

SOUTHWESTERN ENERGY

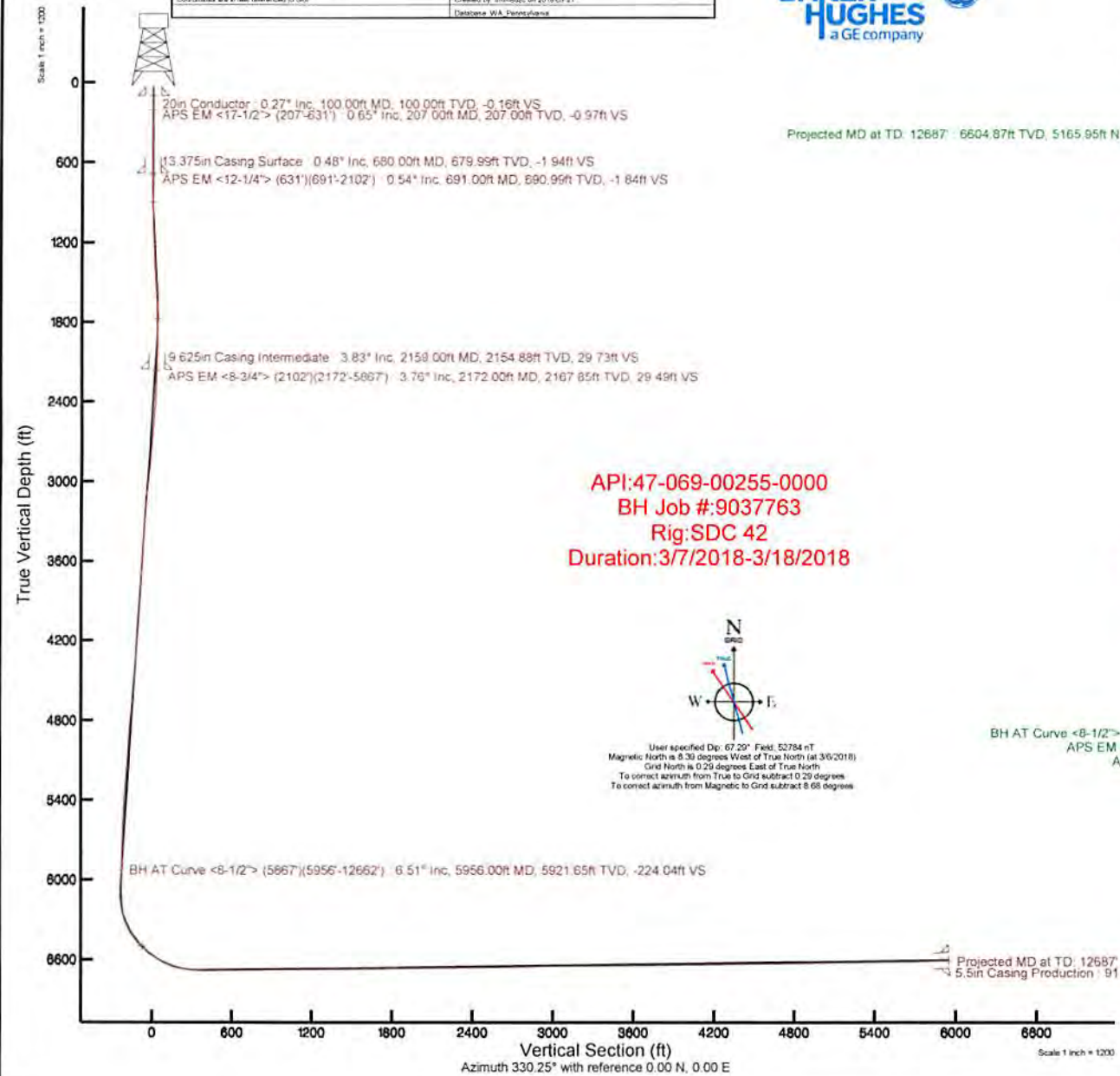
Location: Ohio County, WV
 Field: Ohio
 Facility: Esther Weeks OHI Pad

Slot: Slot #3H
 Well: Esther Weeks OHI 3H
 Wellbore: Esther Weeks OHI 3H PWB

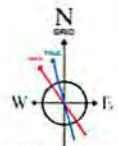


Location Information						
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
Esther Weeks OHI Pad		1765685 170	14536300 640	40°01'31.473"N	80°33'09.104"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #3H	2.77	-19.12	1765686 050	14536303 410	40°01'31.502"N	80°33'09.349"W
SDC 42 (RKB) to Ground level (At Slot: Slot #3H)				26ft		
Mean Sea Level to Ground level (At Slot: Slot #3H)				-1256.73ft		
SDC 42 (RKB) to Mean Sea Level				1282.73ft		

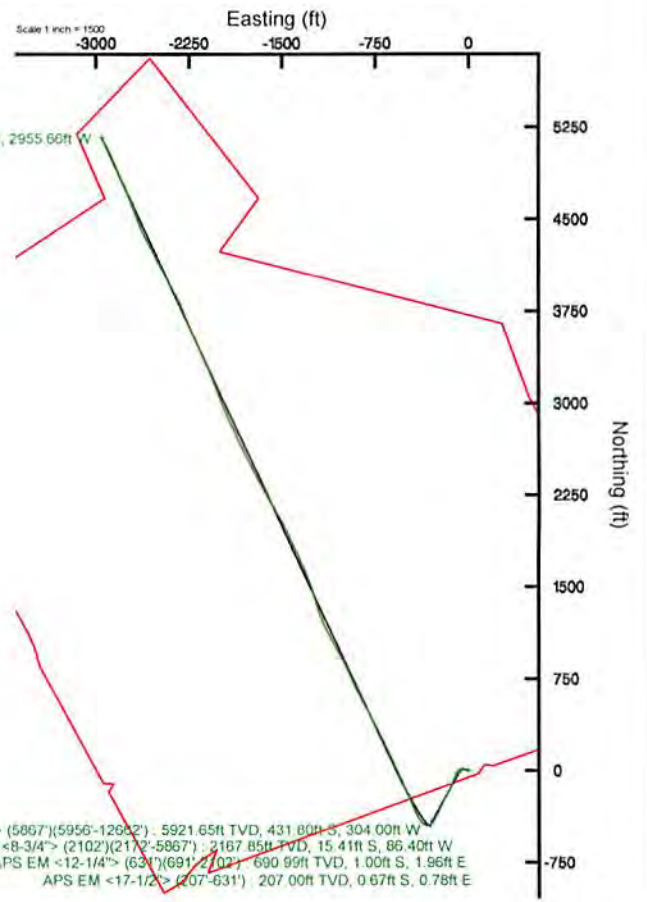
Plot reference wellpath is Esther Weeks OHI 3H PWB Rev A 0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 42 (RKB)	* - Wellpath was transformed from a different geoidic datum
Measured depths are referenced to SDC 42 (RKB)	North Reference: Grid north
SDC 42 (RKB) to Mean Sea Level: 1282.73 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: Slot #3H): 1,256.73 feet	Depths are in feet
Coordinates are in feet referenced to Grid	Created by: thomson on 2018-03-21
	Dataverse: WA - Pennsylvania



