	6025.43	2509.58	-2076.91	1464.56	1743940.64	14521562.52	39°59'6.7572"N	80°37'49.5083"W	2541.35	144.810	1.25	0.14	1.24
8302.00	89.320	159.590	6026.36	2600.10	-2162.26	1496.10	1743972.17	14521477.20	39°59'5.9124"N	80°37'49.1076"W	2629.39	145.320	0.35	-0.21	-0.29
8393.00	90.150	160.990	6026.78	2690.53	-2247.93	1526.79	1744002.84	14521391.57	39°59'5.0646"N	80°37'48.7179"W	2717.40	145.816	1.79	0.91	1.54
8483.00	89.940	160.020	6026.71	2779.93	-2332.77	1556.82	1744032.87	14521306.76	39°59'4.2250"N	80°37'48.3366"W	2804.55	146.282	1.10	-0.23	-1.08
8574.00	89.540	160.390	6027.12	2870.37	-2418.39	1587.64	1744063.67	14521221.18	39°59'3.3776"N	80°37'47.9453"W	2892.96	146.716	0.60	-0.44	0.41
8664.00	89.450	160.410	6027.92	2959.79	-2503.17	1617.83	1744093.85	14521136.43	39°59'2.5385"N	80°37'47.5620"W	2980.48	147.125	0.10	-0.10	0.02
8755.00	89.480	160.300	6028.77	3050.20	-2588.87	1648.42	1744124.43	14521050.76	39°59'1.6904"N	80°37'47.1735"W	3069.13	147.514	0.13	0.03	-0.12
8845.00	89.510	160.220	6029.56	3139.64	-2673.58	1678.82	1744154.81	14520966.09	39°59'0.8520"N	80°37'46.7876"W	3156.97	147.874	0.09	0.03	-0.09
8936.00	89.420	160.350	6030.41	3230.07	-2759.24	1709.52	1744185.50	14520880.46	39°59'0.0042"N	80°37'46.3978"W	3245.90	148.219	0.17	-0.10	0.14
9027.00	89.480	160.150	6031.28	3320.50	-2844.88	1740.27	1744216.24	14520794.85	39°58'59.1566"N	80°37'46.0074"W	3334.95	148.545	0.23	0.07	-0.22
9117.00	89.750	160.380	6031.89	3409.94	-2929.59	1770.65	1744246.61	14520710.17	39°58'58.3182"N	80°37'45.6215"W	3423.12	148.851	0.39	0.30	0.26
9208.00	89.910	160.980	6032.16	3500.30	-3015.47	1800.76	1744276.71	14520624.33	39°58'57.4683"N	80°37'45.2393"W	3512.23	149.155	0.68	0.18	0.66
9298.00	90.000	160.880	6032.23	3589.62	-3100.53	1830.17	1744306.10	14520539.30	39°58'56.6265"N	80°37'44.8661"W	3600.39	149.448	0.15	0.10	-0.11
9389.00	89.970	159.290	6032.25	3680.08	-3186.08	1861.16	1744337.09	14520453.78	39°58'55.7798"N	80°37'44.4725"W	3689.86	149.709	1.75	-0.03	-1.75
9480.00	90.340	159.930	6032.00	3770.63	-3271.38	1892.87	1744368.78	14520368.51	39°58'54.9355"N	80°37'44.0698"W	3779.53	149.946	0.81	0.41	0.70
9570.00	89.510	159.800	6032.12	3860.14	-3355.88	1923.85	1744399.75	14520284.05	39°58'54.0992"N	80°37'43.6763"W	3868.22	150.175	0.93	-0.92	-0.14
9661.00	89.230	158.000	6033.12	3950.78	-3440.77	1956.60	1744432.49	14520199.19	39°58'53.2590"N	80°37'43.2601"W	3958.18	150.375	2.00	-0.31	-1.98
9751.00	89.540	160.050	6034.09	4040.41	-3524.80	1988.82	1744464.69	14520115.20	39°58'52.4273"N	80°37'42.8508"W	4047.17	150.567	2.30	0.34	2.28
9842.00	89.170	159.700	6035.11	4130.90	-3610.24	2020.13	1744495.99	14520029.79	39°58'51.5817"N	80°37'42.4531"W	4136.99	150.771	0.56	-0.41	-0.38
9932.00	89.350	159.340	6036.28	4220.46	-3694.54	2051.61	1744527.46	14519945.52	39°58'50.7472"N	80°37'42.0532"W	4225.96	150.956	0.45	0.20	-0.40
10023.00	89.290	159.420	6037.36	4311.03	-3779.70	2083.66	1744559.49	14519860.39	39°58'49.9043"N	80°37'41.6461"W	4315.99	151.133	0.11	-0.07	0.09
10113.00	89.690	159.850	6038.16	4400.58	-3864.08	2114.98	1744590.80	14519776.05	39°58'49.0692"N	80°37'41.2483"W	4405.02	151.306	0.65	0.44	0.48
10204.00	89.170	159.830	6039.06	4491.08	-3949.50	2146.34	1744622.15	14519690.67	39°58'48.2238"N	80°37'40.8500"W	4495.03	151.478	0.57	-0.57	-0.02
10295.00	89.350	160.110	6040.24	4581.56	-4034.98	2177.50	1744653.30	14519605.21	39°58'47.3777"N	80°37'40.4543"W	4585.04	151.646	0.37	0.20	0.31

