

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 10H
Area	Ohio County, WV	Well	Michael Ratcliffe OHI 10H
Field	Ohio	Wellbore	Michael Ratcliffe OHI 10H AWB
Facility	Michael Ratcliffe OHI Pad		

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Atenjen
Scale	0.999617	Report Generated	04/Apr/2019 at 12:41
Convergence at slot	0.28° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Michael_Ratcliffe_OHI_10H_AWP_Proj_23760_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	78.27	-115.61	1761403.71	14581109.33	40°08'54.655"N	80°34'01.356"W
Facility Reference Pt			1761519.28	14581031.09	40°08'53.876"N	80°33'59.872"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC 41 (KB) to Facility Vertical Datum	1307.30ft
Horizontal Reference Pt	Slot	SDC 41 (KB) to Mean Sea Level	1307.30ft
Vertical Reference Pt	SDC 41 (KB)	SDC 41 (KB) to Ground Level at Slot (Slot 10H)	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	149.18°

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WV Department of
Environmental Protection

Actual Wellpath Report

Michael Ratcliffe OHI 10H AWP Proj: 23760'

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Ohio County, WV	Wellbore	Michael Ratcliffe OHI 10H AWB
Ohio		
Facility		

WELLPATH DATA (269 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	0.00	211.350	0.00	0.00	0.00	0.00	1761403.71	14581109.33	40°08'54.655"N	80°34'01.356"W	0.00	0.000	0.00	0.00	0.00
26.00	0.00	211.350	26.00	0.00	0.00	0.00	1761403.71	14581109.33	40°08'54.655"N	80°34'01.356"W	0.00	0.000	0.00	0.00	0.00
100.00	0.650	211.350	100.00	0.20	-0.36	-0.22	1761403.49	14581108.97	40°08'54.651"N	80°34'01.359"W	0.42	211.350	0.88	0.88	-200.88
200.00	0.780	210.560	199.99	0.79	-1.43	-0.86	1761402.85	14581107.90	40°08'54.641"N	80°34'01.367"W	1.67	211.028	0.13	0.13	-0.79
300.00	0.530	211.370	299.98	1.33	-2.41	-1.45	1761402.27	14581106.92	40°08'54.631"N	80°34'01.375"W	2.81	210.971	0.25	-0.25	0.81
400.00	0.100	143.080	399.98	1.63	-2.87	-1.63	1761402.08	14581106.45	40°08'54.627"N	80°34'01.377"W	3.31	209.626	0.50	-0.43	-68.29
500.00	0.200	163.820	499.98	1.89	-3.11	-1.53	1761402.18	14581106.21	40°08'54.624"N	80°34'01.376"W	3.47	206.235	0.11	0.10	20.74
600.00	0.280	194.440	599.98	2.23	-3.52	-1.55	1761402.17	14581105.81	40°08'54.620"N	80°34'01.376"W	3.84	203.733	0.15	0.08	30.62
692.00	0.210	204.720	691.98	2.48	-3.89	-1.67	1761402.04	14581105.44	40°08'54.617"N	80°34'01.378"W	4.23	203.281	0.09	-0.08	11.17
783.00	0.180	358.810	782.98	2.45	-3.90	-1.75	1761401.97	14581105.43	40°08'54.617"N	80°34'01.379"W	4.27	204.132	0.42	-0.03	169.33
873.00	1.070	43.180	872.97	2.10	-3.14	-1.17	1761402.54	14581106.18	40°08'54.624"N	80°34'01.371"W	3.35	200.477	1.06	0.99	49.30
963.00	2.660	51.650	962.92	1.59	-1.23	1.04	1761404.75	14581108.09	40°08'54.643"N	80°34'01.342"W	1.61	139.856	1.79	1.77	9.41
1053.00	5.330	52.970	1052.70	0.87	2.58	6.02	1761409.73	14581111.91	40°08'54.680"N	80°34'01.278"W	6.55	66.778	2.97	2.97	1.47
1157.00	8.550	50.440	1155.92	-0.83	10.42	15.83	1761419.54	14581119.74	40°08'54.757"N	80°34'01.151"W	18.95	56.664	3.11	3.10	-2.43
1247.00	10.330	48.700	1244.70	-3.32	20.00	27.06	1761430.76	14581129.32	40°08'54.851"N	80°34'01.006"W	33.65	53.523	2.00	1.98	-1.93
1340.00	11.380	52.220	1336.04	-5.95	31.13	40.57	1761444.27	14581140.44	40°08'54.961"N	80°34'00.831"W	51.14	52.504	1.33	1.13	3.78
1433.00	12.170	56.740	1427.08	-7.47	42.13	56.02	1761459.71	14581151.43	40°08'55.069"N	80°34'00.632"W	70.09	53.059	1.31	0.85	4.86
1525.00	12.590	63.660	1516.94	-7.10	51.89	73.12	1761476.80	14581161.20	40°08'55.164"N	80°34'00.411"W	89.66	54.636	1.67	0.46	7.52
1618.00	13.230	67.610	1607.60	-4.75	60.44	92.04	1761495.72	14581169.75	40°08'55.248"N	80°34'00.167"W	110.11	56.707	1.17	0.69	4.25
1711.00	14.110	71.500	1697.96	-0.77	68.10	112.63	1761516.30	14581177.39	40°08'55.322"N	80°33'59.901"W	131.62	58.843	1.37	0.95	4.18
1803.00	14.400	70.170	1877.13	3.80	75.53	134.03	1761537.69	14581184.83	40°08'55.395"N	80°33'59.625"W	153.85	60.596	0.48	0.32	-1.45
1896.00	14.470	71.560	1877.19	8.50	83.13	155.93	1761559.58	14581192.43	40°08'55.469"N	80°33'59.343"W	176.71	61.936	0.38	0.08	1.49
1988.00	14.420	69.040	1966.29	12.92	90.87	177.53	1761581.18	14581200.16	40°08'55.544"N	80°33'59.064"W	199.43	62.895	0.69	-0.05	-2.74
2074.00	14.420	67.800	1991.47	13.96	93.25	183.55	1761587.19	14581202.54	40°08'55.568"N	80°33'58.986"W	205.88	63.069	1.19	0.00	-4.77
2096.00	14.620	67.850	2070.85	17.05	101.01	202.59	1761606.22	14581210.29	40°08'55.643"N	80°33'58.741"W	226.37	63.500	0.24	0.24	0.06
2187.00	16.560	74.200	2158.50	22.14	108.87	225.71	1761629.33	14581218.15	40°08'55.720"N	80°33'58.442"W	250.59	64.250	2.84	2.13	6.98
2280.00	19.610	75.190	2246.90	29.89	116.47	253.56	1761657.17	14581225.75	40°08'55.794"N	80°33'58.083"W	279.03	65.329	3.30	3.28	1.06
2372.00	22.180	75.800	2332.84	39.11	124.68	285.32	1761688.92	14581233.95	40°08'55.873"N	80°33'57.674"W	311.37	66.396	2.80	2.79	0.66
2465.00	23.940	79.230	2418.41	50.60	132.51	320.88	1761724.47	14581241.78	40°08'55.949"N	80°33'57.215"W	347.16	67.561	2.38	1.89	3.69
2556.00	25.350	77.690	2502.94	63.39	140.28	358.87	1761762.45	14581249.55	40°08'56.024"N	80°33'56.726"W	385.31	68.650	1.67	1.52	-1.66

