



SWN PRODUCTION COMPANY, LLC



Location: Ohio County, WV
Field: Ohio
Facility: Roth OHI Pad

Slot: 8H
Well: Roth OHI 8H
Wellbore: Roth OHI 8H AWB

Plot reference wellpath is Roth OHI 8H awp 50' - 23533' Propj: 23558'	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC40 (KB)	North Reference: Grid north
Reference wellpath measured depths are referenced to SDC40 (KB)	Scale: True distance
SDC40 (KB) to Mean Sea Level: 1030.01 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: 8H): -1004.01 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: tranlam on 2023-01-26; Database: WA_MPL_EASTERLUS_Defn

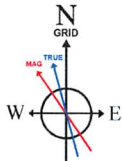
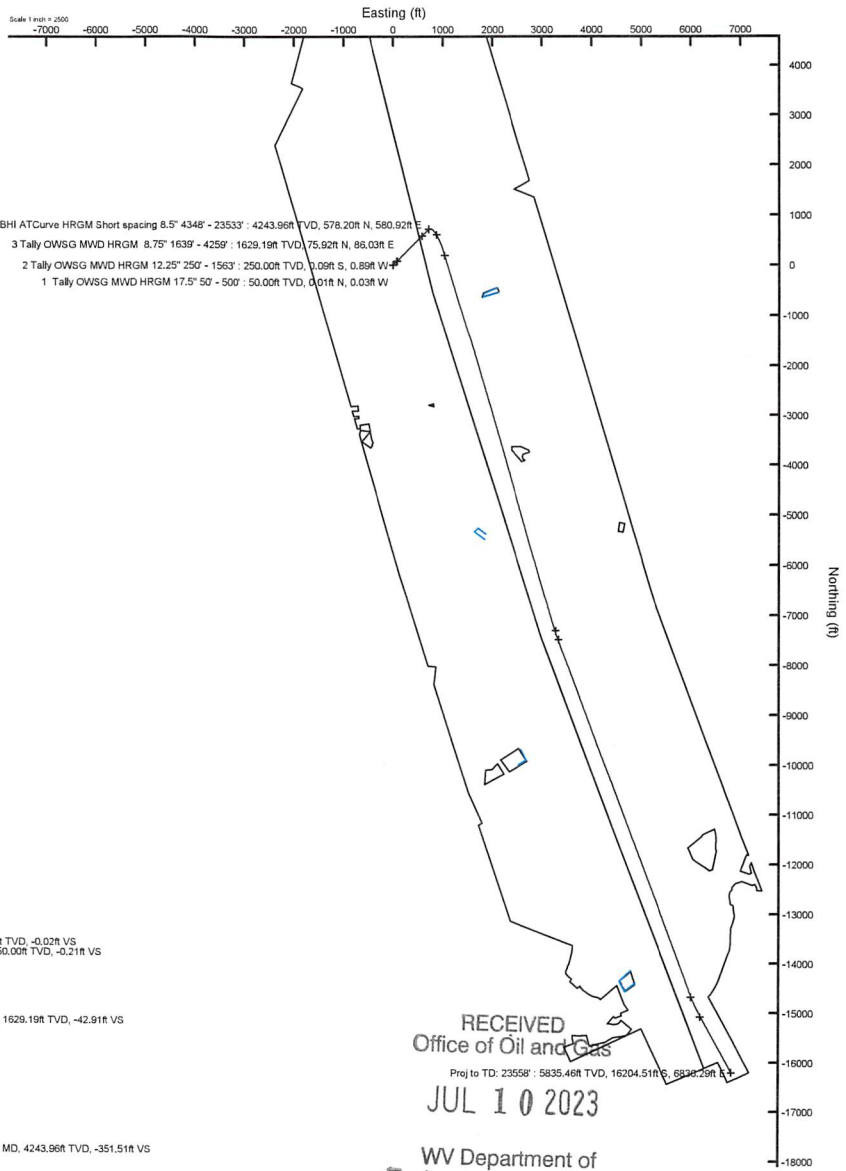
Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Roth OHI Pad			1727905.720	14581925.640	40°09'4.1151"N	80°41'12.8573"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
8H	-1.17	9.54	1727915.258	14581924.469	40°09'4.1032"N	80°41'12.7345"W
SDC40 (KB) to Ground level (At Slot: 8H)					26ft	
Mean Sea Level to Ground level (At Slot: 8H)					-1004.01ft	
SDC40 (KB) to Mean Sea Level					1030.01ft	

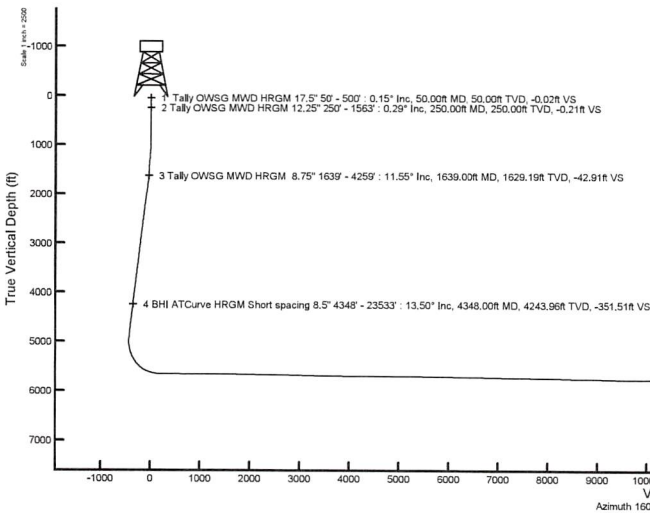
Bottom Hole Location

MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
23558.00	89.970	152.500	5835.46	-16204.51	6836.29	1734748.86	14565726.34	40°06'23.7227"N	80°39'45.4888"W

API: 47069003480000
 BH JOB: 111588304
 DURATION: 01.20.2023 to 01.24.2023
 RIG: SDC 40



HDGM2022v1.0 (1900.0 to 2023.0) Dip: 67.07° Field: 52021.6 nT
 Magnetic North is 8.02 degrees West of True North (at 12/31/2022)
 Grid North is 0.20 degrees East of True North
 To correct azimuth from True to Grid subtract 0.20 degrees
 To correct azimuth from Magnetic to Grid subtract 8.22 degrees



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 Proj to TD: 23558' : 5835.46ft TVD, 16204.51ft N, 6836.29ft E
 JUL 10 2023

WV Department of
 Environmental Protection

09/22/2023



Well Name: Roth OHI 8H 47069003480000

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	423.00	423.00	
Top of Salt Water	1119.00	1119.00	NA	NA	
Pittsburgh Coal	179.00	179.00	184.00	184.00	
Pottsville (ss)	371.00	371.00	423.00	423.00	
Raven Cliff (ss)	703.00	703.00	937.00	937.00	
Maxton (ss)	1096.00	1095.00	1182.00	1181.00	
Big Injun (ss)	1328.00	1325.00	1499.00	1492.00	
Berea (siltstone)	1796.00	1783.00	1898.00	1883.00	
Rhinestreet (shale)	5256.00	5121.00	5531.00	5372.00	
Cashaqua (shale)	5531.00	5372.00	5591.00	5421.00	
Middlesex (shale)	5591.00	5421.00	5677.00	5486.00	
Burket (shale)	5677.00	5486.00	5708.00	5508.00	
Tully (ls)	5708.00	5508.00	5778.00	5551.00	
Mahantango (shale)	5778.00	5551.00	5926.00	5620.00	
Marcellus (shale)	5926.00	5620.00	NA	NA	GAS

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REFERENCE WELLPATH IDENTIFICATION