RECEIVED  
 Office of Oil and Gas  
 OCT 26 2020  
 WV Department of Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH DATA (233 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]
10385.00	89.110	160.180	6041.45	4671.01	-4119.63	2208.07	1744683.86	14519520.60	39°58'46.5400"N	80°37'40.0662"W	4674.06	151.809	0.28	-0.27	0.08
10476.00	88.580	160.160	6043.28	4761.45	-4205.21	2238.93	1744714.71	14519435.05	39°58'45.6929"N	80°37'39.6743"W	4764.10	151.968	0.58	-0.58	-0.02
10566.00	88.830	159.380	6045.32	4850.95	-4289.64	2270.04	1744745.81	14519350.66	39°58'44.8573"N	80°37'39.2792"W	4853.26	152.113	0.91	0.28	-0.87
10657.00	88.950	159.790	6047.08	4941.48	-4374.91	2301.78	1744777.53	14519265.42	39°58'44.0134"N	80°37'38.8761"W	4943.48	152.250	0.47	0.13	0.45
10748.00	89.080	159.600	6048.64	5032.00	-4460.24	2333.35	1744809.09	14519180.12	39°58'43.1688"N	80°37'38.4751"W	5033.71	152.384	0.25	0.14	-0.21
10838.00	88.800	159.230	6050.31	5121.56	-4544.48	2364.99	1744840.72	14519095.91	39°58'42.3350"N	80°37'38.0732"W	5123.03	152.507	0.52	-0.31	-0.41
10929.00	89.170	161.280	6051.92	5211.98	-4630.11	2395.73	1744871.44	14519010.32	39°58'41.4875"N	80°37'37.6829"W	5213.20	152.542	2.29	0.41	2.25
11019.00	89.570	160.210	6052.91	5301.33	-4715.07	2425.41	1744901.11	14518925.39	39°58'40.6467"N	80°37'37.3063"W	5302.31	152.779	1.27	0.44	-1.19
11110.00	89.510	159.960	6053.64	5391.79	-4800.62	2456.40	1744932.09	14518839.87	39°58'39.7999"N	80°37'36.9127"W	5392.58	152.902	0.28	-0.07	-0.27
11201.00	89.480	160.200	6054.44	5482.26	-4886.18	2487.40	1744963.08	14518754.35	39°58'38.9532"N	80°37'36.5191"W	5482.87	153.021	0.27	-0.03	0.26
11291.00	89.450	160.300	6055.28	5571.70	-4970.88	2517.82	1744993.48	14518669.68	39°58'38.1149"N	80°37'36.1330"W	5572.16	153.137	0.12	-0.03	0.11
11382.00	89.510	159.610	6056.11	5662.18	-5056.36	2549.01	1745024.66	14518584.23	39°58'37.2688"N	80°37'35.7370"W	5662.53	153.246	0.76	0.07	-0.76
11473.00	89.350	160.350	6057.01	5752.66	-5141.86	2580.16	1745055.80	14518498.77	39°58'36.4226"N	80°37'35.3414"W	5752.90	153.353	0.83	-0.18	0.81
11563.00	89.170	156.810	6058.18	5842.34	-5225.62	2613.02	1745088.65	14518415.04	39°58'35.5935"N	80°37'34.9238"W	5842.51	153.433	3.94	-0.20	-3.93
11654.00	89.600	157.790	6059.15	5933.17	-5309.57	2648.13	1745123.75	14518331.13	39°58'34.7625"N	80°37'34.4773"W	5933.30	153.492	1.18	0.47	1.08
11745.00	89.600	158.090	6059.79	6023.94	-5393.90	2682.31	1745157.91	14518246.82	39°58'33.9277"N	80°37'34.0428"W	6024.03	153.560	0.33	0.00	0.33
11835.00	89.290	158.370	6060.66	6113.67	-5477.48	2715.69	1745191.28	14518163.28	39°58'33.1003"N	80°37'33.6186"W	6113.73	153.628	0.46	-0.34	0.31
11926.00	89.630	158.610	6061.52	6204.37	-5562.14	2749.05	1745224.63	14518078.65	39°58'32.2623"N	80°37'33.1946"W	6204.41	153.699	0.46	0.37	0.26
12017.00	89.450	158.480	6062.25	6295.07	-5646.83	2782.34	1745257.90	14517993.99	39°58'31.4240"N	80°37'32.7716"W	6295.08	153.769	0.24	-0.20	-0.14
12107.00	89.850	157.960	6062.80	6384.81	-5730.40	2815.73	1745291.28	14517910.45	39°58'30.5967"N	80°37'32.3472"W	6384.81	153.832	0.73	0.44	-0.58
12198.00	89.600	158.040	6063.23	6475.57	-5814.77	2849.82	1745325.36	14517826.11	39°58'29.7615"N	80°37'31.9139"W	6475.57	153.891	0.29	-0.27	0.09
12289.00	89.600	157.790	6063.87	6566.35	-5899.10	2884.03	1745359.56	14517741.83	39°58'28.9268"N	80°37'31.4790"W	6566.35	153.946	0.27	0.00	-0.27
12379.00	89.970	158.240	6064.21	6656.11	-5982.55	2917.72	1745393.24	14517658.40	39°58'28.1007"N	80°37'31.0507"W	6656.13	154.001	0.65	0.41	0.50
12470.00	89.820	158.150	6064.37	6746.85	-6067.04	2951.52	1745427.02	14517573.95	39°58'27.2644"N	80°37'30.6211"W	6746.89	154.058	0.19	-0.16	-0.10
12561.00	89.450	158.070	6064.95	6837.60	-6151.48	2985.45	1745460.94	14517489.54	39°58'26.4285"N	80°37'30.1899"W	6837.66	154.112	0.42	-0.41	-0.09
12651.00	89.750	158.660	6065.58	6927.32	-6235.13	3018.63	1745494.11	14517405.92	39°58'25.6004"N	80°37'29.7682"W	6927.41	154.167	0.74	0.33	0.66
12742.00	89.510	158.100	6066.17	7018.04	-6319.73	3052.16	1745527.62	14517321.36	39°58'24.7630"N	80°37'29.3421"W	7018.17	154.221	0.67	-0.26	-0.62
12832.00	89.380	157.440	6067.04	7107.83	-6403.03	3086.21	1745561.65	14517238.08	39°58'23.9384"N	80°37'28.9093"W	7107.99	154.266	0.75	-0.14	-0.73
12923.00	89.780	158.180	6067.71	7198.61	-6487.29	3120.58	1745596.01	14517153.86	39°58'23.1043"N	80°37'28.4724"W	7198.82	154.311	0.92	0.44	0.81
13014.00	89.720	158.070	6068.11	7289.36	-6571.74	3154.48	1745629.90	14517069.44	39°58'22.2683"N	80°37'28.0415"W	7289.62	154.359	0.14	-0.07	-0.12