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WELLPATH DATA (269 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]
2651.00	25.760	80.190	2586.84	76.96	147.97	398.24	1761801.80	14581257.24	40°08'56.098"N	80°33'56.218"W	424.84	69.617	1.24	0.44	2.69
2743.00	24.990	85.480	2669.98	92.74	152.91	437.31	1761840.86	14581262.17	40°08'56.145"N	80°33'55.715"W	463.28	70.728	2.60	-0.84	5.75
2836.00	23.870	83.000	2754.65	109.04	156.75	475.58	1761879.11	14581266.01	40°08'56.181"N	80°33'55.222"W	500.74	71.758	1.63	-1.20	-2.67
2929.00	24.500	84.550	2839.49	124.91	160.87	513.45	1761916.96	14581270.14	40°08'56.220"N	80°33'54.734"W	538.06	72.603	0.96	0.68	1.67
3022.00	25.440	84.400	2923.79	141.68	164.65	552.53	1761956.03	14581273.92	40°08'56.255"N	80°33'54.230"W	576.54	73.406	1.01	1.01	-0.16
3114.00	24.110	83.480	3007.32	157.83	168.72	590.86	1761994.35	14581277.98	40°08'56.294"N	80°33'53.736"W	614.48	74.064	1.51	-1.45	-1.00
3207.00	23.260	87.030	3092.49	174.23	171.83	628.08	1762031.55	14581281.08	40°08'56.323"N	80°33'53.257"W	651.15	74.700	1.78	-0.91	3.82
3300.00	24.070	86.270	3177.67	191.44	174.01	665.34	1762068.80	14581283.27	40°08'56.342"N	80°33'52.777"W	687.72	75.343	0.93	0.87	-0.82
3393.00	24.820	82.800	3262.34	207.90	177.69	703.63	1762107.07	14581286.95	40°08'56.377"N	80°33'52.284"W	725.72	75.827	1.74	0.81	-3.73
3485.00	23.590	83.310	3346.25	223.17	182.26	741.07	1762144.50	14581291.51	40°08'56.420"N	80°33'51.801"W	763.16	76.183	1.36	-1.34	0.55
3578.00	23.630	84.230	3431.47	238.67	186.30	778.10	1762181.51	14581295.55	40°08'56.458"N	80°33'51.324"W	800.09	76.535	0.40	0.04	0.99
3671.00	24.140	81.980	3516.50	253.93	190.82	815.48	1762218.88	14581300.08	40°08'56.501"N	80°33'50.843"W	837.51	76.830	1.12	0.55	-2.42
3763.00	24.110	83.670	3600.47	269.01	195.52	852.78	1762256.17	14581304.77	40°08'56.546"N	80°33'50.362"W	874.91	77.087	0.75	-0.03	1.84
3856.00	24.110	81.130	3685.36	283.98	200.54	890.43	1762293.80	14581309.79	40°08'56.594"N	80°33'49.877"W	912.73	77.308	1.12	0.00	-2.73
3949.00	24.230	82.020	3770.21	298.49	206.12	928.10	1762331.45	14581315.37	40°08'56.647"N	80°33'48.391"W	950.71	77.478	0.41	0.13	0.96
4041.00	23.840	79.520	3854.23	312.28	212.13	965.07	1762368.42	14581321.37	40°08'56.705"N	80°33'48.915"W	988.11	77.603	1.19	-0.42	-2.72
4134.00	23.430	79.800	3939.43	325.32	218.82	1001.75	1762405.08	14581328.06	40°08'56.769"N	80°33'48.442"W	1025.37	77.678	0.46	-0.44	0.30
4226.00	24.080	82.010	4023.64	339.05	224.67	1038.34	1762441.66	14581333.90	40°08'56.825"N	80°33'47.970"W	1062.37	77.791	1.20	0.71	2.40
4319.00	25.020	83.560	4108.23	354.53	229.51	1076.67	1762479.97	14581338.75	40°08'56.871"N	80°33'47.476"W	1100.86	77.967	1.23	1.01	1.67
4412.00	25.470	83.580	4192.35	370.91	233.95	1116.09	1762519.37	14581343.19	40°08'56.913"N	80°33'46.969"W	1140.35	78.161	0.48	0.48	0.02
4505.00	24.750	84.640	4276.56	387.54	238.01	1155.34	1762558.61	14581347.24	40°08'56.951"N	80°33'46.463"W	1179.60	78.360	0.91	-0.77	1.14
4597.00	24.350	81.670	4360.24	403.07	242.55	1193.29	1762596.54	14581351.78	40°08'56.994"N	80°33'45.974"W	1217.69	78.510	1.41	-0.43	-3.23
4690.00	25.260	83.810	4444.66	418.68	247.47	1231.98	1762635.22	14581356.70	40°08'57.041"N	80°33'45.475"W	1256.59	78.642	1.37	0.98	2.30
4783.00	25.010	87.350	4528.86	436.23	250.52	1271.35	1762674.58	14581359.75	40°08'57.069"N	80°33'44.968"W	1295.80	78.853	1.64	-0.27	3.81
4876.00	24.370	85.000	4613.36	453.87	253.10	1310.11	1762713.31	14581362.33	40°08'57.093"N	80°33'44.469"W	1334.33	79.066	1.26	-0.69	-2.53
4968.00	23.550	87.140	4697.44	470.75	255.67	1347.37	1762750.57	14581366.90	40°08'57.116"N	80°33'43.989"W	1371.41	79.256	1.30	-0.89	2.33
5061.00	24.300	89.820	4782.45	489.21	256.66	1385.06	1762788.24	14581366.89	40°08'57.124"N	80°33'43.503"W	1408.64	79.502	1.22	0.81	2.88
5154.00	25.310	88.590	4866.87	508.73	257.21	1424.07	1762827.24	14581366.43	40°08'57.128"N	80°33'43.001"W	1447.12	79.762	1.42	1.09	-1.32
5246.00	24.240	85.100	4950.07	526.95	259.37	1463.26	1762866.41	14581368.59	40°08'57.147"N	80°33'42.496"W	1486.07	79.949	1.62	-0.11	-3.79
5339.00	23.240	84.450	5034.22	544.37	262.63	1502.74	1762905.87	14581371.85	40°08'57.177"N	80°33'41.988"W	1525.51	80.087	0.16	0.00	0.38