Operator	SWN PRODUCTION COMPANY, LLC	Well	Roth OHI 8H
Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Tranlam
Scale	0.999609	Report Generated	1/26/2023 at 12:26:11 PM
Convergence at slot	0.20° 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	-1.17	9.54	1727915.26	14581924.47	40°09'4.1032"N	80°41'12.7345"W
Facility Reference Pt			1727905.72	14581925.64	40°09'4.1151"N	80°41'12.8573"W
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.4780"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC40 (KB) to Facility Vertical Datum	1030.01ft
Horizontal Reference Pt	Slot	SDC40 (KB) to Mean Sea Level	1030.01ft
Vertical Reference Pt	SDC40 (KB)	SDC40 (KB) to Ground Level at Slot (8H)	26.00ft
MD Reference Pt	SDC40 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	160.53°

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Slot	8H		

WELLPATH DATA (260 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	285.690	0.00	0.00	0.00	0.00	1727915.26	14581924.47	40°09'4.1032"N	80°41'12.7345"W	0.00	0.000	0.00
26.00	0.000	285.690	26.00	0.00	0.00	0.00	1727915.26	14581924.47	40°09'4.1032"N	80°41'12.7345"W	0.00	0.000	0.00
50.00	0.150	285.690	50.00	-0.02	0.01	-0.03	1727915.23	14581924.48	40°09'4.1033"N	80°41'12.7349"W	0.03	285.690	0.62
100.00	0.250	288.480	100.00	-0.12	0.06	-0.20	1727915.06	14581924.53	40°09'4.1038"N	80°41'12.7370"W	0.21	287.168	0.20
150.00	0.310	236.620	150.00	-0.16	0.02	-0.41	1727914.85	14581924.49	40°09'4.1034"N	80°41'12.7398"W	0.41	272.900	0.50
200.00	0.280	262.890	200.00	-0.15	-0.07	-0.65	1727914.61	14581924.40	40°09'4.1026"N	80°41'12.7428"W	0.65	263.949	0.27
250.00	0.290	267.380	250.00	-0.21	-0.09	-0.89	1727914.36	14581924.38	40°09'4.1024"N	80°41'12.7460"W	0.90	264.288	0.05
300.00	0.410	241.150	300.00	-0.22	-0.18	-1.18	1727914.08	14581924.29	40°09'4.1015"N	80°41'12.7497"W	1.19	261.235	0.39
350.00	0.670	240.680	349.99	-0.14	-0.41	-1.59	1727913.67	14581924.06	40°09'4.0992"N	80°41'12.7550"W	1.64	255.500	0.52
395.00	0.740	234.920	394.99	-0.02	-0.71	-2.06	1727913.20	14581923.76	40°09'4.0963"N	80°41'12.7610"W	2.17	251.032	0.22
400.00	1.000	235.490	399.99	0.00	-0.75	-2.12	1727913.14	14581923.72	40°09'4.0959"N	80°41'12.7618"W	2.25	250.505	5.20
450.00	1.230	227.550	449.98	0.32	-1.36	-2.87	1727912.38	14581923.11	40°09'4.0899"N	80°41'12.7716"W	3.18	244.688	0.55
500.00	0.170	46.550	499.98	0.50	-1.67	-3.22	1727912.04	14581922.80	40°09'4.0868"N	80°41'12.7760"W	3.62	242.553	2.80
528.00	1.060	48.560	527.98	0.39	-1.47	-2.99	1727912.27	14581923.00	40°09'4.0888"N	80°41'12.7731"W	3.33	243.826	3.18
578.00	1.510	45.800	577.96	-0.06	-0.71	-2.17	1727913.09	14581923.76	40°09'4.0963"N	80°41'12.7625"W	2.29	252.018	0.91
693.00	3.480	38.580	692.85	-2.54	3.08	1.09	1727916.35	14581927.55	40°09'4.1336"N	80°41'12.7203"W	3.27	19.484	1.73
783.00	2.670	56.280	782.72	-4.50	6.38	4.54	1727919.79	14581930.85	40°09'4.1661"N	80°41'12.6758"W	7.83	35.421	1.38
874.00	1.460	95.580	873.66	-4.53	7.44	7.45	1727922.71	14581931.91	40°09'4.1765"N	80°41'12.6381"W	10.53	45.042	1.97
965.00	1.460	90.030	964.63	-3.66	7.33	9.77	1727925.02	14581931.80	40°09'4.1753"N	80°41'12.6084"W	12.21	53.113	0.16
1055.00	3.300	47.540	1054.56	-4.28	9.08	12.82	1727928.08	14581933.54	40°09'4.1925"N	80°41'12.5689"W	15.71	54.708	2.70
1145.00	6.270	37.740	1144.24	-7.96	14.71	17.75	1727933.00	14581939.18	40°09'4.2480"N	80°41'12.5053"W	23.05	50.334	3.41
1235.00	8.860	35.060	1233.45	-14.64	24.28	24.74	1727939.98	14581948.74	40°09'4.3423"N	80°41'12.4148"W	34.66	45.538	2.90
1328.00	11.330	39.780	1325.03	-23.39	37.04	34.59	1727949.84	14581961.49	40°09'4.4680"N	80°41'12.2873"W	50.68	43.046	2.59
1419.00	12.480	48.920	1414.11	-31.50	50.25	47.63	1727962.87	14581974.70	40°09'4.5981"N	80°41'12.1188"W	69.24	43.465	2.53
1509.00	12.230	58.010	1502.03	-37.15	61.69	63.04	1727978.28	14581986.14	40°09'4.7107"N	80°41'11.9198"W	88.21	45.621	2.18
1563.00	12.210	60.900	1554.81	-39.35	67.50	72.89	1727988.11	14581991.94	40°09'4.7677"N	80°41'11.7928"W	99.34	47.197	1.13
1639.00	11.550	53.590	1629.19	-42.91	75.92	86.03	1728001.26	14582000.36	40°09'4.8505"N	80°41'11.6231"W	114.74	48.571	2.16
1709.00	11.620	48.040	1697.76	-47.65	84.80	96.91	1728012.13	14582009.23	40°09'4.9378"N	80°41'11.4826"W	128.78	48.815	1.59
1800.00	11.680	39.960	1786.90	-55.84	97.99	109.65	1728024.86	14582022.42	40°09'5.0677"N	80°41'11.3180"W	147.05	48.214	1.79
1892.00	14.560	41.120	1876.48	-66.25	113.84	123.23	1728038.44	14582038.26	40°09'5.2239"N	80°41'11.1423"W	167.77	47.269	3.14

