

# Actual Wellpath Report

Yocum MSH 3H AWP Proj: 18470

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Office of Oil and Gas  
SEP 19 2019  
WV Department of  
Environmental Protection



REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWB
Facility	Yocum MSH Pad		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect@ 5.1
North Reference	Grid	User	Atenien
Scale	0.999616	Report Generated	21/Mar/2019 at 13:27
Convergence at slot	0.27° East	Database/Source file	WA_MPL_EASTERNUUS_Defn/Yocum_MSH_3H_AWP_Proj_18470_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-29.44	51.75	1757498.46	14429756.20	39°43'58.543"N	80°35'00.763"W
Facility Reference Pt			1757446.73	14429785.62	39°43'58.836"N	80°35'01.424"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM			
Calculation method	Minimum curvature	SDC 46 (RKB) to Facility Vertical Datum	1079.40ft
Horizontal Reference Pt	Slot	SDC 46 (RKB) to Mean Sea Level	1079.40ft
Vertical Reference Pt	SDC 46 (RKB)	SDC 46 (RKB) to Mud Line at Slot (Slot 3H)	26.00ft
MD Reference Pt	SDC 46 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	311.71°



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Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWB
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 stations) + = interpolated/extrapolated station

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)
0.001	0.000	166.250	0.00	0.00	0.00	0.00	1757498.46	14429756.20	39°43'58.543"N	80°35'00.763"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	166.250	26.00	0.00	0.00	0.00	1757498.46	14429756.20	39°43'58.543"N	80°35'00.763"W	0.00	0.000	0.00	0.00	0.00
181.00	0.280	166.250	181.00	-0.31	-0.37	0.09	1757498.55	14429755.83	39°43'58.539"N	80°35'00.762"W	0.38	166.250	0.18	0.18	107.26
221.02	0.120	149.360	221.02	-0.43	-0.50	0.13	1757498.60	14429755.70	39°43'58.538"N	80°35'00.762"W	0.52	164.900	0.42	-0.40	-42.20
315.00	0.210	168.180	315.00	-0.66	-0.75	0.22	1757498.68	14429755.44	39°43'58.535"N	80°35'00.761"W	0.78	163.693	0.11	0.10	20.03
408.00	0.270	168.930	408.00	-0.98	-1.13	0.30	1757498.76	14429755.09	39°43'58.531"N	80°35'00.760"W	1.17	165.322	0.06	0.06	0.81
483.66	0.160	161.370	483.66	-1.21	-1.41	0.37	1757498.76	14429754.79	39°43'58.529"N	80°35'00.759"W	1.46	165.477	0.15	-0.15	-9.99
609.94	0.090	129.840	609.94	-1.46	-1.64	0.50	1757498.96	14429754.56	39°43'58.526"N	80°35'00.757"W	1.71	163.122	0.08	-0.06	-24.97
701.64	0.120	83.030	701.64	-1.60	-1.67	0.65	1757499.11	14429754.52	39°43'58.526"N	80°35'00.755"W	1.80	158.838	0.10	0.03	-51.05
791.78	0.230	96.210	791.78	-1.81	-1.68	0.92	1757499.38	14429754.51	39°43'58.526"N	80°35'00.752"W	1.92	151.283	0.13	0.12	14.62
882.25	0.200	88.560	882.25	-2.07	-1.70	1.26	1757499.72	14429754.50	39°43'58.526"N	80°35'00.747"W	2.11	143.422	0.05	-0.03	-8.46
973.44	0.300	78.690	973.43	-2.33	-1.65	1.65	1757500.11	14429754.55	39°43'58.526"N	80°35'00.742"W	2.33	134.895	0.12	0.11	-10.82
1063.40	0.520	76.170	1063.39	-2.70	-1.50	2.28	1757500.74	14429754.69	39°43'58.528"N	80°35'00.734"W	2.73	123.394	0.25	0.24	-2.80
1154.39	0.430	85.320	1154.38	-3.17	-1.38	3.02	1757501.48	14429754.82	39°43'58.529"N	80°35'00.725"W	3.32	114.496	0.13	-0.10	10.06
1240.87	0.440	64.220	1240.86	-3.52	-1.21	3.64	1757502.10	14429754.99	39°43'58.531"N	80°35'00.717"W	3.84	108.311	0.18	0.01	-24.40
1335.70	0.700	60.960	1335.68	-3.85	-0.77	4.48	1757502.94	14429755.43	39°43'58.535"N	80°35'00.706"W	4.54	99.711	0.28	0.27	-3.44
1425.99	0.930	45.180	1425.96	-4.08	0.02	5.48	1757503.94	14429756.21	39°43'58.543"N	80°35'00.693"W	5.48	89.814	0.35	0.25	-17.48
1516.37	0.920	41.290	1516.33	-4.12	1.08	6.48	1757504.94	14429757.27	39°43'58.553"N	80°35'00.680"W	6.57	80.537	0.07	-0.01	-4.30
1606.15	1.290	32.790	1606.09	-3.96	2.47	7.50	1757505.96	14429758.67	39°43'58.567"N	80°35'00.667"W	7.90	71.769	0.45	0.41	-9.47
1695.90	1.530	32.010	1695.82	-3.60	4.34	8.68	1757507.14	14429760.53	39°43'58.585"N	80°35'00.652"W	9.71	63.466	0.27	0.27	-0.87
1784.41	1.070	38.600	1784.30	-3.35	5.98	9.83	1757509.18	14429762.18	39°43'58.601"N	80°35'00.637"W	11.51	58.659	0.55	-0.52	7.45
1877.38	0.630	42.160	1877.26	-3.31	7.04	10.71	1757509.17	14429763.23	39°43'58.612"N	80°35'00.626"W	12.82	56.679	0.48	-0.47	3.83
1967.30	0.420	355.280	1967.18	-3.08	7.74	11.02	1757509.47	14429763.93	39°43'58.619"N	80°35'00.622"W	13.46	54.920	0.51	-0.23	-52.14
2057.03	0.400	350.240	2056.91	-2.59	8.37	10.94	1757509.39	14429764.57	39°43'58.625"N	80°35'00.623"W	13.77	52.561	0.05	-0.02	-5.62
2147.71	0.300	31.250	2147.59	-2.30	8.89	11.01	1757509.46	14429765.08	39°43'58.630"N	80°35'00.622"W	14.15	51.076	0.29	-0.11	45.22
2238.05	0.420	41.440	2237.92	-2.26	9.34	11.35	1757509.80	14429765.53	39°43'58.634"N	80°35'00.618"W	14.70	50.547	0.15	0.13	11.28
2330.39	0.480	359.650	2330.26	-2.00	9.98	11.57	1757510.03	14429766.17	39°43'58.641"N	80°35'00.615"W	15.28	49.220	0.35	0.06	-45.26
2420.50	0.450	318.450	2420.37	-1.39	10.62	11.33	1757509.79	14429766.81	39°43'58.647"N	80°35'00.618"W	15.53	46.854	0.36	-0.03	-45.72
2519.23	0.460	325.840	2519.10	-0.62	11.24	10.85	1757509.31	14429767.43	39°43'58.653"N	80°35'00.624"W	15.62	43.996	0.06	0.01	7.49
2607.63	0.870	179.600	2607.49	-0.73	10.86	10.66	1757509.11	14429767.05	39°43'58.650"N	80°35'00.626"W	15.22	44.457	1.45	0.46	-165.43



