



# SWN PRODUCTION COMPANY, LLC



Location: Marshall County, WV  
 Field: Marshall WV  
 Facility: Charles Jamison MSH Pad

Slot: 410H  
 Well: Charles Jamison MSH 410H  
 Wellbore: Charles Jamison MSH 410H AWB

Plot reference wellpath is Charles Jamison MSH 410H AWB_ awp 50' - 27331' Proj: 27375'	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to Rig on Slot 410H (KB)	North Reference: Grid north
Reference wellpath measured depths are referenced to Rig on Slot 410H (KB)	Scale: True distance
Rig on Slot 410H (KB) to Mean Sea Level: 1363.3 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot 410H): -1337.3 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: tranlam on 2022-04-12; Database: WA_MPL_EASTERNUS_Defn

### Bottom Hole Location

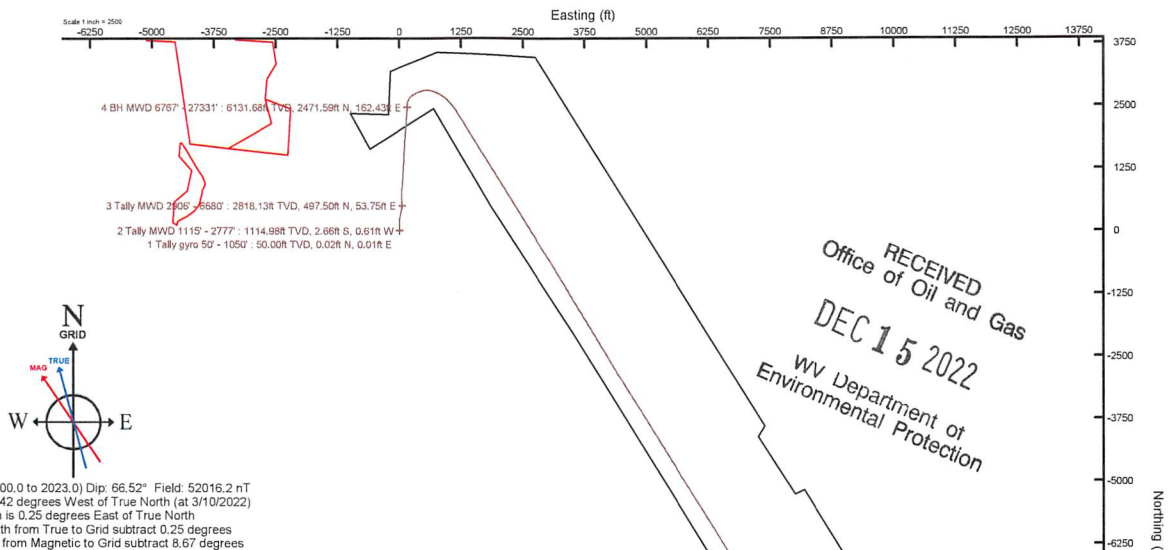
MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
27375.00	88.460	138.460	7383.77	-13289.05	11517.59	1762183.46	14437901.86	39°45'18.8549"N	80°34'0.2691"W

### Location Information

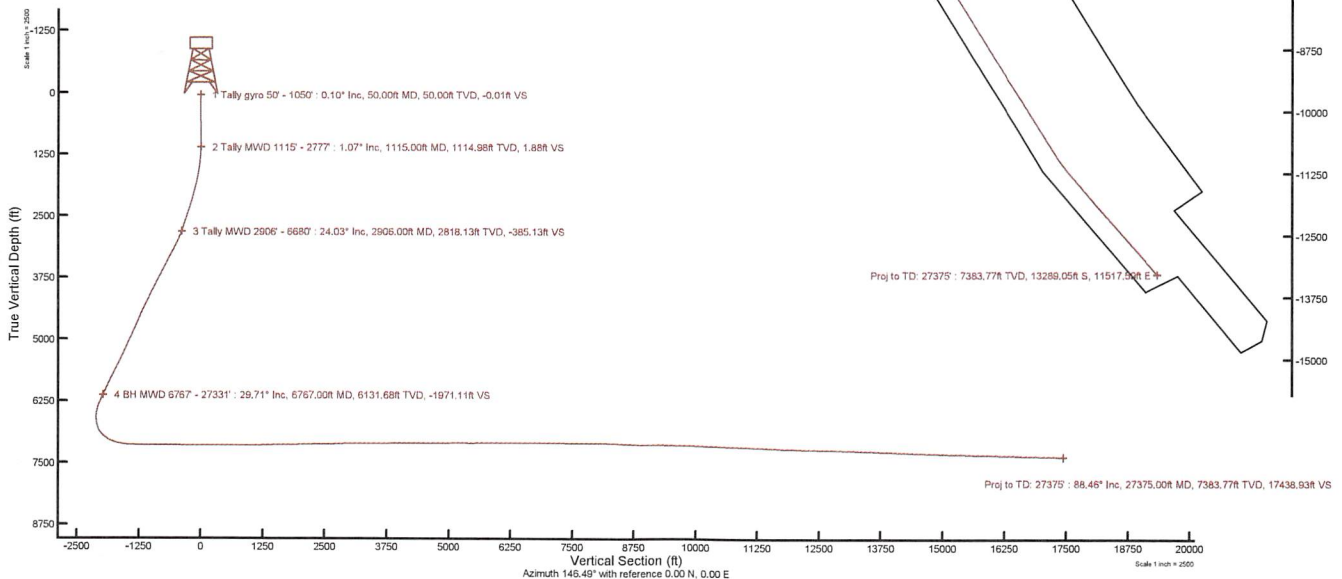
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
Charles Jamison MSH Pad		1750638.500	14451211.924	39°47'30.9700"N	80°36'27.4000"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
410H	-26.18	31.85	1750670.340	14451185.750	39°47'30.7099"N	80°36'26.9934"W

Comment	09.20.2021: Adjusted SHL coordinates as per updated geological prog dated 09.02.2021	26ft
Rig on Slot 410H (KB) to Ground level (At Slot: 410H)		-1337.3ft
Mean Sea Level to Ground level (At Slot: 410H)		1363.3ft
Rig on Slot 410H (KB) to Mean Sea Level		

**API: 47051024250000**  
**BHI JOB: 111260140**  
**DURATION: 03-29-2022 to 04-09-2022**  
**RIG: SDC 410H**



HDGM2022v1.0 (1900.0 to 2023.0) Dip: 66.52° Field: 52016.2 nT  
 Magnetic North is 8.42 degrees West of True North (at 3/10/2022)  
 Grid North is 0.25 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.25 degrees  
 To correct azimuth from Magnetic to Grid subtract 8.67 degrees





# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Tranlam
Scale	0.999614	Report Generated	4/12/2022 at 1:44:08 PM
Convergence at slot	0.25° 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	-26.18	31.85	1750670.34	14451185.75	39°47'30.7099"N	80°36'26.9934"W
Facility Reference Pt			1750638.50	14451211.92	39°47'30.9700"N	80°36'27.4000"W
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.4780"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on Slot 410H (KB) to Facility Vertical Datum	1363.30ft
Horizontal Reference Pt	Slot	Rig on Slot 410H (KB) to Mean Sea Level	1363.30ft
Vertical Reference Pt	Rig on Slot 410H (KB)	Rig on Slot 410H (KB) to Ground Level at Slot (410H)	26.00ft
MD Reference Pt	Rig on Slot 410H (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	146.49°