API:47-069-00255-0000
 BH Job #:9037763
 Rig:SDC 42
 Duration:3/7/2018-3/18/2018



User specified Dip: 67.29° Field: 52784 nT
 Magnetic North is 8.30 degrees West of True North (at 3/6/2018)
 Grid North is 0.29 degrees East of True North
 To correct azimuth from True to Grid subtract 0.29 degrees
 To correct azimuth from Magnetic to Grid subtract 8.68 degrees



BH AT Curve <8-1/2> (5867°)(5956'-12662') : 5921.65ft TVD, 431.80ft S, 304.00ft W
 APS EM <8-3/4> (2102°)(2172'-5867') : 2167.85ft TVD, 15.41ft S, 86.40ft W
 APS EM <12-1/4> (631°)(691'-2102') : 690.99ft TVD, 1.00ft S, 1.96ft E
 APS EM <17-1/2> (207'-631') : 207.00ft TVD, 0.67ft S, 0.78ft E

Projected MD at TD: 12687' : 91.88° Inc, 12687.00ft MD, 6604.87ft TVD, 5951.72ft VS
 5.5in Casing Production : 91.88° Inc, 12687.00ft MD, 6604.87ft TVD, 5951.72ft VS

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWB
Facility	Esther Weeks OHI Pad		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Thomsuzc
Scale	0.999618	Report Generated	3/21/2018 at 12:17:36 PM
Convergence at slot	0.29° East	Database/Source file	WA_Pennsylvania/Esther_Weeks_OHI_3H_AWP_Proj_12687_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2.77	-19.12	1765666.06	14536303.41	40°01'31.502"N	80°33'09.349"W
Facility Reference Pt			1765685.17	14536300.64	40°01'31.473"N	80°33'09.104"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM			
Calculation method	Minimum curvature	SDC 42 (RKB) to Facility Vertical Datum	1282.73ft
Horizontal Reference Pt	Slot	SDC 42 (RKB) to Mean Sea Level	1282.73ft
Vertical Reference Pt	SDC 42 (RKB)	SDC 42 (RKB) to Ground Level at Slot (Slot #3H)	26.00ft
MD Reference Pt	SDC 42 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	330.25°

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWB
Facility	Esther Weeks OHI Pad		