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Slot	8H		

WELLPATH DATA (260 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]
1983.00	17.150	43.540	1964.02	-77.96	132.19	140.00	1728055.21	14582056.60	40°09'5.4046"N	80°41'10.9255"W	192.55	46.645	2.94
2073.00	18.180	42.800	2049.77	-90.52	152.11	158.68	1728073.88	14582076.52	40°09'5.6008"N	80°41'10.6840"W	219.81	46.212	1.17
2164.00	16.830	42.530	2136.56	-103.31	172.23	177.23	1728092.42	14582096.63	40°09'5.7990"N	80°41'10.4442"W	247.14	45.820	1.49
2257.00	15.700	47.760	2225.84	-114.50	190.61	195.65	1728110.83	14582115.01	40°09'5.9800"N	80°41'10.2062"W	273.16	45.747	1.99
2348.00	15.700	48.410	2313.44	-123.90	207.06	213.98	1728129.15	14582131.45	40°09'6.1420"N	80°41'9.9695"W	297.76	45.941	0.19
2438.00	15.920	44.860	2400.04	-133.83	223.90	231.79	1728146.96	14582148.28	40°09'6.3077"N	80°41'9.7393"W	322.27	45.993	1.10
2529.00	15.660	43.700	2487.60	-144.78	241.62	249.08	1728164.24	14582166.00	40°09'6.4822"N	80°41'9.5158"W	347.02	45.871	0.45
2619.00	15.700	41.000	2574.26	-156.27	259.59	265.46	1728180.61	14582183.96	40°09'6.6593"N	80°41'9.3041"W	371.29	45.640	0.81
2710.00	15.040	43.880	2662.00	-167.63	277.40	281.72	1728196.87	14582201.76	40°09'6.8346"N	80°41'9.0938"W	395.37	45.443	1.11
2801.00	14.580	44.460	2749.98	-177.96	294.08	297.93	1728213.07	14582218.44	40°09'6.9990"N	80°41'8.8843"W	418.62	45.372	0.53
2892.00	14.820	41.590	2838.00	-188.63	310.96	313.68	1728228.81	14582235.31	40°09'7.1652"N	80°41'8.6808"W	441.69	45.249	0.84
2983.00	14.270	44.820	2926.09	-199.13	327.62	329.31	1728244.44	14582251.96	40°09'7.3293"N	80°41'8.4787"W	464.52	45.147	1.08
3074.00	13.480	44.940	3014.43	-208.57	343.09	344.71	1728259.83	14582267.42	40°09'7.4816"N	80°41'8.2797"W	486.34	45.135	0.87
3168.00	14.740	42.520	3105.59	-218.92	359.66	360.53	1728275.64	14582283.98	40°09'7.6448"N	80°41'8.0752"W	509.25	45.069	1.48
3258.00	15.030	47.760	3192.58	-228.81	375.94	376.91	1728292.02	14582300.26	40°09'7.8051"N	80°41'7.8635"W	532.34	45.074	1.53
3350.00	14.830	48.270	3281.47	-237.89	391.80	394.52	1728309.63	14582316.11	40°09'7.9612"N	80°41'7.6359"W	556.02	45.199	0.26
3440.00	15.830	44.510	3368.27	-247.64	408.22	411.73	1728326.82	14582332.53	40°09'8.1229"N	80°41'7.4137"W	579.79	45.245	1.57
3531.00	14.930	42.390	3456.01	-258.61	425.73	428.33	1728343.42	14582350.03	40°09'8.2953"N	80°41'7.1990"W	603.91	45.175	1.17
3622.00	15.030	44.870	3543.92	-269.25	442.75	444.56	1728359.64	14582367.04	40°09'8.4629"N	80°41'6.9893"W	627.42	45.117	0.71
3713.00	15.920	46.910	3631.62	-279.36	459.64	462.00	1728377.07	14582383.92	40°09'8.6292"N	80°41'6.7639"W	651.70	45.147	1.15
3805.00	14.770	45.580	3720.34	-289.36	476.46	479.59	1728394.66	14582400.75	40°09'8.7949"N	80°41'6.5366"W	676.03	45.187	1.31
3896.00	15.420	44.200	3808.20	-299.62	493.26	496.31	1728411.37	14582417.53	40°09'8.9602"N	80°41'6.3205"W	699.73	45.177	0.82
3987.00	16.400	45.340	3895.71	-310.46	510.96	513.88	1728428.94	14582435.23	40°09'9.1346"N	80°41'6.0934"W	724.67	45.163	1.13
4078.00	15.740	43.610	3983.16	-321.51	528.93	531.53	1728446.58	14582453.19	40°09'9.3115"N	80°41'5.8653"W	749.86	45.141	0.90
4168.00	15.790	46.300	4069.77	-332.07	546.23	548.80	1728463.85	14582470.48	40°09'9.4819"N	80°41'5.6420"W	774.31	45.135	0.81
4259.00	14.510	44.130	4157.61	-342.22	562.96	565.69	1728480.73	14582487.21	40°09'9.6467"N	80°41'5.4238"W	798.08	45.139	1.54
4348.00	13.500	45.890	4243.96	-351.51	578.20	580.92	1728495.95	14582502.44	40°09'9.7967"N	80°41'5.2270"W	819.62	45.134	1.23
4439.00	15.640	46.520	4332.03	-360.93	594.03	597.45	1728512.47	14582518.27	40°09'9.9526"N	80°41'5.0134"W	842.51	45.164	2.36
4529.00	15.620	46.420	4418.70	-370.81	610.73	615.03	1728530.04	14582534.96	40°09'10.1170"N	80°41'4.7863"W	866.75	45.201	0.04
4619.00	16.240	46.450	4505.25	-380.90	627.76	632.92	1728547.93	14582551.98	40°09'10.2846"N	80°41'4.5550"W	891.44	45.235	0.69

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Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

WELLPATH DATA (260 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]
4712.00	15.990	45.420	4594.59	-391.64	645.71	651.47	1728566.48	14582569.92	40°09'10.4613"N	80°41'4.3153"W	917.25	45.255	0.41
4802.00	15.070	45.680	4681.31	-401.82	662.58	668.67	1728583.67	14582586.79	40°09'10.6275"N	80°41'4.0930"W	941.35	45.262	1.03
4893.00	13.580	46.630	4769.47	-411.12	678.19	684.91	1728599.89	14582602.39	40°09'10.7811"N	80°41'3.8832"W	963.86	45.282	1.66
4984.00	15.740	45.310	4857.51	-420.70	694.20	701.45	1728616.43	14582618.40	40°09'10.9388"N	80°41'3.6695"W	986.89	45.297	2.40
5074.00	15.870	50.130	4944.11	-430.20	710.68	719.57	1728634.55	14582634.87	40°09'11.1010"N	80°41'3.4353"W	1011.36	45.356	1.47
5164.00	13.890	79.550	5031.21	-432.80	720.54	739.67	1728654.64	14582644.73	40°09'11.1977"N	80°41'3.1760"W	1032.61	45.751	8.58
5257.00	16.220	107.250	5121.13	-423.27	718.71	763.09	1728678.04	14582642.90	40°09'11.1788"N	80°41'2.8746"W	1048.26	46.715	8.04
5347.00	19.930	124.520	5206.73	-403.32	706.28	787.75	1728702.70	14582630.47	40°09'11.0551"N	80°41'2.5574"W	1058.01	48.122	7.20
5438.00	25.660	135.680	5290.63	-372.86	683.36	814.33	1728729.27	14582607.56	40°09'10.8277"N	80°41'2.2162"W	1063.07	49.998	7.86
5528.00	31.720	144.290	5369.57	-332.40	650.16	841.80	1728756.72	14582574.38	40°09'10.4987"N	80°41'1.8640"W	1063.64	52.319	8.14
5620.00	39.320	148.430	5444.41	-280.60	605.62	871.22	1728786.13	14582529.85	40°09'10.0575"N	80°41'1.4872"W	1061.04	55.195	8.66
5710.00	47.630	152.790	5509.68	-219.66	551.65	901.41	1728816.31	14582475.90	40°09'9.5231"N	80°41'1.1008"W	1056.82	58.534	9.81
5801.00	56.890	155.260	5565.32	-148.23	487.00	932.80	1728847.69	14582411.27	40°09'8.8831"N	80°41'0.6995"W	1052.28	62.432	10.40
5891.00	65.880	158.350	5608.39	-69.48	414.43	963.80	1728878.68	14582338.73	40°09'8.1648"N	80°41'0.3037"W	1049.12	66.733	10.43
5982.00	74.460	160.330	5639.23	16.02	334.39	993.93	1728908.80	14582258.73	40°09'7.3729"N	80°40'59.9193"W	1048.68	71.405	9.65
6072.00	81.940	163.180	5657.63	104.03	250.78	1021.46	1728936.32	14582175.15	40°09'6.5457"N	80°40'59.5685"W	1051.80	76.206	8.87
6163.00	89.660	163.350	5664.29	194.61	163.94	1047.58	1728962.42	14582088.34	40°09'5.6866"N	80°40'59.2363"W	1060.33	81.106	8.49
6255.00	89.350	163.270	5665.08	286.50	75.82	1074.00	1728988.83	14582000.26	40°09'4.8148"N	80°40'58.9001"W	1076.67	85.962	0.35
6346.00	89.540	163.470	5665.96	377.38	-11.37	1100.04	1729014.87	14581913.10	40°09'3.9523"N	80°40'58.5687"W	1100.10	90.592	0.30
6436.00	89.450	163.370	5666.76	467.26	-97.63	1125.72	1729040.54	14581826.88	40°09'3.0990"N	80°40'58.2419"W	1129.95	94.957	0.15
6527.00	89.230	163.290	5667.81	558.15	-184.80	1151.82	1729066.63	14581739.74	40°09'2.2367"N	80°40'57.9098"W	1166.55	99.115	0.26
6618.00	89.480	163.180	5668.83	649.04	-271.92	1178.07	1729092.86	14581652.65	40°09'1.3748"N	80°40'57.5758"W	1209.05	102.997	0.30
6708.00	89.380	162.160	5669.73	738.97	-357.83	1204.88	1729119.66	14581566.78	40°09'0.5249"N	80°40'57.2345"W	1256.89	106.541	1.14
6799.00	89.420	163.520	5670.68	829.89	-444.78	1231.72	1729146.50	14581479.87	40°08'59.6648"N	80°40'56.8928"W	1309.57	109.855	1.50
6889.00	90.060	163.200	5671.09	919.78	-531.01	1257.50	1729172.26	14581393.67	40°08'58.8117"N	80°40'56.5649"W	1365.01	112.893	0.80
6980.00	89.850	163.410	5671.16	1010.67	-618.17	1283.64	1729198.39	14581306.54	40°08'57.9494"N	80°40'56.2323"W	1424.73	115.714	0.33
7070.00	96.220	162.740	5671.10	1100.58	-704.27	1309.84	1729224.58	14581220.48	40°08'57.0977"N	80°40'55.8988"W	1487.17	118.266	0.85
7162.00	89.600	163.620	5671.25	1192.48	-792.33	1336.46	1729251.19	14581132.45	40°08'56.2265"N	80°40'55.5601"W	1553.68	120.662	1.17
7252.00	89.260	160.120	5672.14	1282.44	-877.85	1364.46	1729279.18	14581046.97	40°08'55.3805"N	80°40'55.2034"W	1622.46	122.756	3.91
7343.00	89.910	162.970	5672.80	1373.41	-964.16	1393.26	1729307.97	14580960.69	40°08'54.5265"N	80°40'54.8365"W	1694.34	124.684	3.21