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Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 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	DLS [°/100ft]	
0.00†	0.000	21.570	0.00	0.00	0.00	0.00	1750670.34	14451185.75	39°47'30.7099"N	80°36'26.9934"W	0.00	
26.00	0.000	21.570	26.00	0.00	0.00	0.00	1750670.34	14451185.75	39°47'30.7099"N	80°36'26.9934"W	0.00	
50.00	0.100	21.570	50.00	-0.01	0.02	0.01	1750670.35	14451185.77	39°47'30.7100"N	80°36'26.9933"W	0.42	
100.00	0.060	330.160	100.00	-0.06	0.08	0.01	1750670.35	14451185.83	39°47'30.7107"N	80°36'26.9933"W	0.16	
150.00	0.070	5.660	150.00	-0.11	0.14	0.00	1750670.34	14451185.89	39°47'30.7112"N	80°36'26.9934"W	0.08	
200.00	0.050	81.000	200.00	-0.13	0.17	0.03	1750670.37	14451185.92	39°47'30.7115"N	80°36'26.9931"W	0.15	
250.00	0.080	99.830	250.00	-0.09	0.17	0.08	1750670.42	14451185.92	39°47'30.7115"N	80°36'26.9924"W	0.07	
300.00	0.130	133.000	300.00	-0.02	0.12	0.16	1750670.50	14451185.87	39°47'30.7111"N	80°36'26.9914"W	0.15	
350.00	0.260	115.670	350.00	0.14	0.03	0.30	1750670.64	14451185.78	39°47'30.7102"N	80°36'26.9896"W	0.28	
400.00	0.220	122.720	400.00	0.32	-0.07	0.48	1750670.82	14451185.68	39°47'30.7092"N	80°36'26.9872"W	0.10	
450.00	0.280	135.070	450.00	0.53	-0.20	0.65	1750670.99	14451185.55	39°47'30.7078"N	80°36'26.9851"W	0.16	
500.00	0.370	139.330	500.00	0.81	-0.41	0.84	1750671.18	14451185.34	39°47'30.7057"N	80°36'26.9827"W	0.19	
550.00	0.370	132.540	550.00	1.13	-0.65	1.07	1750671.41	14451185.10	39°47'30.7034"N	80°36'26.9798"W	0.09	
600.00	0.390	146.840	600.00	1.45	-0.90	1.28	1750671.62	14451184.85	39°47'30.7009"N	80°36'26.9771"W	0.19	
650.00	0.440	136.890	649.99	1.81	-1.18	1.50	1750671.84	14451184.57	39°47'30.6981"N	80°36'26.9742"W	0.18	
700.00	0.420	157.150	699.99	2.18	-1.49	1.71	1750672.04	14451184.26	39°47'30.6951"N	80°36'26.9717"W	0.31	
750.00	0.330	178.150	749.99	2.49	-1.80	1.78	1750672.12	14451183.95	39°47'30.6920"N	80°36'26.9707"W	0.33	
800.00	0.170	193.840	799.99	2.66	-2.02	1.77	1750672.11	14451183.73	39°47'30.6898"N	80°36'26.9709"W	0.35	
850.00	0.290	212.620	849.99	2.76	-2.20	1.68	1750672.02	14451183.55	39°47'30.6881"N	80°36'26.9720"W	0.28	
900.00	0.470	237.240	899.99	2.81	-2.41	1.44	1750671.78	14451183.34	39°47'30.6859"N	80°36'26.9751"W	0.48	
950.00	0.580	235.150	949.99	2.81	-2.67	1.06	1750671.40	14451183.08	39°47'30.6834"N	80°36'26.9800"W	0.22	
1000.00	0.640	241.430	999.98	2.79	-2.95	0.61	1750670.95	14451182.80	39°47'30.6807"N	80°36'26.9858"W	0.18	
1050.00	0.680	261.370	1049.98	2.64	-3.13	0.07	1750670.41	14451182.63	39°47'30.6790"N	80°36'26.9927"W	0.46	
1115.00	1.070	330.040	1114.98	1.88	-2.66	-0.61	1750669.73	14451183.09	39°47'30.6836"N	80°36'27.0014"W	1.60	
1205.00	2.900	353.450	1204.92	-0.99	0.33	-1.29	1750669.05	14451186.08	39°47'30.7132"N	80°36'27.0100"W	2.18	
1295.00	5.130	357.750	1294.69	-6.46	6.62	-1.71	1750668.63	14451192.36	39°47'30.7753"N	80°36'27.0150"W	2.50	
1387.00	7.560	11.710	1386.13	-14.24	16.65	-0.64	1750669.70	14451202.40	39°47'30.8745"N	80°36'27.0007"W	3.11	
1477.00	9.960	4.320	1475.07	-24.56	30.21	1.14	1750671.48	14451215.95	39°47'31.0084"N	80°36'26.9771"W	2.94	
1569.00	10.550	2.000	1565.60	-37.70	46.57	2.04	1750672.38	14451232.30	39°47'31.1700"N	80°36'26.9647"W	0.78	
1660.00	11.930	3.200	1654.86	-52.02	64.28	2.85	1750673.19	14451250.01	39°47'31.3450"N	80°36'26.9533"W	1.54	

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
1751.00	14.320	358.780	1743.48	-69.08	84.93	3.14	1750673.48	14451270.65	39°47'31.5490"N	80°36'26.9485"W	2.85
1842.00	15.770	2.030	1831.36	-88.66	108.54	3.34	1750673.67	14451294.25	39°47'31.7824"N	80°36'26.9446"W	1.84
1932.00	16.200	1.220	1917.88	-108.93	133.31	4.04	1750674.38	14451319.01	39°47'32.0272"N	80°36'26.9342"W	0.54
2022.00	17.210	359.580	2004.08	-130.40	159.18	4.21	1750674.54	14451344.87	39°47'32.2828"N	80°36'26.9306"W	1.24
2113.00	18.330	2.060	2090.73	-153.32	186.94	4.62	1750674.96	14451372.62	39°47'32.5571"N	80°36'26.9237"W	1.49
2203.00	20.150	6.060	2175.71	-176.78	216.51	6.77	1750677.11	14451402.17	39°47'32.8492"N	80°36'26.8946"W	2.50
2295.00	22.960	9.830	2261.27	-202.06	249.95	11.51	1750681.84	14451435.61	39°47'33.1795"N	80°36'26.8320"W	3.40
2386.00	24.550	10.760	2344.56	-228.50	286.02	18.07	1750688.40	14451471.65	39°47'33.5356"N	80°36'26.7459"W	1.80
2478.00	25.820	11.850	2427.81	-256.27	324.40	25.75	1750696.08	14451510.03	39°47'33.9147"N	80°36'26.6453"W	1.47
2569.00	25.410	11.600	2509.87	-283.97	362.92	33.74	1750704.07	14451548.53	39°47'34.2950"N	80°36'26.5408"W	0.47
2661.00	23.520	9.490	2593.60	-311.33	400.37	40.74	1750711.06	14451585.96	39°47'34.6647"N	80°36'26.4490"W	2.26
2753.00	23.350	8.830	2678.02	-338.23	436.49	46.57	1750716.89	14451622.07	39°47'35.0215"N	80°36'26.3724"W	0.34
2777.00	23.450	8.450	2700.04	-345.30	445.91	48.00	1750718.32	14451631.49	39°47'35.1145"N	80°36'26.3535"W	0.75
2906.00	24.030	4.330	2818.13	-385.13	497.50	53.75	1750724.07	14451683.05	39°47'35.6241"N	80°36'26.2769"W	1.36
3001.00	27.290	0.980	2903.76	-418.37	538.57	55.59	1750725.90	14451724.11	39°47'36.0299"N	80°36'26.2511"W	3.75
3094.00	29.600	356.960	2985.53	-455.74	582.83	54.73	1750725.05	14451768.36	39°47'36.4674"N	80°36'26.2595"W	3.23
3186.00	29.270	357.590	3065.66	-494.59	627.99	52.58	1750722.90	14451813.50	39°47'36.9138"N	80°36'26.2845"W	0.49
3279.00	31.340	358.400	3145.94	-534.59	674.89	50.95	1750721.27	14451860.38	39°47'37.3773"N	80°36'26.3028"W	2.27
3372.00	32.300	2.210	3224.97	-575.30	723.90	51.23	1750721.55	14451909.37	39°47'37.8617"N	80°36'26.2964"W	2.39
3464.00	32.730	1.840	3302.55	-615.54	773.32	52.98	1750723.30	14451958.77	39°47'38.3500"N	80°36'26.2713"W	0.51
3556.00	32.580	2.890	3380.01	-655.76	822.92	55.03	1750725.35	14452008.35	39°47'38.8400"N	80°36'26.2422"W	0.64
3649.00	32.480	4.840	3458.42	-695.50	872.81	58.40	1750728.71	14452058.22	39°47'39.3329"N	80°36'26.1963"W	1.13
3742.00	33.600	5.410	3536.38	-735.11	923.31	62.93	1750733.24	14452108.70	39°47'39.8318"N	80°36'26.1354"W	1.25
3834.00	32.730	5.150	3613.40	-774.33	973.43	67.56	1750737.88	14452158.80	39°47'40.3269"N	80°36'26.0732"W	0.96
3930.00	33.030	1.990	3694.02	-815.90	1025.43	70.80	1750741.11	14452210.78	39°47'40.8406"N	80°36'26.0288"W	1.81
4021.00	32.640	1.480	3770.48	-856.20	1074.75	72.30	1750742.61	14452260.08	39°47'41.3280"N	80°36'26.0069"W	0.53
4114.00	32.300	3.370	3848.95	-896.62	1124.62	74.40	1750744.71	14452309.94	39°47'41.8208"N	80°36'25.9770"W	1.15
4206.00	32.730	6.130	3926.53	-935.44	1173.89	78.50	1750748.81	14452359.19	39°47'42.3075"N	80°36'25.9217"W	1.68
4298.00	32.170	3.320	4004.17	-974.20	1223.08	82.58	1750752.89	14452408.35	39°47'42.7934"N	80°36'25.8668"W	1.75
4390.00	31.610	4.170	4082.28	-1012.88	1271.57	85.75	1750756.06	14452456.83	39°47'43.2726"N	80°36'25.8234"W	0.78

