

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

Slot: Slot 405H  
Well: Betty Schafer MSH 405H  
Wellbore: Betty Schafer MSH 405H PWB

### Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Betty Schafer MSH Pad			1742490.560	14523655.400	39°59'27.5067"N	80°38'8.0344"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot 405H	9.09	7.71	1742498.270	14523664.490	39°59'27.5962"N	80°38'7.9348"W
SDC 40 (KB) to Ground level (At Slot: Slot 405H)					26ft	
Mean Sea Level to Ground level (At Slot: Slot 405H)					-848.5ft	
SDC 40 (KB) to Mean Sea Level					874.5ft	

### Bottom Hole Location

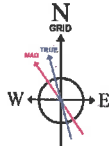
MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
20756.00	90.650	339.320	5892.21	12054.54	-2814.43	1739684.93	14535714.32	40°01'26.8341"N	80°38'43.4781"W

Plot reference wellpath is Betty Schafer MSH 405H Rev D.0

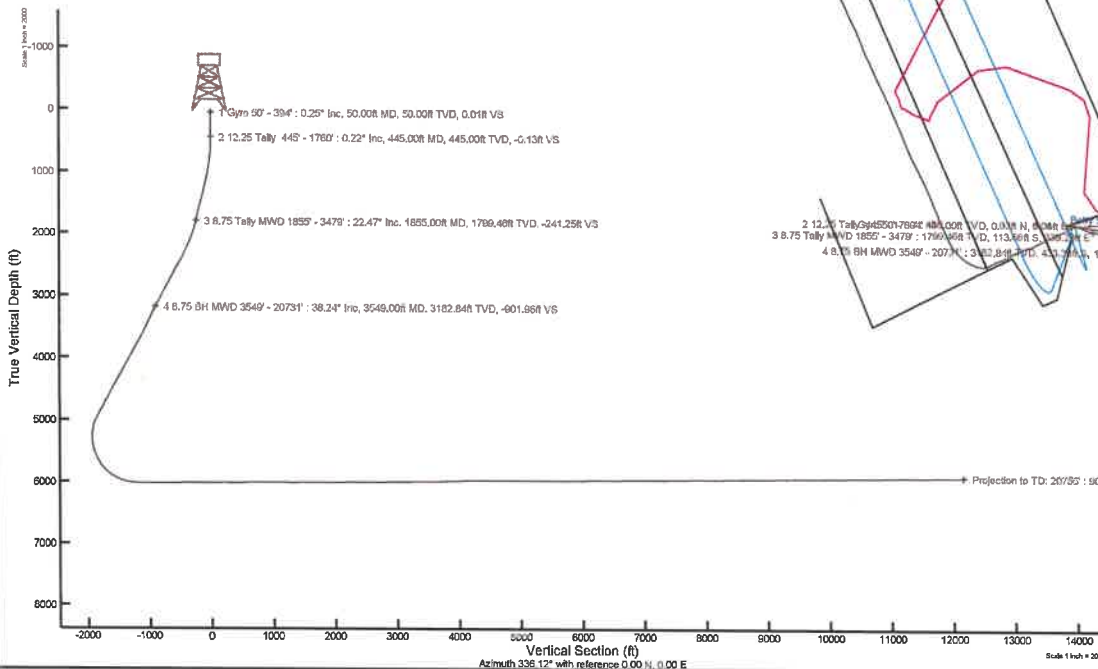
True vertical depths are referenced to SDC 40 (KB)  
Reference wellpath measured depths are referenced to SDC 40 (KB)  
SDC 40 (KB) to Mean Sea Level: 874.5 feet  
Mean Sea Level to Ground level (At Slot: Slot 405H): -848.5 feet  
Offset wellpath MDs are referenced to each path's default MD datum

Grid System: NAD83 / UTM Zone 17 North, US feet  
North Reference: Grid north  
Scale: True distance  
Coordinates are in feet referenced to Slot  
Depths are in feet  
Created by: tranlam on 2021-12-31; Database: WA\_MPL\_EASTERNUS\_Defn

API: 47051023830000  
BH JOB: 111177937  
Duration: 1-13-2022 to 1-18-2022  
Rig: SDC 40



HDGM2021v1.0 (1900.0 to 2022.0) Dip: 66.91° Field: 52230.6 nT  
Magnetic North is 8.22 degrees West of True North (at 12/31/2021)  
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 8.45 degrees



09/09/2022



# Actual Wellpath Report

Betty Schafer MSH 405H AWB\_awp 50' - 20731' Proj: 20756'  
Page 1 of 10



## REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 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	Tranlam
Scale	0.999612	Report Generated	1/18/2022 at 4:44:52 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	9.09	7.71	1742498.27	14523664.49	39°59'27.5962"N	80°38'7.9348"W
Facility Reference Pt			1742490.56	14523655.40	39°59'27.5067"N	80°38'8.0344"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	874.50ft
Horizontal Reference Pt	Slot	SDC 40 (KB) to Mean Sea Level	874.50ft
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	336.12°

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Operator	<b>SWN PRODUCTION COMPANY, LLC</b>	Well	<b>Betty Schafer MSH 405H</b>
Field	<b>Marshall</b>	API	<b>47051023830000</b>
Facility	<b>Betty Schafer MSH Pad</b>	Wellbore	<b>Betty Schafer MSH 405H AWB</b>
Slot	<b>Slot 405H</b>		