RECEIVED  
 Office of Oil and Gas  
 OCT 26 2020  
 WV Department of Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

**WELLPATH DATA (233 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]
13104.00	89.420	157.100	6068.78	7379.17	-6654.94	3188.80	1745664.20	14516986.28	39°58'21.4447"N	80°37'27.6052"W	7379.47	154.398	1.13	-0.33	-1.08
13195.00	89.720	157.410	6069.46	7470.01	-6738.86	3223.98	1745699.37	14516902.39	39°58'20.6139"N	80°37'27.1578"W	7470.36	154.433	0.47	0.33	0.34
13285.00	90.150	156.110	6069.57	7559.89	-6821.55	3259.49	1745734.87	14516819.73	39°58'19.7952"N	80°37'26.7062"W	7560.28	154.460	1.52	0.48	-1.44
13376.00	89.880	155.640	6069.54	7650.84	-6904.60	3296.69	1745772.05	14516736.71	39°58'18.9730"N	80°37'26.2330"W	7651.25	154.477	0.60	-0.30	-0.52
13466.00	89.910	152.430	6069.71	7740.83	-6985.51	3336.08	1745811.43	14516655.84	39°58'18.1718"N	80°37'25.7313"W	7741.24	154.472	3.57	0.03	-3.57
13557.00	90.120	151.440	6069.68	7831.77	-7065.81	3378.90	1745854.23	14516575.57	39°58'17.3765"N	80°37'25.1858"W	7832.15	154.443	1.11	0.23	-1.09
13648.00	89.820	148.700	6069.73	7922.56	-7144.66	3424.30	1745899.61	14516496.74	39°58'16.5953"N	80°37'24.6069"W	7922.88	154.393	3.03	-0.33	-3.01
13738.00	89.350	148.550	6070.38	8012.18	-7221.50	3471.15	1745946.45	14516419.94	39°58'15.8340"N	80°37'24.0093"W	8012.43	154.328	0.55	-0.52	-0.17
13829.00	89.380	148.720	6071.39	8102.79	-7299.20	3518.51	1745993.79	14516342.27	39°58'15.0642"N	80°37'23.4052"W	8102.98	154.264	0.19	0.03	0.19
13920.00	89.290	148.960	6072.45	8193.44	-7377.06	3565.60	1746040.86	14516264.43	39°58'14.2928"N	80°37'22.8047"W	8193.57	154.204	0.28	-0.10	0.26
14010.00	89.570	149.190	6073.34	8283.12	-7454.27	3611.85	1746087.09	14516187.26	39°58'13.5279"N	80°37'22.2148"W	8283.21	154.148	0.40	0.31	0.26
14101.00	89.260	148.940	6074.27	8373.79	-7532.32	3658.62	1746133.85	14516109.24	39°58'12.7546"N	80°37'21.6182"W	8373.85	154.093	0.44	-0.34	-0.27
14191.00	89.480	149.210	6075.26	8463.47	-7609.52	3704.87	1746180.08	14516032.07	39°58'11.9898"N	80°37'21.0284"W	8463.50	154.040	0.39	0.24	0.30
14282.00	89.290	148.820	6076.24	8554.13	-7687.53	3751.72	1746226.90	14515954.09	39°58'11.2169"N	80°37'20.4310"W	8554.15	153.986	0.48	-0.21	-0.43