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Slot	410H		

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4481.00	32.010	5.310	4159.62	-1050.55	1319.37	89.72	1750760.02	14452504.61	39°47'43.7448"N	80°36'25.7699"W	0.79
4574.00	30.970	1.810	4238.93	-1089.28	1367.84	92.75	1750763.06	14452553.06	39°47'44.2236"N	80°36'25.7283"W	2.26
4664.00	30.760	1.470	4316.18	-1127.03	1413.99	94.08	1750764.38	14452599.19	39°47'44.6797"N	80°36'25.7087"W	0.30
4757.00	29.480	1.770	4396.62	-1165.20	1460.64	95.39	1750765.70	14452645.82	39°47'45.1406"N	80°36'25.6892"W	1.39
4849.00	29.440	3.080	4476.73	-1201.84	1505.84	97.31	1750767.61	14452691.01	39°47'45.5873"N	80°36'25.6622"W	0.70
4942.00	27.180	3.360	4558.60	-1237.18	1549.88	99.78	1750770.08	14452735.02	39°47'46.0223"N	80°36'25.6280"W	2.43
5029.00	27.350	0.880	4635.93	-1269.57	1589.70	101.25	1750771.55	14452774.83	39°47'46.4158"N	80°36'25.6069"W	1.32
5124.00	28.790	1.440	4719.76	-1306.33	1634.39	102.16	1750772.46	14452819.50	39°47'46.8574"N	80°36'25.5928"W	1.54
5215.00	30.160	4.610	4798.98	-1342.28	1679.08	104.55	1750774.85	14452864.18	39°47'47.2990"N	80°36'25.5596"W	2.28
5305.00	30.190	3.960	4876.79	-1378.03	1724.19	107.93	1750778.23	14452909.28	39°47'47.7447"N	80°36'25.5138"W	0.36
5395.00	29.930	3.160	4954.68	-1414.00	1769.19	110.73	1750781.03	14452954.25	39°47'48.1892"N	80°36'25.4754"W	0.53
5487.00	29.930	3.790	5034.41	-1450.66	1815.01	113.51	1750783.81	14453000.05	39°47'48.6419"N	80°36'25.4372"W	0.34
5580.00	30.400	7.700	5114.83	-1486.83	1861.48	118.20	1750788.49	14453046.51	39°47'49.1009"N	80°36'25.3745"W	2.17
5673.00	30.550	4.980	5194.98	-1523.03	1908.35	123.40	1750793.70	14453093.36	39°47'49.5639"N	80°36'25.3052"W	1.49
5765.00	30.120	2.440	5274.39	-1560.02	1954.70	126.42	1750796.71	14453139.70	39°47'50.0219"N	80°36'25.2640"W	1.47
5855.00	29.500	2.370	5352.48	-1596.25	1999.41	128.29	1750798.59	14453184.38	39°47'50.4636"N	80°36'25.2374"W	0.69
5947.00	30.980	5.630	5431.97	-1632.98	2045.61	131.55	1750801.84	14453230.56	39°47'50.9200"N	80°36'25.1931"W	2.40
6039.00	33.200	6.590	5509.91	-1670.61	2094.20	136.77	1750807.06	14453279.14	39°47'51.4000"N	80°36'25.1235"W	2.48
6132.00	32.720	2.560	5587.95	-1710.41	2144.61	140.81	1750811.10	14453329.53	39°47'51.8980"N	80°36'25.0689"W	2.41
6221.00	32.220	2.610	5663.03	-1749.02	2192.34	142.97	1750813.25	14453377.24	39°47'52.3696"N	80°36'25.0386"W	0.56
6314.00	32.340	5.650	5741.66	-1788.34	2241.86	146.55	1750816.83	14453426.74	39°47'52.8589"N	80°36'24.9899"W	1.75
6406.00	31.560	2.860	5819.73	-1826.81	2290.40	150.17	1750820.45	14453475.26	39°47'53.3384"N	80°36'24.9408"W	1.81
6497.00	31.080	5.920	5897.48	-1864.13	2337.55	153.78	1750824.06	14453522.40	39°47'53.8042"N	80°36'24.8919"W	1.83
6590.00	29.670	3.150	5977.71	-1901.14	2384.42	157.52	1750827.80	14453569.24	39°47'54.2672"N	80°36'24.8413"W	2.14
6680.00	29.430	4.110	6056.01	-1936.52	2428.71	160.33	1750830.61	14453613.52	39°47'54.7048"N	80°36'24.8028"W	0.59
6767.00	29.710	1.510	6131.68	-1971.11	2471.59	162.43	1750832.71	14453656.38	39°47'55.1284"N	80°36'24.7735"W	1.51
6858.00	29.720	1.780	6210.71	-2007.99	2516.67	163.73	1750834.00	14453701.45	39°47'55.5740"N	80°36'24.7544"W	0.15
6950.00	29.820	9.300	6290.60	-2043.39	2562.06	168.13	1750838.41	14453746.81	39°47'56.0223"N	80°36'24.6954"W	4.06
7040.00	29.740	21.100	6368.78	-2072.76	2605.01	179.80	1750850.07	14453789.74	39°47'56.4462"N	80°36'24.5435"W	6.50
7130.00	30.000	36.570	6446.94	-2093.39	2643.96	201.27	1750871.53	14453828.68	39°47'56.8303"N	80°36'24.2662"W	8.55