**WELLPATH DATA (236 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]
0.00†	0.000	50.970	0.00	0.00	0.00	0.00	1742498.27	14523664.49	39°59'27.5962"N	80°38'7.9348"W	0.00	0.000	0.00
26.00	0.000	50.970	26.00	0.00	0.00	0.00	1742498.27	14523664.49	39°59'27.5962"N	80°38'7.9348"W	0.00	0.000	0.00
50.00	0.250	50.970	50.00	0.01	0.03	0.04	1742498.31	14523664.52	39°59'27.5965"N	80°38'7.9343"W	0.05	50.970	1.04
100.00	0.170	51.580	100.00	0.06	0.15	0.18	1742498.45	14523664.64	39°59'27.5977"N	80°38'7.9325"W	0.24	51.162	0.16
150.00	0.140	59.670	150.00	0.09	0.22	0.29	1742498.56	14523664.71	39°59'27.5984"N	80°38'7.9310"W	0.37	52.644	0.07
200.00	0.300	71.530	200.00	0.08	0.30	0.47	1742498.74	14523664.79	39°59'27.5991"N	80°38'7.9288"W	0.56	57.778	0.33
250.00	0.270	75.150	250.00	0.05	0.37	0.71	1742498.98	14523664.86	39°59'27.5998"N	80°38'7.9257"W	0.80	62.535	0.07
300.00	0.320	75.470	300.00	0.01	0.43	0.96	1742499.23	14523664.92	39°59'27.6005"N	80°38'7.9225"W	1.05	65.640	0.10
350.00	0.090	76.030	350.00	-0.02	0.48	1.13	1742499.40	14523664.97	39°59'27.6009"N	80°38'7.9203"W	1.23	67.082	0.46
394.00	0.110	221.700	394.00	-0.04	0.46	1.14	1742499.41	14523664.95	39°59'27.6007"N	80°38'7.9202"W	1.22	68.181	0.43
445.00	0.220	205.510	445.00	-0.13	0.33	1.06	1742499.33	14523664.82	39°59'27.5994"N	80°38'7.9212"W	1.11	72.728	0.23
536.00	2.040	114.250	535.98	-1.45	-0.49	2.46	1742500.73	14523664.00	39°59'27.5912"N	80°38'7.9032"W	2.51	101.308	2.26
626.00	4.410	110.080	625.83	-5.04	-2.34	7.18	1742505.44	14523662.15	39°59'27.5728"N	80°38'7.8428"W	7.55	108.055	2.64
717.00	7.820	108.640	716.30	-11.66	-5.52	16.33	1742514.59	14523658.97	39°59'27.5410"N	80°38'7.7253"W	17.24	108.676	3.75
808.00	11.130	104.560	806.04	-21.31	-9.71	30.70	1742528.96	14523654.79	39°59'27.4990"N	80°38'7.5409"W	32.20	107.547	3.71
898.00	13.390	103.580	893.99	-33.05	-14.34	49.24	1742547.49	14523650.16	39°59'27.4525"N	80°38'7.3029"W	51.29	106.236	2.52
990.00	15.420	106.230	983.09	-47.41	-20.26	71.34	1742569.58	14523644.24	39°59'27.3931"N	80°38'7.0193"W	74.16	105.853	2.32
1082.00	16.520	110.600	1071.54	-64.45	-28.28	95.33	1742593.56	14523636.22	39°59'27.3129"N	80°38'6.7115"W	99.44	106.523	1.77
1173.00	17.990	111.380	1158.44	-83.50	-37.96	120.53	1742618.75	14523626.55	39°59'27.2163"N	80°38'6.3883"W	126.36	107.480	1.64
1264.00	18.330	110.150	1244.91	-103.43	-48.01	147.05	1742645.26	14523616.50	39°59'27.1158"N	80°38'6.0481"W	154.69	108.081	0.56
1356.00	18.630	111.460	1332.17	-123.93	-58.37	174.31	1742672.51	14523606.14	39°59'27.0124"N	80°38'5.6985"W	183.82	108.514	0.56
1448.00	18.460	114.700	1419.39	-145.31	-69.83	201.22	1742699.41	14523594.69	39°59'26.8980"N	80°38'5.3533"W	212.99	109.139	1.14
1538.00	20.330	114.340	1504.28	-167.66	-82.23	228.41	1742726.59	14523582.29	39°59'26.7744"N	80°38'5.0046"W	242.76	109.800	2.08
1630.00	21.510	109.370	1590.22	-191.13	-94.41	258.88	1742757.05	14523570.11	39°59'26.6527"N	80°38'4.6137"W	275.56	110.036	2.32
1721.00	21.310	104.240	1674.95	-212.77	-104.01	290.65	1742788.81	14523560.52	39°59'26.5566"N	80°38'4.2060"W	308.70	109.690	2.07
1760.00	21.260	102.600	1711.29	-221.35	-107.30	304.42	1742802.57	14523557.23	39°59'26.5235"N	80°38'4.0293"W	322.78	109.416	1.53
1855.00	22.470	98.240	1799.46	-241.25	-113.66	339.20	1742837.34	14523550.88	39°59'26.4593"N	80°38'3.5828"W	357.74	108.525	2.13
1926.00	22.730	100.570	1865.01	-256.22	-118.12	366.11	1742864.24	14523546.42	39°59'26.4141"N	80°38'3.2373"W	384.70	107.881	1.31
2018.00	25.270	105.910	1949.06	-278.85	-126.77	402.48	1742900.59	14523537.77	39°59'26.3272"N	80°38'2.7705"W	421.97	107.482	3.63
2109.00	28.010	109.220	2030.40	-305.88	-139.13	441.35	1742939.44	14523525.42	39°59'26.2035"N	80°38'2.2718"W	462.76	107.497	3.42



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Field	Marshall		API	47051023830000
Facility	Betty Schafer MSH Pad		Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H			