REFERENCE WELLPATH IDENTIFICATION				
Operator	SWN PRODUCTION COMPANY, LLC		Well	Roth OHI 8H
Field	Ohio		API/Legal	
Facility	Roth OHI Pad		Wellbore	Roth OHI 8H AWB
Slot	8H			

WELLPATH DATA (260 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]
7434.00	89.140	162.500	5673.56	1464.34	-1051.05	1420.27	1729334.97	14580873.83	40°08'53.6669"N	80°40'54.4927"W	1766.88	126.503	0.99
7525.00	89.570	162.700	5674.58	1555.28	-1137.88	1447.48	1729362.17	14580787.03	40°08'52.8079"N	80°40'54.1463"W	1841.19	128.171	0.52
7616.00	89.320	163.000	5675.46	1646.20	-1224.83	1474.31	1729388.99	14580700.12	40°08'51.9477"N	80°40'53.8048"W	1916.72	129.719	0.43
7708.00	89.170	160.200	5676.68	1738.17	-1312.11	1503.35	1729418.01	14580612.87	40°08'51.0841"N	80°40'53.4350"W	1995.42	131.114	3.05
7798.00	89.350	160.270	5677.84	1828.16	-1396.80	1533.78	1729448.43	14580528.22	40°08'50.2461"N	80°40'53.0470"W	2074.50	132.324	0.21
7889.00	89.200	161.700	5678.99	1919.14	-1482.83	1563.42	1729478.07	14580442.22	40°08'49.3950"N	80°40'52.6692"W	2154.78	133.484	1.58
7980.00	89.660	163.190	5679.90	2010.09	-1569.58	1590.87	1729505.50	14580355.50	40°08'48.5367"N	80°40'52.3198"W	2234.83	134.614	1.71
8071.00	89.350	163.130	5680.68	2100.99	-1656.68	1617.23	1729531.85	14580268.44	40°08'47.6751"N	80°40'51.9843"W	2315.17	135.690	0.35
8163.00	88.950	162.710	5682.05	2192.90	-1744.61	1644.25	1729558.86	14580180.55	40°08'46.8052"N	80°40'51.6405"W	2397.34	136.696	0.63
8253.00	89.540	163.420	5683.23	2282.80	-1830.70	1670.46	1729585.06	14580094.49	40°08'45.9535"N	80°40'51.3069"W	2478.29	137.620	1.03
8345.00	89.260	164.290	5684.20	2374.64	-1919.06	1696.04	1729610.63	14580006.16	40°08'45.0794"N	80°40'50.9816"W	2561.13	138.530	0.99
8436.00	88.770	162.160	5685.76	2465.52	-2006.17	1722.30	1729636.88	14579919.08	40°08'44.2176"N	80°40'50.6475"W	2644.06	139.354	2.40
8526.00	90.180	164.740	5686.59	2555.39	-2092.43	1747.93	1729662.50	14579832.86	40°08'43.3643"N	80°40'50.3214"W	2726.45	140.126	3.27
8617.00	89.510	163.950	5686.83	2646.18	-2180.05	1772.49	1729687.05	14579745.27	40°08'42.4976"N	80°40'50.0093"W	2809.69	140.887	1.14
8709.00	88.860	163.690	5688.14	2738.02	-2268.40	1798.12	1729712.67	14579656.96	40°08'41.6236"N	80°40'49.6833"W	2894.63	141.597	0.76
8800.00	88.890	162.060	5689.93	2828.93	-2355.35	1824.91	1729739.45	14579570.05	40°08'40.7635"N	80°40'49.3424"W	2979.59	142.232	1.79
8891.00	90.620	164.540	5690.32	2919.81	-2442.50	1851.06	1729765.59	14579482.93	40°08'39.9013"N	80°40'49.0097"W	3064.67	142.843	3.32
8981.00	88.340	162.890	5691.13	3009.66	-2528.87	1876.29	1729790.81	14579396.59	40°08'39.0468"N	80°40'48.6888"W	3148.92	143.427	3.13
9073.00	86.890	163.550	5694.96	3101.47	-2616.88	1902.83	1729817.34	14579308.62	40°08'38.1762"N	80°40'48.3512"W	3235.55	143.978	1.73
9163.00	87.720	163.080	5699.19	3191.27	-2702.99	1928.64	1729843.14	14579222.54	40°08'37.3243"N	80°40'48.0228"W	3320.52	144.491	1.06
9262.00	89.420	163.580	5701.66	3290.11	-2797.80	1957.03	1729871.52	14579127.77	40°08'36.3865"N	80°40'47.6617"W	3414.33	145.028	1.79
9359.00	89.350	163.800	5702.70	3386.96	-2890.89	1984.27	1729898.75	14579034.72	40°08'35.4656"N	80°40'47.3152"W	3506.36	145.535	0.24
9458.00	89.560	164.010	5703.54	3483.79	-2984.08	2011.16	1729925.63	14578941.56	40°08'34.5437"N	80°40'46.9733"W	3598.54	146.022	0.39
9552.00	89.660	163.820	5704.11	3579.62	-3076.32	2037.76	1729952.21	14578849.36	40°08'33.6312"N	80°40'46.6351"W	3690.02	146.480	0.20
9648.00	89.690	163.980	5704.66	3675.45	-3168.56	2064.38	1729978.82	14578757.16	40°08'32.7188"N	80°40'46.2966"W	3781.72	146.915	0.17
9745.00	89.680	163.970	5705.21	3772.27	-3261.79	2091.16	1730005.59	14578663.97	40°08'31.7966"N	80°40'45.9561"W	3874.56	147.336	0.03
9841.00	89.570	163.780	5705.85	3868.11	-3354.01	2117.82	1730032.24	14578571.78	40°08'30.8843"N	80°40'45.6171"W	3966.68	147.731	0.22
9938.00	89.480	164.010	5706.66	3964.94	-3447.20	2144.72	1730059.14	14578478.63	40°08'29.9624"N	80°40'45.2750"W	4059.93	148.112	0.25
10035.00	89.690	164.180	5707.36	4061.75	-3540.48	2171.31	1730085.71	14578385.38	40°08'29.0396"N	80°40'44.9370"W	4153.26	148.480	0.28
10131.00	90.250	163.680	5707.41	4157.58	-3632.73	2197.88	1730112.27	14578293.17	40°08'28.1271"N	80°40'44.5992"W	4245.87	148.825	0.78

REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Roth OHI 8H
Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

WELLPATH DATA (260 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]
10228.00	90.490	164.540	5706.78	4254.39	-3726.02	2224.44	1730138.82	14578199.91	40°08'27.2042"N	80°40'44.2616"W	4339.51	149.163	0.92
10324.00	88.920	164.270	5707.28	4350.16	-3818.48	2250.24	1730164.62	14578107.49	40°08'26.2896"N	80°40'43.9336"W	4432.20	149.489	1.66
10421.00	89.480	163.880	5708.63	4446.97	-3911.75	2276.86	1730191.22	14578014.26	40°08'25.3670"N	80°40'43.5953"W	4526.13	149.798	0.70
10518.00	89.420	164.040	5709.56	4543.79	-4004.97	2303.66	1730218.01	14577921.08	40°08'24.4448"N	80°40'43.2545"W	4620.24	150.093	0.18
10614.00	89.510	163.880	5710.46	4639.61	-4097.23	2330.18	1730244.52	14577828.85	40°08'23.5322"N	80°40'42.9173"W	4713.49	150.372	0.19
10711.00	89.720	163.980	5711.11	4736.44	-4190.43	2357.03	1730271.36	14577735.68	40°08'22.6101"N	80°40'42.5759"W	4807.84	150.643	0.24
10808.00	89.880	164.090	5711.45	4833.26	-4283.69	2383.71	1730298.03	14577642.46	40°08'21.6876"N	80°40'42.2367"W	4902.25	150.906	0.20
10904.00	89.540	163.860	5711.93	4929.08	-4375.96	2410.21	1730324.52	14577550.23	40°08'20.7749"N	80°40'41.8998"W	4995.81	151.155	0.43
11000.00	89.780	164.010	5712.50	5024.91	-4468.21	2436.78	1730351.08	14577458.02	40°08'19.8623"N	80°40'41.5621"W	5089.48	151.394	0.29
11097.00	89.690	163.980	5712.95	5121.73	-4561.45	2463.52	1730377.81	14577364.81	40°08'18.9400"N	80°40'41.2220"W	5184.18	151.628	0.10
11194.00	90.090	163.780	5713.14	5218.57	-4654.64	2490.45	1730404.73	14577271.66	40°08'18.0181"N	80°40'40.8796"W	5279.01	151.851	0.46
11290.00	89.820	163.990	5713.21	5314.40	-4746.86	2517.10	1730431.37	14577179.47	40°08'17.1058"N	80°40'40.5408"W	5372.94	152.065	0.36
11387.00	89.600	163.620	5713.71	5411.24	-4840.01	2544.15	1730458.41	14577086.36	40°08'16.1843"N	80°40'40.1969"W	5467.95	152.271	0.44
11484.00	89.540	164.030	5714.43	5508.08	-4933.17	2571.17	1730485.42	14576993.24	40°08'15.2628"N	80°40'39.8533"W	5563.01	152.471	0.43
11580.00	89.600	163.920	5715.15	5603.90	-5025.44	2597.67	1730511.91	14576901.01	40°08'14.3500"N	80°40'39.5164"W	5657.11	152.665	0.13
11676.00	89.720	164.010	5715.72	5699.73	-5117.70	2624.19	1730538.42	14576808.78	40°08'13.4373"N	80°40'39.1793"W	5751.28	152.853	0.16
11772.00	89.660	163.870	5716.24	5795.56	-5209.95	2650.75	1730564.96	14576716.57	40°08'12.5247"N	80°40'38.8417"W	5845.52	153.034	0.16
11869.00	89.880	164.300	5716.63	5892.37	-5303.23	2677.35	1730591.55	14576623.32	40°08'11.6020"N	80°40'38.5036"W	5940.75	153.213	0.50
11965.00	89.690	164.400	5716.99	5988.15	-5395.67	2703.24	1730617.44	14576530.92	40°08'10.6876"N	80°40'38.1745"W	6034.97	153.389	0.22
12062.00	88.740	165.190	5718.32	6084.88	-5489.27	2728.68	1730642.87	14576437.36	40°08'9.7618"N	80°40'37.8513"W	6130.07	153.568	1.27
12158.00	88.980	162.610	5720.23	6180.68	-5581.48	2755.30	1730669.47	14576345.19	40°08'8.8496"N	80°40'37.5130"W	6224.51	153.727	2.70
12255.00	89.110	162.930	5721.85	6277.59	-5674.11	2784.02	1730698.19	14576252.59	40°08'7.9331"N	80°40'37.1474"W	6320.31	153.865	0.36
12351.00	89.380	163.720	5723.11	6373.47	-5766.06	2811.57	1730725.72	14576160.67	40°08'7.0235"N	80°40'36.7971"W	6415.01	154.006	0.87
12447.00	89.570	163.970	5723.99	6469.31	-5858.27	2838.28	1730752.42	14576068.50	40°08'6.1113"N	80°40'36.4575"W	6509.62	154.150	0.33
12544.00	89.170	162.720	5725.06	6566.18	-5951.19	2866.08	1730780.21	14575975.62	40°08'5.1921"N	80°40'36.1040"W	6605.38	154.285	1.35
12641.00	89.380	163.770	5726.29	6663.06	-6044.07	2894.04	1730808.16	14575882.78	40°08'4.2733"N	80°40'35.7484"W	6701.21	154.414	1.10
12737.00	89.450	163.950	5727.27	6758.90	-6136.28	2920.72	1730834.83	14575790.61	40°08'3.3611"N	80°40'35.4091"W	6795.92	154.547	0.20
12833.00	89.380	163.860	5728.25	6854.72	-6228.51	2947.33	1730861.43	14575698.41	40°08'2.4487"N	80°40'35.0708"W	6890.65	154.676	0.12
12930.00	89.320	163.710	5729.35	6951.56	-6321.64	2974.42	1730888.51	14575605.31	40°08'1.5274"N	80°40'34.7265"W	6986.44	154.802	0.17
13027.00	89.200	163.690	5730.60	7048.41	-6414.74	3001.64	1730915.72	14575512.25	40°08'0.6064"N	80°40'34.3803"W	7082.28	154.924	0.13

REFERENCE WELLPATH IDENTIFICATION			
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Slot	8H		