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MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5432.00	24.720	82.530	5118.53	560.85	266.73	1541.76	1762944.88	14581375.95	40°08'57.216"N	80°33'41.485"W	1564.66	80.185	1.43	-0.53	-3.14
5524.00	25.570	81.300	5201.81	575.95	272.23	1580.46	1762983.57	14581381.45	40°08'57.269"N	80°33'40.986"W	1603.74	80.227	1.08	0.92	-1.34
5617.00	26.520	83.820	5285.37	592.16	277.50	1620.94	1763024.03	14581386.72	40°08'57.319"N	80°33'40.465"W	1644.53	80.285	1.57	1.02	2.71
5710.00	26.360	84.530	5368.64	609.66	281.71	1662.14	1763065.21	14581390.92	40°08'57.358"N	80°33'39.934"W	1685.84	80.381	0.38	-0.17	0.76
5800.00	25.570	80.680	5449.56	625.33	286.76	1701.20	1763104.26	14581395.97	40°08'57.406"N	80°33'39.431"W	1725.20	80.432	2.07	-0.88	-4.28
5892.00	24.610	82.310	5532.88	640.14	292.54	1739.78	1763142.82	14581401.75	40°08'57.461"N	80°33'38.933"W	1764.20	80.455	1.29	-1.04	1.77
5985.00	23.150	83.600	5617.92	655.88	296.53	1777.20	1763180.23	14581405.74	40°08'57.499"N	80°33'38.451"W	1801.77	80.527	2.12	-1.57	3.54
6076.00	21.920	83.820	5701.97	670.92	299.73	1811.92	1763214.94	14581408.94	40°08'57.529"N	80°33'38.004"W	1836.54	80.607	1.55	-1.35	-1.96
6166.00	22.650	86.190	5785.25	685.80	302.69	1845.91	1763248.92	14581411.90	40°08'57.557"N	80°33'37.566"W	1870.57	80.688	1.29	0.81	2.63
6225.00	23.660	86.130	5839.50	696.32	304.25	1869.06	1763272.06	14581413.45	40°08'57.571"N	80°33'37.268"W	1893.66	80.755	1.71	1.71	-0.10
6233.00	23.570	85.910	5846.83	697.77	304.47	1872.26	1763275.25	14581413.68	40°08'57.573"N	80°33'37.227"W	1896.85	80.763	1.57	-1.12	-2.75
6325.00	21.900	88.170	5931.68	714.36	306.33	1907.76	1763310.74	14581415.53	40°08'57.590"N	80°33'36.769"W	1932.19	80.878	2.05	-1.82	2.46
6372.00	22.780	93.970	5975.16	723.80	305.98	1925.60	1763328.57	14581415.18	40°08'57.585"N	80°33'36.540"W	1949.76	80.971	5.05	1.87	12.34
6418.00	25.730	101.660	6017.10	735.63	303.34	1944.27	1763347.23	14581412.55	40°08'57.558"N	80°33'36.299"W	1987.79	81.132	9.38	6.41	16.72
6464.00	30.060	107.220	6057.75	750.95	297.91	1965.07	1763368.02	14581407.12	40°08'57.504"N	80°33'36.032"W	1987.52	81.379	10.97	9.41	12.09
6511.00	32.750	112.430	6097.87	769.90	289.57	1988.07	1763391.02	14581398.78	40°08'57.420"N	80°33'35.736"W	2009.05	81.713	8.13	5.72	11.09
6557.00	35.170	121.450	6136.05	791.61	277.90	2010.89	1763413.83	14581387.12	40°08'57.304"N	80°33'35.443"W	2030.00	82.132	12.14	5.26	19.61
6603.00	38.420	128.540	6172.90	816.73	262.07	2033.39	1763436.32	14581371.30	40°08'57.146"N	80°33'35.154"W	2050.21	82.656	11.62	7.07	15.41
6650.00	43.170	133.180	6208.47	845.87	241.96	2056.55	1763459.48	14581351.19	40°08'56.946"N	80°33'34.857"W	2070.74	83.290	11.98	10.11	9.87
6696.00	46.210	136.690	6241.18	877.22	219.10	2079.43	1763482.34	14581328.34	40°08'56.719"N	80°33'34.564"W	2090.94	83.985	8.51	6.61	7.63
6742.00	51.190	139.940	6271.53	911.15	193.28	2102.37	1763505.27	14581302.53	40°08'56.463"N	80°33'34.270"W	2111.23	84.747	12.05	10.83	7.07
6789.00	56.260	141.850	6299.33	948.63	163.88	2126.24	1763529.14	14581273.14	40°08'56.171"N	80°33'33.965"W	2132.55	85.593	11.27	10.79	4.06
6835.00	60.980	143.630	6323.28	987.64	132.62	2150.00	1763552.88	14581241.89	40°08'55.861"N	80°33'33.661"W	2154.08	86.470	10.78	10.26	3.87
6881.00	65.580	145.970	6343.96	1028.60	99.05	2173.66	1763576.54	14581208.34	40°08'55.528"N	80°33'33.358"W	2175.92	87.391	10.98	10.00	5.09
6927.00	69.880	147.520	6361.69	1071.00	63.56	2196.93	1763599.79	14581172.86	40°08'55.176"N	80°33'33.061"W	2197.84	88.343	8.22	7.61	3.37
6974.00	72.410	148.930	6377.30	1115.32	25.87	2220.26	1763623.12	14581135.19	40°08'54.803"N	80°33'32.763"W	2220.41	89.332	7.04	6.45	3.00
7020.00	76.830	150.610	6389.73	1159.59	-12.38	2242.55	1763645.40	14581096.95	40°08'54.424"N	80°33'32.478"W	2242.58	90.316	10.23	9.61	3.65
7067.00	81.880	153.090	6398.70	1205.66	-53.05	2264.30	1763667.14	14581056.29	40°08'54.021"N	80°33'32.201"W	2264.92	91.342	11.74	10.53	5.28
7113.00	85.970	154.830	6405.72	1251.21	-94.12	2284.36	1763687.19	14581015.24	40°08'53.614"N	80°33'31.945"W	2286.30	92.359	10.46	9.76	3.78
7159.00	89.850	156.530	6405.56	1296.87	-136.00	2303.29	1763706.11	14580973.38	40°08'53.199"N	80°33'31.704"W	2307.30	93.379	8.42	7.57	3.70

Actual Wellpath Report

Michael Ratcliffe OHI 10H AWP Proj: 23760'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 10H
Area	Ohio County, WV	Well	Michael Ratcliffe OHI 10H
Field	Ohio	Wellbore	Michael Ratcliffe OHI 10H AWB
Facility	Michael Ratcliffe OHI Pad		

WELLPATH DATA (269 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]
7252.00	89.380	155.210	6406.51	1389.23	-220.87	2341.30	1763744.11	14580888.54	40°08'52.359"N	80°33'31.220"W	2351.70	95.389	1.42	-0.08	-1.42
7345.00	89.450	154.700	6407.46	1481.75	-305.12	2380.67	1763783.47	14580804.32	40°08'51.524"N	80°33'30.718"W	2400.14	97.304	0.55	0.08	-0.55
7437.00	89.200	154.200	6408.54	1573.35	-388.12	2420.35	1763823.13	14580721.36	40°08'50.702"N	80°33'30.213"W	2451.27	99.110	0.61	-0.27	-0.54
7530.00	89.200	154.750	6409.84	1665.95	-472.03	2460.42	1763863.18	14580637.48	40°08'49.871"N	80°33'29.702"W	2505.29	100.860	0.59	0.00	0.59
7623.00	89.200	155.010	6411.14	1758.48	-556.23	2499.89	1763902.64	14580553.31	40°08'49.037"N	80°33'29.199"W	2561.03	102.544	0.28	0.00	0.28
7715.00	89.140	157.620	6412.47	1849.75	-640.46	2536.84	1763939.58	14580469.11	40°08'48.203"N	80°33'28.729"W	2616.44	104.169	2.84	-0.07	2.84
7808.00	89.420	157.580	6413.64	1941.74	-726.44	2572.28	1763975.00	14580383.17	40°08'47.351"N	80°33'28.278"W	2672.89	105.770	0.30	0.30	-0.04
7901.00	90.090	159.270	6414.04	2033.53	-812.92	2606.48	1764009.18	14580296.72	40°08'46.495"N	80°33'27.843"W	2730.30	107.322	1.95	0.72	1.82
7992.00	89.480	158.650	6414.38	2123.20	-897.85	2639.15	1764041.84	14580211.82	40°08'45.654"N	80°33'27.428"W	2787.69	108.789	0.96	-0.67	-0.68
8085.00	90.090	160.890	6414.73	2214.61	-985.11	2671.30	1764073.99	14580124.60	40°08'44.790"N	80°33'27.020"W	2847.15	110.243	2.50	0.66	2.41
8178.00	89.380	160.080	6415.16	2305.81	-1072.76	2702.37	1764105.04	14580036.98	40°08'43.922"N	80°33'26.625"W	2907.51	111.652	1.16	-0.76	-0.87
8271.00	89.600	157.770	6415.99	2397.45	-1159.53	2735.81	1764138.47	14579950.24	40°08'43.063"N	80°33'26.200"W	2971.39	112.969	2.50	0.24	-2.48
8364.00	89.350	156.390	6416.84	2489.56	-1245.18	2772.02	1764174.67	14579864.62	40°08'42.215"N	80°33'25.739"W	3038.85	114.189	1.51	-0.27	-1.48
8455.00	89.910	156.890	6417.43	2579.79	-1328.72	2808.10	1764210.73	14579781.12	40°08'41.388"N	80°33'25.280"W	3106.60	115.322	0.82	0.62	0.55
8548.00	89.910	155.590	6417.57	2672.08	-1413.84	2845.57	1764248.19	14579696.03	40°08'40.545"N	80°33'24.803"W	3177.45	116.421	1.40	0.00	-1.40
8641.00	90.060	154.090	6417.60	2764.63	-1498.01	2885.11	1764287.71	14579611.89	40°08'39.711"N	80°33'24.299"W	3250.83	117.439	1.62	0.16	-1.61
8733.00	89.910	153.010	6417.62	2856.36	-1580.38	2926.09	1764328.67	14579529.55	40°08'38.895"N	80°33'23.777"W	3325.60	118.373	1.19	-0.16	-1.17
8826.00	89.850	151.430	6417.82	2949.23	-1662.66	2969.43	1764372.00	14579447.31	40°08'38.080"N	80°33'23.224"W	3403.23	119.246	1.70	-0.06	-1.70
8919.00	89.820	151.500	6418.09	3042.15	-1744.36	3013.86	1764416.41	14579365.64	40°08'37.270"N	80°33'22.657"W	3482.26	120.061	0.08	-0.03	0.08
9011.00	89.910	151.760	6418.30	3134.07	-1825.31	3057.57	1764460.11	14579284.72	40°08'36.468"N	80°33'22.100"W	3560.97	120.836	0.30	0.10	0.28
9103.00	89.380	152.990	6418.87	3225.92	-1906.82	3100.23	1764502.75	14579203.24	40°08'35.661"N	80°33'21.556"W	3639.70	121.594	1.46	-0.58	1.34
9195.00	89.260	154.460	6419.96	3317.62	-1989.31	3140.95	1764543.46	14579120.79	40°08'34.844"N	80°33'21.037"W	3717.92	122.348	1.60	-0.13	1.60
9288.00	89.480	152.800	6420.99	3410.33	-2072.62	3182.26	1764584.74	14579037.50	40°08'34.018"N	80°33'20.510"W	3797.70	123.076	1.80	0.24	-1.78
9381.00	89.290	152.540	6421.98	3503.15	-2155.23	3224.95	1764627.42	14578954.92	40°08'33.200"N	80°33'19.966"W	3878.83	123.755	0.35	-0.20	-0.28
9472.00	89.200	152.870	6423.18	3593.97	-2236.10	3266.68	1764669.13	14578874.09	40°08'32.399"N	80°33'19.434"W	3958.70	124.392	0.38	-0.10	0.36
9565.00	89.290	151.890	6424.41	3686.82	-2318.49	3309.79	1764712.23	14578791.73	40°08'31.582"N	80°33'18.884"W	4041.05	125.011	1.06	0.10	-1.05
9658.00	89.320	151.640	6425.64	3779.72	-2400.42	3353.78	1764756.20	14578709.83	40°08'30.771"N	80°33'18.323"W	4124.30	125.593	0.27	0.03	-0.27
9751.00	89.320	156.370	6426.64	3872.36	-2483.53	3394.53	1764796.93	14578626.30	40°08'29.943"N	80°33'17.803"W	4206.30	126.195	5.09	0.00	5.09
9843.00	89.320	158.200	6427.73	3963.43	-2568.83	3430.05	1764832.44	14578541.48	40°08'29.102"N	80°33'17.351"W	4285.34	126.830	1.99	0.00	1.99
9936.00	89.800	161.750	6428.61	4054.76	-2656.19	3461.89	1764864.27	14578454.16	40°08'28.238"N	80°33'16.947"W	4363.49	127.498	3.83	0.30	3.82

