

**RAYLE COAL OHI 401H
ATTACHMENT 1
PERF REPORT**

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	2/21/2019	15,786	15,690	36
2	3/29/2019	15,659	15,482	36
3	3/29/2019	15,449	15,272	36
4	3/30/2019	15,239	15,062	36
5	3/30/2019	15,029	14,852	36
6	3/30/2019	14,819	14,642	36
7	3/31/2019	14,609	14,432	36
8	3/31/2019	14,399	14,222	36
9	3/31/2019	14,189	14,012	36
10	3/31/2019	13,979	13,802	36
11	4/1/2019	13,769	13,592	36
12	4/1/2019	13,559	13,382	36
13	4/1/2019	13,349	13,172	36
14	4/1/2019	13,139	12,965	36
15	4/1/2019	12,929	12,750	36
16	4/2/2019	12,722	12,542	36
17	4/2/2019	12,509	12,332	36
18	4/2/2019	12,299	12,122	36
19	4/2/2019	12,089	11,912	36
20	4/3/2019	11,879	11,702	36
21	4/3/2019	11,669	11,494	36
22	4/3/2019	11,459	11,285	36
23	4/3/2019	11,249	11,072	36
24	4/3/2019	11,044	10,862	36
25	4/4/2019	10,822	10,652	36
26	4/4/2019	10,619	10,442	36
27	4/4/2019	10,409	10,235	36
28	4/4/2019	10,199	10,026	36
29	4/4/2019	9,989	9,809	36
30	4/5/2019	9,779	9,602	36
31	4/5/2019	9,569	9,392	36
32	4/5/2019	9,359	9,182	36
33	4/5/2019	9,149	8,972	36
34	4/6/2019	8,939	8,762	36
35	4/6/2019	8,729	8,552	36
36	4/6/2019	8,519	8,335	54
37	4/6/2019	8,309	8,132	36
38	4/7/2019	8,099	7,922	36
39	4/7/2019	7,889	7,707	60
40	4/7/2019	7,679	7,502	36
41	4/7/2019	7,469	7,292	36
42	4/7/2019	7,259	7,082	36
43	4/8/2019	7,049	6,872	36

**RAYLE COAL OHI 401H
ATTACHMENT 2
STIM REPORT**

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment	Max Breakdown	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/othe
1	3/29/2019	67	8,227	8,370	3,768	234,865	6,101	0
2	3/29/2019	84	7,927	5,386	4,120	414,345	8,007	0
3	3/29/2019	85	8,154	5,377	4,210	421,600	8,215	0
4	3/30/2019	90	7,842	5,247	4,467	428,380	8,692	0
5	3/30/2019	30	7,350	5,516	8,789	5,045	2,825	0
6	3/31/2019	92	7,741	5,491	4,172	414,000	8,018	0
7	3/31/2019	91	7,839	5,118	4,410	413,740	8,254	0
8	3/31/2019	87	7,792	5,351	4,427	410,240	8,082	0
9	3/31/2019	91	7,831	5,318	4,786	414,170	7,801	0
10	3/31/2019	94	7,853	5,880	4,313	417,840	7,254	0
11	4/1/2019	84	8,078	5,594	4,448	409,900	8,132	0
12	4/1/2019	93	7,817	4,609	4,380	415,945	7,716	0
13	4/1/2019	87	7,926	4,671	4,256	426,295	7,856	0
14	4/1/2019	89	7,872	4,704	4,315	417,305	7,065	0
15	4/1/2019	91	7,901	5,482	4,335	416,035	7,162	0
16	4/2/2019	96	7,936	5,333	4,402	429,200	7,177	0
17	4/2/2019	91	7,686	5,028	4,496	419,940	7,603	0
18	4/2/2019	92	8,034	4,747	4,654	417,025	7,416	0
19	4/2/2019	89	7,699	5,406	4,201	416,615	6,692	0
20	4/3/2019	89	8,021	5,528	4,283	425,660	7,161	0
21	4/3/2019	92	7,639	5,518	4,484	407,540	7,427	0
22	4/3/2019	100	7,540	5,227	4,682	420,204	7,685	0
23	4/3/2019	96	7,888	5,565	4,631	419,535	6,753	0
24	4/3/2019	91	7,413	5,228	4,618	416,241	7,272	0
25	4/4/2019	92	7,245	5,327	4,273	419,062	7,172	0
26	4/4/2019	99	7,395	5,314	4,707	424,139	7,348	0
27	4/4/2019	100	7,405	5,468	4,776	418,458	6,896	0
28	4/4/2019	93	7,124	5,213	4,551	428,796	7,259	0
29	4/5/2019	93	7,033	4,523	4,456	416,090	6,815	0
30	4/5/2019	94	6,920	5,013	4,558	421,830	6,553	0
31	4/5/2019	93	7,013	5,617	4,709	417,525	6,402	0
32	4/5/2019	90	7,654	4,241	4,618	414,715	8,466	0
33	4/5/2019	91	7,071	5,360	4,829	415,945	6,850	0
34	4/6/2019	92	7,054	5,219	4,664	415,945	6,397	0
35	4/6/2019	92	7,548	4,904	4,314	422,038	7,073	0
36	4/6/2019	90	6,371	5,705	4,461	384,036	11,925	0
37	4/6/2019	93	6,980	4,920	4,732	420,103	6,954	0
38	4/7/2019	92	6,997	4,885	4,753	422,361	7,260	0
39	4/7/2019	75	7,569	4,781	4,200	426,840	11,333	0
40	4/7/2019	89	6,066	5,421	4,432	421,164	8,275	0
41	4/7/2019	93	6,596	4,843	4,289	422,364	6,780	0
42	4/8/2019	91	6,543	5,222	4,607	411,734	6,660	0
43	4/8/2019	94	6,456	5,855	5,142	400,160	6,912	0



Well Name: Rayle Coal OHI 406H

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	290.00	290.00	
Top of Salt Water	555.00	555.00	NA	NA	
Pittsburgh Coal	242.00	242.00	248.00	248.00	
Big Injun (ss)	1329.00	1329.00	1812.00	1812.00	
Berea (siltstone)	1812.00	1812.00	5943.00	5243.00	
Burket (shale)	6352.00	5612.00	6379.00	5627.00	
Tully (ls)	6379.00	5627.00	6475.00	5678.00	
Mahantango (shale)	6475.00	5678.00	6721.00	5763.00	
Marcellus (shale)	6721.00	5763.00	NA	NA	GAS