WELLPATH DATA (162 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†	0.000	130.920	0.00	0.00	0.00	0.00	1765666.06	14536303.41	40°01'31.502"N	80°33'09.349"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	130.920	26.00	0.00	0.00	0.00	1765666.06	14536303.41	40°01'31.502"N	80°33'09.349"W	0.00	0.000	0.00	0.00	0.00
207.00	0.650	130.920	207.00	-0.97	-0.67	0.78	1765666.84	14536302.74	40°01'31.495"N	80°33'09.339"W	1.03	130.920	0.36	0.36	72.33
297.00	0.530	131.420	296.99	-1.84	-1.28	1.47	1765667.53	14536302.13	40°01'31.489"N	80°33'09.330"W	1.95	131.027	0.13	-0.13	0.56
381.00	0.270	153.160	380.99	-2.41	-1.72	1.85	1765667.91	14536301.69	40°01'31.485"N	80°33'09.325"W	2.53	132.778	0.35	-0.31	25.88
465.00	0.300	39.460	464.99	-2.53	-1.72	2.08	1765668.14	14536301.69	40°01'31.485"N	80°33'09.322"W	2.70	129.585	0.57	0.04	-135.36
547.00	0.060	44.940	546.99	-2.44	-1.53	2.25	1765668.31	14536301.88	40°01'31.487"N	80°33'09.320"W	2.72	124.152	0.29	-0.29	6.68
631.00	0.260	341.120	630.99	-2.24	-1.32	2.22	1765668.28	14536302.10	40°01'31.489"N	80°33'09.321"W	2.58	120.645	0.29	0.24	-75.98
691.00	0.540	310.140	690.99	-1.84	-1.00	1.96	1765668.02	14536302.41	40°01'31.492"N	80°33'09.324"W	2.20	117.130	0.57	0.47	-51.63
700.00	0.390	333.030	699.99	-1.77	-0.95	1.91	1765667.97	14536302.46	40°01'31.492"N	80°33'09.325"W	2.14	116.392	2.62	-1.67	254.33
725.00	0.630	315.480	724.99	-1.56	-0.78	1.78	1765667.84	14536302.63	40°01'31.494"N	80°33'09.326"W	1.94	113.564	1.13	0.96	-70.20
777.00	0.840	306.470	776.98	-0.93	-0.35	1.27	1765667.33	14536303.07	40°01'31.498"N	80°33'09.333"W	1.32	105.189	0.46	0.40	-17.33
859.00	1.210	323.500	858.97	0.48	0.71	0.27	1765666.33	14536304.12	40°01'31.509"N	80°33'09.346"W	0.76	21.072	0.58	0.45	20.77
943.00	1.600	303.060	942.94	2.40	2.06	-1.24	1765664.82	14536305.47	40°01'31.522"N	80°33'09.365"W	2.40	329.014	0.75	0.46	-24.33
1026.00	1.950	298.290	1025.90	4.63	3.36	-3.45	1765662.61	14536306.77	40°01'31.535"N	80°33'09.393"W	4.82	314.243	0.46	0.42	-5.75
1110.00	2.590	298.560	1109.84	7.46	4.95	-6.38	1765659.68	14536308.36	40°01'31.551"N	80°33'09.431"W	8.07	307.799	0.76	0.76	0.32
1192.00	4.260	292.240	1191.69	11.44	6.99	-10.82	1765655.24	14536310.39	40°01'31.571"N	80°33'09.488"W	12.88	302.836	2.08	2.04	-7.71
1275.00	3.560	276.970	1274.50	15.41	8.47	-16.24	1765649.83	14536311.87	40°01'31.586"N	80°33'09.557"W	18.31	297.537	1.50	-0.84	-18.40
1359.00	3.790	277.470	1358.32	18.64	9.14	-21.58	1765644.49	14536312.55	40°01'31.593"N	80°33'09.626"W	23.43	292.963	0.28	0.27	0.60
1443.00	4.920	271.080	1442.08	22.17	9.57	-27.93	1765638.14	14536312.98	40°01'31.598"N	80°33'09.708"W	29.53	288.915	1.46	1.35	-7.61
1527.00	5.920	279.010	1525.70	26.73	10.32	-35.81	1765630.26	14536313.72	40°01'31.605"N	80°33'09.809"W	37.27	286.072	1.48	1.19	9.44
1611.00	5.390	270.610	1609.30	31.43	11.04	-44.04	1765622.04	14536314.44	40°01'31.613"N	80°33'09.914"W	45.40	284.072	1.17	-0.63	-10.00
1694.00	5.850	258.190	1691.90	34.71	10.21	-52.07	1765614.01	14536313.62	40°01'31.605"N	80°33'10.018"W	53.07	281.097	1.56	0.55	-14.96
1776.00	5.830	246.640	1773.48	36.46	7.71	-59.99	1765606.10	14536311.11	40°01'31.581"N	80°33'10.120"W	60.48	277.321	1.43	-0.02	-14.09
1859.00	6.000	232.330	1856.04	36.33	3.38	-67.29	1765598.79	14536306.79	40°01'31.539"N	80°33'10.214"W	67.38	272.879	1.78	0.20	-17.24
1943.00	5.410	230.960	1939.62	35.09	-1.79	-73.84	1765592.25	14536301.62	40°01'31.488"N	80°33'10.298"W	73.86	268.609	0.72	-0.70	-1.63
2026.00	5.130	226.280	2022.27	33.56	-6.82	-79.56	1765586.53	14536296.59	40°01'31.438"N	80°33'10.372"W	79.86	265.099	0.62	-0.34	-5.64
2102.00	4.230	210.690	2098.02	31.35	-11.58	-83.45	1765582.64	14536291.83	40°01'31.391"N	80°33'10.423"W	84.25	262.099	2.04	-1.18	-20.51
2172.00	3.760	225.360	2167.85	29.49	-15.41	-86.40	1765579.69	14536288.00	40°01'31.354"N	80°33'10.461"W	87.77	259.885	1.60	-0.67	20.96
2197.00	3.560	223.920	2192.80	29.06	-16.55	-87.52	1765578.57	14536286.87	40°01'31.343"N	80°33'10.475"W	89.07	259.293	0.88	-0.80	-5.76

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWB
Facility	Esther Weeks OHI Pad		