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 10H
Area	Ohio County, WV	Well	Michael Ratcliffe OHI 10H
Field	Ohio	Wellbore	Michael Ratcliffe OHI 10H AWB
Facility	Michael Ratcliffe OHI Pad		

WELLPATH DATA (269 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]
10028.00	89.630	161.770	6429.23	4144.55	-2743.57	3490.68	1764893.05	14578366.81	40°08'27.373"N	80°33'16.582"W	4439.83	128.166	0.04	0.03	0.02
10121.00	89.380	160.500	6430.03	4235.53	-2831.57	3520.75	1764923.11	14578278.85	40°08'26.502"N	80°33'16.200"W	4518.13	128.808	1.39	-0.27	-1.37
10214.00	89.290	157.100	6431.11	4327.20	-2918.26	3554.38	1764956.72	14578192.19	40°08'25.643"N	80°33'15.773"W	4598.89	129.387	3.66	-0.10	-3.66
10306.00	89.380	159.700	6432.18	4418.00	-3003.78	3588.24	1764990.57	14578106.70	40°08'24.796"N	80°33'15.343"W	4679.55	129.933	2.83	0.10	2.83
10399.00	89.450	162.740	6433.13	4508.94	-3091.82	3618.17	1765020.49	14578018.70	40°08'23.925"N	80°33'14.963"W	4759.26	130.515	3.27	0.08	3.27
10492.00	89.230	162.740	6434.20	4599.34	-3180.62	3645.77	1765048.08	14577929.93	40°08'23.046"N	80°33'14.613"W	4838.18	131.102	0.24	-0.24	0.00
10584.00	89.920	158.910	6435.69	4689.42	-3267.49	3675.97	1765078.27	14577843.09	40°08'22.186"N	80°33'14.230"W	4918.26	131.633	4.18	-0.34	-4.16
10677.00	89.200	158.060	6437.21	4781.18	-3354.00	3710.08	1765112.36	14577756.62	40°08'21.330"N	80°33'13.796"W	5001.40	132.114	0.96	0.30	-0.91
10770.00	89.290	153.580	6438.44	4873.52	-3438.81	3748.16	1765150.43	14577671.84	40°08'20.490"N	80°33'13.312"W	5086.66	132.535	4.82	0.10	-4.82
10862.00	89.140	151.620	6439.70	4965.35	-3520.48	3790.49	1765192.74	14577590.21	40°08'19.680"N	80°33'12.772"W	5173.16	132.885	2.14	-0.16	-2.13
10955.00	89.200	152.900	6441.05	5058.20	-3602.78	3833.77	1765236.01	14577507.94	40°08'18.885"N	80°33'12.220"W	5260.97	133.221	1.38	0.06	1.38
11047.00	89.230	154.370	6442.31	5149.91	-3685.20	3874.62	1765276.84	14577425.55	40°08'18.049"N	80°33'11.699"W	5347.28	133.565	1.60	0.03	1.60
11139.00	89.200	154.010	6443.57	5241.55	-3768.01	3914.68	1765316.88	14577342.76	40°08'17.228"N	80°33'11.189"W	5433.47	133.906	0.39	-0.03	-0.39
11232.00	89.170	153.210	6444.89	5334.26	-3851.31	3956.01	1765358.20	14577259.50	40°08'16.403"N	80°33'10.662"W	5521.10	134.232	0.86	-0.03	-0.86
11324.00	89.260	154.550	6446.15	5425.94	-3933.91	3996.51	1765398.68	14577176.93	40°08'15.585"N	80°33'10.146"W	5607.82	134.548	1.46	0.10	1.46
11417.00	89.230	156.460	6447.38	5518.37	-4018.52	4035.06	1765437.22	14577092.35	40°08'14.747"N	80°33'09.655"W	5694.76	134.882	2.05	-0.03	2.05
11509.00	89.170	154.650	6448.66	5609.78	-4102.27	4073.13	1765475.27	14577008.64	40°08'13.917"N	80°33'09.170"W	5780.91	135.204	1.97	-0.07	-1.97
11602.00	89.290	155.790	6449.91	5702.26	-4186.69	4112.10	1765514.23	14576924.24	40°08'13.081"N	80°33'08.674"W	5868.37	135.515	1.23	0.13	1.23
11695.00	89.350	156.480	6451.01	5794.57	-4271.74	4149.72	1765551.84	14576839.23	40°08'12.239"N	80°33'08.195"W	5955.50	135.830	0.74	0.06	0.74
11788.00	89.260	156.010	6452.14	5886.85	-4356.85	4187.18	1765589.28	14576754.15	40°08'11.396"N	80°33'07.718"W	6042.74	136.138	0.51	-0.10	-0.51
11880.00	89.320	157.600	6453.28	5978.03	-4441.40	4223.42	1765625.50	14576669.63	40°08'10.558"N	80°33'07.257"W	6128.89	136.441	1.73	0.07	1.73
11973.00	89.600	157.700	6454.16	6070.01	-4527.41	4258.78	1765660.85	14576583.66	40°08'09.707"N	80°33'06.808"W	6215.68	136.751	0.32	0.30	0.11
12066.00	89.540	157.290	6454.86	6162.03	-4613.33	4294.37	1765696.43	14576497.77	40°08'08.856"N	80°33'06.355"W	6302.73	137.051	0.45	-0.06	-0.44
12159.00	89.630	157.060	6455.53	6254.13	-4699.04	4330.45	1765732.49	14576412.09	40°08'08.007"N	80°33'05.896"W	6390.13	137.338	0.27	0.10	-0.25
12252.00	89.570	155.230	6456.18	6346.43	-4784.09	4368.06	1765770.09	14576327.07	40°08'07.165"N	80°33'05.417"W	6478.23	137.603	1.97	-0.06	-1.97
12344.00	89.480	155.010	6456.94	6437.94	-4867.55	4406.76	1765808.78	14576243.65	40°08'06.338"N	80°33'04.925"W	6566.02	137.844	0.26	-0.10	-0.24
12437.00	89.570	155.800	6457.71	6530.38	-4952.11	4445.47	1765847.47	14576159.12	40°08'05.501"N	80°33'04.432"W	6654.74	138.086	0.85	0.10	0.85
12530.00	89.630	154.310	6458.36	6622.89	-5036.43	4484.69	1765886.67	14576074.83	40°08'04.665"N	80°33'03.932"W	6743.74	138.317	1.60	0.06	-1.60
12621.00	89.540	154.750	6459.02	6713.49	-5118.58	4523.82	1765925.79	14575992.71	40°08'03.852"N	80°33'03.434"W	6831.17	138.530	0.49	-0.10	0.48
12712.00	89.570	154.460	6459.73	6804.08	-5200.79	4562.85	1765964.80	14575910.54	40°08'03.037"N	80°33'02.937"W	6918.65	138.738	0.32	0.03	-0.32