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
7221.00	32.800	46.010	6524.65	-2105.63	2679.38	232.58	1750902.83	14453864.09	39°47'57.1789"N	80°36'23.8630"W	6.21
7311.00	37.330	58.210	6598.39	-2109.25	2710.74	273.39	1750943.62	14453895.44	39°47'57.4871"N	80°36'23.3385"W	9.25
7402.00	41.650	62.660	6668.62	-2105.17	2739.18	323.74	1750993.95	14453923.87	39°47'57.7660"N	80°36'22.6918"W	5.67
7492.00	46.790	69.200	6733.13	-2094.73	2764.60	381.03	1751051.22	14453949.27	39°47'58.0146"N	80°36'21.9563"W	7.63
7579.00	49.900	72.910	6790.96	-2078.34	2785.64	442.50	1751112.67	14453970.31	39°47'58.2200"N	80°36'21.1676"W	4.79
7670.00	50.350	81.300	6849.36	-2053.78	2801.19	510.47	1751180.61	14453985.85	39°47'58.3706"N	80°36'20.2959"W	7.09
7762.00	53.980	94.750	6905.94	-2015.76	2803.47	582.79	1751252.90	14453988.13	39°47'58.3900"N	80°36'19.3692"W	12.19
7853.00	56.260	103.870	6958.05	-1965.05	2791.33	656.31	1751326.40	14453976.00	39°47'58.2669"N	80°36'18.4279"W	8.59
7945.00	60.710	111.240	7006.18	-1904.04	2767.59	730.95	1751401.01	14453952.27	39°47'58.0290"N	80°36'17.4729"W	8.36
8038.00	65.630	118.720	7048.19	-1833.32	2732.49	806.03	1751476.06	14453917.18	39°47'57.6788"N	80°36'16.5130"W	8.91
8129.00	71.240	125.030	7081.65	-1756.43	2687.77	877.78	1751547.78	14453872.47	39°47'57.2337"N	80°36'15.5963"W	8.92
8219.00	76.330	130.700	7106.80	-1674.58	2634.72	945.91	1751615.89	14453819.45	39°47'56.7065"N	80°36'14.7263"W	8.28
8310.00	80.420	137.880	7125.15	-1587.53	2572.51	1009.63	1751679.58	14453757.26	39°47'56.0889"N	80°36'13.9135"W	8.94
8401.00	84.110	140.330	7137.40	-1498.13	2504.36	1068.64	1751738.57	14453689.13	39°47'55.4128"N	80°36'13.1613"W	4.85
8492.00	87.200	146.900	7144.30	-1407.56	2431.35	1122.42	1751792.33	14453616.16	39°47'54.6890"N	80°36'12.4764"W	7.96
8584.00	89.320	147.440	7147.09	-1315.62	2354.08	1172.27	1751842.16	14453538.92	39°47'53.9232"N	80°36'11.8421"W	2.38
8675.00	89.380	147.610	7148.13	-1224.64	2277.32	1221.13	1751891.00	14453462.19	39°47'53.1624"N	80°36'11.2205"W	0.20
8766.00	89.570	147.650	7148.96	-1133.66	2200.46	1269.85	1751939.70	14453385.36	39°47'52.4008"N	80°36'10.6007"W	0.21
8856.00	90.090	148.390	7149.23	-1043.70	2124.12	1317.51	1751987.34	14453309.05	39°47'51.6442"N	80°36'9.9944"W	1.00
8948.00	90.400	148.700	7148.83	-951.76	2045.64	1365.52	1752035.33	14453230.60	39°47'50.8665"N	80°36'9.3838"W	0.48
9040.00	89.020	148.550	7149.30	-859.82	1967.10	1413.42	1752083.21	14453152.09	39°47'50.0882"N	80°36'8.7746"W	1.51
9131.00	91.020	147.630	7149.27	-768.86	1889.86	1461.52	1752131.29	14453074.87	39°47'49.3227"N	80°36'8.1628"W	2.42
9223.00	89.510	148.260	7148.84	-676.90	1811.89	1510.34	1752180.10	14452996.93	39°47'48.5501"N	80°36'7.5417"W	1.78
9313.00	89.480	148.390	7149.64	-586.95	1735.29	1557.60	1752227.33	14452920.37	39°47'47.7911"N	80°36'6.9406"W	0.15
9405.00	89.780	147.970	7150.23	-494.99	1657.12	1606.11	1752275.82	14452842.23	39°47'47.0164"N	80°36'6.3236"W	0.56
9496.00	89.230	148.150	7151.02	-404.03	1579.90	1654.25	1752323.94	14452765.04	39°47'46.2512"N	80°36'5.7113"W	0.64
9588.00	88.000	147.740	7153.24	-312.09	1501.95	1703.06	1752372.74	14452687.12	39°47'45.4787"N	80°36'5.0904"W	1.41
9679.00	90.400	146.870	7154.51	-221.11	1425.39	1752.20	1752421.86	14452610.58	39°47'44.7198"N	80°36'4.4651"W	2.81
9769.00	88.710	148.280	7155.21	-131.14	1349.43	1800.46	1752470.10	14452534.65	39°47'43.9670"N	80°36'3.8513"W	2.45
9859.00	88.800	148.220	7157.16	-41.20	1272.91	1847.81	1752517.43	14452458.17	39°47'43.2088"N	80°36'3.2491"W	0.12

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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REFERENCE WELLPATH IDENTIFICATION			
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Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS ["/100ft]
9952.00	90.490	147.090	7157.74	51.77	1194.35	1897.56	1752567.16	14452379.63	39°47'42.4301"N	80°36'2.6161"W	2.19
10043.00	89.350	148.070	7157.87	142.76	1117.53	1946.34	1752615.93	14452302.85	39°47'41.6689"N	80°36'1.9955"W	1.65
10133.00	89.320	147.950	7158.91	232.72	1041.21	1994.02	1752663.59	14452226.55	39°47'40.9125"N	80°36'1.3891"W	0.14
10225.00	90.950	149.580	7158.70	324.64	962.55	2041.72	1752711.27	14452147.92	39°47'40.1330"N	80°36'0.7825"W	2.51
10318.00	89.660	145.460	7158.20	417.60	884.11	2091.65	1752761.18	14452069.52	39°47'39.3557"N	80°36'0.1473"W	4.64
10409.00	89.660	147.980	7158.74	508.59	808.04	2141.58	1752811.09	14451993.48	39°47'38.6017"N	80°35'59.5120"W	2.77
10500.00	90.490	149.300	7158.62	599.52	730.34	2188.94	1752858.43	14451915.81	39°47'37.8317"N	80°35'58.9098"W	1.71
10592.00	90.400	147.490	7157.91	691.47	651.99	2237.15	1752906.62	14451837.49	39°47'37.0553"N	80°35'58.2966"W	1.97
10684.00	91.140	146.670	7156.67	783.45	574.77	2287.14	1752956.59	14451760.30	39°47'36.2900"N	80°35'57.6606"W	1.20
10775.00	90.580	149.510	7155.30	874.40	497.54	2335.23	1753004.67	14451683.10	39°47'35.5246"N	80°35'57.0489"W	3.18
10868.00	89.480	147.100	7155.26	967.34	418.42	2384.09	1753053.50	14451604.01	39°47'34.7405"N	80°35'56.4276"W	2.85
10959.00	91.050	146.890	7154.84	1058.33	342.11	2433.66	1753103.05	14451527.72	39°47'33.9841"N	80°35'55.7969"W	1.74
11049.00	91.020	147.960	7153.21	1148.31	266.28	2482.10	1753151.48	14451451.93	39°47'33.2326"N	80°35'55.1806"W	1.19
11139.00	91.750	149.160	7151.03	1238.22	189.52	2529.03	1753198.39	14451375.19	39°47'32.4719"N	80°35'54.5839"W	1.56
11231.00	90.740	145.220	7149.03	1330.17	112.23	2578.86	1753248.20	14451297.93	39°47'31.7059"N	80°35'53.9499"W	4.42
11322.00	91.480	149.160	7147.27	1421.13	35.78	2628.15	1753297.47	14451221.51	39°47'30.9482"N	80°35'53.3229"W	4.40
11412.00	90.770	146.480	7145.50	1511.08	-40.38	2676.07	1753345.37	14451145.39	39°47'30.1935"N	80°35'52.7134"W	3.08
11504.00	91.780	148.460	7143.46	1603.04	-117.92	2725.53	1753394.81	14451067.88	39°47'29.4250"N	80°35'52.0843"W	2.42
11595.00	90.460	149.510	7141.68	1693.93	-195.89	2772.41	1753441.67	14450989.94	39°47'28.6523"N	80°35'51.4883"W	1.85
11686.00	90.800	145.480	7140.68	1784.89	-272.61	2821.29	1753490.54	14450913.24	39°47'27.8919"N	80°35'50.8664"W	4.44
11776.00	89.880	148.290	7140.14	1874.88	-347.99	2870.46	1753539.68	14450837.90	39°47'27.1449"N	80°35'50.2409"W	3.29
11867.00	92.280	146.560	7138.43	1965.84	-424.65	2919.44	1753588.64	14450761.27	39°47'26.3851"N	80°35'49.6179"W	3.25
11958.00	90.030	147.220	7136.59	2056.81	-500.85	2969.13	1753638.32	14450685.09	39°47'25.6298"N	80°35'48.9857"W	2.58
12049.00	90.920	146.280	7135.84	2147.81	-576.95	3019.02	1753688.19	14450609.02	39°47'24.8755"N	80°35'48.3509"W	1.42
12140.00	91.080	147.790	7134.25	2238.78	-653.29	3068.53	1753737.68	14450532.72	39°47'24.1189"N	80°35'47.7211"W	1.67
12231.00	91.290	148.030	7132.37	2329.74	-730.37	3116.86	1753785.99	14450455.67	39°47'23.3550"N	80°35'47.1064"W	0.35
12321.00	91.050	149.570	7130.53	2419.64	-807.33	3163.48	1753832.59	14450378.73	39°47'22.5923"N	80°35'46.5138"W	1.73
12414.00	90.340	148.210	7129.40	2512.55	-886.95	3211.52	1753880.62	14450299.15	39°47'21.8034"N	80°35'45.9029"W	1.65
12504.00	91.450	148.640	7128.00	2602.49	-963.61	3258.64	1753927.72	14450222.51	39°47'21.0436"N	80°35'45.3037"W	1.32
12596.00	90.950	147.650	7126.07	2694.43	-1041.74	3307.18	1753976.24	14450144.42	39°47'20.2694"N	80°35'44.6864"W	1.21