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Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWP
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)
2703.00	1.110	174.500	2702.85	-1.89	9.22	10.75	1757509.21	14429765.41	39°43'58.633"N	80°35'00.625"W	14.16	49.390	0.27	0.25	-5.35
2789.71	1.080	171.870	2789.54	-3.13	7.57	10.95	1757509.40	14429763.77	39°43'58.617"N	80°35'00.623"W	13.31	55.325	0.07	-0.03	-3.03
2878.78	1.410	213.060	2878.59	-3.94	5.82	10.47	1757508.92	14429762.02	39°43'58.600"N	80°35'00.629"W	11.98	60.912	1.04	0.37	46.24
2973.00	1.450	218.570	2972.78	-4.18	3.92	9.09	1757507.55	14429760.11	39°43'58.581"N	80°35'00.647"W	9.90	66.677	0.15	0.04	5.85
3066.00	1.190	220.450	3065.76	-4.27	2.27	7.73	1757506.19	14429758.46	39°43'58.565"N	80°35'00.664"W	8.06	73.672	0.28	-0.28	2.02
3156.00	0.940	223.330	3155.74	-4.26	1.02	6.62	1757505.08	14429757.21	39°43'58.552"N	80°35'00.679"W	6.70	81.265	0.28	-0.28	3.20
3246.00	0.690	231.160	3245.74	-4.15	0.14	5.69	1757504.15	14429756.34	39°43'58.544"N	80°35'00.691"W	5.69	88.589	0.30	-0.28	8.70
3337.00	0.320	261.980	3336.73	-3.90	-0.24	5.01	1757503.47	14429755.96	39°43'58.540"N	80°35'00.699"W	5.02	92.729	0.49	-0.41	33.87
3428.00	0.320	307.550	3427.73	-3.48	-0.12	4.56	1757503.02	14429755.08	39°43'58.541"N	80°35'00.705"W	4.56	91.501	0.27	0.00	50.08
3518.00	0.400	305.330	3517.73	-2.92	0.22	4.10	1757502.56	14429756.41	39°43'58.545"N	80°35'00.711"W	4.11	86.996	0.09	0.09	-2.47
3609.00	0.490	311.860	3608.73	-2.22	0.66	3.55	1757502.01	14429756.85	39°43'58.549"N	80°35'00.718"W	3.62	79.501	0.11	0.10	7.18
3699.00	0.600	314.330	3698.72	-1.36	1.24	2.93	1757501.39	14429757.44	39°43'58.555"N	80°35'00.726"W	3.18	66.988	0.12	0.12	2.74
3789.00	0.650	310.930	3788.72	-0.38	1.91	2.21	1757500.67	14429758.10	39°43'58.561"N	80°35'00.735"W	2.92	49.163	0.07	0.06	-3.78
3879.00	0.810	311.980	3878.71	0.77	2.67	1.35	1757499.81	14429758.86	39°43'58.569"N	80°35'00.746"W	2.99	26.828	0.18	0.18	-1.17
3969.00	1.050	125.000	3968.70	0.59	2.62	1.55	1757500.01	14429758.82	39°43'58.569"N	80°35'00.743"W	3.05	30.635	2.06	0.27	192.24
4060.00	1.450	113.400	4059.68	-1.34	1.69	3.29	1757501.75	14429757.88	39°43'58.559"N	80°35'00.721"W	3.70	62.886	0.52	0.44	-12.75
4150.00	1.210	88.860	4149.66	-3.11	1.25	5.29	1757503.75	14429757.45	39°43'58.555"N	80°35'00.696"W	5.43	76.675	0.68	-0.27	-27.27
4241.00	1.800	66.620	4240.63	-4.42	1.84	7.56	1757506.02	14429758.03	39°43'58.561"N	80°35'00.667"W	7.78	76.331	0.90	0.65	-24.44
4331.00	0.600	65.030	4330.61	-5.20	2.60	9.28	1757507.74	14429758.79	39°43'58.568"N	80°35'00.644"W	9.64	74.365	1.33	-1.33	-1.77
4422.00	0.740	63.370	4421.60	-5.61	3.06	10.24	1757508.70	14429759.26	39°43'58.572"N	80°35'00.632"W	10.69	73.350	0.16	0.15	-1.82
4511.00	0.270	220.420	4510.60	-5.82	3.16	10.62	1757509.18	14429759.35	39°43'58.573"N	80°35'00.622"W	11.08	73.424	1.12	-0.53	176.46
4602.00	0.380	125.050	4601.60	-6.13	2.82	10.73	1757509.08	14429759.02	39°43'58.570"N	80°35'00.626"W	11.09	75.250	0.53	0.12	-104.80
4692.00	1.070	200.270	4691.59	-6.73	1.86	10.68	1757509.14	14429758.06	39°43'58.561"N	80°35'00.627"W	10.84	80.097	1.16	0.77	83.58
4782.16	1.070	202.170	4781.74	-7.32	0.30	10.07	1757508.53	14429756.49	39°43'58.545"N	80°35'00.634"W	10.08	88.321	0.04	0.00	2.11
4873.00	0.980	137.260	4872.56	-8.38	-1.06	10.28	1757508.74	14429755.14	39°43'58.532"N	80°35'00.632"W	10.33	95.892	1.21	-0.10	-71.46
4963.00	0.740	268.870	4962.56	-8.72	-1.64	10.22	1757508.68	14429754.56	39°43'58.526"N	80°35'00.653"W	10.35	99.103	1.75	-0.27	146.23
5054.00	1.120	285.680	5053.55	-7.49	-1.41	8.78	1757507.23	14429754.79	39°43'58.528"N	80°35'00.631"W	8.89	99.120	0.51	0.42	18.47
5144.00	0.950	322.410	5143.53	-5.97	-0.58	7.47	1757505.93	14429755.62	39°43'58.537"N	80°35'00.668"W	7.50	94.436	0.75	-0.19	40.81
5235.00	1.020	357.870	5234.52	-4.66	0.83	6.98	1757505.44	14429757.02	39°43'58.551"N	80°35'00.674"W	7.03	83.243	0.66	0.08	38.97
5317.59	0.320	173.190	5317.11	-4.33	1.33	6.98	1757505.44	14429757.53	39°43'58.556"N	80°35'00.674"W	7.11	79.193	1.62	-0.85	212.28