14373.00	88.830	150.080	6077.73	8644.85	-7765.88	3797.97	1746273.13	14515875.77	39°58'10.4406"N	80°37'19.8413"W	8644.85	153.939	1.47	-0.51	1.38
14463.00	89.200	148.120	6079.28	8734.52	-7843.09	3844.18	1746319.33	14515798.59	39°58'9.6757"N	80°37'19.2519"W	8734.52	153.889	2.22	0.41	-2.18
14554.00	89.320	148.230	6080.45	8825.06	-7920.41	3892.16	1746367.29	14515721.30	39°58'8.9096"N	80°37'18.6399"W	8825.06	153.830	0.18	0.13	0.12
14644.00	89.170	147.420	6081.64	8914.55	-7996.58	3940.08	1746415.19	14515645.16	39°58'8.1549"N	80°37'18.0285"W	8914.57	153.770	0.92	-0.17	-0.90
14735.00	89.350	147.770	6082.82	9004.99	-8073.40	3988.84	1746463.94	14515568.37	39°58'7.3936"N	80°37'17.4064"W	9005.03	153.707	0.43	0.20	0.38
14826.00	89.140	147.880	6084.01	9095.48	-8150.42	4037.30	1746512.37	14515491.38	39°58'6.6305"N	80°37'16.7883"W	9095.55	153.649	0.26	-0.23	0.12
14916.00	89.510	148.190	6085.08	9185.00	-8226.77	4084.94	1746559.99	14515415.06	39°58'5.8740"N	80°37'16.1806"W	9185.12	153.594	0.54	0.41	0.34
15007.00	89.540	148.080	6085.83	9275.54	-8304.05	4132.98	1746608.02	14515337.81	39°58'5.1083"N	80°37'15.5678"W	9275.71	153.540	0.13	0.03	-0.12
15097.00	89.510	148.570	6086.58	9365.12	-8380.64	4180.23	1746655.25	14515261.25	39°58'4.3494"N	80°37'14.9650"W	9365.33	153.490	0.55	-0.03	0.54
15188.00	89.420	148.330	6087.43	9455.71	-8458.19	4227.85	1746702.85	14515183.73	39°58'3.5811"N	80°37'14.3578"W	9455.98	153.442	0.28	-0.10	-0.26
15278.00	89.480	148.090	6088.29	9545.26	-8534.68	4275.26	1746750.24	14515107.27	39°58'2.8231"N	80°37'13.7530"W	9545.61	153.392	0.27	0.07	-0.27
15369.00	89.660	148.370	6088.97	9635.82	-8612.04	4323.17	1746798.13	14515029.94	39°58'2.0566"N	80°37'13.1419"W	9636.24	153.344	0.37	0.20	0.31
15460.00	89.570	147.770	6089.58	9726.35	-8689.27	4371.30	1746846.24	14514952.74	39°58'1.2914"N	80°37'12.5280"W	9726.85	153.294	0.67	-0.10	-0.66
15550.00	89.600	147.940	6090.24	9815.85	-8765.47	4419.18	1746894.11	14514876.57	39°58'0.5363"N	80°37'11.9172"W	9816.45	153.245	0.19	0.03	0.19
15641.00	89.540	147.590	6090.92	9906.33	-8842.45	4467.72	1746942.63	14514799.62	39°57'59.7736"N	80°37'11.2980"W	9907.04	153.194	0.39	-0.07	-0.38
15731.00	89.200	147.650	6091.91	9995.79	-8918.46	4515.89	1746990.77	14514723.63	39°57'59.0203"N	80°37'10.6836"W	9996.61	153.145	0.39	-0.38	0.11