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS ["/100ft]
12688.00	91.570	148.220	7124.05	2786.38	-1119.68	3356.01	1754025.05	14450066.50	39°47'19.4969"N	80°35'44.0654"W	0.92
12779.00	92.220	150.690	7121.04	2877.20	-1198.00	3402.23	1754071.25	14449988.21	39°47'18.7208"N	80°35'43.4778"W	2.81
12869.00	89.080	149.910	7120.02	2966.98	-1276.17	3446.81	1754115.82	14449910.08	39°47'17.9464"N	80°35'42.9113"W	3.59
12960.00	93.110	149.070	7118.28	3057.82	-1354.54	3493.00	1754161.98	14449831.74	39°47'17.1698"N	80°35'42.3242"W	4.52
13050.00	87.290	146.140	7117.96	3147.75	-1430.49	3541.19	1754210.15	14449755.82	39°47'16.4171"N	80°35'41.7113"W	7.24
13141.00	90.770	149.160	7119.50	3238.70	-1507.33	3589.86	1754258.81	14449679.00	39°47'15.6555"N	80°35'41.0923"W	5.06
13233.00	90.460	147.950	7118.52	3330.63	-1585.82	3637.85	1754306.78	14449600.55	39°47'14.8777"N	80°35'40.4821"W	1.36
13325.00	90.990	147.610	7117.35	3422.60	-1663.64	3686.90	1754355.81	14449522.75	39°47'14.1064"N	80°35'39.8583"W	0.68
13415.00	91.290	149.720	7115.56	3512.51	-1740.49	3733.69	1754402.58	14449445.93	39°47'13.3448"N	80°35'39.2633"W	2.37
13506.00	89.630	148.430	7114.83	3603.41	-1818.55	3780.45	1754449.32	14449367.90	39°47'12.5713"N	80°35'38.6689"W	2.31
13596.00	89.970	147.870	7115.15	3693.37	-1895.00	3827.94	1754496.80	14449291.49	39°47'11.8137"N	80°35'38.0649"W	0.73
13686.00	91.110	148.000	7114.30	3783.34	-1971.26	3875.72	1754544.56	14449215.25	39°47'11.0578"N	80°35'37.4574"W	1.27
13776.00	91.480	149.680	7112.26	3873.24	-2048.26	3922.28	1754591.09	14449138.29	39°47'10.2948"N	80°35'36.8655"W	1.91
13868.00	90.400	149.070	7110.75	3965.10	-2127.41	3969.13	1754637.93	14449059.16	39°47'9.5105"N	80°35'36.2699"W	1.35
13959.00	90.150	149.470	7110.32	4056.00	-2205.63	4015.63	1754684.42	14448980.97	39°47'8.7354"N	80°35'35.6788"W	0.52
14050.00	90.060	147.870	7110.15	4146.93	-2283.36	4062.95	1754731.71	14448903.27	39°47'7.9651"N	80°35'35.0772"W	1.76
14142.00	90.280	148.290	7109.88	4238.89	-2361.45	4111.59	1754780.34	14448825.22	39°47'7.1912"N	80°35'34.4587"W	0.52
14234.00	90.310	148.720	7109.40	4330.83	-2439.90	4159.66	1754828.38	14448746.80	39°47'6.4138"N	80°35'33.8476"W	0.47
14326.00	90.580	149.130	7108.69	4422.75	-2518.69	4207.14	1754875.85	14448668.04	39°47'5.6329"N	80°35'33.2439"W	0.53
14417.00	90.220	149.240	7108.05	4513.64	-2596.84	4253.76	1754922.44	14448589.92	39°47'4.8585"N	80°35'32.6514"W	0.41
14508.00	89.850	149.120	7108.00	4604.54	-2674.99	4300.38	1754969.05	14448511.80	39°47'4.0841"N	80°35'32.0587"W	0.43
14600.00	90.030	149.000	7108.09	4696.45	-2753.90	4347.68	1755016.33	14448432.92	39°47'3.3022"N	80°35'31.4574"W	0.24
14691.00	90.860	147.930	7107.39	4787.39	-2831.46	4395.27	1755063.91	14448355.39	39°47'2.5335"N	80°35'30.8523"W	1.49
14784.00	90.920	149.390	7105.94	4880.31	-2910.88	4443.63	1755112.25	14448276.00	39°47'1.7465"N	80°35'30.2375"W	1.57
14874.00	89.910	145.260	7105.29	4970.28	-2986.61	4492.21	1755160.81	14448200.30	39°47'0.9958"N	80°35'29.6197"W	4.72
14965.00	90.280	147.990	7105.14	5061.27	-3062.60	4542.27	1755210.84	14448124.34	39°47'0.2426"N	80°35'28.9829"W	3.03
15055.00	90.340	148.250	7104.65	5151.23	-3139.02	4589.80	1755258.36	14448047.95	39°46'59.4852"N	80°35'28.3786"W	0.30
15146.00	90.340	148.860	7104.11	5242.17	-3216.66	4637.27	1755305.81	14447970.34	39°46'58.7159"N	80°35'27.7750"W	0.67
15237.00	89.050	147.110	7104.60	5333.13	-3293.81	4685.51	1755354.03	14447893.22	39°46'57.9512"N	80°35'27.1616"W	2.39
15329.00	89.780	146.450	7105.54	5425.13	-3370.77	4735.91	1755404.41	14447816.29	39°46'57.1884"N	80°35'26.5206"W	1.07