**WELLPATH DATA (236 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]
2200.00	30.590	110.340	2109.75	-336.64	-154.21	483.24	1742981.32	14523510.34	39°59'26.0527"N	80°38'1.7344"W	507.25	107.699	2.90
2291.00	31.890	110.890	2187.55	-369.72	-170.83	527.41	1743025.48	14523493.72	39°59'25.8866"N	80°38'1.1677"W	554.39	107.948	1.46
2381.00	33.360	112.220	2263.35	-404.29	-188.67	572.53	1743070.58	14523475.89	39°59'25.7085"N	80°38'0.5890"W	602.82	108.239	1.82
2476.00	35.840	112.990	2341.54	-443.42	-209.41	622.33	1743120.35	14523455.16	39°59'25.5015"N	80°37'59.9504"W	656.61	108.598	2.65
2567.00	38.760	112.660	2413.92	-483.55	-230.80	673.15	1743171.16	14523433.78	39°59'25.2881"N	80°37'59.2985"W	711.61	108.925	3.22
2657.00	39.570	109.710	2483.71	-523.76	-251.32	726.14	1743224.12	14523413.27	39°59'25.0832"N	80°37'58.6188"W	768.40	109.091	2.26
2749.00	38.580	109.300	2555.13	-563.60	-270.69	780.80	1743278.76	14523393.91	39°59'24.8896"N	80°37'57.9176"W	826.39	109.120	1.11
2842.00	37.840	110.420	2628.20	-603.37	-290.22	834.90	1743332.85	14523374.38	39°59'24.6943"N	80°37'57.2235"W	883.91	109.168	1.09
2934.00	37.760	108.060	2700.90	-641.90	-308.80	888.13	1743386.06	14523355.81	39°59'24.5085"N	80°37'56.5406"W	940.29	109.172	1.57
3026.00	37.640	109.200	2773.70	-679.92	-326.77	941.44	1743439.34	14523337.84	39°59'24.3288"N	80°37'55.8567"W	996.54	109.142	0.77
3117.00	38.300	109.750	2845.43	-718.35	-345.44	994.23	1743492.11	14523319.18	39°59'24.1421"N	80°37'55.1795"W	1052.53	109.160	0.82
3207.00	38.390	107.220	2916.02	-755.97	-363.14	1047.17	1743545.03	14523301.49	39°59'23.9651"N	80°37'54.5002"W	1108.35	109.126	1.75
3298.00	38.350	108.440	2987.37	-793.55	-380.43	1100.94	1743598.78	14523284.20	39°59'23.7920"N	80°37'53.8103"W	1164.82	109.063	0.83
3388.00	39.520	109.970	3057.38	-832.19	-399.05	1154.35	1743652.17	14523265.60	39°59'23.6058"N	80°37'53.1252"W	1221.37	109.070	1.68
3479.00	38.650	110.240	3128.01	-872.03	-418.77	1208.22	1743706.02	14523245.89	39°59'23.4088"N	80°37'52.4340"W	1278.74	109.116	0.97
3549.00	38.240	108.860	3182.84	-901.96	-433.33	1249.23	1743747.02	14523231.33	39°59'23.2631"N	80°37'51.9079"W	1322.26	109.131	1.36
3641.00	37.620	102.960	3255.43	-938.13	-448.84	1303.56	1743801.32	14523215.83	39°59'23.1077"N	80°37'51.2108"W	1378.67	108.999	4.00
3733.00	37.660	103.730	3328.28	-972.12	-461.81	1358.23	1743855.97	14523202.86	39°59'22.9773"N	80°37'50.5091"W	1434.59	108.778	0.51
3823.00	36.580	106.920	3400.05	-1006.42	-476.14	1410.60	1743908.32	14523188.54	39°59'22.8335"N	80°37'49.8370"W	1488.79	108.652	2.45
3914.00	35.600	109.250	3473.59	-1042.25	-492.76	1461.55	1743959.25	14523171.92	39°59'22.6671"N	80°37'49.1833"W	1542.38	108.632	1.85
4006.00	34.750	109.610	3548.79	-1078.60	-510.39	1511.53	1744009.21	14523154.30	39°59'22.4909"N	80°37'48.5421"W	1595.38	108.658	0.95
4096.00	36.540	109.630	3621.92	-1114.70	-528.00	1560.93	1744058.59	14523136.69	39°59'22.3148"N	80°37'47.9084"W	1647.82	108.689	1.99
4187.00	39.020	108.900	3693.84	-1152.82	-546.39	1613.56	1744111.20	14523118.32	39°59'22.1310"N	80°37'47.2333"W	1703.56	108.707	2.77
4278.00	37.770	109.270	3765.16	-1191.33	-564.86	1666.97	1744164.59	14523099.85	39°59'21.9462"N	80°37'46.5480"W	1760.07	108.719	1.40
4369.00	39.200	109.660	3836.39	-1230.21	-583.74	1720.36	1744217.96	14523080.98	39°59'21.7575"N	80°37'45.8631"W	1816.70	108.743	1.59
4461.00	39.030	109.210	3907.77	-1270.02	-603.05	1775.09	1744272.67	14523061.68	39°59'21.5644"N	80°37'45.1610"W	1874.73	108.764	0.36
4552.00	39.080	109.230	3978.44	-1309.20	-621.92	1829.23	1744326.79	14523042.81	39°59'21.3756"N	80°37'44.4664"W	1932.07	108.778	0.06
4644.00	39.220	108.790	4049.78	-1348.73	-640.84	1884.15	1744381.68	14523023.90	39°59'21.1864"N	80°37'43.7619"W	1990.15	108.784	0.34
4736.00	38.990	108.440	4121.18	-1387.93	-659.37	1939.14	1744436.66	14523005.38	39°59'21.0011"N	80°37'43.0563"W	2048.18	108.780	0.35
4826.00	39.330	108.550	4190.96	-1426.24	-677.40	1993.04	1744490.53	14522987.36	39°59'20.8207"N	80°37'42.3649"W	2105.01	108.772	0.39



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Slot	Slot 405H			

**WELLPATH DATA (236 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]
4918.00	39.710	108.550	4261.93	-1465.73	-696.02	2048.54	1744546.01	14522968.74	39°59'20.6344"N	80°37'41.6528"W	2163.56	108.766	0.41
5010.00	39.630	108.450	4332.74	-1505.32	-714.66	2104.24	1744601.69	14522950.11	39°59'20.4479"N	80°37'40.9383"W	2222.28	108.759	0.11
5101.00	38.870	108.300	4403.21	-1544.04	-732.81	2158.88	1744656.30	14522931.97	39°59'20.2663"N	80°37'40.2372"W	2279.86	108.749	0.84
5192.00	39.760	108.340	4473.62	-1582.77	-750.93	2213.61	1744711.02	14522913.85	39°59'20.0850"N	80°37'39.5350"W	2337.51	108.739	0.98
5283.00	40.000	108.560	4543.45	-1622.06	-769.40	2268.96	1744766.34	14522895.40	39°59'19.9002"N	80°37'38.8249"W	2395.86	108.732	0.31
5374.00	39.450	108.010	4613.44	-1661.10	-787.64	2324.18	1744821.54	14522877.15	39°59'19.7176"N	80°37'38.1165"W	2454.02	108.721	0.72
5465.00	39.960	108.120	4683.45	-1699.95	-805.67	2379.45	1744876.79	14522859.13	39°59'19.5371"N	80°37'37.4074"W	2512.15	108.706	0.57
5555.00	39.390	108.190	4752.72	-1738.43	-823.57	2434.05	1744931.37	14522841.24	39°59'19.3580"N	80°37'36.7069"W	2569.60	108.694	0.64
5646.00	39.910	107.990	4822.79	-1777.26	-841.60	2489.24	1744986.54	14522823.21	39°59'19.1775"N	80°37'35.9987"W	2627.66	108.680	0.59
5739.00	39.380	107.950	4894.40	-1816.85	-859.91	2545.68	1745042.96	14522804.92	39°59'18.9942"N	80°37'35.2746"W	2687.00	108.665	0.57
5830.00	40.050	108.040	4964.40	-1855.66	-877.87	2600.99	1745098.24	14522786.96	39°59'18.8144"N	80°37'34.5651"W	2745.14	108.650	0.74
5920.00	33.810	102.300	5036.33	-1889.83	-892.19	2653.05	1745150.28	14522772.64	39°59'18.6708"N	80°37'33.8970"W	2799.05	108.587	7.92
6011.00	29.550	93.610	5113.79	-1915.16	-899.01	2700.23	1745197.44	14522765.83	39°59'18.6015"N	80°37'33.2912"W	2845.95	108.415	6.85
6102.00	23.960	82.610	5195.06	-1930.79	-898.04	2741.00	1745238.21	14522766.80	39°59'18.6093"N	80°37'32.7673"W	2884.37	108.140	8.18
6192.00	24.790	68.090	5277.12	-1936.63	-888.64	2776.67	1745273.85	14522776.20	39°59'18.7007"N	80°37'32.3086"W	2915.40	107.747	6.71
6283.00	24.910	50.120	5359.81	-1931.99	-869.21	2809.12	1745306.29	14522795.62	39°59'18.8915"N	80°37'31.8906"W	2940.52	107.193	8.27
6374.00	25.000	34.110	5442.41	-1916.50	-840.97	2834.64	1745331.80	14522823.85	39°59'19.1695"N	80°37'31.5613"W	2956.75	106.524	7.40
6464.00	25.280	20.500	5523.95	-1892.66	-807.19	2852.05	1745349.21	14522857.61	39°59'19.5025"N	80°37'31.3358"W	2964.07	105.803	6.42
6553.00	29.690	10.210	5602.93	-1860.79	-767.66	2862.62	1745359.77	14522897.13	39°59'19.8928"N	80°37'31.1978"W	2963.76	105.012	7.27
6643.00	33.740	1.560	5679.52	-1819.73	-720.69	2867.26	1745364.41	14522944.08	39°59'20.3567"N	80°37'31.1357"W	2956.44	104.109	6.76
6735.00	39.880	353.490	5753.18	-1768.43	-665.76	2864.60	1745361.76	14522998.99	39°59'20.8996"N	80°37'31.1668"W	2940.95	103.084	8.48
6829.00	46.880	349.510	5821.47	-1706.20	-602.00	2854.93	1745352.08	14523062.73	39°59'21.5302"N	80°37'31.2877"W	2917.71	101.907	7.99
6920.00	53.700	343.610	5879.61	-1637.42	-534.05	2838.51	1745335.67	14523130.65	39°59'22.2024"N	80°37'31.4950"W	2888.31	100.655	9.00
7010.00	61.350	336.840	5927.94	-1561.80	-462.78	2812.68	1745309.85	14523201.89	39°59'22.9077"N	80°37'31.8230"W	2850.50	99.343	10.60
7101.00	68.010	330.900	5966.86	-1479.71	-389.07	2776.39	1745273.58	14523275.57	39°59'23.6377"N	80°37'32.2852"W	2803.52	97.977	9.40
7193.00	75.340	327.210	5995.78	-1393.12	-314.26	2731.47	1745228.68	14523350.35	39°59'24.3788"N	80°37'32.8583"W	2749.49	96.563	8.83
7285.00	82.160	327.360	6013.72	-1304.01	-238.39	2682.73	1745179.96	14523426.20	39°59'25.1306"N	80°37'33.4804"W	2693.30	95.078	7.41
7378.00	90.030	331.690	6020.05	-1211.93	-158.49	2635.74	1745132.98	14523506.06	39°59'25.9221"N	80°37'34.0798"W	2640.50	93.441	9.65
7468.00	89.850	333.600	6020.14	-1122.10	-78.56	2594.39	1745091.64	14523585.96	39°59'26.7137"N	80°37'34.6068"W	2595.58	91.734	2.13
7560.00	89.660	331.870	6020.53	-1030.27	3.21	2552.24	1745049.52	14523667.70	39°59'27.5236"N	80°37'35.1439"W	2552.24	89.928	1.89