RECEIVED  
Office of Oil and Gas  
OCT 26 2020  
Department of Environmental Protection



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

**WELLPATH DATA (233 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]
15822.00	89.660	147.760	6092.81	10086.26	-8995.40	4564.48	1747039.35	14514646.73	39°57'58.2580"N	80°37'10.0637"W	10087.20	153.096	0.51	0.51	0.08
15912.00	89.540	148.270	6093.44	10175.78	-9071.73	4612.15	1747087.00	14514570.42	39°57'57.5016"N	80°37'9.4556"W	10176.85	153.051	0.58	-0.13	0.57
16003.00	89.420	147.890	6094.27	10266.31	-9148.97	4660.26	1747135.09	14514493.22	39°57'56.7363"N	80°37'8.8420"W	10267.51	153.007	0.44	-0.13	-0.42
16094.00	89.420	147.970	6095.19	10356.82	-9226.08	4708.57	1747183.39	14514416.14	39°57'55.9723"N	80°37'8.2257"W	10358.15	152.962	0.09	0.00	0.09
16184.00	89.600	148.010	6095.98	10446.34	-9302.39	4756.28	1747231.07	14514339.85	39°57'55.2161"N	80°37'7.6172"W	10447.81	152.920	0.20	0.20	0.04
16275.00	89.540	147.790	6096.64	10536.84	-9379.48	4804.63	1747279.41	14514262.80	39°57'54.4523"N	80°37'7.0004"W	10538.46	152.876	0.25	-0.07	-0.24
16366.00	89.480	147.530	6097.42	10627.30	-9456.36	4853.31	1747328.07	14514185.95	39°57'53.6904"N	80°37'6.3795"W	10629.08	152.832	0.29	-0.07	-0.29
16456.00	89.290	148.120	6098.39	10716.80	-9532.54	4901.24	1747375.97	14514109.80	39°57'52.9356"N	80°37'5.7682"W	10718.74	152.790	0.69	-0.21	0.66
16547.00	89.600	147.630	6099.27	10807.29	-9609.60	4949.62	1747424.34	14514032.77	39°57'52.1720"N	80°37'5.1510"W	10809.40	152.748	0.64	0.34	-0.54
16638.00	89.350	147.770	6100.10	10897.76	-9686.51	4998.25	1747472.95	14513955.88	39°57'51.4099"N	80°37'4.5307"W	10900.05	152.706	0.31	-0.27	0.15
16728.00	89.290	148.000	6101.17	10987.26	-9762.74	5046.09	1747520.77	14513879.69	39°57'50.6546"N	80°37'3.9205"W	10989.73	152.667	0.26	-0.07	0.26
16819.00	89.260	147.950	6102.32	11077.77	-9839.88	5094.34	1747569.01	14513802.58	39°57'49.8902"N	80°37'3.3050"W	11080.42	152.628	0.06	-0.03	-0.05
16910.00	89.200	148.190	6103.54	11168.30	-9917.11	5142.47	1747617.11	14513725.38	39°57'49.1250"N	80°37'2.6913"W	11171.12	152.591	0.27	-0.07	0.26
17000.00	89.320	147.630	6104.71	11257.80	-9993.35	5190.28	1747664.90	14513649.17	39°57'48.3695"N	80°37'2.0815"W	11260.82	152.554	0.64	0.13	-0.62
17091.00	89.420	147.780	6105.71	11348.27	-10070.27	5238.89	1747713.50	14513572.28	39°57'47.6073"N	80°37'1.4613"W	11351.49	152.515	0.20	0.11	0.16