0.00 Gas
 0.00 Oil
 0.00 Water
 0.00 Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 10H
SOUTHWESTERN ENERGY	Well	Michael Ratcliffe OHI 10H
Area	Wellbore	Michael Ratcliffe OHI 10H AWB
Field		
Facility		

WELLPATH DATA (269 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]
12803.00	89.690	156.000	6460.32	6894.57	-5283.41	4600.97	1766002.91	14575827.95	40°08'02.219"N	80°33'02.451"W	7005.95	138.950	1.70	0.13	1.69
12896.00	89.720	155.690	6460.80	6986.94	-5368.27	4639.03	1766040.95	14575743.12	40°08'01.378"N	80°33'01.967"W	7094.99	139.168	0.33	0.03	-0.33
12988.00	89.630	155.370	6461.32	7078.37	-5452.00	4677.13	1766079.05	14575659.42	40°08'00.549"N	80°33'01.482"W	7183.31	139.375	0.36	-0.10	-0.35
13080.00	89.880	156.490	6461.71	7169.73	-5536.00	4714.66	1766116.55	14575575.46	40°07'59.717"N	80°33'01.004"W	7271.54	139.581	1.25	0.27	1.22
13173.00	89.660	156.190	6462.08	7262.01	-5621.18	4751.98	1766153.86	14575490.31	40°07'58.874"N	80°33'00.529"W	7360.64	139.790	0.40	-0.24	-0.32
13265.00	89.630	157.640	6462.65	7353.17	-5705.81	4788.05	1766189.92	14575405.71	40°07'58.035"N	80°33'00.070"W	7448.60	139.998	1.58	-0.03	1.58
13357.00	89.750	157.540	6463.15	7444.17	-5790.86	4823.12	1766224.98	14575320.69	40°07'57.193"N	80°32'59.624"W	7536.35	140.210	0.17	0.13	-0.11
13448.00	89.780	154.780	6463.52	7534.49	-5874.09	4859.90	1766261.74	14575237.50	40°07'56.369"N	80°32'59.156"W	7623.88	140.398	3.03	0.03	-3.03
13540.00	89.630	152.190	6464.00	7626.22	-5956.41	4900.97	1766302.79	14575155.21	40°07'55.553"N	80°32'58.633"W	7713.51	140.552	2.82	-0.16	-2.82
13633.00	89.690	154.450	6464.55	7718.97	-6039.50	4942.72	1766344.53	14575072.16	40°07'54.730"N	80°32'58.101"W	7804.23	140.703	2.43	0.06	2.43
13725.00	89.660	155.360	6465.07	7810.51	-6122.81	4981.74	1766383.53	14574988.87	40°07'53.905"N	80°32'57.604"W	7893.45	140.867	0.99	-0.03	0.99
13816.00	89.720	157.530	6465.56	7900.77	-6206.22	5018.10	1766419.88	14574905.49	40°07'53.079"N	80°32'57.141"W	7981.14	141.042	2.39	0.07	2.38
13909.00	89.690	157.080	6466.04	7992.84	-6292.02	5053.98	1766455.75	14574819.73	40°07'52.229"N	80°32'56.685"W	8070.46	141.227	0.48	-0.03	-0.48
14002.00	89.660	157.240	6466.57	8084.94	-6377.73	5090.08	1766491.83	14574734.06	40°07'51.380"N	80°32'56.226"W	8159.92	141.407	0.18	-0.03	0.17
14094.00	90.000	156.730	6466.84	8176.08	-6462.40	5126.05	1766527.79	14574649.41	40°07'50.542"N	80°32'55.768"W	8248.58	141.578	0.67	0.37	-0.55
14187.00	89.970	157.140	6466.87	8268.23	-6547.97	5162.48	1766564.21	14574563.88	40°07'49.694"N	80°32'55.305"W	8338.29	141.747	0.44	-0.03	0.44
14280.00	90.030	156.910	6466.87	8360.36	-6633.59	5198.79	1766600.50	14574478.29	40°07'48.847"N	80°32'54.843"W	8428.04	141.914	0.26	0.06	-0.25
14373.00	90.030	155.400	6466.82	8452.67	-6718.65	5236.38	1766638.08	14574393.26	40°07'48.004"N	80°32'54.364"W	8518.21	142.068	1.62	0.00	-1.62
14466.00	89.970	155.350	6466.82	8545.13	-6803.19	5275.13	1766676.81	14574308.75	40°07'47.167"N	80°32'53.871"W	8608.74	142.210	0.08	-0.05	-0.05
14559.00	89.940	156.540	6466.89	8637.48	-6888.11	5313.04	1766714.71	14574223.87	40°07'46.326"N	80°32'53.389"W	8699.11	142.356	1.28	-0.03	1.28
14651.00	90.030	155.940	6466.92	8728.78	-6972.32	5350.11	1766751.76	14574139.70	40°07'45.492"N	80°32'52.917"W	8788.45	142.500	0.66	0.10	-0.65
14744.00	90.060	156.360	6466.84	8821.09	-7057.37	5387.71	1766789.35	14574054.67	40°07'44.649"N	80°32'52.438"W	8878.85	142.641	0.45	0.03	0.45
14837.00	89.970	155.910	6466.82	8913.41	-7142.42	5425.34	1766826.96	14573969.65	40°07'43.807"N	80°32'51.960"W	8969.31	142.780	0.49	-0.10	-0.48
14928.00	90.030	156.780	6466.82	9003.70	-7225.78	5461.85	1766863.46	14573886.33	40°07'42.981"N	80°32'51.495"W	9057.79	142.915	0.96	0.07	0.96
15020.00	90.030	156.430	6466.77	9094.93	-7310.21	5498.38	1766899.97	14573801.93	40°07'42.145"N	80°32'51.030"W	9147.20	143.051	0.38	0.00	-0.38
15111.00	89.910	156.610	6466.82	9185.18	-7393.68	5534.63	1766936.22	14573718.50	40°07'41.319"N	80°32'50.569"W	9235.73	143.183	0.24	-0.13	0.20
15204.00	90.000	156.570	6466.89	9277.40	-7479.02	5571.58	1766973.15	14573633.18	40°07'40.473"N	80°32'50.099"W	9326.22	143.315	0.11	0.10	-0.04
15296.00	90.060	155.460	6466.84	9368.75	-7563.08	5608.98	1767010.53	14573549.16	40°07'39.641"N	80°32'49.623"W	9415.99	143.438	1.21	0.07	-1.21
15389.00	89.830	153.020	6467.10	9461.38	-7646.83	5649.40	1767050.93	14573465.44	40°07'38.811"N	80°32'49.108"W	9507.35	143.543	2.66	-0.46	-2.62
15481.00	89.690	151.460	6467.64	9553.24	-7728.23	5692.25	1767093.77	14573384.07	40°07'38.005"N	80°32'48.562"W	9598.30	143.626	1.70	0.07	-1.70

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 10H
SOUTHWESTERN ENERGY	Well	Michael Ratcliffe OHI 10H
Ohio County, WV	Wellbore	Michael Ratcliffe OHI 10H AWB
Ohio		
Facility		