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Field	Marshall	Wellbore	Yocum MSH 3H AWB
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 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)
5415.00	0.520	142.940	5414.52	-4.96	0.71	7.28	1757505.74	14429756.91	39°43'58.549"N	80°35'00.670"W	7.32	84.430	0.30	0.21	-31.05
5505.00	0.330	268.360	5504.51	-5.18	0.38	7.27	1757505.73	14429756.57	39°43'58.546"N	80°35'00.670"W	7.28	87.032	0.84	-0.21	139.36
5595.00	0.440	308.240	5594.51	-4.64	0.58	6.74	1757505.20	14429756.78	39°43'58.548"N	80°35'00.677"W	6.76	85.053	0.31	0.12	44.31
5686.00	0.700	9.720	5685.51	-4.00	1.35	6.56	1757505.02	14429757.54	39°43'58.556"N	80°35'00.679"W	6.70	78.389	0.69	0.29	67.56
5776.00	0.650	122.340	5775.50	-4.21	1.62	7.08	1757505.54	14429757.81	39°43'58.558"N	80°35'00.673"W	7.26	77.144	1.25	-0.06	125.13
5867.00	1.610	156.360	5866.49	-5.88	0.17	8.03	1757506.49	14429756.36	39°43'58.544"N	80°35'00.661"W	8.03	88.794	1.24	1.05	37.38
5957.00	1.480	181.020	5956.46	-7.79	-2.15	8.52	1757506.97	14429754.04	39°43'58.521"N	80°35'00.655"W	8.78	104.175	0.75	-0.14	27.40
6048.00	1.550	239.360	6047.43	-8.18	-3.95	7.44	1757505.90	14429752.24	39°43'58.503"N	80°35'00.666"W	8.42	117.995	1.62	0.08	64.11
6138.00	1.900	242.870	6137.39	-7.28	-5.25	5.06	1757503.52	14429750.94	39°43'58.491"N	80°35'00.699"W	7.30	136.066	0.41	0.39	3.90
6195.00	1.280	234.080	6194.37	-6.80	-6.06	3.71	1757502.17	14429750.14	39°43'58.483"N	80°35'00.716"W	7.10	148.548	1.17	-1.09	-15.42
6274.00	0.280	13.760	6273.36	-6.52	-6.39	3.04	1757501.50	14429749.81	39°43'58.479"N	80°35'00.725"W	7.07	154.575	1.90	-1.27	176.81
6364.00	5.980	300.520	6363.19	-1.81	-3.79	-0.95	1757497.51	14429752.40	39°43'58.505"N	80°35'00.776"W	3.91	194.103	6.56	6.33	-81.38
6455.00	11.990	308.180	6453.04	12.29	4.47	-12.48	1757485.99	14429760.66	39°43'58.587"N	80°35'00.923"W	13.25	289.692	6.72	6.60	8.42
6545.00	16.470	303.410	6540.26	34.25	17.28	-30.49	1757467.99	14429773.46	39°43'58.715"N	80°35'01.153"W	35.04	299.540	5.14	4.98	-5.30
6635.00	22.200	300.860	6625.15	63.60	33.04	-55.75	1757442.73	14429789.22	39°43'58.872"N	80°35'01.475"W	64.81	300.649	6.43	6.37	-2.83
6726.00	28.240	302.110	6707.44	101.75	53.32	-88.78	1757409.72	14429809.49	39°43'59.074"N	80°35'01.897"W	103.56	300.988	6.66	6.64	1.37
6816.00	35.520	302.710	6783.81	148.63	78.80	-128.86	1757369.65	14429834.96	39°43'59.327"N	80°35'02.408"W	151.05	301.445	8.10	8.09	0.67
6907.00	43.210	300.570	6854.11	205.39	108.97	-178.01	1757320.52	14429865.13	39°43'59.628"N	80°35'03.035"W	208.71	301.474	8.58	8.45	-2.35
6997.00	51.300	299.860	6915.15	270.10	142.18	-235.09	1757263.47	14429898.32	39°43'59.959"N	80°35'03.764"W	274.74	301.166	9.01	8.99	-0.79
7087.00	59.530	302.530	6966.20	342.89	180.60	-298.36	1757200.42	14429936.72	39°44'00.341"N	80°35'04.572"W	348.76	301.186	9.46	9.14	2.97
7178.00	66.870	301.530	7007.20	422.90	223.63	-367.18	1757131.22	14429979.73	39°44'00.770"N	80°35'05.450"W	429.92	301.343	8.13	8.07	-1.10
7268.00	68.900	303.520	7041.08	505.20	268.44	-437.47	1757061.16	14430024.55	39°44'01.216"N	80°35'06.347"W	513.28	301.536	3.05	2.26	2.21
7359.00	76.100	308.060	7068.44	591.45	319.22	-507.76	1756990.89	14430075.29	39°44'01.721"N	80°35'07.244"W	599.77	302.157	9.23	7.91	4.99
7449.00	83.170	310.660	7084.63	679.85	375.34	-576.15	1756922.53	14430131.39	39°44'02.278"N	80°35'08.116"W	687.63	303.083	8.35	7.86	2.89
7539.00	91.410	312.710	7088.88	769.66	435.08	-643.22	1756855.49	14430191.11	39°44'02.872"N	80°35'08.971"W	776.55	304.075	9.43	9.16	2.80
7630.00	91.040	313.260	7086.94	860.62	497.11	-709.78	1756788.96	14430253.11	39°44'03.488"N	80°35'09.819"W	866.54	305.006	0.73	-0.41	0.60
7720.00	90.980	313.090	7085.35	960.58	558.68	-775.40	1756723.36	14430314.66	39°44'04.099"N	80°35'10.655"W	955.70	305.773	0.20	-0.07	-0.19
7810.00	90.920	312.800	7083.86	1040.54	619.99	-841.27	1756657.51	14430375.94	39°44'04.708"N	80°35'11.495"W	1045.05	306.389	0.33	-0.07	-0.32
7901.00	90.890	313.300	7082.42	1131.51	682.10	-907.76	1756591.05	14430438.03	39°44'05.325"N	80°35'12.342"W	1135.47	306.921	0.55	-0.03	0.55
7991.00	90.980	314.690	7080.95	1221.42	744.60	-972.50	1756526.34	14430500.51	39°44'05.946"N	80°35'13.167"W	1224.82	307.440	1.55	0.10	1.54