17182.00	89.600	147.750	6106.48	11438.75	-10147.24	5287.43	1747762.02	14513495.34	39°57'46.8446"N	80°37'0.8422"W	11442.17	152.477	0.20	0.20	-0.03
17272.00	89.480	147.660	6107.21	11528.22	-10223.31	5335.51	1747810.08	14513419.29	39°57'46.0908"N	80°37'0.2289"W	11531.86	152.440	0.17	-0.13	-0.10
17363.00	89.540	147.680	6107.99	11618.68	-10300.20	5384.18	1747858.73	14513342.43	39°57'45.3289"N	80°36'59.6082"W	11622.55	152.403	0.07	0.07	0.02
17454.00	89.850	147.240	6108.47	11709.11	-10376.92	5433.12	1747907.65	14513265.75	39°57'44.5687"N	80°36'58.9838"W	11713.21	152.364	0.59	0.34	-0.48
17544.00	89.750	142.950	6108.78	11798.03	-10450.71	5484.61	1747959.12	14513191.99	39°57'43.8373"N	80°36'58.3267"W	11802.47	152.309	4.77	-0.11	-4.77
17635.00	89.690	141.780	6109.23	11887.20	-10522.77	5540.18	1748014.67	14513119.95	39°57'43.1228"N	80°36'57.6171"W	11892.11	152.233	1.29	-0.07	-1.29
17726.00	89.600	142.090	6109.79	11976.23	-10594.41	5596.28	1748070.75	14513048.34	39°57'42.4124"N	80°36'56.9005"W	11981.65	152.156	0.35	-0.10	0.34
17816.00	89.630	141.720	6110.40	12064.27	-10665.24	5651.81	1748126.25	14512977.54	39°57'41.7101"N	80°36'56.1914"W	12070.22	152.080	0.41	0.03	-0.41
17907.00	89.690	139.600	6110.94	12152.85	-10735.62	5709.49	1748183.91	14512907.19	39°57'41.0122"N	80°36'55.4545"W	12159.43	151.995	2.33	0.07	-2.33
17998.00	89.600	140.050	6111.50	12241.12	-10805.15	5768.19	1748242.59	14512837.69	39°57'40.3225"N	80°36'54.7044"W	12248.40	151.905	0.50	-0.10	0.49
18088.00	89.690	138.590	6112.06	12328.23	-10873.40	5826.86	1748301.23	14512769.47	39°57'39.6456"N	80°36'53.9548"W	12336.25	151.814	1.63	0.10	-1.62
18179.00	89.750	141.120	6112.50	12416.51	-10942.95	5885.52	1748359.88	14512699.94	39°57'38.9557"N	80°36'53.2053"W	12425.28	151.727	2.78	0.07	2.78
18269.00	89.420	143.020	6113.16	12504.59	-11013.93	5940.84	1748415.17	14512628.98	39°57'38.2519"N	80°36'52.4988"W	12514.01	151.658	2.14	-0.37	2.11
18360.00	89.480	147.090	6114.03	12594.49	-11088.51	5992.95	1748467.26	14512554.44	39°57'37.5127"N	80°36'51.8338"W	12604.38	151.610	4.47	0.07	4.47
18451.00	89.480	148.340	6114.86	12684.96	-11165.43	6041.55	1748515.85	14512477.54	39°57'36.7504"N	80°36'51.2139"W	12695.17	151.582	1.37	0.00	1.37

RECEIVED  
 Office of Oil and Gas  
 OCT 26 2020  
 Environmental Protection Department of