# Actual Wellpath Report

Betty Schafer MSH 405H AWB\_awp 50' - 20731' Proj: 20756'  
Page 5 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H		

WELLPATH DATA (236 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]
7651.00	89.480	334.520	6021.22	-939.40	84.42	2511.21	1745008.50	14523748.88	39°59'28.3278"N	80°37'35.6667"W	2512.63	88.074	2.92
7742.00	90.740	335.910	6021.04	-848.41	167.04	2473.06	1744970.37	14523831.46	39°59'29.1458"N	80°37'36.1523"W	2478.70	86.136	2.06
7834.00	89.720	334.970	6020.67	-756.42	250.71	2434.83	1744932.15	14523915.10	39°59'29.9743"N	80°37'36.6391"W	2447.70	84.121	1.51
7924.00	89.850	335.240	6021.01	-666.44	332.35	2396.94	1744894.27	14523996.71	39°59'30.7826"N	80°37'37.1215"W	2419.87	82.106	0.33
8015.00	91.110	335.570	6020.25	-575.45	415.09	2359.07	1744856.42	14524079.42	39°59'31.6018"N	80°37'37.6036"W	2395.31	80.021	1.43
8106.00	90.650	334.280	6018.85	-484.48	497.50	2320.51	1744817.87	14524161.80	39°59'32.4178"N	80°37'38.0946"W	2373.24	77.899	1.50
8196.00	89.720	335.290	6018.56	-394.51	578.92	2282.17	1744779.55	14524243.19	39°59'33.2240"N	80°37'38.5828"W	2354.45	75.766	1.53
8287.00	89.940	335.960	6018.83	-303.51	661.81	2244.61	1744742.01	14524326.04	39°59'34.0447"N	80°37'39.0609"W	2340.14	73.572	0.77
8377.00	89.940	335.630	6018.92	-213.51	743.90	2207.71	1744705.12	14524408.10	39°59'34.8574"N	80°37'39.5306"W	2329.67	71.379	0.37
8468.00	90.920	334.180	6018.24	-122.54	826.30	2169.12	1744666.54	14524490.47	39°59'35.6734"N	80°37'40.0220"W	2321.17	69.146	1.92
8559.00	91.940	336.190	6015.97	-31.59	908.87	2130.94	1744628.38	14524573.00	39°59'36.4909"N	80°37'40.5081"W	2316.67	66.901	2.48
8650.00	90.980	338.160	6013.65	59.36	992.71	2095.65	1744593.11	14524656.81	39°59'37.3209"N	80°37'40.9570"W	2318.89	64.653	2.41
8740.00	90.580	334.120	6012.43	149.33	1074.99	2059.26	1744556.73	14524739.06	39°59'38.1355"N	80°37'41.4202"W	2322.96	62.434	4.51
8831.00	89.690	334.590	6012.21	240.29	1157.03	2019.88	1744517.36	14524821.07	39°59'38.9478"N	80°37'41.9218"W	2327.79	60.195	1.11
8922.00	89.660	335.070	6012.73	331.27	1239.39	1981.17	1744478.67	14524903.39	39°59'39.7633"N	80°37'42.4147"W	2336.91	57.971	0.53
9013.00	89.510	333.800	6013.39	422.22	1321.47	1941.91	1744439.42	14524985.45	39°59'40.5761"N	80°37'42.9148"W	2348.89	55.765	1.41
9105.00	91.350	335.030	6012.70	514.17	1404.44	1902.18	1744399.71	14525068.39	39°59'41.3977"N	80°37'43.4208"W	2364.48	53.560	2.41
9198.00	92.120	338.020	6009.88	607.12	1489.70	1865.15	1744362.70	14525153.61	39°59'42.2417"N	80°37'43.8920"W	2387.05	51.386	3.32
9289.00	90.090	333.640	6008.12	698.07	1572.68	1827.91	1744325.47	14525236.56	39°59'43.0633"N	80°37'44.3660"W	2411.34	49.292	5.30
9380.00	89.880	334.740	6008.15	789.02	1654.60	1788.29	1744285.86	14525318.45	39°59'43.8745"N	80°37'44.8707"W	2436.33	47.224	1.23
9471.00	91.050	335.840	6007.41	880.00	1737.26	1750.25	1744247.84	14525401.07	39°59'44.6930"N	80°37'45.3550"W	2466.06	45.213	1.76
9562.00	90.090	334.340	6006.50	970.98	1819.79	1711.93	1744209.53	14525483.57	39°59'45.5101"N	80°37'45.8431"W	2498.47	43.251	1.96
9652.00	89.970	335.410	6006.46	1060.96	1901.27	1673.72	1744171.33	14525565.02	39°59'46.3169"N	80°37'46.3297"W	2533.01	41.358	1.20
9743.00	88.800	335.940	6007.43	1151.95	1984.19	1636.23	1744133.87	14525647.90	39°59'47.1378"N	80°37'46.8069"W	2571.82	39.510	1.41
9834.00	89.110	335.680	6009.09	1242.93	2067.18	1598.95	1744096.60	14525730.87	39°59'47.9595"N	80°37'47.2815"W	2613.41	37.722	0.44
9924.00	90.460	335.940	6009.43	1332.93	2149.28	1562.07	1744059.74	14525812.93	39°59'48.7723"N	80°37'47.7509"W	2656.97	36.009	1.53
10015.00	90.460	336.540	6008.70	1423.92	2232.56	1525.41	1744023.09	14525896.18	39°59'49.5968"N	80°37'48.2176"W	2703.93	34.343	0.66
10106.00	90.340	336.100	6008.07	1514.92	2315.90	1488.86	1743986.55	14525979.48	39°59'50.4219"N	80°37'48.6827"W	2753.20	32.737	0.50
10197.00	90.650	336.340	6007.28	1605.92	2399.17	1452.17	1743949.88	14526062.72	39°59'51.2463"N	80°37'49.1497"W	2804.43	31.186	0.43
10288.00	90.310	336.070	6006.52	1696.91	2482.43	1415.46	1743913.18	14526145.95	39°59'52.0706"N	80°37'49.6170"W	2857.62	29.691	0.48