WELLPATH DATA (162 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]
2281.00	5.210	220.930	2276.55	27.07	-21.31	-91.83	1765574.26	14536282.11	40°01'31.296"N	80°33'10.531"W	94.27	256.936	1.98	1.96	-3.56
2366.00	7.390	217.340	2361.04	23.66	-28.57	-97.68	1765568.42	14536274.85	40°01'31.224"N	80°33'10.607"W	101.77	253.695	2.61	2.56	-4.22
2449.00	8.390	208.860	2443.25	18.43	-38.12	-103.84	1765562.26	14536265.31	40°01'31.130"N	80°33'10.686"W	110.61	249.841	1.85	1.20	-10.22
2531.00	8.250	204.850	2524.39	11.91	-48.70	-109.20	1765556.91	14536254.73	40°01'31.026"N	80°33'10.756"W	119.56	245.965	0.73	-0.17	-4.89
2615.00	7.850	199.610	2607.56	4.68	-59.57	-113.65	1765552.45	14536243.86	40°01'30.919"N	80°33'10.814"W	128.32	242.339	0.99	-0.48	-6.24
2699.00	7.690	197.930	2690.79	-2.84	-70.32	-117.31	1765548.80	14536233.12	40°01'30.813"N	80°33'10.862"W	136.77	239.060	0.33	-0.19	-2.00
2783.00	8.810	200.630	2773.92	-10.73	-81.69	-121.31	1765544.80	14536221.75	40°01'30.701"N	80°33'10.914"W	146.25	236.043	1.41	1.33	3.21
2867.00	8.420	199.750	2856.97	-18.82	-93.50	-125.65	1765540.46	14536209.95	40°01'30.584"N	80°33'10.970"W	156.62	233.347	0.49	-0.46	-1.05
2952.00	8.000	198.430	2941.10	-26.81	-104.97	-129.62	1765536.49	14536198.48	40°01'30.471"N	80°33'11.022"W	166.79	231.000	0.54	-0.49	-1.55
3033.00	7.640	197.330	3021.35	-34.23	-115.45	-133.01	1765533.10	14536188.00	40°01'30.367"N	80°33'11.066"W	176.13	229.042	0.48	-0.44	-1.36
3116.00	7.220	202.700	3103.65	-41.17	-125.53	-136.67	1765529.45	14536177.93	40°01'30.268"N	80°33'11.114"W	185.57	227.432	0.98	-0.51	6.47
3200.00	7.070	202.840	3187.00	-47.53	-135.17	-140.71	1765525.40	14536168.30	40°01'30.173"N	80°33'11.167"W	195.11	226.151	0.18	-0.18	0.17
3283.00	7.500	212.370	3269.33	-53.16	-144.45	-145.59	1765520.52	14536159.02	40°01'30.082"N	80°33'11.230"W	205.09	225.226	1.54	0.52	11.48
3367.00	7.370	213.020	3352.63	-58.19	-153.60	-151.46	1765514.65	14536149.87	40°01'29.991"N	80°33'11.306"W	215.71	224.599	0.18	-0.15	0.77
3449.00	6.880	210.100	3433.99	-63.07	-162.26	-156.79	1765509.33	14536141.22	40°01'29.906"N	80°33'11.375"W	225.63	224.019	0.74	-0.60	-3.56
3534.00	6.640	207.260	3518.40	-68.30	-171.03	-161.60	1765504.53	14536132.45	40°01'29.820"N	80°33'11.437"W	235.30	223.376	0.48	-0.28	-3.34
3617.00	6.440	207.610	3600.86	-73.42	-179.42	-165.95	1765500.17	14536124.06	40°01'29.737"N	80°33'11.494"W	244.40	222.767	0.25	-0.24	0.42
3699.00	5.740	207.510	3682.40	-78.12	-187.13	-169.98	1765496.15	14536116.35	40°01'29.661"N	80°33'11.546"W	252.80	222.250	0.85	-0.85	-0.12
3782.00	5.870	205.190	3764.97	-82.80	-194.65	-173.70	1765492.43	14536108.83	40°01'29.587"N	80°33'11.594"W	260.89	221.745	0.32	0.16	-2.80
3864.00	7.000	211.040	3846.46	-87.65	-202.73	-178.06	1765488.07	14536100.76	40°01'29.507"N	80°33'11.651"W	269.82	221.294	1.59	1.38	7.13
3947.00	6.860	207.850	3928.85	-92.78	-211.44	-182.99	1765483.14	14536092.05	40°01'29.421"N	80°33'11.715"W	279.63	220.873	0.49	-0.17	-3.84
4030.00	6.710	207.950	4011.27	-98.02	-220.11	-187.57	1765478.56	14536083.38	40°01'29.336"N	80°33'11.774"W	289.19	220.437	0.18	-0.18	0.12
4113.00	7.060	206.570	4093.67	-103.44	-228.96	-192.13	1765474.01	14536074.54	40°01'29.249"N	80°33'11.834"W	298.89	220.002	0.47	0.42	-1.66
4197.00	6.930	204.350	4177.05	-109.28	-238.19	-196.53	1765469.61	14536065.31	40°01'29.158"N	80°33'11.891"W	308.80	219.525	0.36	-0.15	-2.64
4280.00	6.960	205.420	4259.44	-115.08	-247.29	-200.75	1765465.39	14536056.21	40°01'29.068"N	80°33'11.946"W	318.52	219.069	0.16	0.04	1.29
4364.00	8.230	206.240	4342.70	-121.35	-257.28	-205.59	1765460.55	14536046.23	40°01'28.969"N	80°33'12.008"W	329.34	218.628	1.52	1.51	0.98
4448.00	8.350	203.070	4425.82	-128.40	-268.29	-210.64	1765455.50	14536035.23	40°01'28.861"N	80°33'12.074"W	341.10	218.137	0.56	0.14	-3.77
4531.00	8.440	200.920	4507.93	-135.91	-279.52	-215.18	1765450.97	14536024.00	40°01'28.750"N	80°33'12.133"W	352.75	217.589	0.39	0.11	-2.59
4615.00	9.140	220.330	4590.96	-142.09	-290.37	-221.70	1765444.45	14536013.15	40°01'28.643"N	80°33'12.218"W	365.33	217.362	3.61	0.83	23.11
4697.00	7.670	203.750	4672.09	-147.56	-300.34	-228.12	1765438.03	14536003.18	40°01'28.545"N	80°33'12.301"W	377.15	217.217	3.44	-1.79	-20.22



Actual Wellpath Report

Esther Weeks OHI 3H AWP Proj: 12687'
Page 4 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWP
Facility	Esther Weeks OHI Pad		