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH DATA (233 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]
18541.00	89.750	150.800	6115.46	12774.70	-11243.03	6087.13	1748561.41	14512399.98	39°57'35.9816"N	80°36'50.6329"W	12785.10	151.568	2.75	0.30	2.73
18632.00	89.540	150.870	6116.02	12865.57	-11322.49	6131.48	1748605.74	14512320.55	39°57'35.1945"N	80°36'50.0678"W	12876.09	151.563	0.24	-0.23	0.08
18722.00	89.880	151.400	6116.48	12955.46	-11401.31	6174.93	1748649.17	14512241.76	39°57'34.4137"N	80°36'49.5142"W	12966.09	151.560	0.70	0.38	0.59
18813.00	89.420	152.610	6117.04	13046.41	-11481.66	6217.64	1748691.86	14512161.44	39°57'33.6179"N	80°36'48.9702"W	13057.08	151.563	1.42	-0.51	1.33
18903.00	89.660	153.170	6117.76	13136.39	-11561.77	6258.65	1748732.86	14512081.36	39°57'32.8245"N	80°36'48.4480"W	13147.06	151.572	0.68	0.27	0.62
18994.00	89.630	152.890	6118.32	13227.38	-11642.87	6299.92	1748774.11	14512000.29	39°57'32.0212"N	80°36'47.9225"W	13238.03	151.582	0.31	-0.03	-0.31
19085.00	89.630	152.890	6118.91	13318.37	-11723.87	6341.39	1748815.56	14511919.33	39°57'31.2190"N	80°36'47.3945"W	13329.00	151.591	0.00	0.00	0.00
19175.00	89.320	152.930	6119.73	13408.35	-11803.99	6382.37	1748856.53	14511839.23	39°57'30.4254"N	80°36'46.8727"W	13418.97	151.600	0.35	-0.34	0.04
19266.00	89.260	152.970	6120.86	13499.33	-11885.03	6423.75	1748897.90	14511758.23	39°57'29.6228"N	80°36'46.3458"W	13509.94	151.609	0.08	-0.07	0.04
19356.00	89.350	152.710	6121.95	13589.31	-11965.10	6464.83	1748938.96	14511678.19	39°57'28.8298"N	80°36'45.8227"W	13599.91	151.617	0.31	0.10	-0.29
19447.00	89.320	153.080	6123.01	13680.29	-12046.10	6506.29	1748980.40	14511597.22	39°57'28.0275"N	80°36'45.2948"W	13690.88	151.626	0.41	-0.03	0.41
19538.00	89.420	152.850	6124.01	13771.27	-12127.15	6547.65	1749021.75	14511516.20	39°57'27.2248"N	80°36'44.7682"W	13781.85	151.635	0.28	0.11	-0.25
19628.00	89.380	152.840	6124.95	13861.25	-12207.23	6588.72	1749062.80	14511436.16	39°57'26.4317"N	80°36'44.2452"W	13871.83	151.643	0.05	-0.04	-0.01
19719.00	89.380	152.990	6125.94	13952.24	-12288.24	6630.16	1749104.22	14511355.17	39°57'25.6293"N	80°36'43.7177"W	13962.80	151.651	0.16	0.00	0.16
19810.00	89.290	152.820	6126.99	14043.22	-12369.25	6671.60	1749145.65	14511274.20	39°57'24.8270"N	80°36'43.1900"W	14053.77	151.659	0.21	-0.10	-0.19
19900.00	89.420	152.980	6128.01	14133.20	-12449.36	6712.60	1749186.63	14511194.11	39°57'24.0335"N	80°36'42.6681"W	14143.75	151.667	0.23	0.14	0.18
19991.00	89.480	152.740	6128.88	14224.18	-12530.34	6754.11	1749228.12	14511113.17	39°57'23.2315"N	80°36'42.1396"W	14234.72	151.674	0.27	0.07	-0.26
20081.00	89.380	152.680	6129.78	14314.16	-12610.32	6795.37	1749269.37	14511033.22	39°57'22.4393"N	80°36'41.6142"W	14324.70	151.681	0.13	-0.11	-0.07
20172.00	89.200	153.240	6130.90	14405.14	-12691.36	6836.73	1749310.72	14510952.21	39°57'21.6366"N	80°36'41.0875"W	14415.67	151.689	0.65	-0.20	0.62
20263.00	89.320	152.980	6132.08	14496.12	-12772.52	6877.89	1749351.86	14510871.08	39°57'20.8329"N	80°36'40.5636"W	14506.64	151.698	0.31	0.13	-0.29
20353.00	89.480	152.800	6133.02	14586.10	-12852.63	6918.90	1749392.85	14510791.01	39°57'20.0394"N	80°36'40.0414"W	14596.61	151.705	0.27	0.18	-0.20
20417.00	89.380	153.490	6133.66	14650.09	-12909.72	6947.81	1749421.75	14510733.93	39°57'19.4740"N	80°36'39.6734"W	14660.59	151.712	1.09	-0.16	1.08
20442.00	89.380	153.490	6133.93	14675.09	-12932.09	6958.97	1749432.90	14510711.57	39°57'19.2524"N	80°36'39.5314"W	14685.58	151.715	0.00	0.00	0.00