**REFERENCE WELLPATH IDENTIFICATION**

Operator	<b>SWN PRODUCTION COMPANY, LLC</b>	Well	<b>Betty Schafer MSH 405H</b>
Field	<b>Marshall</b>	API	<b>47051023830000</b>
Facility	<b>Betty Schafer MSH Pad</b>	Wellbore	<b>Betty Schafer MSH 405H AWB</b>
Slot	<b>Slot 405H</b>		

**WELLPATH DATA (236 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]
10380.00	90.580	335.980	6005.80	1788.91	2566.49	1378.08	1743875.81	14526229.98	39°59'52.9028"N	80°37'50.0929"W	2913.07	28.234	0.31
10470.00	90.550	336.600	6004.92	1878.90	2648.89	1341.89	1743839.63	14526312.35	39°59'53.7186"N	80°37'50.5535"W	2969.39	26.866	0.69
10562.00	90.280	335.590	6004.25	1970.90	2732.99	1304.61	1743802.37	14526396.42	39°59'54.5513"N	80°37'51.0280"W	3028.41	25.518	1.14
10654.00	90.580	336.380	6003.56	2062.90	2817.03	1267.17	1743764.94	14526480.42	39°59'55.3832"N	80°37'51.5046"W	3088.91	24.219	0.92
10746.00	90.650	336.410	6002.57	2154.89	2901.32	1230.33	1743728.12	14526564.68	39°59'56.2178"N	80°37'51.9735"W	3151.41	22.980	0.08
10837.00	90.860	336.570	6001.37	2245.88	2984.76	1194.03	1743691.84	14526648.09	39°59'57.0438"N	80°37'52.4354"W	3214.74	21.804	0.29
10928.00	90.460	336.260	6000.32	2336.87	3068.16	1157.63	1743655.45	14526731.45	39°59'57.8694"N	80°37'52.8988"W	3279.28	20.672	0.56
11020.00	90.460	335.710	5999.58	2428.87	3152.19	1120.19	1743618.02	14526815.45	39°59'58.7014"N	80°37'53.3754"W	3345.31	19.564	0.60
11111.00	90.710	336.060	5998.66	2519.86	3235.24	1083.01	1743580.86	14526898.47	39°59'59.5237"N	80°37'53.8487"W	3411.70	18.508	0.47
11202.00	90.650	336.190	5997.58	2610.86	3318.45	1046.18	1743544.04	14526981.65	40°00'0.3475"N	80°37'54.3176"W	3479.45	17.498	0.16
11293.00	90.490	336.280	5996.67	2701.85	3401.73	1009.51	1743507.39	14527064.89	40°00'1.1719"N	80°37'54.7843"W	3548.36	16.529	0.20
11384.00	90.370	336.510	5995.99	2792.85	3485.11	973.07	1743470.96	14527148.24	40°00'1.9974"N	80°37'55.2481"W	3618.41	15.600	0.29
11476.00	90.310	335.960	5995.44	2884.85	3569.31	936.00	1743433.90	14527232.41	40°00'2.8310"N	80°37'55.7200"W	3690.00	14.694	0.60
11568.00	90.400	335.620	5994.87	2976.84	3653.22	898.27	1743396.19	14527316.28	40°00'3.6617"N	80°37'56.2004"W	3762.03	13.814	0.38
11660.00	90.620	336.390	5994.05	3068.84	3737.26	860.86	1743358.79	14527400.29	40°00'4.4938"N	80°37'56.6766"W	3835.13	12.972	0.87
11750.00	90.550	336.290	5993.13	3158.83	3819.69	824.74	1743322.69	14527482.69	40°00'5.3099"N	80°37'57.1364"W	3907.72	12.184	0.14
11841.00	90.550	336.250	5992.26	3249.83	3902.99	788.13	1743286.09	14527565.96	40°00'6.1346"N	80°37'57.6025"W	3981.77	11.416	0.04
11932.00	90.620	336.590	5991.33	3340.82	3986.39	751.72	1743249.70	14527649.33	40°00'6.9602"N	80°37'58.0658"W	4056.65	10.679	0.38
12022.00	91.540	336.280	5989.63	3430.80	4068.87	715.75	1743213.74	14527731.77	40°00'7.7768"N	80°37'58.5237"W	4131.34	9.977	1.08
12113.00	89.910	335.950	5988.48	3521.79	4152.07	678.91	1743176.91	14527814.94	40°00'8.6004"N	80°37'58.9927"W	4207.21	9.286	1.83
12205.00	90.550	335.960	5988.11	3613.79	4236.08	641.42	1743139.44	14527898.92	40°00'9.4322"N	80°37'59.4700"W	4284.37	8.610	0.70
12297.00	92.520	337.500	5985.65	3705.75	4320.56	605.09	1743103.13	14527983.37	40°00'10.2685"N	80°37'59.9324"W	4362.73	7.972	2.72
12388.00	91.320	335.750	5982.60	3796.69	4404.04	569.01	1743067.06	14528066.81	40°00'11.0950"N	80°38'0.3916"W	4440.65	7.362	2.33
12479.00	92.310	336.610	5979.72	3887.64	4487.25	532.28	1743030.34	14528149.99	40°00'11.9187"N	80°38'0.8592"W	4518.71	6.765	1.44
12569.00	91.420	335.140	5976.79	3977.59	4569.34	495.51	1742993.59	14528232.05	40°00'12.7315"N	80°38'1.3273"W	4596.13	6.189	1.91
12660.00	91.910	335.460	5974.15	4068.54	4651.98	457.50	1742955.59	14528314.65	40°00'13.5497"N	80°38'1.8114"W	4674.42	5.617	0.64
12752.00	91.570	335.610	5971.35	4160.49	4735.68	419.42	1742917.53	14528398.32	40°00'14.3784"N	80°38'2.2963"W	4754.22	5.061	0.40
12842.00	91.910	336.260	5968.62	4250.45	4817.82	382.74	1742880.86	14528480.43	40°00'15.1916"N	80°38'2.7634"W	4833.00	4.542	0.81
12934.00	87.600	334.940	5969.01	4342.42	4901.58	344.74	1742842.88	14528564.16	40°00'16.0209"N	80°38'3.2472"W	4913.69	4.023	4.90
13025.00	89.350	337.610	5971.43	4433.38	4984.85	308.15	1742806.30	14528647.39	40°00'16.8452"N	80°38'3.7131"W	4994.36	3.537	3.51