WELLPATH DATA (162 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]
4780.00	7.450	197.490	4754.37	-154.51	-310.55	-231.97	1765434.18	14535992.98	40°01'28.444"N	80°33'12.351"W	387.62	216.758	1.03	-0.27	-7.54
4869.00	7.510	200.220	4842.62	-162.17	-321.51	-235.71	1765430.44	14535982.03	40°01'28.336"N	80°33'12.400"W	398.66	216.247	0.40	0.07	3.07
4953.00	7.510	199.040	4925.90	-169.32	-331.85	-239.40	1765426.75	14535971.69	40°01'28.234"N	80°33'12.448"W	409.19	215.807	0.18	0.00	-1.40
5036.00	7.020	206.290	5008.23	-175.72	-341.52	-243.41	1765422.74	14535962.02	40°01'28.139"N	80°33'12.500"W	419.39	215.479	1.25	-0.59	8.73
5120.00	7.940	213.470	5091.52	-181.20	-350.96	-248.89	1765417.27	14535952.58	40°01'28.046"N	80°33'12.571"W	430.26	215.343	1.56	1.10	8.55
5203.00	7.570	206.780	5173.76	-186.80	-360.63	-254.51	1765411.64	14535942.92	40°01'27.951"N	80°33'12.644"W	441.39	215.213	1.17	-0.45	-8.06
5284.00	8.150	210.650	5254.00	-192.58	-370.33	-259.84	1765406.32	14535933.22	40°01'27.855"N	80°33'12.713"W	452.40	215.056	0.97	0.72	4.78
5367.00	7.300	206.860	5336.24	-198.39	-380.10	-265.23	1765400.94	14535923.46	40°01'27.759"N	80°33'12.783"W	463.48	214.907	1.19	-1.02	-4.57
5449.00	6.340	207.610	5417.66	-203.70	-388.76	-269.68	1765396.49	14535914.80	40°01'27.673"N	80°33'12.841"W	473.14	214.749	1.18	-1.17	0.91
5534.00	6.380	218.320	5502.14	-207.99	-396.62	-274.78	1765391.38	14535906.94	40°01'27.596"N	80°33'12.907"W	482.51	214.715	1.39	0.05	12.60
5618.00	6.020	215.440	5585.65	-211.59	-403.87	-280.23	1765385.94	14535899.69	40°01'27.525"N	80°33'12.977"W	491.57	214.755	0.57	-0.43	-3.43
5700.00	5.740	223.870	5667.22	-214.55	-410.33	-285.56	1765380.60	14535893.24	40°01'27.461"N	80°33'13.046"W	499.92	214.836	1.11	-0.34	10.28
5784.00	6.360	222.260	5750.75	-217.17	-416.80	-291.60	1765374.57	14535886.77	40°01'27.397"N	80°33'13.124"W	508.68	214.978	0.77	0.74	-1.92
5867.00	6.560	218.610	5833.23	-220.34	-423.91	-297.65	1765368.52	14535879.66	40°01'27.327"N	80°33'13.203"W	517.97	215.075	0.55	0.24	-4.40
5956.00	6.510	218.960	5921.65	-224.04	-431.80	-304.00	1765362.18	14535871.77	40°01'27.250"N	80°33'13.285"W	528.08	215.146	0.07	-0.06	0.39
6038.00	6.350	235.750	6003.14	-226.09	-437.97	-310.67	1765355.51	14535865.61	40°01'27.189"N	80°33'13.371"W	536.97	215.350	2.29	-0.20	20.48
6122.00	6.790	243.650	6086.59	-226.16	-442.79	-318.96	1765347.22	14535860.79	40°01'27.142"N	80°33'13.478"W	545.71	215.767	1.20	0.52	9.40
6205.00	7.460	256.650	6168.95	-224.34	-446.21	-328.60	1765337.59	14535857.37	40°01'27.108"N	80°33'13.602"W	554.15	216.369	2.10	0.81	15.66
6288.00	14.680	288.050	6250.42	-215.01	-444.19	-343.88	1765322.32	14535859.39	40°01'27.129"N	80°33'13.798"W	561.75	217.745	11.03	8.70	37.83
6372.00	23.540	309.220	6329.80	-191.40	-430.25	-367.06	1765299.14	14535873.33	40°01'27.268"N	80°33'14.095"W	565.55	220.469	13.23	10.55	25.20
6456.00	32.240	327.410	6404.11	-153.22	-400.65	-392.22	1765273.99	14535902.91	40°01'27.562"N	80°33'14.417"W	560.68	224.391	14.38	10.36	21.65
6539.00	40.730	335.670	6470.82	-104.03	-357.22	-415.36	1765250.86	14535946.33	40°01'27.992"N	80°33'14.711"W	547.84	229.304	11.80	10.23	9.95
6621.00	48.470	337.070	6529.17	-46.83	-304.49	-438.37	1765227.86	14535999.03	40°01'28.514"N	80°33'15.004"W	533.75	235.216	9.51	9.44	1.71
6705.00	57.010	335.560	6579.98	19.59	-243.35	-465.25	1765200.99	14536060.15	40°01'29.120"N	80°33'15.345"W	525.05	242.388	10.27	10.17	-1.80
6747.00	61.850	336.070	6601.33	55.57	-210.37	-480.06	1765186.19	14536093.12	40°01'29.447"N	80°33'15.533"W	524.13	246.336	11.57	11.52	1.21
6789.00	65.140	336.990	6620.07	92.92	-175.90	-495.02	1765171.23	14536127.58	40°01'29.788"N	80°33'15.724"W	525.34	250.438	8.07	7.83	2.19
6831.00	69.530	336.400	6636.25	131.43	-140.31	-510.35	1765155.90	14536163.15	40°01'30.140"N	80°33'15.918"W	529.29	254.627	10.53	10.45	-1.40
6873.00	73.020	335.990	6649.73	170.98	-103.93	-526.40	1765139.86	14536199.52	40°01'30.501"N	80°33'16.122"W	536.57	258.832	8.36	8.31	-0.98
6914.00	76.240	336.300	6660.60	210.30	-67.77	-542.39	1765123.88	14536235.66	40°01'30.859"N	80°33'16.326"W	546.61	262.878	7.89	7.85	0.76
6954.00	78.980	336.070	6669.18	249.16	-32.04	-558.16	1765108.11	14536271.39	40°01'31.213"N	80°33'16.526"W	559.08	266.715	6.87	6.85	-0.57

Actual Wellpath Report

Esther Weeks OHI 3H AWP Proj: 12687

Page 5 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	Area	Field	Facility
SOUTHWESTERN ENERGY	Ohio County, WV	Ohio	Esther Weeks OHI Pad
	Ohio County, WV	Well	Esther Weeks OHI 3H
	Ohio County, WV	Wellbore	Esther Weeks OHI 3H AWP
	Ohio County, WV	Well	Esther Weeks OHI 3H

WELLPATH DATA (162 stations)