# Actual Wellpath Report

Yocum MSH 3H AWP Proj: 18470'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWB
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)
8081.00	91.070	314.410	7079.34	1311.30	807.73	-1036.63	1756462.24	14430563.61	39°44'06.573"N	80°35'13.984"W	1314.16	307.925	0.33	0.10	-0.31
8172.00	91.350	311.950	7077.42	1402.24	869.98	-1102.96	1756395.92	14430625.84	39°44'07.191"N	80°35'14.830"W	1404.78	308.265	2.72	0.31	-2.70
8263.00	91.470	311.290	7075.18	1493.21	930.41	-1170.97	1756327.94	14430686.24	39°44'07.791"N	80°35'15.697"W	1495.60	308.469	0.74	0.13	-0.73
8353.00	91.440	310.320	7072.89	1583.17	989.20	-1239.07	1756259.87	14430745.01	39°44'08.375"N	80°35'16.565"W	1585.50	308.602	1.08	-0.03	-1.08
8443.00	91.560	310.580	7070.54	1673.12	1047.57	-1307.54	1756192.73	14430803.36	39°44'08.955"N	80°35'17.438"W	1675.43	308.701	0.32	0.13	0.29
8524.00	91.530	311.260	7068.08	1764.07	1107.15	-1376.27	1756122.42	14430862.92	39°44'09.547"N	80°35'18.314"W	1766.33	308.815	0.75	-0.03	0.75
8624.00	91.380	311.690	7065.80	1854.04	1166.74	-1443.68	1756055.34	14430922.49	39°44'10.139"N	80°35'19.174"W	1856.21	308.944	0.51	-0.17	0.48
8715.00	91.440	311.890	7063.56	1945.02	1227.36	-1511.51	1755987.53	14430983.09	39°44'10.741"N	80°35'20.038"W	1947.07	309.077	0.23	0.07	0.22
8805.00	91.320	312.040	7061.39	2034.99	1287.53	-1578.41	1755920.66	14431043.23	39°44'11.339"N	80°35'20.891"W	2036.94	309.205	0.21	-0.13	0.17
8895.00	90.950	311.160	7059.61	2124.97	1347.26	-1645.71	1755853.39	14431102.94	39°44'11.932"N	80°35'21.749"W	2126.84	309.306	1.07	-0.41	-0.99
8986.00	90.820	311.400	7058.20	2215.96	1407.29	-1714.09	1755785.04	14431162.94	39°44'12.529"N	80°35'22.621"W	2217.78	309.386	0.31	-0.14	0.27
9076.00	91.070	312.760	7056.72	2305.94	1467.59	-1780.88	1755718.27	14431223.22	39°44'13.128"N	80°35'23.472"W	2307.67	309.491	1.54	0.28	1.51
9166.00	91.040	313.890	7055.06	2395.89	1529.33	-1846.34	1755652.84	14431284.94	39°44'13.741"N	80°35'24.307"W	2397.46	309.635	1.26	-0.03	1.26
9257.00	91.560	315.890	7053.00	2486.72	1593.54	-1910.79	1755588.41	14431349.12	39°44'14.378"N	80°35'25.128"W	2488.06	309.827	2.27	0.57	2.20
9348.00	91.530	315.020	7050.54	2577.49	1658.37	-1974.60	1755524.63	14431413.92	39°44'15.022"N	80°35'25.941"W	2578.61	310.025	0.96	-0.03	-0.96
9438.00	91.690	312.820	7048.02	2667.38	1720.77	-2039.39	1755459.85	14431476.30	39°44'15.641"N	80°35'26.767"W	2668.36	310.156	2.45	0.18	-2.44
9528.00	91.380	310.330	7045.60	2757.34	1780.46	-2106.69	1755392.58	14431535.97	39°44'16.234"N	80°35'27.625"W	2758.30	310.203	2.79	-0.34	-2.77
9618.00	91.530	308.560	7043.32	2847.24	1837.62	-2176.17	1755323.13	14431593.11	39°44'16.802"N	80°35'28.511"W	2848.26	310.179	1.97	0.17	-1.97
9709.00	91.590	307.910	7040.84	2938.04	1893.92	-2247.62	1755251.71	14431649.39	39°44'17.382"N	80°35'29.422"W	2939.17	310.119	0.72	0.07	-0.71
9799.00	91.470	305.810	7038.44	3027.68	1947.89	-2319.60	1755179.76	14431703.33	39°44'17.898"N	80°35'30.340"W	3029.00	310.022	2.34	-0.13	-2.33
9889.00	91.380	307.910	7036.72	3120.22	2001.86	-2391.58	1755107.80	14431757.28	39°44'18.435"N	80°35'31.259"W	3118.83	309.931	2.33	-0.10	2.33
9979.00	91.780	311.240	7033.32	3207.22	2059.16	-2460.92	1755038.49	14431814.56	39°44'19.005"N	80°35'32.143"W	3208.78	309.921	3.73	0.44	3.70
10070.00	91.840	312.410	7030.84	3298.17	2119.82	-2528.70	1754970.74	14431875.19	39°44'19.607"N	80°35'33.007"W	3299.68	309.973	1.29	0.07	1.29
10160.00	91.870	311.150	7027.93	3388.12	2179.75	-2595.77	1754903.69	14431935.10	39°44'20.202"N	80°35'34.862"W	3389.59	310.021	1.40	0.03	-1.40
10250.00	91.990	311.540	7024.90	3478.07	2239.17	-2663.30	1754836.19	14431994.50	39°44'20.793"N	80°35'35.723"W	3479.52	310.055	0.45	0.13	0.43
10341.00	91.810	310.390	7021.88	3568.91	2298.79	-2731.98	1754767.54	14432054.10	39°44'21.385"N	80°35'35.599"W	3570.45	310.079	1.28	-0.20	-1.26
10431.00	91.780	311.780	7019.26	3659.96	2357.91	-2799.78	1754699.76	14432113.19	39°44'21.972"N	80°35'36.463"W	3660.39	310.103	1.54	-0.03	1.54
10522.00	91.780	312.270	7016.94	3749.91	2418.80	-2867.35	1754632.22	14432174.06	39°44'22.577"N	80°35'37.324"W	3751.30	310.150	0.54	0.00	0.54
10612.00	91.690	313.060	7013.51	3839.86	2479.76	-2933.49	1754566.10	14432235.00	39°44'23.182"N	80°35'38.168"W	3841.17	310.209	0.88	-0.10	0.88
10703.00	91.840	312.280	7010.71	3930.80	2541.41	-3000.37	1754499.25	14432296.63	39°44'23.795"N	80°35'39.020"W	3932.05	310.266	0.87	0.16	-0.86