WELLPATH DATA (269 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]
15574.00	90.000	151.740	6467.89	9646.16	-7810.04	5736.48	1767137.98	14573302.29	40°07'37.194"N	80°32'47.998"W	9690.40	143.703	0.45	0.33	0.30
15667.00	89.970	151.860	6467.92	9739.06	-7892.00	5780.43	1767181.91	14573220.36	40°07'36.382"N	80°32'47.437"W	9782.49	143.779	0.13	-0.03	0.13
15758.00	89.720	152.890	6468.16	9829.92	-7972.63	5822.62	1767224.09	14573139.77	40°07'35.583"N	80°32'46.900"W	9872.47	143.858	1.16	-0.27	1.13
15850.00	89.940	154.150	6468.44	9921.65	-8054.97	5863.64	1767265.09	14573057.45	40°07'34.767"N	80°32'46.377"W	9963.18	143.947	1.39	0.24	1.37
15943.00	89.230	155.210	6469.11	10014.22	-8139.04	5903.41	1767304.85	14572973.43	40°07'33.934"N	80°32'45.870"W	10054.56	144.046	1.37	-0.76	1.14
16036.00	89.910	156.250	6469.81	10106.61	-8223.81	5941.64	1767343.06	14572888.68	40°07'33.095"N	80°32'45.384"W	10145.65	144.152	1.34	0.73	1.12
16128.00	89.940	157.430	6469.93	10197.79	-8308.40	5977.82	1767379.23	14572804.13	40°07'32.257"N	80°32'44.924"W	10235.42	144.265	1.28	0.03	1.28
16221.00	89.850	157.930	6470.10	10289.76	-8394.43	6013.14	1767414.54	14572718.13	40°07'31.405"N	80°32'44.475"W	10325.90	144.385	0.55	-0.10	0.54
16314.00	89.940	157.720	6470.27	10381.71	-8480.55	6048.24	1767449.62	14572632.04	40°07'30.552"N	80°32'44.029"W	10416.38	144.504	0.25	0.10	-0.23
16407.00	89.880	154.620	6470.42	10474.00	-8565.61	6085.81	1767487.18	14572547.01	40°07'29.710"N	80°32'43.551"W	10507.46	144.606	3.33	-0.06	-3.33
16499.00	89.820	155.180	6470.66	10565.55	-8648.92	6124.84	1767526.19	14572463.74	40°07'28.884"N	80°32'43.054"W	10597.99	144.695	0.61	-0.07	0.61
16591.00	89.910	156.610	6470.87	10656.91	-8732.90	6162.41	1767563.75	14572379.79	40°07'28.053"N	80°32'42.575"W	10688.25	144.791	1.56	0.10	1.55
16684.00	89.880	156.400	6471.04	10749.15	-8818.19	6199.48	1767600.81	14572294.54	40°07'27.208"N	80°32'42.104"W	10779.33	144.891	0.23	-0.03	-0.23
16777.00	89.880	155.480	6471.24	10841.50	-8903.11	6237.40	1767638.71	14572209.65	40°07'26.367"N	80°32'41.621"W	10870.62	144.985	0.99	0.00	-0.99
16869.00	89.780	155.100	6471.51	10932.98	-8986.68	6275.86	1767677.15	14572126.11	40°07'25.539"N	80°32'41.132"W	10961.15	145.071	0.43	-0.11	-0.41
16962.00	89.850	156.730	6471.81	11025.34	-9071.58	6313.81	1767715.09	14572041.24	40°07'24.698"N	80°32'40.649"W	11052.50	145.162	1.75	0.08	1.75
17055.00	90.060	157.810	6471.88	11117.41	-9157.36	6349.74	1767751.01	14571955.50	40°07'23.849"N	80°32'40.192"W	11143.45	145.262	1.18	0.23	1.16
17147.00	89.970	157.190	6471.86	11208.44	-9242.35	6384.95	1767786.20	14571870.53	40°07'23.007"N	80°32'39.744"W	11233.37	145.362	0.68	-0.10	-0.67
17240.00	89.940	156.310	6471.93	11300.63	-9327.80	6421.66	1767822.90	14571785.12	40°07'22.161"N	80°32'39.277"W	11324.56	145.455	0.95	-0.03	-0.95
17332.00	89.970	155.460	6472.01	11392.00	-9411.77	6459.25	1767860.47	14571701.18	40°07'21.329"N	80°32'38.799"W	11415.05	145.538	0.92	0.03	-0.92
17424.00	90.000	154.550	6472.03	11483.52	-9495.15	6498.12	1767899.33	14571617.83	40°07'20.503"N	80°32'38.304"W	11505.80	145.614	0.99	0.03	-0.99
17517.00	89.720	152.840	6472.26	11576.23	-9578.52	6539.33	1767940.53	14571534.50	40°07'19.677"N	80°32'37.779"W	11597.88	145.678	1.86	-0.30	-1.84
17610.00	89.820	152.700	6472.63	11669.05	-9661.21	6581.89	1767983.06	14571451.83	40°07'18.858"N	80°32'37.237"W	11690.18	145.735	0.18	0.11	-0.15
17703.00	89.720	152.860	6473.00	11761.86	-9743.91	6624.42	1768025.59	14571369.17	40°07'18.039"N	80°32'36.695"W	11782.48	145.790	0.20	-0.11	0.17
17802.00	89.750	153.480	6473.46	11860.62	-9832.25	6669.11	1768070.25	14571280.86	40°07'17.163"N	80°32'36.126"W	11880.66	145.851	0.63	0.03	0.63
17898.00	89.720	152.840	6473.91	11956.39	-9917.91	6712.45	1768113.58	14571195.24	40°07'16.315"N	80°32'35.573"W	11975.89	145.910	0.67	-0.03	-0.67
17992.00	89.720	153.200	6474.37	12050.18	-10001.68	6755.09	1768156.21	14571111.50	40°07'15.485"N	80°32'35.030"W	12069.17	145.965	0.38	0.00	0.38
18087.00	89.380	152.940	6474.11	12144.95	-10086.37	6798.12	1768199.21	14571026.84	40°07'14.646"N	80°32'34.482"W	12163.44	146.020	0.45	-0.36	-0.27
18182.00	89.260	153.650	6474.24	12239.70	-10171.23	6840.81	1768241.89	14570942.01	40°07'13.805"N	80°32'33.938"W	12257.68	146.077	0.76	-0.13	0.75
18277.00	89.320	155.660	6474.42	12334.26	-10257.08	6881.47	1768282.53	14570856.20	40°07'12.954"N	80°32'33.420"W	12351.61	146.142	2.12	0.06	2.12

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 10H
SOUTHWESTERN ENERGY	Well	Michael Ratcliffe OHI 10H
Ohio County, WV	Wellbore	Michael Ratcliffe OHI 10H AWB
Ohio		
Facility		