SOUTHWESTERN ENERGY

Location: Ohio County, WV
 Slot: Slot 401H
 Field: Ohio
 Well: Rayle Coal OHI 401H
 Facility: Rayle Coal OHI Pad
 Wellbore: Rayle Coal OHI 401H PWB

Plot reference wellbore is Rayle Coal OHI 401H PWB Rev-A0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 41 (RKB)	* = Wellbore was transformed from a different geoidetic datum
Measured depths are referenced to SDC 41 (RKB)	North Reference: Grid north
SDC 41 (RKB) to Mean Sea Level: 1090.1 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot 401H): -1064.1 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: thomsuz on 2018-08-30
	Database: WA, Pennsylvania

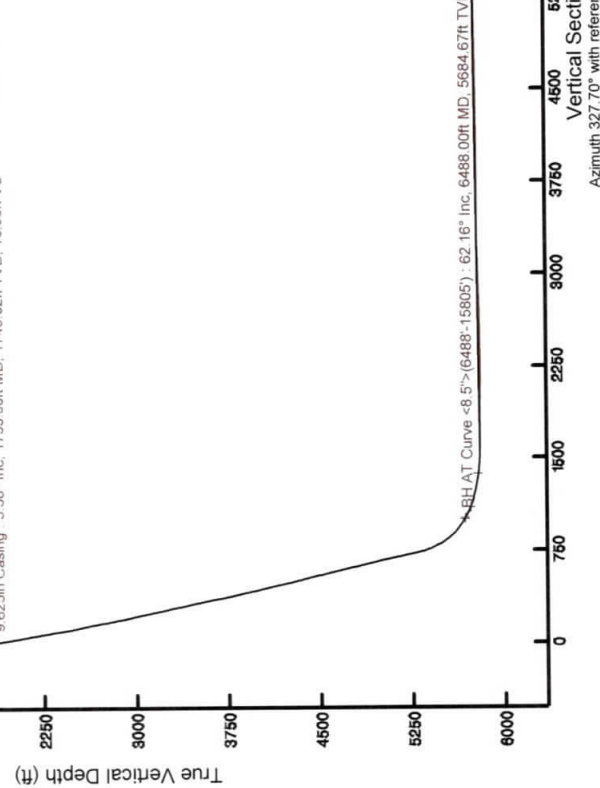
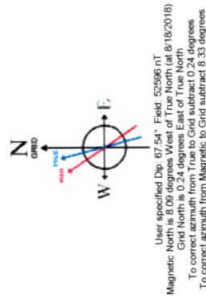
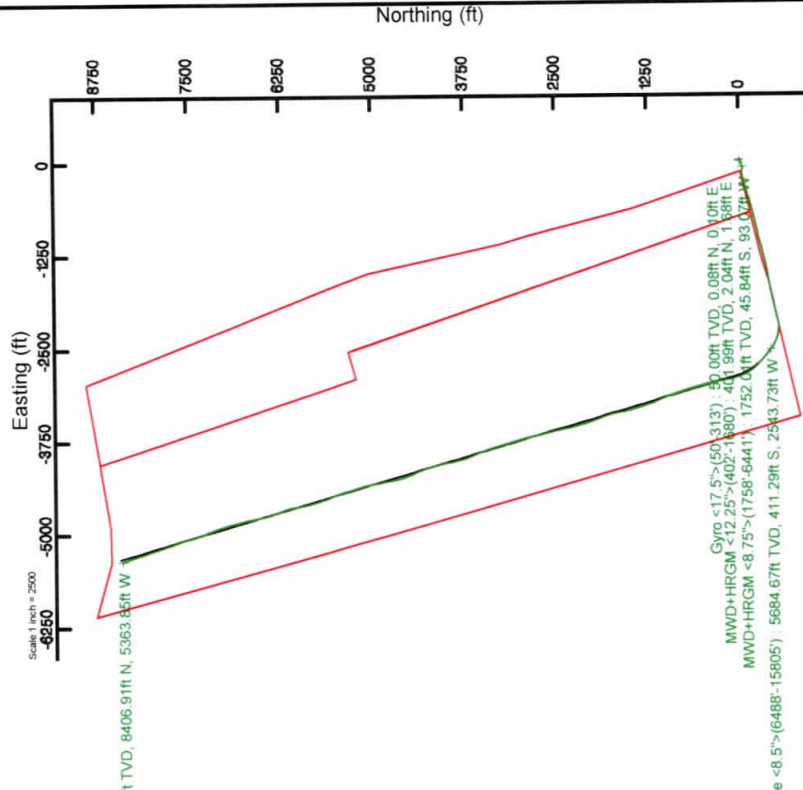


Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Rayle Coal OHI Pad	1744351.331	14585677.739	40°09'40.581"N	80°37'40.786"W
Local N (ft)	Local E (ft)	Grid North (US ft)	Latitude	Longitude
65.00	322.32	1744673.528	40°09'41.210"N	80°37'36.631"W
Slot 401H			26ft	
SDC 41 (RKB) to Ground level (At Slot 401H)				
Mean Sea Level to Ground level (At Slot 401H)			-1064.1ft	
SDC 41 (RKB) to Mean Sea Level			1090.1ft	

Comments

API: 47-069-00278-0000
 BH Job #: 109318132
 Rig: SDC 41
 Duration: 08/23/2018 - 08/26/2018



Projection to Bit: 5726.21ft TVD, 8406.91ft N, 5363.85ft W

BH AT Curve $\angle 8.5^\circ (6488^\circ-15805)$; 62.16° Inc, 6488.00ft MD, 5684.67ft TVD, 1011.60ft VS