Southwestern Energy

# Actual Wellpath Report

Yocum MSH 3H AWP Proj: 18470'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWP
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 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)
10793.00	91.840	313.320	7007.82	4020.73	2602.53	-3066.37	17544333.27	14432357.72	39°44'24.402"N	80°35'39.862"W	4021.91	310.322	1.15	0.00	1.16
10883.00	91.780	315.140	7004.97	4110.60	2665.27	-3130.83	17543688.84	14432420.44	39°44'25.025"N	80°35'40.683"W	4111.66	310.408	2.02	-0.07	2.02
10973.00	91.840	315.150	7002.13	4200.39	2729.04	-3194.27	17543054.42	14432484.18	39°44'25.658"N	80°35'41.492"W	4201.32	310.509	0.07	0.07	0.01
11064.00	92.240	316.470	6998.89	4291.10	2794.25	-3257.66	17542422.06	14432549.37	39°44'26.305"N	80°35'42.299"W	4291.88	310.621	1.51	0.44	1.45
11154.00	92.330	313.280	6995.30	4380.88	2857.69	-3321.38	1754178.36	14432612.78	39°44'26.935"N	80°35'43.111"W	4381.55	310.708	3.54	0.10	-3.54
11244.00	92.210	312.120	6991.74	4470.79	2918.68	-3387.47	1754112.30	14432673.74	39°44'27.540"N	80°35'43.954"W	4471.42	310.749	1.29	-0.13	-1.29
11334.00	92.180	313.000	6988.29	4560.72	2979.50	-3453.71	1754046.08	14432734.55	39°44'28.144"N	80°35'44.798"W	4561.31	310.784	0.98	-0.03	0.98
11425.00	92.180	314.630	6984.84	4651.59	3042.46	-3519.33	1753980.49	14432797.48	39°44'28.770"N	80°35'45.634"W	4652.12	310.843	1.79	0.00	1.79
11515.00	92.390	315.110	6981.24	4741.38	3105.90	-3583.06	1753916.79	14432860.90	39°44'29.399"N	80°35'46.447"W	4741.83	310.920	0.58	0.23	0.53
11606.00	92.580	314.510	6977.30	4832.16	3169.98	-3647.56	1753852.31	14432924.95	39°44'30.035"N	80°35'47.269"W	4832.54	310.993	0.69	0.21	-0.66
11696.00	92.390	314.160	6973.39	4921.98	3232.81	-3711.87	1753788.02	14432987.76	39°44'30.659"N	80°35'48.088"W	4922.30	311.054	0.44	-0.21	-0.39
11787.00	92.330	310.850	6969.65	5012.88	3294.24	-3778.89	1753721.03	14433049.16	39°44'31.269"N	80°35'48.943"W	5013.18	311.080	3.63	-0.07	-3.64
11877.00	92.550	311.840	6965.81	5102.80	3353.64	-3846.40	1753653.55	14433108.53	39°44'31.859"N	80°35'49.804"W	5103.10	311.085	1.13	0.24	1.10
11968.00	92.520	312.090	6961.79	5193.71	3414.43	-3913.99	1753585.98	14433169.30	39°44'32.463"N	80°35'50.665"W	5194.00	311.100	0.28	-0.03	0.27
12058.00	92.490	312.710	6957.85	5283.61	3475.05	-3980.39	1753519.61	14433229.91	39°44'33.065"N	80°35'51.512"W	5283.89	311.122	0.69	-0.03	0.69
12148.00	92.460	312.760	6953.97	5373.52	3536.07	-4046.43	1753453.59	14433290.90	39°44'33.671"N	80°35'52.354"W	5373.77	311.149	0.06	-0.03	0.06
12239.00	92.520	313.460	6950.01	5464.40	3598.20	-4112.81	1753387.24	14433353.01	39°44'34.288"N	80°35'53.200"W	5464.63	311.182	0.77	0.07	0.77
12329.00	92.520	311.820	6946.06	5554.30	3659.11	-4178.95	1753321.13	14433413.89	39°44'34.893"N	80°35'54.043"W	5554.52	311.206	1.82	0.00	-1.82
12419.00	92.550	312.880	6942.08	5644.21	3719.68	-4245.39	1753254.71	14433474.43	39°44'35.494"N	80°35'54.890"W	5644.41	311.224	1.18	0.03	1.18
12510.00	92.490	312.700	6938.08	5735.10	3781.43	-4312.11	1753188.02	14433536.17	39°44'36.108"N	80°35'55.741"W	5735.29	311.249	0.21	-0.07	-0.20
12600.00	92.490	311.780	6934.17	5825.01	3841.88	-4378.68	1753121.47	14433595.59	39°44'36.708"N	80°35'56.590"W	5825.10	311.264	1.02	0.00	-1.02
12691.00	92.490	311.330	6930.21	5915.92	3902.18	-4446.78	1753055.48	14433656.87	39°44'37.307"N	80°35'57.457"W	5916.10	311.268	0.49	0.00	-0.49
12781.00	92.520	310.240	6926.28	6005.83	3960.92	-4514.79	1752985.42	14433715.58	39°44'37.890"N	80°35'58.325"W	6006.01	311.261	1.21	0.03	-1.21
12871.00	92.420	310.930	6922.40	6095.72	4019.41	-4583.07	1752917.16	14433774.06	39°44'38.472"N	80°35'59.196"W	6095.92	311.251	0.77	-0.11	0.77
12961.00	92.550	312.950	6918.50	6185.63	4079.51	-4649.95	1752850.31	14433834.12	39°44'39.068"N	80°36'00.049"W	6185.82	311.261	2.25	0.14	2.24
13051.00	92.420	313.760	6914.59	6275.51	4141.23	-4715.33	1752784.95	14433895.83	39°44'39.681"N	80°36'00.882"W	6275.68	311.291	0.91	-0.14	0.90
13142.00	92.420	312.310	6910.75	6366.40	4203.28	-4781.78	1752718.52	14433957.85	39°44'40.296"N	80°36'01.729"W	6366.55	311.316	1.59	0.00	-1.59
13232.00	91.900	311.850	6907.36	6456.34	4263.55	-4848.54	1752651.80	14434018.10	39°44'40.896"N	80°36'02.561"W	6456.48	311.327	0.77	-0.58	-0.51
13322.00	92.330	313.600	6904.04	6546.26	4324.57	-4914.60	1752585.76	14434079.09	39°44'41.502"N	80°36'03.423"W	6546.39	311.346	2.00	0.48	1.94
13413.00	92.360	313.200	6900.31	6637.14	4387.04	-4980.67	1752519.72	14434141.54	39°44'42.122"N	80°36'04.265"W	6637.26	311.374	0.44	0.03	-0.44