MD	Inclination	Azimuth	TVD	Vent 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)	(ft)	(ft)	(ft)	(ft)	(ft/100ft)	(°/100ft)
6995.00	82.440	336.290	6675.80	289.40	4.97	-574.50	1765091.78	14536308.38	40°01'31.57"N	80°33'16.73"W	574.52	270.496	8.46	8.44	0.54
7036.00	85.440	335.560	6680.13	329.96	42.19	-591.13	1765075.15	14536345.59	40°01'31.94"N	80°33'16.94"W	592.64	274.083	7.53	7.32	-1.78
7076.00	88.890	335.360	6682.11	369.74	78.53	-607.72	1765058.57	14536381.91	40°01'32.30"N	80°33'17.15"W	612.78	277.363	8.64	8.62	-0.50
7118.00	90.770	335.340	6682.23	411.57	116.70	-625.24	1765041.06	14536420.07	40°01'32.68"N	80°33'17.37"W	636.04	280.573	4.48	4.48	-0.05
7202.00	90.710	334.110	6681.14	495.27	192.87	-660.64	1765005.68	14536496.21	40°01'33.44"N	80°33'17.82"W	688.22	286.275	0.63	-0.07	-0.63
7285.00	90.650	334.110	6680.16	578.04	267.75	-696.42	1764969.91	14536571.06	40°01'34.18"N	80°33'18.28"W	746.12	291.030	0.85	-0.07	-0.84
7369.00	90.710	333.050	6679.16	661.89	342.98	-733.79	1764932.55	14536646.25	40°01'34.92"N	80°33'18.75"W	809.99	295.051	1.26	0.07	-1.26
7451.00	90.650	333.540	6678.19	743.77	416.22	-770.64	1764895.72	14536719.47	40°01'35.65"N	80°33'19.22"W	875.86	298.374	0.60	-0.07	0.60
7534.00	90.550	331.710	6677.32	826.69	489.92	-808.80	1764857.57	14536793.14	40°01'36.38"N	80°33'19.71"W	945.61	301.205	2.21	-0.12	-2.20
7619.00	90.520	332.280	6676.53	911.65	564.96	-848.71	1764817.68	14536868.16	40°01'37.12"N	80°33'20.22"W	1019.56	303.651	0.67	-0.04	0.67
7700.00	90.550	335.000	6675.77	992.49	637.53	-884.67	1764781.73	14536940.70	40°01'37.84"N	80°33'20.68"W	1090.45	305.778	3.36	0.04	3.36
7784.00	90.520	335.360	6674.99	1076.18	713.77	-919.93	1764746.48	14537016.91	40°01'38.60"N	80°33'21.12"W	1164.36	307.808	0.43	-0.04	0.43
7866.00	90.580	336.750	6674.20	1157.75	788.71	-953.21	1764713.22	14537091.81	40°01'39.34"N	80°33'21.55"W	1237.20	309.605	1.70	0.07	1.70
7948.00	90.550	332.480	6673.39	1239.49	862.77	-988.35	1764678.09	14537165.85	40°01'40.07"N	80°33'21.99"W	1311.95	311.119	5.21	-0.04	-5.21
8032.00	90.520	330.940	6672.61	1323.46	936.73	-1028.16	1764638.30	14537239.78	40°01'40.80"N	80°33'22.50"W	1390.89	312.336	1.83	-0.04	-1.83
8114.00	90.550	332.230	6671.84	1405.43	1008.85	-1067.18	1764599.29	14537311.87	40°01'41.52"N	80°33'23.00"W	1468.55	313.391	1.57	0.04	1.57
8199.00	90.340	332.890	6671.18	1490.36	1084.28	-1106.34	1764560.14	14537387.28	40°01'42.27"N	80°33'23.50"W	1549.08	314.423	0.81	-0.25	0.78
8280.00	90.520	334.310	6670.57	1571.21	1156.83	-1142.36	1764524.14	14537459.80	40°01'42.99"N	80°33'23.95"W	1625.80	315.361	1.77	0.22	1.75
8364.00	90.830	338.840	6669.58	1654.68	1233.88	-1175.74	1764490.77	14537536.82	40°01'43.73"N	80°33'24.38"W	1704.36	316.382	5.41	0.37	5.39
8448.00	91.570	342.790	6667.82	1737.22	1313.18	-1203.33	1764463.19	14537616.09	40°01'44.53"N	80°33'24.73"W	1781.14	317.499	4.78	0.88	4.70
8531.00	90.620	343.870	6666.24	1818.05	1392.68	-1227.14	1764439.39	14537695.55	40°01'45.32"N	80°33'25.03"W	1856.18	318.616	1.73	-1.14	1.30
8615.00	90.770	342.170	6665.22	1899.96	1473.01	-1251.67	1764414.88	14537775.85	40°01'46.12"N	80°33'25.34"W	1932.98	319.644	2.03	0.18	-2.02
8699.00	91.260	339.350	6663.73	1982.53	1552.29	-1279.34	1764387.21	14537855.11	40°01'46.90"N	80°33'25.69"W	2011.55	320.506	3.41	0.58	-3.36
8781.00	90.650	336.430	6662.36	2063.78	1628.25	-1310.19	1764356.37	14537931.03	40°01'47.65"N	80°33'26.08"W	2089.93	321.178	3.64	-0.74	-3.56
8866.00	90.920	336.390	6661.20	2148.28	1706.13	-1344.21	1764322.37	14538008.89	40°01'48.42"N	80°33'26.51"W	2172.05	321.767	0.32	0.32	-0.05
8950.00	90.680	334.340	6660.02	2231.93	1782.48	-1379.22	1764287.37	14538085.20	40°01'49.18"N	80°33'26.96"W	2253.77	322.269	2.46	-0.29	-2.44
9033.00	90.620	335.940	6659.08	2314.62	1857.78	-1414.11	1764252.50	14538160.48	40°01'49.93"N	80°33'27.40"W	2334.75	322.722	1.93	-0.07	1.93
9117.00	90.580	334.470	6658.20	2398.30	1934.03	-1449.33	1764217.29	14538236.70	40°01'50.68"N	80°33'27.85"W	2416.82	323.153	1.75	-0.05	-1.75
9200.00	90.710	332.150	6657.27	2481.17	2008.18	-1486.61	1764180.02	14538310.81	40°01'51.42"N	80°33'28.30"W	2498.55	323.488	2.80	0.16	-2.80
9284.00	91.050	329.490	6655.98	2565.15	2081.50	-1527.55	1764139.09	14538384.11	40°01'52.14"N	80°33'28.85"W	2581.87	323.726	3.19	0.40	-3.17

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWB
Facility	Esther Weeks OHI Pad		