# Actual Wellpath Report

Betty Schafer MSH 405H AWB\_awp 50' - 20731' Proj: 20756'  
Page 7 of 10



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H		

WELLPATH DATA (236 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]
13117.00	90.710	336.760	5971.39	4525.36	5069.65	272.47	1742770.64	14528732.16	40°00'17.6847"N	80°38'4.1670"W	5076.96	3.076	1.74
13207.00	89.350	336.900	5971.34	4615.35	5152.39	237.06	1742735.24	14528814.87	40°00'18.5038"N	80°38'4.6177"W	5157.84	2.634	1.52
13299.00	90.370	337.110	5971.56	4707.34	5237.07	201.13	1742699.32	14528899.52	40°00'19.3421"N	80°38'5.0751"W	5240.94	2.199	1.13
13390.00	90.120	335.940	5971.17	4798.33	5320.54	164.88	1742663.08	14528982.96	40°00'20.1684"N	80°38'5.5365"W	5323.09	1.775	1.31
13480.00	90.490	337.340	5970.70	4888.32	5403.16	129.19	1742627.41	14529065.54	40°00'20.9863"N	80°38'5.9907"W	5404.70	1.370	1.61
13570.00	89.850	337.250	5970.43	4978.30	5486.18	94.45	1742592.69	14529148.53	40°00'21.8082"N	80°38'6.4328"W	5487.00	0.986	0.72
13661.00	89.910	336.340	5970.62	5069.30	5569.82	58.60	1742556.85	14529232.14	40°00'22.6362"N	80°38'6.8891"W	5570.13	0.603	1.00
13752.00	90.550	337.010	5970.25	5160.29	5653.38	22.57	1742520.83	14529315.67	40°00'23.4634"N	80°38'7.3478"W	5653.43	0.229	1.02
13843.00	89.750	336.670	5970.02	5251.28	5737.05	-13.22	1742485.05	14529399.30	40°00'24.2916"N	80°38'7.8033"W	5737.06	359.868	0.96
13934.00	91.080	337.590	5969.36	5342.26	5820.89	-48.59	1742449.70	14529483.11	40°00'25.1216"N	80°38'8.2534"W	5821.09	359.522	1.78
14024.00	89.910	336.690	5968.58	5432.24	5903.82	-83.55	1742414.75	14529566.00	40°00'25.9425"N	80°38'8.6983"W	5904.41	359.189	1.64
14116.00	90.120	336.120	5968.55	5524.24	5988.12	-120.37	1742377.94	14529650.28	40°00'26.7772"N	80°38'9.1671"W	5989.33	358.848	0.66
14207.00	90.340	336.590	5968.19	5615.24	6071.48	-156.87	1742341.46	14529733.60	40°00'27.6024"N	80°38'9.6317"W	6073.51	358.520	0.57
14297.00	90.650	337.400	5967.41	5705.23	6154.32	-192.04	1742306.30	14529816.41	40°00'28.4225"N	80°38'10.0794"W	6157.32	358.213	0.96
14388.00	90.220	336.600	5966.72	5796.21	6238.08	-227.60	1742270.76	14529900.14	40°00'29.2517"N	80°38'10.5319"W	6242.23	357.910	1.00
14478.00	91.380	336.320	5965.46	5886.20	6320.59	-263.54	1742234.84	14529982.61	40°00'30.0684"N	80°38'10.9894"W	6326.08	357.612	1.33
14568.00	90.920	337.950	5963.66	5976.16	6403.49	-298.50	1742199.89	14530065.49	40°00'30.8891"N	80°38'11.4344"W	6410.45	357.331	1.88
14659.00	90.680	336.730	5962.39	6067.13	6487.46	-333.55	1742164.85	14530149.42	40°00'31.7203"N	80°38'11.8805"W	6496.03	357.057	1.37
14750.00	91.140	336.360	5960.94	6158.12	6570.93	-369.77	1742128.65	14530232.86	40°00'32.5466"N	80°38'12.3415"W	6581.32	356.779	0.65
14841.00	91.050	335.570	5959.20	6249.10	6654.02	-406.83	1742091.60	14530315.92	40°00'33.3693"N	80°38'12.8134"W	6666.45	356.501	0.87
14932.00	90.520	335.230	5957.96	6340.08	6736.76	-444.70	1742053.74	14530398.62	40°00'34.1884"N	80°38'13.2959"W	6751.42	356.223	0.69
15023.00	90.740	335.450	5956.96	6431.07	6819.45	-482.67	1742015.79	14530481.28	40°00'35.0071"N	80°38'13.7794"W	6836.51	355.951	0.34
15114.00	90.030	334.010	5956.34	6522.04	6901.74	-521.51	1741976.96	14530563.54	40°00'35.8219"N	80°38'14.2743"W	6921.41	355.679	1.76
15205.00	90.280	335.200	5956.10	6613.00	6983.94	-560.54	1741937.95	14530645.71	40°00'36.6358"N	80°38'14.7716"W	7006.40	355.411	1.34
15296.00	90.620	335.140	5955.38	6703.99	7066.53	-596.75	1741899.75	14530728.26	40°00'37.4535"N	80°38'15.2583"W	7091.85	355.157	0.38
15388.00	90.770	335.750	5954.27	6795.98	7150.20	-636.98	1741861.54	14530811.90	40°00'38.2819"N	80°38'15.7453"W	7178.52	354.909	0.68
15479.00	90.310	334.780	5953.41	6886.96	7232.85	-675.05	1741823.48	14530894.52	40°00'39.1001"N	80°38'16.2303"W	7264.28	354.668	1.18
15570.00	90.650	335.100	5952.65	6977.94	7315.28	-713.60	1741784.95	14530976.92	40°00'39.9163"N	80°38'16.7213"W	7350.00	354.428	0.51
15661.00	90.250	334.970	5951.93	7068.92	7397.77	-752.00	1741746.56	14531059.38	40°00'40.7331"N	80°38'17.2106"W	7435.90	354.196	0.46
15753.00	90.550	335.540	5951.29	7160.90	7481.32	-790.51	1741708.07	14531142.90	40°00'41.5603"N	80°38'17.7011"W	7522.97	353.968	0.70



### REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H		

### WELLPATH DATA (236 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]
15843.00	90.370	335.310	5950.57	7250.89	7563.17	-827.94	1741670.65	14531224.71	40°00'42.3706"N	80°38'18.1779"W	7608.35	353.753	0.32
15934.00	90.710	334.510	5949.71	7341.87	7645.58	-866.53	1741632.08	14531307.08	40°00'43.1865"N	80°38'18.6695"W	7694.53	353.534	0.96
16026.00	90.580	335.330	5948.67	7433.84	7728.90	-905.52	1741593.10	14531390.37	40°00'44.0115"N	80°38'19.1663"W	7781.76	353.318	0.90
16117.00	90.490	335.450	5947.83	7524.83	7811.63	-943.42	1741555.22	14531473.07	40°00'44.8305"N	80°38'19.6490"W	7868.39	353.114	0.16
16207.00	90.860	335.700	5946.76	7614.82	7893.57	-980.63	1741518.02	14531554.98	40°00'45.6418"N	80°38'20.1229"W	7954.25	352.918	0.50
16298.00	90.680	335.710	5945.54	7705.81	7976.50	-1018.06	1741480.60	14531637.88	40°00'46.4628"N	80°38'20.5998"W	8041.21	352.726	0.20
16391.00	90.710	335.330	5944.41	7798.80	8061.13	-1056.60	1741442.08	14531722.48	40°00'47.3007"N	80°38'21.0906"W	8130.08	352.533	0.41
16481.00	90.550	335.450	5943.42	7888.79	8142.95	-1094.08	1741404.62	14531804.27	40°00'48.1108"N	80°38'21.5680"W	8216.12	352.348	0.22
16574.00	90.740	335.490	5942.38	7981.77	8227.55	-1132.68	1741366.03	14531888.83	40°00'48.9484"N	80°38'22.0598"W	8305.16	352.161	0.21
16666.00	90.650	335.480	5941.26	8073.76	8311.25	-1170.86	1741327.87	14531972.50	40°00'49.7771"N	80°38'22.5460"W	8393.32	351.981	0.10
16759.00	90.650	335.140	5940.21	8166.75	8395.75	-1209.70	1741289.04	14532056.96	40°00'50.6136"N	80°38'23.0409"W	8482.45	351.801	0.37
16850.00	90.460	335.250	5939.32	8257.73	8478.35	-1247.88	1741250.88	14532139.53	40°00'51.4314"N	80°38'23.5272"W	8569.69	351.627	0.24
16940.00	90.800	335.360	5938.34	8347.71	8560.11	-1285.47	1741213.30	14532221.26	40°00'52.2409"N	80°38'24.0062"W	8656.09	351.460	0.40
17032.00	90.620	335.340	5937.20	8439.70	8643.72	-1323.84	1741174.94	14532304.84	40°00'53.0687"N	80°38'24.4950"W	8744.51	351.292	0.20
17124.00	90.580	335.690	5936.23	8531.69	8727.44	-1361.97	1741136.83	14532388.53	40°00'53.8976"N	80°38'24.9807"W	8833.08	351.130	0.38
17214.00	90.800	335.430	5935.15	8621.68	8809.37	-1399.20	1741099.61	14532470.43	40°00'54.7087"N	80°38'25.4549"W	8919.80	350.975	0.38
17306.00	90.520	335.430	5934.09	8713.66	8893.04	-1437.45	1741061.38	14532554.06	40°00'55.5370"N	80°38'25.9422"W	9008.46	350.818	0.30
17397.00	90.710	334.990	5933.11	8804.65	8975.65	-1475.61	1741023.24	14532636.63	40°00'56.3549"N	80°38'26.4283"W	9096.13	350.664	0.53
17490.00	90.710	335.360	5931.96	8897.63	9060.05	-1514.65	1740984.21	14532721.00	40°00'57.1905"N	80°38'26.9257"W	9185.78	350.509	0.40
17581.00	90.800	335.790	5930.76	8988.62	9142.89	-1552.28	1740946.60	14532803.82	40°00'58.0107"N	80°38'27.4050"W	9273.73	350.364	0.48
17672.00	90.650	335.390	5929.61	9079.60	9225.75	-1589.88	1740909.01	14532886.64	40°00'58.8310"N	80°38'27.8840"W	9361.74	350.222	0.47
17762.00	90.580	335.190	5928.64	9169.59	9307.51	-1627.50	1740871.40	14532968.37	40°00'59.6405"N	80°38'28.3633"W	9448.73	350.082	0.24
17853.00	90.830	335.310	5927.52	9260.57	9390.14	-1665.60	1740833.32	14533050.97	40°01'0.4586"N	80°38'28.8487"W	9536.72	349.942	0.30
17944.00	90.710	335.010	5926.30	9351.55	9472.72	-1703.82	1740795.12	14533133.51	40°01'1.2761"N	80°38'29.3357"W	9624.73	349.803	0.36
18035.00	90.770	335.400	5925.12	9442.53	9555.32	-1741.98	1740756.97	14533216.08	40°01'2.0939"N	80°38'29.8219"W	9712.81	349.668	0.43
18126.00	90.520	334.870	5924.10	9533.51	9637.88	-1780.24	1740718.72	14533298.61	40°01'2.9113"N	80°38'30.3094"W	9800.92	349.535	0.64
18216.00	90.620	335.140	5923.20	9623.49	9719.45	-1818.27	1740680.71	14533380.14	40°01'3.7189"N	80°38'30.7939"W	9888.06	349.404	0.32
18307.00	90.710	334.670	5922.15	9714.46	9801.85	-1856.86	1740642.13	14533462.52	40°01'4.5348"N	80°38'31.2857"W	9976.18	349.273	0.53
18398.00	90.580	335.120	5921.12	9805.44	9884.25	-1895.47	1740603.54	14533544.88	40°01'5.3506"N	80°38'31.7776"W	10064.35	349.144	0.51
18489.00	90.920	335.220	5919.93	9896.42	9966.83	-1933.68	1740565.35	14533627.43	40°01'6.1682"N	80°38'32.2645"W	10152.67	349.020	0.39