WELLPATH DATA (269 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)
18372.00	89.380	157.180	6478.49	12428.49	-10344.14	6919.47	1768320.52	14570769.17	40°07'12.092"N	80°32'32.937"W	12445.09	146.220	1.60	0.06	1.60
18467.00	89.480	157.830	6479.44	12522.48	-10431.91	6955.81	1768356.85	14570681.44	40°07'11.223"N	80°32'32.475"W	12538.26	146.305	0.69	0.11	0.68
18561.00	89.380	159.030	6480.37	12615.26	-10519.32	6990.37	1768391.39	14570594.06	40°07'10.357"N	80°32'32.036"W	12630.17	146.395	1.28	-0.11	1.28
18656.00	89.380	158.840	6481.40	12708.88	-10607.96	7024.51	1768425.52	14570505.45	40°07'09.480"N	80°32'31.602"W	12722.92	146.488	0.20	0.00	-0.20
18750.00	89.350	158.670	6482.44	12801.56	-10695.57	7058.57	1768459.57	14570417.88	40°07'08.612"N	80°32'31.169"W	12814.78	146.577	0.18	-0.03	-0.18
18844.00	89.320	158.910	6483.54	12894.24	-10783.20	7092.58	1768493.56	14570330.28	40°07'07.745"N	80°32'30.738"W	12906.66	146.665	0.26	-0.03	0.26
18939.00	89.320	155.880	6484.66	12988.24	-10870.88	7129.09	1768530.05	14570242.63	40°07'06.876"N	80°32'30.273"W	13000.00	146.743	3.19	0.00	-3.19
19034.00	89.420	157.180	6485.71	13082.45	-10958.01	7166.92	1768567.87	14570155.53	40°07'06.013"N	80°32'29.792"W	13093.62	146.814	1.37	0.11	1.37
19128.00	89.350	157.440	6486.72	13175.50	-11044.73	7203.18	1768604.12	14570068.85	40°07'05.154"N	80°32'29.331"W	13186.05	146.888	0.29	-0.07	0.28
19222.00	89.350	156.480	6487.78	13268.63	-11131.23	7239.96	1768640.89	14569982.38	40°07'04.298"N	80°32'28.864"W	13278.61	146.959	1.02	0.00	-1.02
19317.00	89.450	157.590	6488.78	13362.73	-11218.69	7277.03	1768677.94	14569894.95	40°07'03.432"N	80°32'28.392"W	13372.14	147.030	1.17	0.11	1.17
19412.00	89.320	155.610	6489.80	13456.93	-11305.87	7314.75	1768715.65	14569807.81	40°07'02.568"N	80°32'27.913"W	13465.82	147.098	2.09	-0.14	-2.08
19507.00	89.350	154.140	6490.90	13551.45	-11391.87	7355.09	1768755.96	14569721.84	40°07'01.716"N	80°32'27.399"W	13559.94	147.152	1.55	0.03	-1.55
19600.00	89.510	152.930	6491.83	13644.18	-11475.12	7396.53	1768797.39	14569638.62	40°07'00.891"N	80°32'26.871"W	13652.37	147.195	1.31	0.17	-1.30
19694.00	89.540	154.100	6492.60	13737.90	-11559.25	7438.45	1768839.29	14569554.52	40°07'00.058"N	80°32'26.337"W	13745.79	147.238	1.25	0.03	1.24
19789.00	89.420	154.380	6493.47	13832.53	-11644.81	7479.73	1768880.56	14569469.00	40°06'59.210"N	80°32'25.812"W	13840.09	147.286	0.32	-0.13	0.29
19882.00	89.450	155.130	6494.38	13925.08	-11728.92	7519.39	1768920.21	14569384.92	40°06'58.377"N	80°32'25.307"W	13932.30	147.336	0.81	0.03	0.81
19977.00	89.420	156.670	6495.32	14019.42	-11815.63	7558.18	1768958.98	14569298.24	40°06'57.518"N	80°32'24.813"W	14026.24	147.394	1.62	-0.03	1.62
20072.00	89.480	157.280	6496.23	14113.54	-11903.06	7595.34	1768996.12	14569210.85	40°06'56.652"N	80°32'24.341"W	14119.92	147.458	0.65	0.06	0.64
20167.00	89.540	157.570	6497.04	14207.55	-11990.78	7631.81	1769032.58	14569123.17	40°06'55.784"N	80°32'23.877"W	14213.49	147.524	0.31	0.06	0.31
20261.00	89.510	157.620	6497.82	14300.54	-12077.68	7667.63	1769068.39	14569036.38	40°06'54.923"N	80°32'23.422"W	14306.05	147.590	0.06	-0.03	0.05
20356.00	89.540	157.980	6498.61	14394.46	-12165.64	7703.53	1769104.27	14568946.30	40°06'54.052"N	80°32'22.966"W	14399.55	147.657	0.38	0.03	0.38
20451.00	89.510	157.380	6499.40	14488.42	-12253.51	7739.60	1769140.34	14568860.53	40°06'53.182"N	80°32'22.507"W	14493.10	147.723	0.63	-0.03	-0.63
20545.00	89.510	156'690	6500.20	14581.53	-12340.06	7776.28	1769177.00	14568774.02	40°06'52.325"N	80°32'22.041"W	14585.87	147.782	0.73	0.00	-0.73
20640.00	89.600	156'950	6500.94	14675.78	-12427.09	7814.36	1769215.06	14568687.02	40°06'51.463"N	80°32'21.557"W	14679.81	147.838	0.68	0.09	-0.67
20734.00	89.540	155.840	6501.65	14769.12	-12512.93	7852.67	1769253.36	14568601.22	40°06'50.613"N	80°32'21.069"W	14772.87	147.889	0.23	-0.06	-0.22
20828.00	89.480	154.900	6502.45	14862.57	-12598.37	7891.84	1769292.52	14568515.81	40°06'49.766"N	80°32'20.571"W	14866.07	147.936	1.00	-0.06	-1.00
20922.00	89.170	154.130	6503.56	14956.16	-12683.22	7932.29	1769332.94	14568430.99	40°06'48.926"N	80°32'20.056"W	14959.45	147.977	0.88	-0.33	-0.82
21017.00	89.260	153.790	6504.86	15050.82	-12768.56	7973.99	1769374.63	14568345.68	40°06'48.080"N	80°32'19.525"W	15053.93	148.015	0.37	0.09	-0.36
21110.00	89.230	153.980	6506.08	15143.50	-12852.05	8014.96	1769415.58	14568262.23	40°06'47.253"N	80°32'19.003"W	15146.44	148.051	0.15	-0.03	0.15



Actual Wellpath Report

Michael Ratcliffe OHI 10H AWP Proj: 23760*
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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 10H
Area	Ohio County, WV	Well	Michael Ratcliffe OHI 10H
Field	Ohio	Wellbore	Michael Ratcliffe OHI 10H AWB
Facility	Michael Ratcliffe OHI Pad		