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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWB
Facility	Yocum MSH Pad		

## WELLPATH DATA (207 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)
13503.00	92.240	313.020	6896.70	6727.04	4448.50	-5046.32	1752454.09	14434202.98	39°44'42.73"N	80°36'05.102"W	6727.14	311.397	0.24	-0.13	-0.20
13594.00	92.180	311.620	6893.19	6817.97	4509.72	-5113.55	1752386.89	14434264.17	39°44'43.340"N	80°36'05.959"W	6818.06	311.410	1.54	-0.07	-1.54
13684.00	92.180	311.570	6889.77	6907.90	4569.42	-5180.81	1752319.65	14434323.85	39°44'43.933"N	80°36'06.817"W	6908.00	311.412	0.06	0.00	-0.06
13774.00	92.390	311.300	6886.18	6997.83	4628.93	-5248.23	1752252.26	14434383.34	39°44'44.525"N	80°36'07.677"W	6997.92	311.412	0.38	0.23	-0.30
13864.00	92.270	310.530	6882.52	7087.75	4687.83	-5316.18	1752184.33	14434442.41	39°44'45.110"N	80°36'08.543"W	7087.85	311.406	0.87	-0.13	-0.86
13955.00	92.390	310.820	6878.82	7178.66	4747.09	-5385.14	1752115.40	14434501.45	39°44'45.698"N	80°36'09.423"W	7178.76	311.397	0.34	0.13	0.32
14045.00	92.270	310.560	6875.16	7268.57	4805.72	-5453.33	1752047.24	14434560.06	39°44'46.281"N	80°36'10.292"W	7268.68	311.388	0.32	-0.13	-0.29
14135.00	92.180	310.100	6871.67	7358.47	4863.92	-5521.89	1751978.71	14434618.24	39°44'46.859"N	80°36'11.167"W	7358.60	311.375	0.52	-0.10	-0.51
14226.00	92.580	308.890	6867.89	7449.32	4921.75	-5592.05	1751908.57	14434676.04	39°44'47.433"N	80°36'12.062"W	7449.47	311.352	1.40	0.44	-1.33
14316.00	91.160	313.340	6864.95	7539.25	4980.88	-5659.80	1751840.85	14434735.15	39°44'48.021"N	80°36'12.926"W	7539.40	311.349	5.19	-1.58	4.94
14407.00	91.160	312.240	6863.11	7630.21	5042.69	-5726.56	1751774.11	14434796.93	39°44'48.635"N	80°36'13.777"W	7630.35	311.366	1.21	0.00	-1.21
14497.00	91.160	311.990	6861.29	7720.19	5103.03	-5793.31	1751707.39	14434857.26	39°44'49.234"N	80°36'14.628"W	7720.32	311.375	0.28	0.00	-0.28
14587.00	91.410	312.760	6859.27	7810.16	5163.67	-5859.78	1751640.94	14434917.87	39°44'49.836"N	80°36'15.476"W	7810.28	311.387	0.90	0.28	0.86
14678.00	91.440	313.290	6857.01	7901.11	5225.75	-5926.29	1751574.46	14434979.92	39°44'50.452"N	80°36'16.323"W	7901.22	311.406	0.58	0.03	0.58
14768.00	91.410	314.710	6854.77	7991.01	5288.24	-5991.00	1751509.77	14435042.40	39°44'51.073"N	80°36'17.149"W	7991.10	311.435	1.58	-0.03	1.58
14858.00	91.440	314.250	6852.53	8080.87	5351.28	-6055.20	1751445.60	14435105.41	39°44'51.699"N	80°36'17.967"W	8080.94	311.469	0.51	0.03	-0.51
14948.00	91.690	314.150	6850.07	8170.75	5414.00	-6119.70	1751381.13	14435168.11	39°44'52.321"N	80°36'18.789"W	8170.81	311.499	0.30	0.28	-0.11
15039.00	91.380	312.790	6847.63	8261.68	5476.59	-6185.71	1751315.14	14435230.67	39°44'52.943"N	80°36'19.631"W	8261.72	311.520	1.53	-0.34	-1.49
15129.00	91.530	310.930	6845.35	8351.64	5536.62	-6252.72	1751248.16	14435290.68	39°44'53.539"N	80°36'20.485"W	8351.69	311.524	2.07	0.17	-2.07
15219.00	91.250	309.870	6843.17	8441.59	5594.93	-6321.24	1751179.98	14435348.97	39°44'54.118"N	80°36'21.359"W	8441.64	311.512	1.22	-0.31	-1.18
15310.00	91.190	309.300	6841.23	8532.91	5652.91	-6391.35	1751109.58	14435406.92	39°44'54.694"N	80°36'22.253"W	8532.57	311.492	0.63	-0.07	-0.63
15400.00	91.290	310.790	6839.28	8622.45	5710.80	-6460.23	1751040.72	14435464.79	39°44'55.269"N	80°36'23.132"W	8622.52	311.476	1.66	0.11	1.66
15490.00	91.350	310.380	6837.21	8712.40	5769.33	-6528.56	1750972.42	14435523.30	39°44'55.851"N	80°36'24.004"W	8712.48	311.467	0.46	0.07	-0.46
15580.00	91.250	310.400	6835.17	8802.36	5827.64	-6597.09	1750903.92	14435581.58	39°44'56.430"N	80°36'24.878"W	8802.44	311.456	0.11	-0.11	0.02
15671.00	91.220	312.800	6833.20	8893.33	5888.04	-6665.12	1750835.91	14435641.96	39°44'57.030"N	80°36'25.745"W	8893.42	311.458	2.64	-0.03	2.64
15761.00	91.250	313.930	6831.26	8983.27	5949.82	-6730.54	1750770.52	14435704.52	39°44'57.253"N	80°36'26.579"W	8983.34	311.477	1.26	0.03	1.26
15849.00	91.160	314.340	6829.41	9071.17	6011.09	-6793.68	1750707.41	14435763.96	39°44'58.241"N	80°36'27.384"W	9071.23	311.503	0.48	-0.10	0.47
15940.00	91.290	314.390	6827.47	9162.05	6074.70	-6858.72	1750642.39	14435822.55	39°44'58.883"N	80°36'28.213"W	9162.10	311.531	0.15	0.14	0.05
16030.00	91.380	314.240	6825.37	9251.94	6137.56	-6923.10	1750578.04	14435881.38	39°44'59.507"N	80°36'29.034"W	9251.97	311.558	0.19	0.10	-0.17
16121.00	91.590	311.540	6823.01	9342.88	6199.46	-6989.74	1750511.42	14435953.27	39°45'00.121"N	80°36'29.884"W	9342.90	311.571	2.97	0.23	-2.97