WELLPATH DATA (162 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]
9368.00	91.140	330.600	6654.37	2649.14	2154.27	-1569.49	1764097.18	14538456.85	40°01'52.868"N	80°33'29.386"W	2665.36	323.925	1.33	0.11	1.32
9453.00	91.350	332.130	6652.53	2734.10	2228.85	-1610.21	1764056.47	14538531.40	40°01'53.607"N	80°33'29.905"W	2749.64	324.154	1.82	0.25	1.80
9537.00	91.260	330.430	6650.61	2818.06	2302.49	-1650.56	1764016.13	14538605.02	40°01'54.337"N	80°33'30.419"W	2832.99	324.365	2.03	-0.11	-2.02
9619.00	91.080	332.160	6648.94	2900.02	2374.40	-1689.94	1763976.77	14538676.90	40°01'55.049"N	80°33'30.921"W	2914.39	324.559	2.12	-0.22	2.11
9701.00	90.710	334.070	6647.66	2981.91	2447.52	-1727.01	1763939.71	14538749.99	40°01'55.774"N	80°33'31.393"W	2995.49	324.793	2.37	-0.45	2.33
9784.00	90.250	333.520	6646.96	3064.75	2521.99	-1763.66	1763903.08	14538824.43	40°01'56.511"N	80°33'31.859"W	3077.49	325.034	0.86	-0.55	-0.66
9866.00	90.090	333.830	6646.72	3146.60	2595.48	-1800.03	1763866.73	14538897.90	40°01'57.239"N	80°33'32.322"W	3158.58	325.258	0.43	-0.20	0.38
9951.00	90.220	335.060	6646.49	3231.37	2672.17	-1836.69	1763830.07	14538974.55	40°01'57.999"N	80°33'32.788"W	3242.52	325.498	1.46	0.15	1.45
10035.00	90.120	336.530	6646.24	3314.97	2748.78	-1871.13	1763795.65	14539051.13	40°01'58.758"N	80°33'33.226"W	3325.20	325.756	1.75	-0.12	1.75
10119.00	90.710	334.930	6645.63	3398.58	2825.35	-1905.66	1763761.14	14539127.68	40°01'59.516"N	80°33'33.665"W	3407.95	326.001	2.03	0.70	-1.90
10200.00	90.650	336.380	6644.67	3479.22	2899.14	-1939.04	1763727.76	14539201.44	40°02'00.247"N	80°33'34.090"W	3487.82	326.224	1.79	-0.07	1.79
10284.00	90.710	339.800	6643.67	3562.41	2977.06	-1970.38	1763696.44	14539279.32	40°02'01.019"N	80°33'34.488"W	3570.05	326.501	4.07	0.07	4.07
10367.00	90.680	338.730	6642.67	3644.38	3054.67	-1999.76	1763667.06	14539356.91	40°02'01.787"N	80°33'34.861"W	3651.04	326.789	1.29	-0.04	-1.29
10449.00	90.680	339.520	6641.69	3725.39	3131.29	-2028.98	1763637.86	14539433.49	40°02'02.545"N	80°33'35.231"W	3731.18	327.058	0.96	0.00	0.96
10528.00	90.710	337.740	6640.73	3803.54	3204.85	-2057.76	1763609.09	14539507.03	40°02'03.274"N	80°33'35.597"W	3808.60	327.296	2.25	0.04	-2.25
10613.00	90.550	335.790	6639.80	3887.98	3282.94	-2091.29	1763575.57	14539585.09	40°02'04.047"N	80°33'36.023"W	3892.46	327.502	2.30	-0.19	-2.29
10696.00	90.580	336.320	6638.98	3970.55	3358.80	-2124.98	1763541.90	14539660.92	40°02'04.798"N	80°33'36.451"W	3974.55	327.680	0.64	0.04	0.64
10779.00	90.710	336.610	6638.05	4053.06	3434.89	-2158.12	1763508.77	14539736.98	40°02'05.552"N	80°33'36.872"W	4056.59	327.859	0.38	0.16	0.35
10861.00	90.740	333.700	6637.01	4134.74	3509.28	-2192.57	1763474.34	14539811.35	40°02'06.289"N	80°33'37.310"W	4137.92	328.003	3.55	0.04	-3.55
10945.00	90.710	335.760	6635.95	4218.48	3585.24	-2228.42	1763438.50	14539887.27	40°02'07.041"N	80°33'37.766"W	4221.35	328.137	2.45	-0.04	2.45
11027.00	90.770	338.570	6634.89	4299.86	3660.79	-2260.24	1763406.69	14539962.80	40°02'07.789"N	80°33'38.171"W	4302.33	328.308	3.43	0.07	3.43
11109.00	90.680	338.380	6633.85	4381.01	3737.07	-2290.32	1763376.62	14540039.04	40°02'08.545"N	80°33'38.553"W	4383.06	328.497	0.26	-0.11	-0.23
11193.00	90.650	334.670	6632.87	4464.49	3814.10	-2323.77	1763343.18	14540116.04	40°02'09.308"N	80°33'38.978"W	4466.24	328.648	4.42	-0.04	-4.42
11275.00	90.980	331.830	6631.71	4546.36	3887.31	-2360.67	1763306.29	14540189.23	40°02'10.033"N	80°33'39.448"W	4547.96	328.731	3.49	0.40	-3.46
11356.00	90.920	332.530	6630.36	4627.30	3958.94	-2398.47	1763268.51	14540260.83	40°02'10.742"N	80°33'39.929"W	4628.80	328.791	0.87	-0.07	0.86
11441.00	90.890	332.930	6629.02	4712.21	4034.48	-2437.41	1763229.59	14540336.34	40°02'11.491"N	80°33'40.425"W	4713.60	328.862	0.47	-0.04	0.47
11524.00	90.950	333.160	6627.69	4795.10	4108.45	-2475.03	1763191.98	14540410.28	40°02'12.224"N	80°33'40.904"W	4796.37	328.934	0.29	0.07	0.28
11607.00	90.950	332.340	6626.31	4878.01	4182.23	-2513.03	1763154.00	14540484.03	40°02'12.955"N	80°33'41.388"W	4879.18	328.999	0.99	0.00	-0.99
11690.00	90.800	331.950	6625.04	4960.96	4255.60	-2551.80	1763115.24	14540557.38	40°02'13.682"N	80°33'41.881"W	4962.04	329.052	0.50	-0.18	-0.47
11774.00	90.950	332.760	6623.76	5044.89	4330.01	-2590.77	1763076.28	14540631.75	40°02'14.419"N	80°33'42.378"W	5045.89	329.107	0.98	0.18	0.96