WELLPATH DATA (260 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]
13123.00	89.380	163.540	5731.79	7144.26	-6506.83	3028.72	1730942.79	14575420.20	40°07'59.6954"N	80°40'34.0360"W	7177.19	155.040	0.24
13220.00	89.600	163.680	5732.65	7241.11	-6599.89	3056.09	1730970.15	14575327.18	40°07'58.7748"N	80°40'33.6880"W	7273.11	155.153	0.27
13316.00	88.520	161.270	5734.23	7337.04	-6691.41	3084.99	1730999.04	14575235.69	40°07'57.8693"N	80°40'33.3202"W	7368.32	155.249	2.75
13413.00	89.450	163.020	5735.95	7433.98	-6783.72	3114.73	1731028.76	14575143.42	40°07'56.9561"N	80°40'32.9417"W	7464.61	155.338	2.04
13509.00	88.740	163.680	5737.46	7529.85	-6875.68	3142.23	1731056.25	14575051.49	40°07'56.0463"N	80°40'32.5920"W	7559.67	155.439	1.01
13606.00	89.420	164.020	5739.02	7626.67	-6968.84	3169.21	1731083.22	14574958.37	40°07'55.1247"N	80°40'32.2490"W	7655.63	155.545	0.78
13702.00	89.140	163.790	5740.23	7722.50	-7061.07	3195.82	1731109.82	14574866.18	40°07'54.2123"N	80°40'31.9108"W	7750.61	155.649	0.38
13798.00	89.140	163.570	5741.67	7818.34	-7153.19	3222.79	1731136.78	14574774.09	40°07'53.3010"N	80°40'31.5678"W	7845.67	155.747	0.23
13895.00	89.110	164.070	5743.15	7915.17	-7246.34	3249.82	1731163.80	14574680.98	40°07'52.3796"N	80°40'31.2243"W	7941.71	155.845	0.52
13991.00	89.200	161.440	5744.57	8011.08	-7338.01	3278.27	1731192.24	14574589.35	40°07'51.4727"N	80°40'30.8623"W	8037.00	155.927	2.74
14088.00	89.230	159.240	5745.89	8108.07	-7429.34	3310.90	1731224.86	14574498.05	40°07'50.5690"N	80°40'30.4465"W	8133.70	155.980	2.27
14185.00	89.690	159.360	5746.81	8205.04	-7520.07	3345.19	1731259.13	14574407.36	40°07'49.6711"N	80°40'30.0093"W	8230.54	156.019	0.49
14281.00	88.550	160.840	5748.28	8301.02	-7610.32	3377.86	1731291.79	14574317.14	40°07'48.7780"N	80°40'29.5930"W	8326.28	156.066	1.95
14378.00	89.140	158.380	5750.24	8397.98	-7701.22	3411.64	1731325.56	14574226.28	40°07'47.8786"N	80°40'29.1623"W	8423.07	156.107	2.61
14475.00	88.740	158.960	5752.03	8494.91	-7791.56	3446.92	1731360.82	14574135.97	40°07'46.9846"N	80°40'28.7124"W	8519.96	156.136	0.73
14571.00	88.710	159.160	5754.17	8590.86	-7881.20	3481.22	1731395.11	14574046.37	40°07'46.0975"N	80°40'28.2750"W	8615.81	156.168	0.21
14668.00	88.800	157.680	5756.28	8687.76	-7971.37	3516.89	1731430.76	14573956.23	40°07'45.2051"N	80°40'27.8201"W	8712.71	156.193	1.53
14765.00	90.150	158.990	5757.17	8784.69	-8061.51	3552.70	1731466.56	14573866.13	40°07'44.3130"N	80°40'27.3634"W	8809.63	156.217	1.94
14862.00	89.510	159.640	5757.45	8881.66	-8152.26	3586.96	1731500.81	14573775.42	40°07'43.4151"N	80°40'26.9266"W	8906.49	156.251	0.94
14958.00	89.380	159.100	5758.38	8977.64	-8242.10	3620.78	1731534.61	14573685.61	40°07'42.5260"N	80°40'26.4954"W	9002.35	156.284	0.58
15055.00	89.080	159.770	5759.69	9074.61	-8332.91	3654.85	1731568.67	14573594.84	40°07'41.6274"N	80°40'26.0611"W	9099.19	156.318	0.76
15152.00	89.480	160.170	5760.91	9171.60	-8424.03	3688.07	1731601.88	14573503.75	40°07'40.7257"N	80°40'25.6377"W	9195.99	156.356	0.58
15248.00	89.480	159.330	5761.78	9267.58	-8514.10	3721.30	1731635.09	14573413.72	40°07'39.8345"N	80°40'25.2143"W	9291.82	156.391	0.87
15345.00	88.490	159.820	5763.50	9364.55	-8604.98	3755.14	1731668.92	14573322.87	40°07'38.9351"N	80°40'24.7828"W	9388.65	156.424	1.14
15442.00	90.220	159.970	5764.59	9461.54	-8696.06	3788.48	1731702.25	14573231.83	40°07'38.0339"N	80°40'24.3579"W	9485.47	156.459	1.79
15538.00	89.970	159.980	5764.43	9557.53	-8786.26	3821.36	1731735.11	14573141.67	40°07'37.1414"N	80°40'23.9390"W	9581.29	156.495	0.26
15635.00	89.200	159.640	5765.13	9654.52	-8877.29	3854.83	1731768.57	14573050.67	40°07'36.2405"N	80°40'23.5124"W	9678.12	156.528	0.87
15732.00	89.050	159.410	5766.61	9751.50	-8968.15	3888.76	1731802.49	14572959.84	40°07'35.3414"N	80°40'23.0799"W	9774.98	156.558	0.28
15829.00	89.510	159.730	5767.82	9847.47	-9058.11	3922.27	1731835.98	14572869.92	40°07'34.4512"N	80°40'22.6528"W	9870.84	156.587	0.58
15925.00	89.350	159.190	5768.78	9944.45	-9148.94	3956.30	1731870.00	14572779.13	40°07'33.5524"N	80°40'22.2190"W	9967.72	156.615	0.58

REFERENCE WELLPATH IDENTIFICATION			
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Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

WELLPATH DATA (260 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]
16022.00	89.510	159.260	5769.75	10041.42	-9239.63	3990.70	1731904.39	14572688.48	40°07'32.6550"N	80°40'21.7804"W	10064.61	156.640	0.18
16118.00	89.510	159.410	5770.57	10137.40	-9329.45	4024.58	1731938.25	14572598.69	40°07'31.7662"N	80°40'21.3486"W	10160.50	156.665	0.16
16216.00	89.450	159.690	5771.46	10235.38	-9421.27	4058.82	1731972.48	14572506.91	40°07'30.8576"N	80°40'20.9122"W	10258.37	156.693	0.29
16312.00	89.350	159.680	5772.46	10331.36	-9511.29	4092.15	1732005.79	14572416.92	40°07'29.9667"N	80°40'20.4874"W	10354.24	156.721	0.10
16409.00	89.540	159.840	5773.40	10428.35	-9602.30	4125.70	1732039.34	14572325.95	40°07'29.0662"N	80°40'20.0598"W	10451.10	156.749	0.26
16506.00	89.450	159.920	5774.26	10525.34	-9693.37	4159.07	1732072.69	14572234.91	40°07'28.1649"N	80°40'19.6346"W	10547.95	156.778	0.12
16602.00	88.950	159.100	5775.60	10621.31	-9783.29	4192.67	1732106.28	14572145.03	40°07'27.2751"N	80°40'19.2063"W	10643.83	156.802	1.00
16699.00	89.970	157.770	5776.51	10718.24	-9873.49	4228.32	1732141.91	14572054.86	40°07'26.3825"N	80°40'18.7517"W	10740.79	156.817	1.73
16796.00	90.460	160.340	5776.15	10815.20	-9964.07	4262.99	1732176.57	14571964.31	40°07'25.4861"N	80°40'18.3097"W	10837.71	156.837	2.70
16892.00	88.770	158.550	5776.79	10911.17	-10053.95	4296.69	1732210.26	14571874.47	40°07'24.5966"N	80°40'17.8801"W	10933.60	156.860	2.56
16989.00	89.230	158.940	5778.49	11008.11	-10144.34	4331.85	1732245.41	14571784.12	40°07'23.7021"N	80°40'17.4318"W	11030.53	156.876	0.62
17085.00	89.630	158.670	5779.44	11104.06	-10233.84	4366.56	1732280.10	14571694.65	40°07'22.8164"N	80°40'16.9893"W	11126.47	156.893	0.50
17182.00	89.540	158.950	5780.15	11201.02	-10324.28	4401.62	1732315.14	14571604.25	40°07'21.9214"N	80°40'16.5423"W	11223.41	156.910	0.30
17279.00	89.380	159.600	5781.06	11297.99	-10415.00	4435.94	1732349.46	14571513.56	40°07'21.0237"N	80°40'16.1047"W	11320.33	156.930	0.69
17375.00	89.380	159.590	5782.10	11393.97	-10504.97	4469.41	1732382.91	14571423.63	40°07'20.1334"N	80°40'15.6782"W	11416.22	156.952	0.01
17472.00	89.410	159.650	5783.12	11490.95	-10595.89	4503.19	1732416.68	14571332.74	40°07'19.2336"N	80°40'15.2477"W	11513.11	156.975	0.07
17568.00	89.480	159.980	5784.05	11586.94	-10685.99	4536.31	1732449.79	14571242.68	40°07'18.3420"N	80°40'14.8256"W	11608.99	156.998	0.35
17665.00	89.380	159.690	5785.02	11683.93	-10777.04	4569.75	1732483.21	14571151.66	40°07'17.4411"N	80°40'14.3996"W	11705.87	157.022	0.32
17761.00	89.450	159.580	5786.00	11779.91	-10867.04	4603.16	1732516.60	14571061.70	40°07'16.5505"N	80°40'13.9738"W	11801.76	157.043	0.14
17858.00	89.600	159.470	5786.80	11876.89	-10957.91	4637.08	1732550.52	14570970.87	40°07'15.6513"N	80°40'13.5414"W	11898.67	157.063	0.19
17954.00	89.600	159.350	5787.47	11972.87	-11047.77	4670.85	1732584.27	14570881.04	40°07'14.7620"N	80°40'13.1111"W	11994.59	157.082	0.12
18050.00	89.420	159.110	5788.29	12068.84	-11137.53	4704.89	1732618.29	14570791.32	40°07'13.8738"N	80°40'12.6772"W	12090.51	157.099	0.31
18147.00	89.570	159.510	5789.15	12165.82	-11228.27	4739.16	1732652.55	14570700.61	40°07'12.9758"N	80°40'12.2404"W	12187.44	157.117	0.44
18243.00	89.600	159.420	5789.84	12261.80	-11318.17	4772.83	1732686.21	14570610.75	40°07'12.0862"N	80°40'11.8113"W	12283.36	157.135	0.10
18340.00	89.140	159.430	5790.91	12358.78	-11408.98	4806.92	1732720.29	14570519.98	40°07'11.1876"N	80°40'11.3769"W	12380.27	157.153	0.47
18437.00	88.460	159.120	5792.94	12455.73	-11499.68	4841.24	1732754.59	14570429.31	40°07'10.2900"N	80°40'10.9394"W	12477.19	157.169	0.77
18533.00	89.600	158.410	5794.57	12551.67	-11589.14	4876.00	1732789.34	14570339.88	40°07'9.4046"N	80°40'10.4962"W	12573.13	157.182	1.40
18629.00	89.690	161.940	5795.16	12647.65	-11679.44	4908.55	1732821.88	14570249.62	40°07'8.5111"N	80°40'10.0815"W	12668.99	157.204	3.68
18726.00	89.080	158.680	5796.20	12744.63	-11770.75	4941.23	1732854.54	14570158.35	40°07'7.6076"N	80°40'9.6653"W	12765.83	157.228	3.42
18822.00	89.140	159.020	5797.69	12840.58	-11860.27	4975.86	1732889.16	14570068.86	40°07'6.7217"N	80°40'9.2238"W	12861.78	157.240	0.36