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# Actual Wellpath Report

Yocum MSH 3H AWP Proj: 18470'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY		Slot	Slot 3H
Area	Marshall County, WV		Well	Yocum MSH 3H
Field	Marshall		Wellbore	Yocum MSH 3H AWP
Facility	Yocum MSH Pad			

## WELLPATH DATA (207 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)
16211.00	91.250	310.090	6820.78	9432.84	6258.27	-7057.83	1750443.35	14436012.05	39°45'00.706"N	80°36'30.752"W	9432.87	311.564	1.65	-0.38	-1.61
16302.00	91.190	310.350	6818.84	9523.78	6317.02	-7127.30	1750373.91	14436070.77	39°45'01.289"N	80°36'31.638"W	9523.82	311.551	0.29	-0.07	0.29
16390.00	91.220	310.930	6816.99	9611.75	6374.32	-7194.06	1750307.18	14436128.05	39°45'01.858"N	80°36'32.490"W	9611.79	311.543	0.66	0.03	0.66
16480.00	91.100	309.720	6815.17	9701.70	6432.55	-7262.66	1750238.60	14436186.26	39°45'02.437"N	80°36'33.365"W	9701.75	311.531	1.35	-0.13	-1.34
16570.00	89.810	308.050	6814.46	9791.59	6489.04	-7332.71	1750168.58	14436242.73	39°45'02.998"N	80°36'34.259"W	9791.65	311.507	2.34	-1.43	-1.86
16661.00	89.930	310.870	6814.66	9882.51	6546.87	-7402.97	1750098.36	14436300.54	39°45'03.573"N	80°36'35.155"W	9882.58	311.488	3.10	0.13	3.10
16751.00	89.870	313.710	6814.82	9972.49	6607.42	-7469.54	1750031.81	14436361.07	39°45'04.174"N	80°36'36.004"W	9972.56	311.495	3.16	-0.07	3.16
16842.00	90.020	313.890	6814.91	10063.43	6670.41	-7535.22	1749966.16	14436424.03	39°45'04.799"N	80°36'36.841"W	10063.49	311.516	0.26	0.16	0.20
16933.00	89.900	313.320	6814.97	10154.38	6733.17	-7601.11	1749900.29	14436486.76	39°45'05.422"N	80°36'37.681"W	10154.43	311.535	0.64	-0.13	-0.63
17024.00	89.990	313.320	6815.06	10245.35	6795.60	-7667.32	1749834.11	14436549.17	39°45'06.042"N	80°36'38.526"W	10245.39	311.551	0.10	0.10	0.00
17115.00	90.050	314.320	6815.03	10336.28	6858.61	-7732.97	1749768.48	14436612.15	39°45'06.668"N	80°36'39.363"W	10336.31	311.571	1.10	0.07	1.10
17204.00	90.020	313.840	6814.97	10425.21	6920.52	-7796.91	1749704.57	14436674.04	39°45'07.282"N	80°36'40.178"W	10425.23	311.592	0.54	-0.03	-0.54
17295.00	89.990	312.940	6814.96	10516.17	6983.03	-7863.04	1749638.46	14436736.53	39°45'07.903"N	80°36'41.021"W	10516.18	311.608	0.99	0.17	-0.99
17385.00	89.900	313.000	6815.05	10606.14	7044.38	-7928.89	1749572.63	14436797.85	39°45'08.512"N	80°36'41.861"W	10606.16	311.619	0.12	-0.10	0.07
17476.00	90.080	313.930	6815.07	10697.10	7106.98	-7994.94	1749506.61	14436860.43	39°45'09.133"N	80°36'42.703"W	10697.11	311.635	1.04	0.20	1.02
17566.00	90.120	314.970	6814.91	10787.00	7170.00	-8059.18	1749442.39	14436923.43	39°45'09.759"N	80°36'43.522"W	10787.00	311.658	1.16	0.04	1.16
17657.00	90.180	315.110	6814.67	10877.84	7234.40	-8123.48	1749378.11	14436987.80	39°45'10.388"N	80°36'44.342"W	10877.84	311.687	0.17	0.07	0.15
17747.00	90.520	314.590	6814.12	10967.71	7297.87	-8187.29	1749314.33	14437051.24	39°45'11.028"N	80°36'45.155"W	10967.71	311.713	0.69	0.38	-0.58
17838.00	90.550	313.100	6813.27	11058.64	7360.90	-8252.91	1749248.73	14437114.25	39°45'11.654"N	80°36'45.992"W	11058.64	311.730	1.64	0.03	-1.64
17929.00	90.450	311.160	6812.47	11149.63	7421.94	-8320.40	1749181.28	14437175.27	39°45'12.260"N	80°36'46.853"W	11149.63	311.734	2.13	-0.11	-2.13