Actual Wellpath Report

Esther Weeks OHI 3H AWP Proj: 12687



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY
Area	Ohio County, WV
Field	Ohio
Facility	Esther Weeks OHI Pad
Slot	Wellbore
Slot #3H	Esther Weeks OHI 3H
	Esther Weeks OHI 3H AWP

WELLPATH DATA (162 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)	(ft)	(ft)	(°)	(%/100ft)	(%/100ft)	(%/100ft)
11857.00	90.920	336.280	6622.41	5127.64	4404.91	-2626.47	1763040.60	14540706.63	40°02'15.161"N	80°33'42.832"W	5128.51	329.194	4.24	-0.04	4.24
11938.00	90.920	339.900	6621.11	5207.85	4480.04	-2656.69	1763010.39	14540781.73	40°02'15.905"N	80°33'43.216"W	5208.52	329.332	4.47	0.00	4.47
12023.00	90.980	339.710	6619.70	5291.66	4559.80	-2686.02	1762981.07	14540861.46	40°02'16.694"N	80°33'43.588"W	5292.12	329.499	0.23	0.07	-0.22
12107.00	90.950	337.220	6618.28	5374.78	4637.92	-2716.85	1762950.25	14540939.55	40°02'17.468"N	80°33'43.979"W	5375.09	329.639	2.96	-0.04	-2.96
12190.00	90.920	335.790	6616.93	5457.28	4714.03	-2749.94	1762917.18	14541015.63	40°02'18.221"N	80°33'44.400"W	5457.49	329.743	1.72	-0.04	-1.72
12274.00	90.980	336.650	6615.53	5540.81	4790.88	-2783.80	1762883.33	14541092.45	40°02'18.983"N	80°33'44.830"W	5540.95	329.841	1.03	0.07	1.02
12357.00	90.950	338.080	6614.14	5623.16	4867.48	-2815.74	1762851.40	14541169.02	40°02'19.741"N	80°33'45.236"W	5623.23	329.951	1.72	-0.04	1.72
12440.00	91.050	337.300	6612.69	5705.44	4944.25	-2847.24	1762819.91	14541245.76	40°02'20.501"N	80°33'45.636"W	5705.47	330.064	0.95	0.12	-0.94
12522.00	91.940	334.480	6610.55	5787.01	5019.07	-2880.72	1762786.44	14541320.55	40°02'21.242"N	80°33'46.062"W	5787.02	330.146	3.61	1.09	-3.44
12605.00	92.060	332.170	6607.65	5869.83	5093.18	-2917.96	1762749.22	14541394.64	40°02'21.976"N	80°33'46.536"W	5869.84	330.191	2.79	0.14	-2.78
12662.00	91.880	332.850	6605.69	5926.76	5143.72	-2944.26	1762722.94	14541445.15	40°02'22.477"N	80°33'46.871"W	5926.76	330.213	1.23	-0.32	1.19
12687.00	91.880	332.850	6604.87	5951.72	5165.95	-2955.66	1762711.54	14541467.38	40°02'22.697"N	80°33'47.016"W	5951.72	330.224	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Esther Weeks OHI 3H AWP

String/Diameter	Start MD	End MD	Interval	Start TVD	End TVD	Start N/S	End N/S	Start E/W	End E/W
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
20in Conductor	26.00	100.00	74.00	26.00	100.00	0.00	0.00	0.00	-0.11
17.5in Open Hole	100.00	690.00	590.00	100.00	689.99	-0.11	0.13	-1.01	1.97
13.375in Casing Surface	26.00	680.00	654.00	26.00	679.99	0.00	0.00	-1.07	2.03
12.25in Open Hole	690.00	2159.00	1469.00	2154.88	689.99	-1.01	1.97	-14.79	-85.81
9.625in Casing Intermediate	26.00	2159.00	2133.00	2154.88	26.00	0.00	0.00	-14.79	-85.81
8.75in Open Hole	2159.00	5945.00	3786.00	2154.88	5910.72	-14.79	-85.81	-430.83	-303.22
8.5in Open Hole	5945.00	12687.00	6742.00	5910.72	6604.87	-430.83	-303.22	5165.95	-2955.66
5.5in Casing Production	26.00	12687.00	12661.00	26.00	6604.87	0.00	0.00	5165.95	-2955.66

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWB
Facility	Esther Weeks OHI Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Esther Weeks OHI 3H BHL Rev-2	6600.00	5167.65	-2954.21	1762712.98	14541469.08	40°02'22.714"N	80°33'46.998"W	point
Esther Weeks OHI 3H LP Rev-2	6678.00	56.45	-606.27	1765060.02	14536359.84	40°01'32.090"N	80°33'17.139"W	point

WELLPATH COMPOSITION - Ref Wellbore: Esther Weeks OHI 3H AWB Ref Wellpath: Esther Weeks OHI 3H AWP Proj: 12687'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	631.00	BHI NaviTrak (Axial)	01_APS EM <17-1/2"> (207'-631')	Esther Weeks OHI 3H AWB
631.00	2102.00	BHI NaviTrak (Axial)	02_APS EM <12-1/4"> (631')(691'-2102')	Esther Weeks OHI 3H AWB
2102.00	5867.00	BHI NaviTrak (Axial)	03_APS EM <8-3/4"> (2102')(2172'-5867')	Esther Weeks OHI 3H AWB
5867.00	12662.00	BHI AutoTrak Curve (Short)	04_BH AT Curve <8-1/2"> (5867')(5956'-12662')	Esther Weeks OHI 3H AWB
12662.00	12687.00	Blind Drilling (std)	Projection to bit	Esther Weeks OHI 3H AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #3H
Area	Ohio County, WV	Well	Esther Weeks OHI 3H
Field	Ohio	Wellbore	Esther Weeks OHI 3H AWP
Facility	Esther Weeks OHI Pad		

COMMENTS
<p>Wellpath general comments API: 47-069-00255-0000 BH Job #: 9037763 Rig: SDC 42 Duration: 3/7/2018-3/18/2018</p>