Scale 1 inch = 1500

Vertical Section (ft)
 Azimuth 327.70° with reference 0.00 N, 0.00 E

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal 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	0.999612	Report Generated	8/30/2018 at 8:45:41 AM
Convergence at slot	0.25° East	Database/Source file	WA_Pennsylvania/Rayle_Coal_OHI_401H_AWP_Proj_15830_MD.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	65.00	322.32	1744673.53	14585742.72	40°09'41.210"N	80°37'36.631"W
Facility Reference Pt			1744351.33	14585677.74	40°09'40.581"N	80°37'40.786"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC 41 (RKB) to Facility Vertical Datum	1090.10ft
Horizontal Reference Pt	Slot	SDC 41 (RKB) to Mean Sea Level	1090.10ft
Vertical Reference Pt	SDC 41 (RKB)	SDC 41 (RKB) to Ground Level at Slot (Slot 401H)	26.00ft
MD Reference Pt	SDC 41 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	327.70°

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal OHI Pad		

WELLPATH DATA (187 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]
0.00H	0.000	52.150	0.00	0.00	0.00	0.00	1744673.53	14585742.72	40°09'41.210"N	80°37'36.631"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	52.150	26.00	0.00	0.00	0.00	1744673.53	14585742.72	40°09'41.210"N	80°37'36.631"W	0.00	0.000	0.00	0.00	0.00
50.00	0.610	52.150	50.00	0.01	0.08	0.10	1744673.63	14585742.79	40°09'41.211"N	80°37'36.630"W	0.13	52.150	2.54	2.54	217.29
100.00	0.880	38.500	100.00	0.16	0.54	0.55	1744674.08	14585743.26	40°09'41.215"N	80°37'36.624"W	0.77	45.413	0.64	0.54	-27.30
150.00	0.490	351.320	149.99	0.49	1.05	0.76	1744674.28	14585743.77	40°09'41.220"N	80°37'36.621"W	1.30	35.679	1.31	-0.78	-94.36
200.00	0.350	65.250	199.99	0.66	1.33	0.86	1744674.39	14585744.05	40°09'41.223"N	80°37'36.620"W	1.59	32.999	1.03	-0.28	147.86
250.00	0.500	57.270	249.99	0.64	1.51	1.19	1744674.71	14585744.23	40°09'41.225"N	80°37'36.616"W	1.92	38.112	0.32	0.30	-15.96
300.00	0.390	24.860	299.99	0.74	1.78	1.44	1744674.97	14585744.50	40°09'41.228"N	80°37'36.612"W	2.29	38.926	0.54	-0.22	-64.82
313.00	0.340	357.550	312.99	0.80	1.86	1.46	1744674.99	14585744.58	40°09'41.228"N	80°37'36.612"W	2.36	38.048	1.38	-0.38	-210.08
402.00	0.320	110.080	401.99	0.83	2.04	1.68	1744675.21	14585744.76	40°09'41.230"N	80°37'36.609"W	2.64	39.456	0.62	-0.02	126.44
493.00	0.820	111.380	492.98	0.10	1.72	2.52	1744676.05	14585744.43	40°09'41.227"N	80°37'36.598"W	3.05	55.794	0.55	0.55	1.43
584.00	0.930	128.710	583.97	-1.12	1.02	3.71	1744677.23	14585743.73	40°09'41.220"N	80°37'36.583"W	3.84	74.661	0.31	0.12	19.04
697.00	1.990	179.150	696.94	-3.66	-1.52	4.45	1744677.98	14585741.20	40°09'41.195"N	80°37'36.574"W	4.70	108.834	1.39	0.94	44.64
789.00	3.410	218.540	788.84	-5.92	-5.26	2.77	1744676.30	14585737.46	40°09'41.158"N	80°37'36.596"W	5.94	152.205	2.45	1.54	42.82
880.00	5.330	234.830	879.57	-7.02	-9.81	-2.37	1744671.16	14585732.91	40°09'41.113"N	80°37'36.662"W	10.09	193.591	2.49	2.11	17.90
970.00	6.220	236.600	969.12	-7.33	-14.90	-9.86	1744663.67	14585727.82	40°09'41.063"N	80°37'36.759"W	17.87	213.491	1.01	0.99	1.97
1060.00	6.690	242.990	1058.55	-6.94	-19.96	-18.60	1744654.94	14585722.76	40°09'41.013"N	80°37'36.872"W	27.29	222.973	0.95	0.52	7.10
1153.00	6.510	251.600	1150.93	-5.17	-24.09	-28.43	1744645.11	14585718.64	40°09'40.973"N	80°37'36.998"W	37.26	229.724	1.08	-0.19	9.26
1246.00	6.380	253.730	1243.35	-2.48	-27.20	-38.39	1744635.15	14585715.53	40°09'40.943"N	80°37'37.127"W	47.05	234.682	0.29	-0.14	2.29
1338.00	7.140	253.930	1334.71	0.53	-30.22	-48.79	1744624.75	14585712.51	40°09'40.913"N	80°37'37.261"W	57.39	238.231	0.83	0.83	0.22
1431.00	7.770	251.960	1426.92	3.70	-33.76	-60.32	1744613.23	14585708.97	40°09'40.879"N	80°37'37.410"W	69.13	240.765	0.73	0.68	-2.12
1524.00	6.730	254.040	1519.17	6.78	-37.21	-71.54	1744602.01	14585705.52	40°09'40.845"N	80°37'37.554"W	80.64	242.522	1.15	-1.12	2.24
1617.00	5.610	251.010	1611.63	9.36	-40.19	-81.08	1744592.48	14585702.55	40°09'40.816"N	80°37'37.677"W	90.49	243.636	1.25	-1.20	-3.26
1680.00	5.340	245.020	1674.35	10.44	-42.43	-86.65	1744586.91	14585700.31	40°09'40.794"N	80°37'37.749"W	96.48	243.912	1.00	-0.43	-9.51
1758.00	5.380	238.950	1752.01	10.98	-45.84	-93.07	1744580.49	14585696.89	40°09'40.761"N	80°37'37.832"W	103.75	243.776	0.73	0.05	-7.78
1818.00	5.710	240.240	1811.73	11.18	-48.78	-98.07	1744575.49	14585693.96	40°09'40.732"N	80°37'37.897"W	109.53	243.556	0.59	0.55	2.15
1908.00	10.540	283.250	1900.87	17.26	-49.11	-109.99	1744563.58	14585693.62	40°09'40.729"N	80°37'38.050"W	120.46	245.938	8.28	5.37	47.79
1999.00	14.510	284.790	1989.69	31.56	-44.29	-129.12	1744544.46	14585698.44	40°09'40.778"N	80°37'38.296"W	136.51	251.066	4.38	4.36	1.69
2090.00	16.970	274.150	2077.29	47.80	-40.42	-153.40	1744520.19	14585702.31	40°09'40.817"N	80°37'38.609"W	158.63	255.238	4.16	2.70	-11.69
2183.00	19.930	264.190	2165.52	62.94	-41.04	-182.72	1744490.88	14585701.69	40°09'40.812"N	80°37'38.987"W	187.27	257.340	4.64	3.18	-10.71