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H		

WELLPATH DATA (236 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]
18582.00	90.620	335.310	5918.68	9989.40	10051.29	-1972.59	1740526.45	14533711.86	40°01'7.0044"N	80°38'32.7602"W	10243.02	348.897	0.34
18673.00	90.430	335.210	5917.85	10080.38	10133.93	-2010.67	1740488.39	14533794.47	40°01'7.8226"N	80°38'33.2454"W	10331.47	348.778	0.24
18765.00	90.580	335.460	5917.04	10172.37	10217.53	-2049.06	1740450.01	14533878.04	40°01'8.6503"N	80°38'33.7346"W	10420.97	348.660	0.32
18858.00	90.650	335.300	5916.04	10265.36	10302.08	-2087.80	1740411.28	14533962.55	40°01'9.4873"N	80°38'34.2282"W	10511.50	348.544	0.19
18949.00	90.770	335.350	5914.91	10356.34	10384.76	-2125.79	1740373.31	14534045.20	40°01'10.3059"N	80°38'34.7122"W	10600.10	348.431	0.14
19041.00	90.740	335.190	5913.70	10448.32	10468.32	-2164.27	1740334.84	14534128.72	40°01'11.1331"N	80°38'35.2025"W	10689.70	348.319	0.18
19132.00	90.620	335.210	5912.62	10539.31	10550.92	-2202.44	1740296.69	14534211.29	40°01'11.9509"N	80°38'35.6888"W	10778.34	348.209	0.13
19223.00	90.740	335.530	5911.54	10630.29	10633.63	-2240.36	1740258.78	14534293.97	40°01'12.7698"N	80°38'36.1720"W	10867.08	348.103	0.38
19314.00	90.620	335.690	5910.46	10721.28	10716.50	-2277.94	1740221.22	14534376.81	40°01'13.5903"N	80°38'36.6507"W	10955.93	348.000	0.22
19406.00	90.710	335.090	5909.39	10813.27	10800.14	-2316.25	1740182.93	14534460.42	40°01'14.4183"N	80°38'37.1388"W	11045.73	347.895	0.66
19499.00	90.800	336.210	5908.17	10906.25	10884.86	-2354.59	1740144.60	14534545.10	40°01'15.2570"N	80°38'37.6273"W	11136.62	347.794	1.21
19589.00	90.680	337.630	5907.00	10996.24	10967.65	-2389.86	1740109.34	14534627.86	40°01'16.0765"N	80°38'38.0765"W	11225.01	347.707	1.58
19680.00	90.680	338.310	5905.92	11087.18	11052.00	-2424.00	1740075.22	14534712.18	40°01'16.9114"N	80°38'38.5108"W	11314.70	347.629	0.75
19771.00	90.800	338.050	5904.75	11178.12	11136.47	-2457.82	1740041.41	14534796.62	40°01'17.7476"N	80°38'38.9412"W	11404.47	347.554	0.31
19861.00	90.680	338.420	5903.59	11268.05	11220.05	-2491.19	1740008.06	14534880.16	40°01'18.5748"N	80°38'39.3658"W	11493.28	347.482	0.43
19952.00	90.550	338.230	5902.61	11358.97	11304.61	-2524.79	1739974.46	14534964.69	40°01'19.4118"N	80°38'39.7935"W	11583.12	347.410	0.25
20042.00	90.740	338.410	5901.60	11448.90	11388.24	-2558.04	1739941.23	14535048.28	40°01'20.2395"N	80°38'40.2165"W	11672.00	347.340	0.29
20134.00	90.580	338.590	5900.54	11540.82	11473.83	-2591.76	1739907.53	14535133.84	40°01'21.0867"N	80°38'40.6455"W	11762.91	347.271	0.26
20227.00	90.770	339.260	5899.44	11633.70	11560.60	-2625.19	1739874.10	14535220.58	40°01'21.9455"N	80°38'41.0709"W	11854.92	347.206	0.75
20318.00	90.710	339.210	5898.27	11724.56	11645.68	-2657.45	1739841.85	14535305.63	40°01'22.7876"N	80°38'41.4812"W	11945.04	347.146	0.09
20411.00	90.830	339.210	5897.02	11817.41	11732.62	-2690.46	1739808.86	14535392.53	40°01'23.6480"N	80°38'41.9010"W	12037.15	347.085	0.13
20503.00	90.680	338.910	5895.80	11909.28	11818.54	-2723.34	1739775.99	14535478.42	40°01'24.4984"N	80°38'42.3192"W	12128.25	347.024	0.36
20594.00	90.680	338.640	5894.72	12000.18	11903.36	-2756.28	1739743.06	14535563.20	40°01'25.3379"N	80°38'42.7383"W	12218.31	346.963	0.30
20685.00	91.200	338.920	5893.23	12091.07	11988.18	-2789.21	1739710.14	14535647.99	40°01'26.1774"N	80°38'43.1573"W	12308.37	346.902	0.65
20731.00	90.650	339.320	5892.49	12137.00	12031.15	-2805.61	1739693.76	14535690.95	40°01'26.6027"N	80°38'43.3658"W	12353.95	346.873	1.48
20756.00‡	90.650	339.320	5892.21	12161.96	12054.54	-2814.43	1739684.93	14535714.32	40°01'26.8341"N	80°38'43.4781"W	12378.73	346.858	0.00



REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Betty Schafer MSH 405H
Field	Marshall	API	47051023830000
Facility	Betty Schafer MSH Pad	Wellbore	Betty Schafer MSH 405H AWB
Slot	Slot 405H		

HOLE & CASING SECTIONS									
- Ref Wellbore: Betty Schafer MSH 405H AWB    Ref Wellpath: Betty Schafer MSH 405H AWB_awp 50' - 20731' Proj: 20756'									
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]
12.25in Open Hole	26.00	1760.00	1734.00	26.00	1711.29	0.00	0.00	-107.30	304.42
8.75in Open Hole	26.00	3479.00	3453.00	26.00	3128.01	0.00	0.00	-418.77	1208.22
9.625in Casing	26.00	20772.00	20746.00	26.00	N/A	0.00	0.00	N/A	N/A
5.5in Casing	26.00	20772.00	20746.00	26.00	N/A	0.00	0.00	N/A	N/A

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Betty Schafer MSH 405H BHL Rev-3	5866.96	12061.45	-2799.81	1739699.55	14535721.24	40°01'26.9019"N	80°38'43.2897"W	point
Betty Schafer MSH 405H LP Rev 3	6019.00	-139.09	2600.84	1745098.10	14523525.45	39°59'26.1152"N	80°37'34.5272"W	point

WELLPATH COMPOSITION - Ref Wellbore: Betty Schafer MSH 405H AWB    Ref Wellpath: Betty Schafer MSH 405H AWB_awp 50' - 20731' Proj: 20756'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	394.00	Gyrodatta 2015 - GC+WIR+DPIPE	1 Gyro 50' - 394'	Betty Schafer MSH 405H AWB	1/13/2022
394.00	1760.00	OWSG MWD rev2 + HRGM	2 12.25 Tally 445' - 1760'	Betty Schafer MSH 405H AWB	1/13/2022
1760.00	3479.00	OWSG MWD rev2 + HRGM	3 8.75 Tally MWD 1855' - 3479'	Betty Schafer MSH 405H AWB	1/13/2022
3479.00	20756.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	4 8.75 BH MWD 3549' - 20731'	Betty Schafer MSH 405H AWB	1/13/2022



Well Name:

BETTY SCHAFFER MSH 405H

47051023830000

LITHOLOGY/FORMATION	TOP DEPTH, MD (FT)	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, MD (FT)	BOTTOM DEPTH, TVD (FT)	QUANTITY AND TYPE OF FLUID
Base of Fresh Water	0.00	0.00	280.00	280.00	?
Top of Salt Water	802.00	802.00	NA	NA	?
Pittsburgh Coal	352.00	352.00	358.00	358.00	?
Raven Cliff (ss)	1012.00	1010.00	1517.00	1511.00	?
Big Injun (ss)	1517.00	1511.00	1951.00	1941.00	?
Berea (siltstone)	1956.00	1892.00	1985.00	1919.00	?
Rhinestreet (shale)	6321.00	5394.00	6655.00	5689.00	?
Cashaqua (shale)	6655.00	5689.00	6857.00	5839.00	?
Burket (shale)	6857.00	5839.00	6892.00	5861.00	?
Tully (ls)	6892.00	5861.00	6944.00	5892.00	?
Mahantango (shale)	6944.00	5892.00	7198.00	5996.00	?
Marcellus (shale)	7198.00	5996.00	NA	NA	?