18019.00	90.450	311.660	6811.78	11239.62	7481.47	-8387.89	1749113.81	14437234.37	39°45'12.851"N	80°36'47.714"W	11239.62	311.731	0.56	0.00	0.56
18110.00	90.360	311.800	6811.13	11330.62	7542.04	-8455.80	1749045.92	14437295.32	39°45'13.453"N	80°36'48.580"W	11330.62	311.731	0.18	-0.10	0.15
18200.00	90.300	311.640	6810.61	11420.62	7601.93	-8522.98	1748978.77	14437355.19	39°45'14.047"N	80°36'49.436"W	11420.62	311.731	0.19	-0.07	-0.18
18291.00	90.330	310.820	6810.11	11511.61	7661.90	-8591.42	1748910.36	14437415.14	39°45'14.643"N	80°36'50.309"W	11511.61	311.727	0.90	0.03	-0.90
18382.00	90.390	310.790	6809.54	11602.60	7721.37	-8660.30	1748841.51	14437474.58	39°45'15.234"N	80°36'51.188"W	11602.60	311.720	0.07	0.07	-0.03
18445.00	90.300	310.270	6809.16	11665.58	7762.31	-8708.18	1748793.64	14437515.51	39°45'15.640"N	80°36'51.799"W	11665.58	311.713	0.84	-0.14	-0.83
18470.00	90.300	310.270	6809.03	11690.58	7778.47	-8727.26	1748774.58	14437531.66	39°45'15.801"N	80°36'52.042"W	11690.58	311.710	0.00	0.00	0.00





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# Actual Wellpath Report

Yocum MSH 3H AWP Proj: 18470'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWP
Facility	Yocum MSH Pad		

## HOLE & CASING SECTIONS - Ref Wellbore: Yocum MSH 3H AWP Ref Wellpath: Yocum MSH 3H AWP Proj: 18470'

String/Diameter	Start MID [ft]	End MID [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]
17.5in Open Hole	26.00	537.00	511.00	26.00	537.00	0.00	0.00	-1.53	0.42
13.375in Casing Surface	26.00	537.00	511.00	26.00	537.00	0.00	0.00	-1.53	0.42
12.25in Open Hole	537.00	2478.00	1941.00	537.00	2477.87	-1.53	0.42	10.97	11.04
9.625in Casing Intermediate	26.00	2478.00	2452.00	26.00	2477.87	0.00	0.00	10.97	11.04
8.75in Open Hole	2478.00	6260.00	3782.00	2477.87	6259.36	10.97	-6.43	-6.43	3.04
8.5in Open Hole	6260.00	18470.00	12210.00	6259.36	6809.03	-6.43	3.04	7778.47	-8727.26
5.5in Casing Production	26.00	18470.00	18444.00	26.00	6809.03	0.00	0.00	7778.47	-8727.26

## TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Yocum MSH 3H BHL Rev-7	6805.77	7829.03	-8808.12	1748693.74	14437582.20	39°45'16.304"N	80°36'53.075"W	point
Yocum MSH 3H LP Rev-5	7091.00	415.44	-598.59	1756900.11	14430171.47	39°44'02.676"N	80°35'08.401"W	point

## WELLPATH COMPOSITION - Ref Wellbore: Yocum MSH 3H AWP Ref Wellpath: Yocum MSH 3H AWP Proj: 18470'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	483.66	OWSG MWD rev2 + HRGM	01 Premier MWD HRGM <17 1/2"> (181'-483.66')	Yocum MSH 3H AWP
483.66	2420.50	OWSG MWD rev2 + HRGM + Multi-Station Correction	02 Premier MWD HRGM + MS <12 1/4"> (609.94'-2420.5')	Yocum MSH 3H AWP
2420.50	6195.00	OWSG MWD rev2 + HRGM + Multi-Station Correction	03 Premier MWD HRGM + MS <8 3/4"> (2519.23'-6195')	Yocum MSH 3H AWP
6195.00	18445.00	OWSG MWD rev2 + HRGM + Multi-Station Correction	04 AT Curve + MSA <8 1/2"> (6274'-18445')	Yocum MSH 3H AWP
18445.00	18470.00	Blind Drilling (std)	Projection to bit	Yocum MSH 3H AWP



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Yocum MSH 3H AWP Proj: 18470'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 3H
Area	Marshall County, WV	Well	Yocum MSH 3H
Field	Marshall	Wellbore	Yocum MSH 3H AWP
Facility	Yocum MSH Pad		

## COMMENTS

**Wellpath general comments**  
 API: 47-051-02124-0000  
 BH Job #: 109574838  
 Rig: SDC 46  
 Duration: 02/28/2019 - 03/04/2019