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 401H
SOUTHWESTERN ENERGY	Well	Rayle Coal OHI 401H
Area	Wellbore	Rayle Coal OHI 401H AWB
Field		
Facility		

WELLPATH DATA (187 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]	Buidl Rate [°/100ft]	Turn Rate [°/100ft]
2276.00	23.650	259.020	2251.87	76.80	-46.20	-216.81	1744456.80	14585696.53	40°09'40.762"N	80°37'39.426"W	221.68	257.970	4.50	4.00	-5.56
2369.00	26.500	256.980	2336.09	90.44	-54.43	-255.35	1744418.28	14585688.31	40°09'40.683"N	80°37'39.923"W	261.08	257.966	3.20	3.06	-2.19
2461.00	30.500	254.750	2416.93	104.06	-65.20	-297.89	1744375.76	14585677.54	40°09'40.578"N	80°37'40.471"W	304.94	257.654	4.50	4.35	-2.42
2554.00	32.640	255.910	2496.16	118.82	-77.52	-344.99	1744328.67	14585665.23	40°09'40.458"N	80°37'41.079"W	353.59	257.336	2.39	2.30	1.25
2647.00	34.530	255.280	2573.63	134.62	-90.32	-394.81	1744278.87	14585652.43	40°09'40.334"N	80°37'41.721"W	405.01	257.114	2.07	2.03	-0.68
2739.00	36.080	252.940	2648.72	149.62	-104.90	-445.93	1744227.77	14585637.86	40°09'40.192"N	80°37'42.380"W	458.11	256.763	2.24	1.68	-2.54
2832.00	36.900	251.850	2723.48	163.65	-121.63	-498.65	1744175.08	14585621.14	40°09'40.029"N	80°37'43.060"W	513.26	256.292	1.12	0.88	-1.17
2924.00	36.490	252.520	2797.25	177.39	-138.45	-550.98	1744122.76	14585604.32	40°09'39.865"N	80°37'43.735"W	568.11	255.895	0.62	-0.45	0.73
3017.00	35.490	252.750	2872.50	191.48	-154.76	-603.14	1744070.62	14585588.02	40°09'39.706"N	80°37'44.408"W	622.68	255.609	1.09	-1.08	0.25
3110.00	32.660	256.900	2949.54	206.75	-168.46	-663.38	1744020.40	14585574.32	40°09'39.572"N	80°37'45.056"W	674.75	255.543	3.94	-3.04	4.46
3203.00	32.650	258.380	3027.84	223.86	-179.20	-702.40	1743971.41	14585563.59	40°09'39.468"N	80°37'45.687"W	724.89	255.688	0.86	-0.01	1.59
3295.00	33.210	257.330	3105.06	241.09	-189.72	-751.29	1743922.53	14585553.07	40°09'39.366"N	80°37'46.318"W	774.87	255.827	0.87	0.61	-1.14
3388.00	33.280	255.550	3182.84	257.46	-201.68	-800.85	1743873.00	14585541.12	40°09'39.250"N	80°37'46.957"W	825.85	255.865	1.05	0.08	-1.91
3481.00	33.040	256.890	3260.69	273.62	-213.79	-850.25	1743823.61	14585529.01	40°09'39.132"N	80°37'47.594"W	876.71	255.886	0.83	-0.26	1.44
3573.00	32.280	257.560	3338.15	290.21	-224.78	-898.66	1743775.21	14585518.03	40°09'39.026"N	80°37'48.218"W	926.35	255.957	0.91	-0.83	0.73
3666.00	32.260	257.970	3416.78	307.24	-235.30	-947.19	1743726.71	14585507.51	40°09'38.924"N	80°37'48.843"W	975.98	256.049	0.24	-0.02	0.44
3759.00	31.630	257.470	3495.70	324.09	-245.76	-995.27	1743678.65	14585497.05	40°09'38.823"N	80°37'49.463"W	1025.16	256.129	0.73	-0.68	-0.54
3852.00	32.430	255.980	3574.54	340.16	-257.09	-1043.27	1743630.66	14585485.72	40°09'38.712"N	80°37'50.082"W	1074.48	256.156	1.21	0.86	-1.60
3944.00	34.310	254.530	3651.37	355.41	-269.99	-1092.20	1743581.75	14585472.83	40°09'38.587"N	80°37'50.713"W	1125.07	256.115	2.22	2.04	-1.58
4037.00	34.240	254.730	3728.22	370.66	-283.87	-1142.70	1743531.27	14585458.96	40°09'38.452"N	80°37'51.364"W	1177.43	256.049	0.14	-0.08	0.22
4130.00	33.810	256.720	3805.30	386.76	-296.70	-1193.12	1743480.87	14585446.13	40°09'38.327"N	80°37'52.014"W	1229.46	256.035	1.28	-0.46	2.14
4219.00	33.750	256.490	3879.27	402.79	-308.17	-1241.26	1743432.75	14585434.67	40°09'38.216"N	80°37'52.635"W	1278.95	256.057	0.16	-0.07	-0.26
4312.00	35.060	256.510	3956.00	419.72	-320.43	-1292.36	1743381.67	14585422.41	40°09'38.097"N	80°37'53.294"W	1331.49	256.075	1.41	1.41	0.02
4404.00	35.870	258.240	4030.94	437.70	-332.09	-1344.44	1743329.61	14585410.75	40°09'37.984"N	80°37'53.965"W	1384.85	256.125	2.10	0.88	1.88
4495.00	34.770	255.510	4105.19	454.99	-344.02	-1395.67	1743278.40	14585398.83	40°09'37.868"N	80°37'54.625"W	1437.45	256.153	2.41	-1.21	-3.00
4585.00	34.360	255.990	4179.30	470.81	-356.59	-1445.16	1743228.93	14585386.27	40°09'37.746"N	80°37'55.264"W	1488.50	256.139	0.55	-0.46	0.53
4678.00	34.540	258.310	4256.00	488.33	-368.29	-1496.44	1743177.67	14585374.57	40°09'37.632"N	80°37'55.925"W	1541.10	256.174	1.42	0.19	2.49
4771.00	34.220	261.060	4332.76	507.98	-377.69	-1548.10	1743126.03	14585365.17	40°09'37.541"N	80°37'56.590"W	1593.51	256.289	1.70	-0.34	2.96
4863.00	32.940	258.290	4409.40	527.04	-386.79	-1598.15	1743076.00	14585356.08	40°09'37.454"N	80°37'57.236"W	1644.29	256.395	2.17	-1.39	-3.01
4956.00	34.320	258.300	4486.84	545.15	-397.24	-1648.58	1743025.59	14585345.63	40°09'37.352"N	80°37'57.886"W	1695.77	256.452	1.48	1.48	0.01