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Slot	8H		

WELLPATH DATA (260 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]
18918.00	89.380	159.490	5798.93	12936.54	-11950.04	5009.86	1732923.15	14569979.13	40°07'5.8333"N	80°40'8.7904"W	12957.71	157.255	0.55
19015.00	89.540	159.450	5799.85	13033.52	-12040.88	5043.88	1732957.16	14569888.33	40°07'4.9344"N	80°40'8.3569"W	13054.63	157.271	0.17
19112.00	89.660	159.540	5800.52	13130.51	-12131.73	5077.86	1732991.12	14569797.51	40°07'4.0354"N	80°40'7.9239"W	13151.56	157.288	0.15
19208.00	89.420	158.850	5801.30	13226.48	-12221.46	5111.95	1733025.20	14569707.81	40°07'3.1473"N	80°40'7.4894"W	13247.50	157.302	0.76
19305.00	89.140	158.980	5802.51	13323.43	-12311.96	5146.85	1733060.08	14569617.35	40°07'2.2517"N	80°40'7.0446"W	13344.45	157.313	0.32
19402.00	89.480	159.410	5803.68	13420.40	-12402.63	5181.30	1733094.52	14569526.72	40°07'1.3545"N	80°40'6.6055"W	13441.39	157.327	0.57
19498.00	89.720	158.890	5804.35	13516.37	-12492.34	5215.47	1733128.67	14569437.04	40°07'0.4667"N	80°40'6.1700"W	13537.34	157.340	0.60
19595.00	89.630	159.330	5804.90	13613.33	-12582.96	5250.05	1733163.25	14569346.45	40°06'59.5699"N	80°40'5.7292"W	13634.30	157.352	0.46
19692.00	89.630	159.110	5805.53	13710.31	-12673.65	5284.47	1733197.65	14569255.80	40°06'58.6724"N	80°40'5.2906"W	13731.24	157.366	0.23
19788.00	89.510	158.790	5806.25	13806.27	-12763.24	5318.95	1733232.11	14569166.25	40°06'57.7858"N	80°40'4.8511"W	13827.20	157.377	0.36
19885.00	90.920	159.630	5805.89	13903.24	-12853.92	5353.37	1733266.53	14569075.60	40°06'56.8884"N	80°40'4.4123"W	13924.15	157.389	1.69
19981.00	90.060	159.570	5805.06	13999.22	-12943.90	5386.84	1733299.98	14568985.66	40°06'55.9981"N	80°40'3.9859"W	14020.07	157.404	0.90
20078.00	90.280	159.260	5804.78	14096.20	-13034.70	5420.94	1733334.07	14568894.89	40°06'55.0995"N	80°40'3.5513"W	14117.02	157.418	0.39
20174.00	90.030	160.070	5804.52	14192.19	-13124.72	5454.30	1733367.41	14568804.91	40°06'54.2087"N	80°40'3.1263"W	14212.94	157.433	0.88
20271.00	89.540	159.320	5804.88	14289.18	-13215.69	5487.96	1733401.06	14568713.98	40°06'53.3085"N	80°40'2.6974"W	14309.86	157.449	0.92
20367.00	89.750	158.800	5805.48	14385.14	-13305.35	5522.27	1733435.36	14568624.35	40°06'52.4212"N	80°40'2.2601"W	14405.82	157.460	0.58
20464.00	90.250	160.460	5805.48	14482.13	-13396.28	5556.03	1733469.11	14568533.46	40°06'51.5214"N	80°40'1.8300"W	14502.75	157.474	1.79
20560.00	89.880	159.290	5805.37	14578.12	-13486.42	5589.06	1733502.12	14568443.36	40°06'50.6294"N	80°40'1.4092"W	14598.67	157.490	1.28
20657.00	89.540	159.900	5805.86	14675.10	-13577.33	5622.88	1733535.93	14568352.48	40°06'49.7298"N	80°40'0.9783"W	14695.60	157.504	0.72
20754.00	89.050	159.140	5807.05	14772.08	-13668.19	5656.82	1733569.85	14568261.66	40°06'48.8306"N	80°40'0.5459"W	14792.53	157.517	0.93
20850.00	88.710	159.310	5808.93	14868.04	-13757.93	5690.86	1733603.88	14568171.95	40°06'47.9425"N	80°40'0.1120"W	14888.47	157.528	0.40
20947.00	89.290	159.830	5810.62	14965.01	-13848.81	5724.71	1733637.72	14568081.10	40°06'47.0432"N	80°39'59.6807"W	14985.39	157.541	0.80
21043.00	89.350	159.250	5811.76	15060.99	-13938.75	5758.27	1733671.26	14567991.20	40°06'46.1532"N	80°39'59.2531"W	15081.33	157.554	0.61
21140.00	89.420	159.860	5812.80	15157.97	-14029.64	5792.15	1733705.13	14567900.35	40°06'45.2538"N	80°39'58.8215"W	15178.26	157.567	0.63
21236.00	89.230	159.400	5813.93	15253.95	-14119.63	5825.56	1733738.53	14567810.40	40°06'44.3633"N	80°39'58.3958"W	15274.19	157.580	0.52
21333.00	89.320	159.530	5815.16	15350.92	-14210.45	5859.59	1733772.54	14567719.60	40°06'43.4644"N	80°39'57.9623"W	15371.13	157.592	0.16
21429.00	89.380	159.480	5816.25	15446.90	-14300.37	5893.20	1733806.14	14567629.72	40°06'42.5746"N	80°39'57.5340"W	15467.07	157.603	0.08
21526.00	89.570	161.230	5817.14	15543.89	-14391.72	5925.80	1733838.73	14567538.41	40°06'41.6707"N	80°39'57.1188"W	15563.96	157.621	1.81
21622.00	89.260	159.970	5818.12	15639.89	-14482.26	5957.69	1733870.60	14567447.90	40°06'40.7748"N	80°39'56.7128"W	15659.82	157.639	1.35
21719.00	89.230	160.460	5819.40	15736.88	-14573.53	5990.52	1733903.42	14567356.67	40°06'39.8716"N	80°39'56.2946"W	15756.71	157.655	0.51