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'  
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Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
15420.00	90.460	148.210	7105.35	5516.11	-3447.37	4785.03	1755453.51	14447739.72	39°46'56.4292"N	80°35'25.8959"W	2.07
15511.00	90.150	147.410	7104.86	5607.09	-3524.38	4833.51	1755501.97	14447662.74	39°46'55.6659"N	80°35'25.2795"W	0.94
15603.00	90.620	147.920	7104.24	5699.06	-3602.11	4882.71	1755551.16	14447585.04	39°46'54.8955"N	80°35'24.6538"W	0.75
15694.00	90.280	147.180	7103.53	5790.04	-3678.90	4931.54	1755599.96	14447508.28	39°46'54.1344"N	80°35'24.0329"W	0.89
15786.00	91.080	148.470	7102.44	5882.01	-3756.76	4980.52	1755648.93	14447430.44	39°46'53.3627"N	80°35'23.4100"W	1.65
15877.00	90.030	148.180	7101.56	5972.96	-3834.20	5028.31	1755696.69	14447353.03	39°46'52.5952"N	80°35'22.8025"W	1.20
15969.00	89.880	148.500	7101.63	6064.91	-3912.51	5076.59	1755744.96	14447274.76	39°46'51.8192"N	80°35'22.1886"W	0.38
16060.00	88.770	147.450	7102.70	6155.87	-3989.66	5124.85	1755793.20	14447197.64	39°46'51.0546"N	80°35'21.5751"W	1.68
16152.00	89.880	147.440	7103.78	6247.85	-4067.19	5174.35	1755842.68	14447120.14	39°46'50.2861"N	80°35'20.9456"W	1.21
16242.00	90.150	147.250	7103.76	6337.84	-4142.97	5222.91	1755891.22	14447044.39	39°46'49.5350"N	80°35'20.3280"W	0.37
16334.00	89.910	148.300	7103.71	6429.81	-4220.79	5271.97	1755940.26	14446966.59	39°46'48.7637"N	80°35'19.7043"W	1.17
16425.00	89.750	148.160	7103.98	6520.77	-4298.16	5319.88	1755988.15	14446889.26	39°46'47.9969"N	80°35'19.0951"W	0.23
16515.00	90.030	147.600	7104.15	6610.75	-4374.38	5367.73	1756035.99	14446813.06	39°46'47.2415"N	80°35'18.4867"W	0.70
16608.00	90.520	148.180	7103.71	6703.72	-4453.16	5417.16	1756085.40	14446734.32	39°46'46.4608"N	80°35'17.8582"W	0.82
16698.00	89.020	148.100	7104.07	6793.67	-4529.59	5464.67	1756132.89	14446657.91	39°46'45.7032"N	80°35'17.2542"W	1.67
16789.00	90.090	147.800	7104.78	6884.64	-4606.72	5512.96	1756181.16	14446580.82	39°46'44.9388"N	80°35'16.6403"W	1.22
16880.00	89.690	147.760	7104.95	6975.62	-4683.71	5561.47	1756229.66	14446503.86	39°46'44.1758"N	80°35'16.0234"W	0.44
16971.00	90.000	148.470	7105.20	7066.58	-4760.97	5609.54	1756277.70	14446426.62	39°46'43.4100"N	80°35'15.4123"W	0.85
17061.00	90.180	148.400	7105.06	7156.53	-4837.66	5656.65	1756324.80	14446349.97	39°46'42.6500"N	80°35'14.8134"W	0.21
17153.00	90.370	147.870	7104.61	7248.49	-4915.79	5705.22	1756373.35	14446271.87	39°46'41.8756"N	80°35'14.1959"W	0.61
17243.00	89.080	147.690	7105.05	7338.46	-4991.93	5753.21	1756421.31	14446195.76	39°46'41.1210"N	80°35'13.5859"W	1.45
17334.00	89.260	147.860	7106.36	7429.43	-5068.90	5801.73	1756469.81	14446118.81	39°46'40.3581"N	80°35'12.9689"W	0.27
17426.00	89.630	146.830	7107.26	7521.41	-5146.36	5851.36	1756519.43	14446041.39	39°46'39.5904"N	80°35'12.3378"W	1.19
17517.00	89.940	147.870	7107.60	7612.40	-5222.98	5900.46	1756568.51	14445964.80	39°46'38.8309"N	80°35'11.7135"W	1.19
17608.00	89.910	147.560	7107.72	7703.38	-5299.91	5949.06	1756617.09	14445887.90	39°46'38.0684"N	80°35'11.0955"W	0.34
17697.00	89.940	147.880	7107.83	7792.36	-5375.15	5996.59	1756664.61	14445812.68	39°46'37.3226"N	80°35'10.4912"W	0.36
17787.00	90.090	147.090	7107.81	7882.35	-5451.04	6044.97	1756712.96	14445736.82	39°46'36.5704"N	80°35'9.8761"W	0.89
17879.00	89.880	147.590	7107.83	7974.34	-5528.50	6094.62	1756762.59	14445659.40	39°46'35.8027"N	80°35'9.2448"W	0.59
17969.00	88.890	147.600	7108.80	8064.31	-5604.48	6142.85	1756810.80	14445583.45	39°46'35.0496"N	80°35'8.6316"W	1.10
18060.00	88.370	147.350	7110.97	8155.27	-5681.18	6191.76	1756859.70	14445506.77	39°46'34.2894"N	80°35'8.0096"W	0.63

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
18150.00	87.750	148.150	7114.02	8245.20	-5757.25	6239.76	1756907.68	14445430.73	39°46'33.5354"N	80°35'7.3994"W	1.12
18242.00	87.410	147.210	7117.91	8337.10	-5834.93	6288.90	1756956.80	14445353.08	39°46'32.7655"N	80°35'6.7746"W	1.09
18334.00	87.660	147.140	7121.86	8429.00	-5912.17	6338.72	1757006.60	14445275.88	39°46'31.9999"N	80°35'6.1411"W	0.28
18424.00	87.140	147.670	7125.95	8518.90	-5987.92	6387.16	1757055.02	14445200.16	39°46'31.2491"N	80°35'5.5253"W	0.82
18516.00	87.540	149.550	7130.22	8610.73	-6066.36	6435.02	1757102.87	14445121.74	39°46'30.4717"N	80°35'4.9169"W	2.09
18607.00	87.720	147.770	7133.98	8701.59	-6144.02	6482.31	1757150.14	14445044.12	39°46'29.7021"N	80°35'4.3158"W	1.96
18697.00	88.280	148.780	7137.12	8791.49	-6220.52	6529.61	1757197.41	14444967.64	39°46'28.9438"N	80°35'3.7146"W	1.28
18789.00	88.770	148.010	7139.49	8883.40	-6298.85	6577.80	1757245.59	14444889.35	39°46'28.1675"N	80°35'3.1020"W	0.99
18881.00	88.650	147.630	7141.56	8975.36	-6376.69	6626.79	1757294.56	14444811.53	39°46'27.3960"N	80°35'2.4793"W	0.43
18971.00	88.980	147.840	7143.42	9065.31	-6452.78	6674.82	1757342.57	14444735.47	39°46'26.6418"N	80°35'1.8686"W	0.43
19062.00	89.260	147.170	7144.82	9156.29	-6529.52	6723.71	1757391.44	14444658.76	39°46'25.8812"N	80°35'1.2471"W	0.80
19154.00	89.540	147.560	7145.78	9248.27	-6607.00	6773.32	1757441.03	14444581.32	39°46'25.1133"N	80°35'0.6164"W	0.52
19245.00	89.350	148.010	7146.66	9339.25	-6683.98	6821.83	1757489.52	14444504.36	39°46'24.3502"N	80°35'0.0000"W	0.54
19335.00	88.740	147.930	7148.16	9429.20	-6760.27	6869.55	1757537.23	14444428.10	39°46'23.5941"N	80°34'59.3930"W	0.68
19425.00	88.710	147.500	7150.17	9519.16	-6836.34	6917.61	1757585.27	14444352.07	39°46'22.8401"N	80°34'58.7820"W	0.48
19517.00	89.020	147.910	7151.99	9611.12	-6914.09	6966.76	1757634.39	14444274.34	39°46'22.0695"N	80°34'58.1573"W	0.56
19609.00	88.740	147.650	7153.79	9703.08	-6991.91	7015.80	1757683.42	14444196.56	39°46'21.2982"N	80°34'57.5338"W	0.42
19700.00	88.890	147.830	7155.67	9794.04	-7068.84	7064.36	1757731.96	14444119.65	39°46'20.5356"N	80°34'56.9165"W	0.26
19791.00	88.770	147.550	7157.53	9885.00	-7145.74	7112.99	1757780.57	14444042.78	39°46'19.7735"N	80°34'56.2983"W	0.33
19881.00	89.110	147.980	7159.19	9974.96	-7221.85	7160.99	1757828.55	14443966.70	39°46'19.0190"N	80°34'55.6881"W	0.61
19971.00	88.650	148.180	7160.95	10064.91	-7298.23	7208.56	1757876.11	14443890.35	39°46'18.2621"N	80°34'55.0834"W	0.56
20062.00	88.090	147.640	7163.54	10155.84	-7375.29	7256.89	1757924.41	14443813.32	39°46'17.4982"N	80°34'54.4691"W	0.85
20152.00	88.400	147.780	7166.30	10245.78	-7451.34	7304.94	1757972.45	14443737.30	39°46'16.7445"N	80°34'53.8582"W	0.38
20245.00	88.280	147.850	7168.99	10338.72	-7530.02	7354.46	1758021.94	14443658.66	39°46'15.9647"N	80°34'53.2288"W	0.15
20335.00	88.370	147.510	7171.62	10428.66	-7606.04	7402.56	1758070.02	14443582.66	39°46'15.2111"N	80°34'52.6173"W	0.39
20427.00	88.770	147.780	7173.92	10520.61	-7683.73	7451.78	1758119.22	14443505.00	39°46'14.4411"N	80°34'51.9916"W	0.52
20518.00	88.150	147.860	7176.36	10611.55	-7760.73	7500.22	1758167.65	14443428.04	39°46'13.6779"N	80°34'51.3758"W	0.69
20609.00	88.060	147.570	7179.37	10702.48	-7837.61	7548.80	1758216.21	14443351.18	39°46'12.9158"N	80°34'50.7583"W	0.33
20699.00	88.120	147.550	7182.37	10792.42	-7913.53	7597.05	1758264.44	14443275.29	39°46'12.1634"N	80°34'50.1449"W	0.07
20792.00	88.710	147.850	7184.94	10885.36	-7992.11	7646.73	1758314.10	14443196.74	39°46'11.3845"N	80°34'49.5134"W	0.71