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 401H
SOUTHWESTERN ENERGY	Well	Rayle Coal OHI 401H
Area	Wellbore	Rayle Coal OHI 401H AWB
Field		
Facility		

WELLPATH DATA (187 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]
5049.00	35.300	259.410	4563.20	564.32	-407.49	-1700.67	1742973.52	14585335.38	40°09'37.253"N	80°37'58.557"W	1748.81	256.526	1.25	1.05	1.19
5142.00	33.940	256.670	4639.73	582.70	-418.42	-1752.35	1742921.86	14585324.46	40°09'37.147"N	80°37'59.223"W	1801.61	256.571	2.22	-1.46	-2.95
5235.00	35.050	256.380	4716.38	599.69	-430.69	-1803.57	1742870.66	14585312.19	40°09'37.028"N	80°37'59.884"W	1854.28	256.569	1.21	1.19	-0.31
5327.00	35.630	257.670	4791.43	617.31	-442.64	-1855.42	1742818.83	14585300.25	40°09'36.912"N	80°38'00.552"W	1907.49	256.582	1.03	0.63	1.40
5420.00	34.890	257.440	4867.36	635.54	-454.21	-1907.85	1742766.42	14585288.69	40°09'36.800"N	80°38'01.228"W	1961.17	256.609	0.81	-0.80	-0.25
5513.00	34.290	257.560	4943.93	653.43	-465.63	-1959.40	1742714.90	14585276.26	40°09'36.689"N	80°38'01.893"W	2013.96	256.632	0.65	-0.65	0.13
5606.00	33.470	259.230	5021.14	671.74	-476.07	-2010.17	1742664.14	14585266.83	40°09'36.588"N	80°38'02.547"W	2065.78	256.676	1.33	-0.88	1.80
5698.00	32.460	256.170	5098.33	688.87	-486.71	-2059.07	1742615.26	14585256.19	40°09'36.485"N	80°38'03.177"W	2115.81	256.701	2.12	-1.10	-3.33
5791.00	33.750	255.660	5176.23	705.17	-498.64	-2108.44	1742565.90	14585244.27	40°09'36.369"N	80°38'03.814"W	2166.61	256.694	1.42	1.39	0.53
5884.00	32.170	255.530	5254.26	721.15	-510.79	-2157.56	1742516.81	14585232.13	40°09'36.251"N	80°38'04.447"W	2217.20	256.681	1.82	-1.70	-1.22
5930.00	30.470	260.470	5293.56	729.41	-515.78	-2180.92	1742493.45	14585227.14	40°09'36.203"N	80°38'04.748"W	2241.08	256.694	6.69	-3.70	10.74
5977.00	32.590	267.370	5333.63	740.30	-518.33	-2205.33	1742469.06	14585224.58	40°09'36.178"N	80°38'05.063"W	2265.43	256.773	8.90	4.51	14.68
6023.00	34.220	271.050	5372.04	753.54	-518.67	-2230.64	1742443.75	14585224.25	40°09'36.176"N	80°38'05.389"W	2290.15	256.910	5.65	3.54	8.00
6070.00	36.350	272.010	5410.40	768.66	-517.93	-2257.78	1742416.63	14585224.98	40°09'36.184"N	80°38'05.738"W	2316.43	257.080	4.68	4.53	2.04
6116.00	38.470	275.160	5446.94	785.05	-516.17	-2285.66	1742388.76	14585226.75	40°09'36.203"N	80°38'06.097"W	2343.22	257.274	6.21	4.61	6.85
6163.00	40.610	278.350	5483.19	803.91	-512.63	-2315.36	1742359.07	14585230.28	40°09'36.239"N	80°38'06.480"W	2371.43	257.516	6.28	4.55	6.79
6209.00	44.400	282.130	5517.10	824.94	-507.07	-2345.92	1742328.52	14585235.84	40°09'36.295"N	80°38'06.873"W	2400.10	257.803	9.93	8.24	8.22
6256.00	47.150	286.130	5549.88	849.35	-498.83	-2378.56	1742295.89	14585244.08	40°09'36.378"N	80°38'07.293"W	2430.30	258.156	8.45	5.85	8.51
6302.00	49.720	291.480	5580.41	876.13	-487.71	-2411.11	1742263.36	14585255.19	40°09'36.489"N	80°38'07.712"W	2459.94	258.565	10.34	5.59	11.63
6348.00	52.880	295.370	5609.18	905.80	-473.42	-2444.02	1742230.46	14585269.48	40°09'36.632"N	80°38'08.135"W	2489.45	259.037	9.52	6.87	8.46
6395.00	55.810	299.790	5636.58	938.83	-455.73	-2477.84	1742196.65	14585287.17	40°09'36.808"N	80°38'08.569"W	2519.40	259.579	9.86	6.23	9.40
6441.00	58.700	303.780	5661.47	973.62	-435.34	-2510.70	1742163.80	14585307.55	40°09'37.011"N	80°38'08.992"W	2548.16	260.163	9.63	6.28	8.67
6488.00	62.160	308.250	5684.67	1011.60	-411.29	-2543.73	1742130.79	14585331.58	40°09'37.250"N	80°38'09.416"W	2576.77	260.815	11.07	7.36	9.51
6518.00	63.910	309.960	5698.27	1036.94	-394.43	-2564.48	1742100.05	14585348.44	40°09'37.417"N	80°38'09.682"W	2594.63	261.256	7.74	5.83	5.70
6611.00	71.430	311.580	5733.58	1119.19	-338.27	-2629.56	1742044.99	14585404.58	40°09'37.975"N	80°38'10.517"W	2651.23	262.670	8.24	8.09	1.74
6704.00	76.710	313.090	5759.10	1205.39	-278.05	-2695.63	1741978.95	14585464.77	40°09'38.573"N	80°38'11.365"W	2709.93	264.111	5.89	5.68	1.62
6750.00	77.780	314.340	5769.25	1248.92	-247.05	-2728.06	1741946.54	14585495.77	40°09'38.880"N	80°38'11.781"W	2739.22	264.826	3.53	2.33	2.72
6796.00	80.420	317.250	5777.95	1293.11	-214.67	-2759.54	1741915.06	14585528.13	40°09'39.202"N	80°38'12.185"W	2767.88	265.552	8.46	5.74	6.33
6889.00	83.340	324.810	5791.11	1384.48	-143.14	-2817.37	1741857.25	14585599.63	40°09'39.911"N	80°38'12.926"W	2821.01	267.092	8.64	3.14	8.13
6982.00	86.430	333.730	5799.41	1476.97	-63.60	-2864.64	1741810.01	14585679.14	40°09'40.699"N	80°38'13.531"W	2865.34	268.728	10.11	3.32	9.59