REFERENCE WELLPATH IDENTIFICATION			
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WELLPATH DATA (260 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]
21815.00	89.170	158.310	5820.74	15832.84	-14663.37	6024.32	1733937.20	14567266.87	40°06'38.9826"N	80°39'55.8640"W	15852.66	157.665	2.24
21912.00	89.260	157.360	5822.07	15929.72	-14753.19	6060.91	1733973.78	14567177.08	40°06'38.0936"N	80°39'55.3974"W	15949.64	157.666	0.98
22008.00	89.540	155.060	5823.07	16025.44	-14841.02	6099.63	1734012.49	14567089.28	40°06'37.2242"N	80°39'54.9033"W	16045.60	157.657	2.41
22105.00	89.200	153.550	5824.14	16121.86	-14928.42	6141.68	1734054.52	14567001.92	40°06'36.3590"N	80°39'54.3663"W	16142.43	157.637	1.60
22202.00	89.140	150.660	5825.54	16217.79	-15014.13	6187.05	1734099.88	14566916.24	40°06'35.5103"N	80°39'53.7865"W	16238.96	157.604	2.98
22298.00	89.050	152.470	5827.06	16312.60	-15098.54	6232.76	1734145.56	14566831.87	40°06'34.6745"N	80°39'53.2024"W	16334.41	157.569	1.89
22395.00	89.050	151.240	5828.67	16408.48	-15184.05	6278.51	1734191.29	14566746.39	40°06'33.8277"N	80°39'52.6178"W	16430.92	157.535	1.27
22491.00	89.350	151.430	5830.01	16503.24	-15268.28	6324.55	1734237.32	14566662.19	40°06'32.9936"N	80°39'52.0293"W	16526.35	157.499	0.37
22587.00	89.850	151.350	5830.68	16598.01	-15352.55	6370.52	1734283.27	14566577.95	40°06'32.1591"N	80°39'51.4418"W	16621.81	157.464	0.53
22684.00	89.720	150.910	5831.04	16693.71	-15437.50	6417.35	1734330.09	14566493.04	40°06'31.3179"N	80°39'50.8431"W	16718.22	157.427	0.47
22780.00	89.720	151.030	5831.51	16788.38	-15521.44	6463.94	1734376.65	14566409.14	40°06'30.4867"N	80°39'50.2477"W	16813.61	157.391	0.12
22877.00	89.750	151.000	5831.96	16884.04	-15606.29	6510.94	1734423.64	14566324.32	40°06'29.6465"N	80°39'49.6469"W	16910.01	157.354	0.04
22973.00	89.600	151.370	5832.50	16978.77	-15690.40	6557.21	1734469.89	14566240.24	40°06'28.8136"N	80°39'49.0555"W	17005.46	157.319	0.42
23069.00	89.600	150.870	5833.18	17073.47	-15774.46	6603.57	1734516.24	14566156.22	40°06'27.9812"N	80°39'48.4629"W	17100.90	157.285	0.52
23166.00	89.850	151.610	5833.64	17169.20	-15859.49	6650.24	1734562.89	14566071.22	40°06'27.1391"N	80°39'47.8664"W	17197.36	157.251	0.81
23263.00	89.780	151.130	5833.95	17264.96	-15944.63	6696.72	1734609.35	14565986.11	40°06'26.2960"N	80°39'47.2724"W	17293.85	157.218	0.50
23359.00	89.260	151.450	5834.76	17359.71	-16028.82	6742.84	1734655.44	14565901.95	40°06'25.4623"N	80°39'46.6830"W	17389.34	157.185	0.64
23455.00	89.970	151.910	5835.40	17454.56	-16113.33	6788.38	1734700.97	14565817.47	40°06'24.6255"N	80°39'46.1010"W	17484.89	157.155	0.88
23533.00	89.970	152.500	5835.44	17531.74	-16182.33	6824.75	1734737.32	14565748.50	40°06'23.9422"N	80°39'45.6363"W	17562.60	157.133	0.76
23558.00‡	89.970	152.500	5835.46	17556.50	-16204.51	6836.29	1734748.86	14565726.34	40°06'23.7227"N	80°39'45.4888"W	17587.52	157.126	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Roth OHI 8H AWB Ref Wellpath: Roth OHI 8H awp 50' - 23533' Propj: 23558'											
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]		
13.375in Casing	26.00	222.00	196.00	26.00	222.00	0.00	0.00	-0.08	-0.75		
9.625in Casing	26.00	1632.00	1606.00	26.00	1622.33	0.00	0.00	75.10	84.90		
5.5in Casing	26.00	23558.00	23532.00	26.00	5835.46	0.00	0.00	-16204.51	6836.29		

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Roth OHI 8H
Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Roth OHI 8H LP rev 1	5662.01	189.80	1038.49	1728953.34	14582114.20	40°09'5.9425"N	80°40'59.3521"W	point
Roth OHI 8H wp1	5662.01	-7311.88	3287.42	1731201.39	14574615.46	40°07'51.7305"N	80°40'30.7432"W	point
Roth OHI 8H LP rev 2	5663.00	189.80	1038.49	1728953.34	14582114.20	40°09'5.9425"N	80°40'59.3521"W	point
Roth OHI 8H wp2	5787.88	-14675.71	6018.43	1733931.32	14567254.53	40°06'38.8608"N	80°39'55.9404"W	point
Roth OHI 8H BHL rev 2	5802.01	-16203.95	6837.85	1734750.42	14565726.89	40°06'23.7281"N	80°39'45.4687"W	point
Roth OHI 8H BHL rev 3	5803.00	-16203.95	6837.85	1734750.42	14565726.89	40°06'23.7281"N	80°39'45.4687"W	point

WELLPATH COMPOSITION - Ref Wellbore: Roth OHI 8H AWB Ref Wellpath: Roth OHI 8H awp 50' - 23533' Propj: 23558'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
26.00	200.00	OWSG MWD rev2 + HRGM	1 Tally OWSG MWD HRGM 17.5" 50' - 500'	Roth OHI 8H AWB	1/19/2023
200.00	1563.00	OWSG MWD rev2 + HRGM	2 Tally OWSG MWD HRGM 12.25" 250' - 1563'	Roth OHI 8H AWB	1/19/2023
1563.00	4259.00	OWSG MWD rev2 + HRGM	3 Tally OWSG MWD HRGM 8.75" 1639' - 4259'	Roth OHI 8H AWB	1/20/2023
4259.00	23558.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	4 BHI ATCurve HRGM Short spacing 8.5" 4348' - 23533'	Roth OHI 8H AWB	1/20/2023

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SWN PRODUCTION COMPANY, LLC	Well	Roth OHI 8H
Field	Ohio	API/Legal	
Facility	Roth OHI Pad	Wellbore	Roth OHI 8H AWB
Slot	8H		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
50.00	0.150	285.690	50.00	1 Tally OWSG MWD HRGM 17.5" 50' - 500'
250.00	0.290	267.380	250.00	2 Tally OWSG MWD HRGM 12.25" 250' - 1563'
1639.00	11.550	53.590	1629.19	3 Tally OWSG MWD HRGM 8.75" 1639' - 4259'
4348.00	13.500	45.890	4243.96	4 BHI ATCurve HRGM Short spacing 8.5" 4348' - 23533'
23558.00	89.970	152.500	5835.46	Proj to TD: 23558'

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