RECEIVED  
Office of Oil and Gas  
OCT 26 2020  
WV Department of  
Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

HOLE & CASING SECTIONS - Ref Wellbore: Betty Schafer MSH 8H AWB Ref Wellpath: Betty Schafer MSH 8H AWP Proj: 20442'									
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	100.00	74.00	26.00	100.00	0.00	0.00	0.13	0.08
17.5in Open Hole	100.00	331.00	231.00	100.00	331.00	0.13	0.08	0.87	0.53
13.375in Casing Surface	26.00	331.00	305.00	26.00	331.00	0.00	0.00	0.87	0.53
12.25in Open Hole	331.00	1707.00	1376.00	331.00	1699.16	0.87	0.53	67.09	98.36
9.625in Casing Intermediate	26.00	1707.00	1681.00	26.00	1699.16	0.00	0.00	67.09	98.36
8.75in Open Hole	1707.00	5853.00	4146.00	1699.16	5768.93	67.09	98.36	55.60	653.05
8.5in Open Hole	5853.00	20442.00	14589.00	5768.93	6133.93	55.60	653.05	-12932.09	6958.97
5.5in Casing Production	26.00	20442.00	20416.00	26.00	6133.93	0.00	0.00	-12932.09	6958.97

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Betty Schafer MSH 8H LP Rev-3	6010.00	-398.95	813.19	1743289.52	14523239.83	39°59'23.3659"N	80°37'57.7875"W	point
Betty Schafer MSH 8H BHL Rev-3	6138.00	-12934.04	6958.52	1749432.46	14510709.63	39°57'19.2332"N	80°36'39.5372"W	point
8H Hardline	6200.00	-9724.47	4587.44	1747062.30	14513917.94	39°57'51.0521"N	80°37'9.8087"W	polygon
2D Polygon: dimensions not calculated								

RECEIVED  
 Office of Oil and Gas  
 WV Department of  
 Environmental Protection  
 OCT 26 2020

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

WELLPATH COMPOSITION - Ref Wellbore: Betty Schafer MSH 8H AWB Ref Wellpath: Betty Schafer MSH 8H AWP Proj: 20442'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	297.00	SDI Keeper v1.04	01_Scientific Gyro <17 1/2"> (50'-297')	Betty Schafer MSH 8H AWB	3/23/2020
297.00	662.00	SDI Keeper v1.04	02_Scientific Gyro <12 1/4"> (390'-662')	Betty Schafer MSH 8H AWB	3/23/2020
662.00	1643.00	OWSG MWD rev2 + HRGM	03_Premier MWD <12 1/4"> (773'-1643')	Betty Schafer MSH 8H AWB	3/23/2020
1643.00	5789.00	OWSG MWD rev2 + HRGM	04_Premier MWD <8 3/4"> (1755'-5789')	Betty Schafer MSH 8H AWB	3/23/2020
5789.00	20442.00	BH AutoTrak Curve (2019) (Short spacing)	05_BH AT Curve <8 1/2"> (5856'-20417')	Betty Schafer MSH 8H AWB	3/23/2020

RECEIVED  
Office of Oil and Gas  
OCT 26 2020  
WV Department of  
Environmental Protection



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 8H
Field	Marshall	API/Legal	
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 8H AWB
Slot	Slot 8H		

COMMENTS
<p><b>Wellpath general comments</b>                      API: 47-051-02297-0000                      BH Job #: 110238795A                      Rig: SDC 41                      Duration: 03/24/2020 - 03/27/2020</p>

**RECEIVED**  
 Office of Oil and Gas  
**OCT 26 2020**  
 WV Department of  
 Environmental Protection