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal OHI Pad		

WELLPATH DATA (187 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]
7075.00	89.450	341.390	5802.76	1568.46	22.23	-2900.08	1741774.58	14585764.94	40°09'41.548"N	80°38'13.983"W	2900.16	270.439	8.85	3.25	8.24
7168.00	89.420	346.420	5803.68	1657.73	111.55	-2925.85	1741748.82	14585854.23	40°09'42.432"N	80°38'14.310"W	2927.98	272.183	5.41	-0.03	5.41
7260.00	89.600	348.370	5804.47	1744.34	201.33	-2945.93	1741728.75	14585943.97	40°09'43.320"N	80°38'14.564"W	2952.80	273.910	2.13	0.20	2.12
7353.00	89.940	348.020	5804.84	1831.45	292.36	-2964.95	1741709.73	14586034.96	40°09'44.220"N	80°38'14.804"W	2979.33	275.631	0.52	0.37	-0.38
7446.00	90.030	348.090	5804.86	1918.64	383.35	-2984.20	1741690.49	14586125.92	40°09'45.120"N	80°38'15.047"W	3008.72	277.320	0.12	0.10	0.08
7539.00	88.830	347.020	5805.79	2006.11	474.16	-3004.24	1741670.46	14586216.69	40°09'46.018"N	80°38'15.300"W	3041.43	278.969	1.73	-1.29	-1.15
7631.00	88.890	344.030	5807.62	2093.67	563.21	-3027.23	1741647.48	14586305.70	40°09'46.899"N	80°38'15.592"W	3079.18	280.539	3.25	0.07	-3.25
7724.00	88.830	342.930	5809.47	2183.14	652.35	-3053.67	1741621.05	14586394.81	40°09'47.781"N	80°38'15.928"W	3122.57	282.059	1.18	-0.06	-1.18
7817.00	90.830	343.200	5809.75	2272.81	741.31	-3080.76	1741593.97	14586483.74	40°09'48.662"N	80°38'16.272"W	3168.69	283.530	2.17	2.15	0.29
7909.00	90.920	342.740	5808.34	2361.55	829.27	-3107.70	1741567.04	14586571.66	40°09'49.532"N	80°38'16.614"W	3216.44	284.941	0.51	0.10	-0.50
8002.00	90.980	341.360	5806.80	2451.64	917.73	-3136.36	1741538.39	14586660.08	40°09'50.407"N	80°38'16.979"W	3267.87	286.310	1.49	0.06	-1.48
8095.00	90.490	338.720	5805.61	2542.47	1005.12	-3168.10	1741506.67	14586747.45	40°09'51.272"N	80°38'17.383"W	3323.72	287.602	2.89	-0.53	-2.84
8187.00	90.740	336.690	5804.62	2633.06	1090.24	-3203.00	1741471.78	14586832.53	40°09'52.115"N	80°38'17.828"W	3383.46	288.798	2.22	0.27	-2.21
8280.00	91.450	338.090	5802.84	2724.72	1176.07	-3238.74	1741436.05	14586918.33	40°09'52.964"N	80°38'18.284"W	3445.66	289.957	1.69	0.76	1.51
8373.00	91.380	340.420	5800.54	2815.80	1263.01	-3271.67	1741403.13	14587005.23	40°09'53.825"N	80°38'18.704"W	3507.00	291.109	2.51	-0.08	2.51
8465.00	91.510	342.780	5798.22	2905.07	1350.27	-3300.70	1741374.11	14587092.46	40°09'54.688"N	80°38'19.073"W	3566.21	292.249	2.57	0.14	2.57
8558.00	91.380	343.430	5795.88	2994.70	1439.23	-3327.72	1741347.11	14587181.38	40°09'55.568"N	80°38'19.416"W	3625.62	293.388	0.71	-0.14	0.70
8651.00	91.390	347.310	5793.63	3083.27	1529.17	-3351.20	1741323.64	14587271.29	40°09'56.458"N	80°38'19.714"W	3683.60	294.527	4.17	0.01	4.17
8744.00	91.420	349.010	5791.35	3170.37	1620.16	-3370.27	1741304.57	14587362.25	40°09'57.358"N	80°38'19.955"W	3739.47	295.675	1.83	0.03	1.83
8837.00	90.250	348.180	5789.99	3257.25	1711.31	-3388.66	1741286.19	14587453.36	40°09'58.260"N	80°38'20.187"W	3796.26	296.794	1.54	-1.26	-0.89
8929.00	90.340	343.480	5789.52	3344.65	1800.49	-3411.18	1741263.68	14587542.50	40°09'59.142"N	80°38'20.472"W	3857.18	297.826	5.11	0.10	-5.11
9022.00	90.280	339.110	5789.02	3435.02	1888.55	-3440.99	1741233.88	14587630.53	40°10'00.013"N	80°38'20.852"W	3925.18	298.760	4.70	-0.06	-4.70
9115.00	90.120	338.430	5788.69	3526.29	1975.24	-3474.67	1741200.21	14587717.19	40°10'00.871"N	80°38'21.281"W	3996.86	299.617	0.75	-0.17	-0.73
9208.00	90.030	340.710	5788.57	3617.30	2062.38	-3507.13	1741167.77	14587804.30	40°10'01.734"N	80°38'21.695"W	4068.58	300.458	2.45	-0.10	2.45
9299.00	89.290	345.230	5789.11	3705.06	2149.37	-3533.77	1741141.13	14587891.25	40°10'02.594"N	80°38'22.033"W	4136.10	301.309	5.03	-0.81	4.97
9392.00	90.220	346.440	5789.51	3793.44	2239.54	-3556.53	1741118.38	14587981.38	40°10'03.486"N	80°38'22.322"W	4202.91	302.199	1.64	1.00	1.30
9485.00	90.250	347.220	5789.13	3881.30	2330.09	-3577.72	1741097.20	14588071.90	40°10'04.382"N	80°38'22.590"W	4269.59	303.075	0.84	0.03	0.84
9578.00	90.250	347.300	5788.72	3968.93	2420.80	-3598.23	1741076.70	14588162.57	40°10'05.279"N	80°38'22.849"W	4336.76	303.932	0.09	0.00	0.09
9670.00	90.250	346.570	5788.32	4055.79	2510.42	-3619.02	1741055.91	14588252.16	40°10'06.165"N	80°38'23.113"W	4404.49	304.748	0.79	0.00	-0.79
9763.00	90.220	346.100	5787.94	4143.92	2600.78	-3641.00	1741033.95	14588342.49	40°10'07.059"N	80°38'23.391"W	4474.47	305.538	0.51	-0.03	-0.51



REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 401H
SOUTHWESTERN ENERGY	Well	Rayle Coal OHI 401H
Area	Wellbore	Rayle Coal OHI 401H AWB
Field		
Facility		

WELLPATH DATA (187 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]
9856.00	90.220	346.080	5787.58	4232.17	2691.06	-3663.35	1741011.60	14588432.72	40°10'07.952"N	80°38'23.674"W	4545.54	306.301	0.02	0.00	-0.02
9948.00	90.340	346.490	5787.13	4319.37	2780.43	-3685.16	1740989.80	14588522.06	40°10'08.836"N	80°38'23.950"W	4616.41	307.034	0.46	0.13	0.45
10041.00	90.620	346.580	5786.35	4407.39	2870.87	-3706.82	1740968.15	14588612.47	40°10'09.731"N	80°38'24.225"W	4688.54	307.757	0.32	0.30	0.10
10134.00	90.680	345.470	5785.30	4495.66	2961.11	-3729.28	1740945.70	14588702.67	40°10'10.624"N	80°38'24.509"W	4761.90	308.450	1.20	0.06	-1.19
10226.00	90.490	343.490	5784.36	4583.74	3049.75	-3753.89	1740921.10	14588791.28	40°10'11.501"N	80°38'24.822"W	4836.60	309.091	2.16	-0.21	-2.15
10319.00	90.710	342.820	5783.38	4673.37	3138.75	-3780.84	1740894.16	14588880.25	40°10'12.381"N	80°38'25.164"W	4913.91	309.699	0.76	0.24	-0.72
10412.00	90.770	343.860	5782.18	4762.92	3227.84	-3807.50	1740867.51	14588969.30	40°10'13.263"N	80°38'25.503"W	4991.59	310.290	1.12	0.06	1.12
10505.00	90.830	344.610	5780.88	4852.06	3317.33	-3832.76	1740842.26	14589058.76	40°10'14.148"N	80°38'25.824"W	5069.00	310.877	0.81	0.06	0.81
10598.00	90.950	342.780	5779.44	4941.44	3406.58	-3858.87	1740816.16	14589147.97	40°10'15.031"N	80°38'26.155"W	5147.39	311.438	1.97	0.13	-1.97
10690.00	90.830	339.760	5778.01	5030.86	3493.68	-3888.40	1740786.64	14589235.04	40°10'15.893"N	80°38'26.531"W	5227.38	311.939	3.28	-0.13	-3.28
10783.00	90.800	337.520	5776.69	5122.15	3580.28	-3922.27	1740752.78	14589321.60	40°10'16.750"N	80°38'26.963"W	5310.61	312.390	2.41	-0.03	-2.41
10876.00	90.550	338.720	5775.59	5213.61	3666.57	-3956.93	1740718.14	14589407.86	40°10'17.604"N	80°38'27.405"W	5394.54	312.819	1.32	-0.27	1.29
10968.00	90.430	341.110	5774.80	5303.52	3752.97	-3988.52	1740686.57	14589494.22	40°10'18.459"N	80°38'27.807"W	5476.59	313.257	2.60	-0.13	2.60
11061.00	90.490	344.460	5774.06	5393.30	3841.79	-4016.04	1740659.06	14589583.01	40°10'19.338"N	80°38'28.157"W	5557.69	313.730	3.60	0.06	3.60
11154.00	90.460	349.310	5773.29	5481.10	3932.33	-4037.13	1740637.97	14589673.52	40°10'20.234"N	80°38'28.424"W	5635.75	314.247	5.21	-0.03	5.22
11246.00	90.650	348.370	5772.40	5566.90	4022.59	-4054.94	1740620.17	14589763.74	40°10'21.126"N	80°38'28.649"W	5711.72	314.771	1.04	0.21	-1.02
11339.00	90.310	345.890	5771.62	5654.60	4113.24	-4075.65	1740599.47	14589854.36	40°10'22.023"N	80°38'28.911"W	5790.48	315.263	2.69	-0.37	-2.67
11432.00	90.460	344.280	5770.99	5743.34	4203.10	-4099.58	1740575.54	14589944.18	40°10'22.912"N	80°38'29.215"W	5871.34	315.714	1.74	0.16	-1.73
11524.00	90.460	341.090	5770.25	5832.20	4290.92	-4126.96	1740548.17	14590031.96	40°10'23.781"N	80°38'29.563"W	5953.47	316.116	3.47	0.00	-3.47
11617.00	90.460	337.240	5769.51	5923.33	4377.82	-4160.03	1740515.12	14590118.83	40°10'24.641"N	80°38'29.984"W	6039.14	316.461	4.14	0.00	-4.14
11710.00	90.370	336.560	5768.83	6015.13	4463.36	-4196.52	1740478.64	14590204.34	40°10'25.487"N	80°38'30.450"W	6126.36	316.765	0.74	-0.10	-0.73
11803.00	90.220	339.140	5768.35	6106.66	4549.49	-4231.58	1740443.60	14590290.43	40°10'26.340"N	80°38'30.897"W	6213.22	317.073	2.78	-0.16	2.77
11896.00	90.620	345.490	5767.67	6196.60	4638.04	-4259.82	1740415.37	14590378.95	40°10'27.216"N	80°38'31.256"W	6297.42	317.434	6.84	0.43	6.83
11988.00	90.680	350.180	5766.63	6282.95	4727.95	-4279.20	1740396.00	14590468.82	40°10'28.105"N	80°38'31.501"W	6376.91	317.852	5.10	0.07	5.10
12081.00	90.740	349.060	5765.47	6369.22	4819.42	-4295.95	1740379.25	14590560.26	40°10'29.010"N	80°38'31.712"W	6456.16	318.287	1.21	0.06	-1.20
12174.00	90.800	348.030	5764.22	6456.12	4910.56	-4314.42	1740360.79	14590651.36	40°10'29.911"N	80°38'31.946"W	6536.65	318.697	1.11	0.06	-1.11
12267.00	90.740	348.140	5762.97	6543.29	5001.54	-4333.62	1740341.60	14590742.31	40°10'30.811"N	80°38'32.188"W	6617.83	319.093	0.13	-0.06	0.12
12360.00	90.950	347.900	5761.60	6630.50	5092.51	-4352.92	1740322.30	14590833.24	40°10'31.711"N	80°38'32.432"W	6699.37	319.477	0.34	0.23	-0.26
12452.00	90.740	343.300	5760.25	6718.01	5181.58	-4375.79	1740299.44	14590922.28	40°10'32.592"N	80°38'32.722"W	6782.06	319.819	5.00	-0.23	-5.00
12545.00	90.280	343.510	5759.42	6807.53	5270.71	-4402.35	1740272.89	14591011.37	40°10'33.474"N	80°38'33.060"W	6867.39	320.130	0.54	-0.49	0.23