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH DATA (310 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
20889.00	87.410	147.780	7188.23	10982.28	-8074.15	7698.37	1758365.72	14443114.73	39°46'10.5713"N	80°34'48.8571"W	1.34
20984.00	87.380	147.990	7192.54	11077.15	-8154.53	7748.82	1758416.15	14443034.38	39°46'9.7746"N	80°34'48.2158"W	0.22
21078.00	87.600	149.520	7196.66	11170.98	-8234.82	7797.53	1758464.84	14442954.13	39°46'8.9789"N	80°34'47.5968"W	1.64
21173.00	87.720	147.420	7200.54	11265.84	-8315.72	7847.16	1758514.46	14442873.26	39°46'8.1771"N	80°34'46.9660"W	2.21
21268.00	87.200	147.320	7204.75	11360.74	-8395.65	7898.34	1758565.61	14442793.36	39°46'7.3848"N	80°34'46.3155"W	0.56
21363.00	87.380	147.870	7209.24	11455.61	-8475.77	7949.19	1758616.44	14442713.27	39°46'6.5907"N	80°34'45.6690"W	0.61
21458.00	87.690	148.320	7213.33	11550.49	-8556.34	7999.35	1758666.59	14442632.73	39°46'5.7921"N	80°34'45.0315"W	0.57
21552.00	87.170	148.200	7217.54	11644.35	-8636.20	8048.75	1758715.97	14442552.90	39°46'5.0006"N	80°34'44.4037"W	0.57
21647.00	88.000	147.580	7221.55	11739.23	-8716.60	8099.20	1758766.40	14442472.54	39°46'4.2037"N	80°34'43.7624"W	1.09
21742.00	88.280	148.000	7224.63	11834.16	-8796.93	8149.81	1758816.99	14442392.23	39°46'3.4074"N	80°34'43.1191"W	0.53
21836.00	87.970	147.800	7227.71	11928.08	-8876.52	8199.74	1758866.90	14442312.68	39°46'2.6186"N	80°34'42.4846"W	0.39
21931.00	88.060	147.300	7231.00	12023.01	-8956.64	8250.68	1758917.82	14442232.59	39°46'1.8244"N	80°34'41.8370"W	0.53
22026.00	88.520	147.500	7233.83	12117.95	-9036.63	8301.84	1758968.96	14442152.62	39°46'1.0315"N	80°34'41.1867"W	0.53
22120.00	88.430	147.400	7236.33	12211.91	-9115.84	8352.40	1759019.50	14442073.45	39°46'0.2463"N	80°34'40.5440"W	0.14
22215.00	88.490	147.630	7238.89	12306.86	-9195.95	8403.40	1759070.48	14441993.37	39°45'59.4523"N	80°34'39.8957"W	0.25
22310.00	88.650	147.660	7241.26	12401.81	-9276.17	8454.23	1759121.29	14441913.18	39°45'58.6571"N	80°34'39.2497"W	0.17
22404.00	88.710	147.730	7243.42	12495.76	-9355.60	8504.45	1759171.49	14441833.78	39°45'57.8698"N	80°34'38.6113"W	0.10
22500.00	88.800	147.850	7245.51	12591.71	-9436.81	8555.61	1759222.63	14441752.60	39°45'57.0649"N	80°34'37.9611"W	0.16
22594.00	88.920	147.910	7247.38	12685.67	-9516.41	8605.58	1759272.58	14441673.04	39°45'56.2759"N	80°34'37.3260"W	0.14
22689.00	88.430	147.670	7249.57	12780.62	-9596.76	8656.20	1759323.18	14441592.71	39°45'55.4794"N	80°34'36.6826"W	0.57
22784.00	88.280	147.930	7252.30	12875.55	-9677.12	8706.80	1759373.76	14441512.39	39°45'54.6829"N	80°34'36.0395"W	0.32
22879.00	88.000	147.830	7255.39	12970.48	-9757.53	8757.29	1759424.23	14441432.00	39°45'53.8859"N	80°34'35.3979"W	0.31
22973.00	88.370	147.690	7258.36	13064.40	-9837.00	8807.41	1759474.33	14441352.57	39°45'53.0982"N	80°34'34.7609"W	0.42
23068.00	88.180	148.120	7261.22	13159.33	-9917.45	8857.86	1759524.76	14441272.15	39°45'52.3008"N	80°34'34.1197"W	0.49
23162.00	88.150	148.150	7264.23	13253.25	-9997.24	8907.46	1759574.34	14441192.39	39°45'51.5099"N	80°34'33.4893"W	0.05
23257.00	87.940	148.200	7267.47	13348.15	-10077.91	8957.53	1759624.39	14441111.75	39°45'50.7104"N	80°34'32.8531"W	0.23
23351.00	88.090	147.950	7270.73	13442.06	-10157.64	9007.21	1759674.05	14441032.05	39°45'49.9201"N	80°34'32.2218"W	0.31
23446.00	88.150	147.970	7273.85	13536.97	-10238.13	9057.58	1759724.40	14440951.59	39°45'49.1223"N	80°34'31.5816"W	0.07
23541.00	88.310	147.760	7276.78	13631.90	-10318.54	9108.08	1759774.89	14440871.22	39°45'48.3253"N	80°34'30.9398"W	0.28
23636.00	88.280	147.980	7279.61	13726.83	-10398.95	9158.59	1759825.37	14440790.83	39°45'47.5282"N	80°34'30.2979"W	0.23

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# Actual Wellpath Report

Charles Jamison MSH 410H AWB\_ awp 50' - 27331' Proj: 27375'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