WELLPATH DATA (269 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]
21204.00	89.260	154.320	6507.32	15237.14	-12936.61	8055.97	1769456.58	14568177.69	40°06'46.415"N	80°32'18.481"W	15239.91	148.088	0.42	0.03	0.41
21299.00	89.140	153.330	6508.65	15331.82	-13021.86	8097.88	1769498.47	14568092.48	40°06'45.571"N	80°32'17.947"W	15334.42	148.124	1.05	-0.13	-1.04
21393.00	89.200	153.130	6510.01	15425.57	-13105.78	8140.21	1769540.79	14568008.60	40°06'44.739"N	80°32'17.408"W	15428.04	148.155	0.22	0.06	-0.21
21487.00	89.480	154.360	6511.09	15519.27	-13190.07	8181.79	1769582.35	14567924.33	40°06'43.904"N	80°32'16.878"W	15521.59	148.189	1.34	0.30	1.31
21582.00	89.420	154.190	6512.01	15613.89	-13275.65	8223.02	1769623.57	14567838.79	40°06'43.056"N	80°32'16.353"W	15616.05	148.226	0.19	-0.06	-0.18
21677.00	89.450	153.370	6512.94	15708.57	-13360.87	8264.99	1769665.52	14567753.60	40°06'42.212"N	80°32'15.819"W	15710.60	148.259	0.86	0.03	-0.86
21771.00	89.480	154.850	6513.82	15802.22	-13445.43	8306.03	1769706.55	14567669.07	40°06'41.374"N	80°32'15.296"W	15804.11	148.294	1.57	0.03	1.57
21865.00	89.570	155.670	6514.10	15895.69	-13530.80	8345.37	1769745.87	14567583.74	40°06'40.529"N	80°32'14.796"W	15897.42	148.335	0.88	0.10	0.87
21959.00	89.510	156.320	6515.35	15989.02	-13616.67	8383.61	1769784.09	14567497.90	40°06'39.678"N	80°32'14.309"W	15990.58	148.380	0.69	-0.06	0.69
22054.00	89.420	157.260	6516.24	16083.18	-13703.98	8421.05	1769821.52	14567410.63	40°06'38.814"N	80°32'13.833"W	16084.56	148.429	0.99	-0.09	0.99
22147.00	89.420	156.510	6517.18	16175.33	-13789.50	8457.56	1769858.01	14567325.13	40°06'37.966"N	80°32'13.369"W	16176.55	148.478	0.81	0.00	-0.81
22242.00	89.510	155.950	6518.07	16269.61	-13876.44	8495.85	1769896.29	14567238.23	40°06'37.105"N	80°32'12.882"W	16270.68	148.523	0.60	0.09	-0.59
22337.00	89.510	158.090	6518.88	16363.71	-13963.89	8532.93	1769933.36	14567150.81	40°06'36.239"N	80°32'12.411"W	16364.63	148.572	2.25	0.00	2.25
22431.00	89.450	158.450	6519.74	16456.53	-14051.21	8567.73	1769968.14	14567063.53	40°06'35.375"N	80°32'11.969"W	16457.29	148.627	0.39	-0.06	0.38
22525.00	89.450	158.000	6520.64	16549.36	-14138.50	8602.60	1770003.00	14566976.27	40°06'34.510"N	80°32'11.526"W	16549.98	148.681	0.48	0.00	-0.48
22620.00	89.570	156.980	6521.45	16643.35	-14226.26	8638.97	1770039.35	14566888.55	40°06'33.641"N	80°32'11.064"W	16643.86	148.732	1.08	0.13	-1.07
22715.00	89.570	156.850	6522.16	16737.49	-14313.65	8676.22	1770076.59	14566801.19	40°06'32.776"N	80°32'10.590"W	16737.90	148.778	0.14	0.00	-0.14
22809.00	89.480	156.170	6522.94	16830.71	-14399.85	8713.68	1770114.04	14566715.02	40°06'31.922"N	80°32'10.114"W	16831.05	148.821	0.73	-0.10	-0.72
22904.00	89.230	155.360	6524.01	16925.08	-14486.48	8752.68	1770153.02	14566628.43	40°06'31.064"N	80°32'09.618"W	16925.35	148.860	0.89	-0.26	-0.85
22998.00	89.140	154.130	6525.35	17018.63	-14571.48	8792.78	1770193.10	14566543.46	40°06'30.222"N	80°32'09.108"W	17018.84	148.892	1.31	-0.10	-1.31
23093.00	89.290	154.390	6526.65	17113.24	-14657.05	8834.03	1770234.34	14566457.93	40°06'29.374"N	80°32'08.582"W	17113.42	148.922	0.32	0.16	0.27
23187.00	89.170	154.960	6527.91	17206.80	-14742.00	8874.23	1770274.53	14566373.00	40°06'28.532"N	80°32'08.071"W	17206.94	148.953	0.62	-0.13	0.61
23282.00	89.290	155.060	6529.19	17301.30	-14828.10	8914.36	1770314.64	14566286.93	40°06'27.680"N	80°32'07.560"W	17301.40	148.987	0.16	0.13	0.11
23376.00	89.260	154.800	6530.38	17394.82	-14913.24	8954.19	1770354.45	14566201.83	40°06'26.836"N	80°32'07.053"W	17394.89	149.019	0.28	-0.03	-0.28
23471.00	89.350	154.980	6531.53	17489.34	-14999.26	8994.50	1770394.75	14566115.85	40°06'25.984"N	80°32'06.540"W	17489.39	149.050	0.21	0.09	0.19
23566.00	89.320	156.070	6532.64	17583.76	-15085.71	9033.86	1770434.09	14566029.42	40°06'25.128"N	80°32'06.039"W	17583.78	149.085	1.15	-0.03	1.15
23660.00	89.350	156.480	6533.73	17677.03	-15171.76	9071.67	1770471.89	14565943.41	40°06'24.275"N	80°32'05.559"W	17677.04	149.123	0.44	0.03	0.44
23735.00	89.380	156.340	6534.56	17751.43	-15240.49	9101.69	1770501.89	14565874.71	40°06'23.595"N	80°32'05.177"W	17751.43	149.154	0.19	0.04	-0.19
23760.00	89.380	156.340	6534.83	17776.23	-15263.39	9111.72	1770511.92	14565851.82	40°06'23.368"N	80°32'05.049"W	17776.23	149.164	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Michael Ratcliffe OHI 10H AWB Ref Wellpath: Michael Ratcliffe OHI 10H AWP Proj: 23760*

String/Diameter	17.5in Open Hole	Start MD [ft]	26.00	End MD [ft]	665.00	Interval [ft]	639.00	Start TVD [ft]	26.00	End TVD [ft]	664.98	Start N/S [ft]	0.00	End N/S [ft]	-3.79	End EW [ft]	-1.63
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HOLE & CASING SECTIONS - Ref Wellbore: Michael Ratcliffe OHI 10H AWB Ref Wellpath: Michael Ratcliffe OHI 10H AWP Proj: 23760'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	End N/S [ft]	Start EW [ft]	End EW [ft]
13.375in Casing Surface	26.00	665.00	639.00	26.00	664.98	0.00	-3.79	0.00	-1.63
12.25in Open Hole	665.00	1938.00	1273.00	664.98	1917.86	-3.79	86.55	-1.63	165.84
9.625in Casing Intermediate	26.00	1938.00	1912.00	26.00	1917.86	0.00	86.55	0.00	165.84
8.75in Open Hole	1938.00	6238.00	4300.00	1917.86	5851.41	86.55	304.61	165.84	1874.25
8.5in Open Hole	6238.00	23760.00	17522.00	5851.41	6534.83	304.61	-15263.39	1874.25	9111.72
5.5in Casing Production	26.00	23760.00	23734.00	26.00	6534.83	0.00	-15263.39	0.00	9111.72

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Michael Ratcliffe OHI 10H LP Rev-7	6406.00	-125.56	2302.02	1763704.85	14580983.82	40°08'53.302"N	80°33'31.720"W	point
Michael Ratcliffe OHI 10H BHL Rev-6	6551.00	-15266.29	9106.24	1770506.45	14565848.92	40°06'23.339"N	80°32'05.120"W	point

WELLPATH COMPOSITION - Ref Wellbore: Michael Ratcliffe OHI 10H AWB Ref Wellpath: Michael Ratcliffe OHI 10H AWP Proj: 23760'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	692.00	BHI Generic gyro - northseeking (Standard)	01_MS Energy NS Gyro <17 1/2"> (100'-692')	Michael Ratcliffe OHI 10H AWB
692.00	1053.00	BHI Generic gyro - northseeking (Standard)	02_MS Energy NS Gyro <12 1/4"> (783'-1053')	Michael Ratcliffe OHI 10H AWB
1053.00	1896.00	OWSG MWD rev2 + HRGM	03_Premier MWD <12 1/4"> (1157'-1896')	Michael Ratcliffe OHI 10H AWB
1896.00	6166.00	OWSG MWD rev2 + HRGM	04_Premier MWD <8 3/4"> (1988'-6166')	Michael Ratcliffe OHI 10H AWB
6166.00	23735.00	BHI AutoTrak Curve (Short)	05_BH AT Curve <8 1/2"> (6225'-23735')	Michael Ratcliffe OHI 10H AWB
23735.00	23760.00	Blind Drilling (std)	Projection to bit	Michael Ratcliffe OHI 10H AWB

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Environmental Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 10H
SOUTHWESTERN ENERGY	Well	Michael Ratcliffe OHI 10H
Ohio County, WV	Wellbore	Michael Ratcliffe OHI 10H AWB
Ohio		
Michael Ratcliffe OHI Pad		

COMMENTS

Wellpath general comments
API: 47-069-00276-0000
BH Job #: 109617461
Rig: SDC 41
Duration: 03/13/2019 - 03/19/2019

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Well Name: Michael Ratcliffe OHI 10H 47069002760000

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	402.00	402.00	
Top of Salt Water	755.00	755.00	NA	NA	
Pittsburgh Coal	611.00	611.00	616.00	616.00	
Pottsville (ss)	749.00	749.00	831.00	831.00	
Raven Cliff (ss)	1360.00	1360.00	1792.00	1792.00	
Big Injun (ss)	1792.00	1792.00	1935.00	1935.00	
Rhinestreet (shale)	6269.00	5880.00	6446.00	6042.00	
Cashaqua (shale)	6446.00	6042.00	6519.00	6104.00	
Middlesex (shale)	6519.00	6104.00	6612.00	6179.00	
Burket (shale)	6612.00	6179.00	6637.00	6198.00	
Tully (ls)	6637.00	6198.00	6695.00	6240.00	
Mahantango (shale)	6695.00	6240.00	6961.00	6373.00	
Marcellus (shale)	6961.00	6373.00	NA	NA	GAS

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