## WELLPATH DATA (310 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]
23730.00	87.970	148.190	7282.68	13820.75	-10478.70	9208.25	1759875.02	14440711.12	39°45'46.7378"N	80°34'29.6668"W	0.40
23825.00	87.910	147.660	7286.10	13915.65	-10559.14	9258.67	1759925.42	14440630.70	39°45'45.9404"N	80°34'29.0261"W	0.56
23919.00	87.780	147.850	7289.63	14009.56	-10638.59	9308.79	1759975.51	14440551.29	39°45'45.1529"N	80°34'28.3892"W	0.24
24014.00	87.940	148.200	7293.18	14104.46	-10719.12	9359.06	1760025.77	14440470.79	39°45'44.3547"N	80°34'27.7503"W	0.40
24109.00	87.630	147.360	7296.85	14199.37	-10799.43	9409.67	1760076.36	14440390.51	39°45'43.5586"N	80°34'27.1071"W	0.94
24203.00	88.060	147.510	7300.39	14293.29	-10878.60	9460.23	1760126.90	14440311.38	39°45'42.7739"N	80°34'26.4645"W	0.48
24298.00	87.630	145.660	7303.96	14388.22	-10957.83	9512.51	1760179.16	14440232.17	39°45'41.9884"N	80°34'25.7999"W	2.00
24393.00	87.780	143.290	7307.76	14483.07	-11035.08	9567.66	1760234.29	14440154.95	39°45'41.2224"N	80°34'25.0984"W	2.50
24487.00	88.000	143.830	7311.22	14576.89	-11110.65	9623.46	1760290.06	14440079.41	39°45'40.4729"N	80°34'24.3885"W	0.62
24582.00	88.280	141.810	7314.31	14671.64	-11186.30	9680.83	1760347.42	14440003.79	39°45'39.7226"N	80°34'23.6584"W	2.15
24677.00	87.850	139.030	7317.52	14766.04	-11259.47	9741.32	1760407.88	14439930.65	39°45'38.9967"N	80°34'22.8883"W	2.96
24772.00	88.550	139.030	7320.50	14860.19	-11331.16	9803.58	1760470.12	14439858.98	39°45'38.2852"N	80°34'22.0955"W	0.74
24866.00	88.710	139.170	7322.75	14953.38	-11402.19	9865.11	1760531.62	14439787.98	39°45'37.5804"N	80°34'21.3120"W	0.23
24961.00	88.580	139.170	7324.99	15047.58	-11474.06	9927.20	1760593.69	14439716.15	39°45'36.8672"N	80°34'20.5213"W	0.14
25056.00	88.520	139.790	7327.40	15141.84	-11546.25	9988.91	1760655.37	14439643.98	39°45'36.1509"N	80°34'19.7356"W	0.66
25151.00	88.650	139.510	7329.74	15236.14	-11618.63	10050.40	1760716.84	14439571.63	39°45'35.4327"N	80°34'18.9527"W	0.32
25246.00	88.920	139.400	7331.76	15330.40	-11690.80	10112.14	1760778.55	14439499.49	39°45'34.7165"N	80°34'18.1665"W	0.31
25340.00	88.710	139.840	7333.70	15423.71	-11762.39	10173.02	1760839.41	14439427.92	39°45'34.0061"N	80°34'17.3913"W	0.52
25435.00	88.650	139.680	7335.89	15518.03	-11834.89	10234.37	1760900.74	14439355.45	39°45'33.2868"N	80°34'16.6101"W	0.18
25530.00	88.520	138.080	7338.24	15612.16	-11906.43	10296.83	1760963.17	14439283.94	39°45'32.5768"N	80°34'15.8148"W	1.69
25625.00	88.490	138.470	7340.72	15706.15	-11977.31	10360.03	1761026.35	14439213.09	39°45'31.8733"N	80°34'15.0098"W	0.41
25720.00	88.490	138.340	7343.22	15800.17	-12048.33	10423.08	1761089.37	14439142.09	39°45'31.1685"N	80°34'14.2069"W	0.14
25815.00	88.920	138.810	7345.37	15894.24	-12119.55	10485.92	1761152.19	14439070.91	39°45'30.4617"N	80°34'13.4067"W	0.67
25909.00	88.550	138.610	7347.44	15987.36	-12190.16	10547.93	1761214.18	14439000.32	39°45'29.7609"N	80°34'12.6170"W	0.45
26004.00	88.520	138.680	7349.87	16081.44	-12261.45	10610.68	1761276.90	14438929.06	39°45'29.0535"N	80°34'11.8179"W	0.08
26099.00	88.620	138.370	7352.24	16175.49	-12332.60	10673.58	1761339.78	14438857.93	39°45'28.3473"N	80°34'11.0169"W	0.34
26193.00	88.490	138.840	7354.61	16268.57	-12403.10	10735.72	1761401.89	14438787.47	39°45'27.6477"N	80°34'10.2256"W	0.52
26288.00	88.580	138.210	7357.04	16362.62	-12474.25	10798.61	1761464.76	14438716.34	39°45'26.9415"N	80°34'9.4246"W	0.67
26383.00	88.620	138.700	7359.36	16456.66	-12545.33	10861.60	1761527.72	14438645.29	39°45'26.2360"N	80°34'8.6225"W	0.52
26478.00	88.430	138.480	7361.81	16550.73	-12616.56	10924.41	1761590.51	14438574.09	39°45'25.5291"N	80°34'7.8226"W	0.31

**REFERENCE WELLPATH IDENTIFICATION**

Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

**WELLPATH DATA (310 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	DLS [°/100ft]
26572.00	88.310	138.500	7364.48	16643.78	-12686.92	10986.69	1761652.76	14438503.76	39°45'24.8308"N	80°34'7.0296"W	0.13
26667.00	88.520	138.470	7367.11	16737.82	-12758.03	11049.63	1761715.68	14438432.68	39°45'24.1251"N	80°34'6.2280"W	0.22
26762.00	88.620	138.740	7369.48	16831.89	-12829.27	11112.43	1761778.46	14438361.46	39°45'23.4180"N	80°34'5.4284"W	0.30
26857.00	89.170	139.220	7371.31	16926.05	-12900.93	11174.77	1761840.77	14438289.83	39°45'22.7069"N	80°34'4.6346"W	0.77
26952.00	88.650	138.240	7373.12	17020.17	-12972.32	11237.42	1761903.40	14438218.46	39°45'21.9984"N	80°34'3.8368"W	1.17
27047.00	88.460	138.540	7375.51	17114.19	-13043.33	11300.48	1761966.44	14438147.48	39°45'21.2936"N	80°34'3.0337"W	0.37
27142.00	88.740	138.770	7377.83	17208.27	-13114.63	11363.22	1762029.15	14438076.21	39°45'20.5860"N	80°34'2.2348"W	0.38
27237.00	88.520	138.380	7380.11	17302.34	-13185.84	11426.06	1762091.96	14438005.03	39°45'19.8792"N	80°34'1.4347"W	0.47
27331.00	88.460	138.460	7382.58	17395.38	-13256.13	11488.42	1762154.30	14437934.77	39°45'19.1816"N	80°34'0.6405"W	0.11
27375.00‡	88.460	138.460	7383.77	17438.93	-13289.05	11517.59	1762183.46	14437901.86	39°45'18.8549"N	80°34'0.2691"W	0.00

**TARGETS**

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Charles Jamison MSH 410H LP Rev 6	7135.00	2470.30	1089.28	1751759.20	14453655.09	39°47'55.0753"N	80°36'12.8988"W	point
Charles Jamison MSH 410H Way Point#1 Rev3	7365.68	-10843.23	9413.51	1760080.20	14440346.73	39°45'43.1256"N	80°34'27.0606"W	point
Charles Jamison MSH 410H BHL Rev 6	7415.00	-13285.87	11523.73	1762189.60	14437905.04	39°45'18.8860"N	80°34'0.1903"W	point

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Charles Jamison MSH 410H
Field	Marshall WV	API	47051024250000
Facility	Charles Jamison MSH Pad	Wellbore	Charles Jamison MSH 410H AWB
Slot	410H		

WELLPATH COMPOSITION - Ref Wellbore: Charles Jamison MSH 410H AWB Ref Wellpath: Charles Jamison MSH 410H AWB_awp 50' - 27331' Proj: 27375'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	1050.00	BH Generic gyro - northseeking (Standard)	1 Tally gyro 50' - 1050'	Charles Jamison MSH 410H AWB	3/28/2022
1050.00	2777.00	OWSG MWD rev2 + HRGM	2 Tally MWD 1115' - 2777'	Charles Jamison MSH 410H AWB	3/28/2022
2777.00	6680.00	OWSG MWD rev2 + HRGM	3 Tally MWD 2906' - 6680'	Charles Jamison MSH 410H AWB	3/28/2022
6680.00	27375.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	4 BH MWD 6767' - 27331'	Charles Jamison MSH 410H AWB	3/28/2022

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