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal OHI Pad		

WELLPATH DATA (187 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]
12638.00	90.370	343.420	5758.89	6897.03	5359.86	-4428.82	1740246.44	14591100.49	40°10'34.356"N	80°38'33.396"W	6952.88	320.433	0.14	0.10	-0.10
12730.00	90.430	342.130	5758.25	6985.86	5447.73	-4456.06	1740219.20	14591188.32	40°10'35.225"N	80°38'33.742"W	7038.06	320.718	1.40	0.07	-1.40
12823.00	90.460	339.530	5757.53	7076.42	5535.56	-4486.60	1740188.68	14591276.12	40°10'36.094"N	80°38'34.131"W	7125.45	320.975	2.80	0.03	-2.80
12916.00	90.460	338.640	5756.78	7167.59	5622.43	-4519.79	1740155.50	14591362.96	40°10'36.954"N	80°38'34.554"W	7213.89	321.205	0.96	0.00	-0.96
13008.00	90.430	341.170	5756.06	7257.50	5708.82	-4551.40	1740123.90	14591449.31	40°10'37.809"N	80°38'34.957"W	7301.09	321.436	2.75	-0.03	2.75
13101.00	90.460	343.960	5755.34	7347.37	5797.54	-4579.26	1740096.05	14591537.99	40°10'38.687"N	80°38'35.312"W	7387.90	321.696	3.00	0.03	3.00
13191.00	90.430	347.670	5754.64	7432.90	5884.77	-4601.31	1740074.01	14591625.20	40°10'39.550"N	80°38'35.591"W	7470.12	321.978	4.12	-0.03	4.12
13283.00	90.430	349.710	5753.95	7518.78	5974.98	-4619.35	1740055.98	14591715.37	40°10'40.442"N	80°38'35.819"W	7552.40	322.292	2.22	0.00	2.22
13376.00	90.650	349.190	5753.08	7605.16	6066.40	-4636.38	1740038.96	14591806.76	40°10'41.346"N	80°38'36.033"W	7635.26	322.610	0.61	0.24	-0.56
13469.00	90.950	344.500	5751.78	7692.98	6156.93	-4657.54	1740017.81	14591897.25	40°10'42.242"N	80°38'36.301"W	7720.13	322.894	5.05	0.32	-5.04
13561.00	90.740	339.100	5750.42	7782.17	6244.28	-4686.26	1739989.10	14591984.57	40°10'43.106"N	80°38'36.667"W	7807.18	323.112	5.87	-0.23	-5.87
13654.00	90.370	339.420	5749.52	7873.28	6331.25	-4719.19	1739956.18	14592071.50	40°10'43.967"N	80°38'37.087"W	7896.55	323.300	0.53	-0.40	0.34
13747.00	90.460	342.870	5748.84	7963.71	6419.25	-4749.24	1739926.14	14592159.46	40°10'44.837"N	80°38'37.469"W	7985.11	323.504	3.71	0.10	3.71
13839.00	90.400	347.760	5748.15	8051.37	6508.21	-4772.55	1739902.83	14592248.39	40°10'45.717"N	80°38'37.765"W	8070.57	323.747	5.32	-0.07	5.32
13932.00	90.550	349.290	5747.38	8138.29	6599.35	-4791.05	1739884.34	14592339.49	40°10'46.619"N	80°38'37.999"W	8155.10	324.021	1.65	0.16	1.65
14025.00	90.520	348.410	5746.51	8225.02	6690.59	-4809.04	1739866.36	14592430.70	40°10'47.521"N	80°38'38.226"W	8239.59	324.292	0.95	-0.03	-0.95
14118.00	90.650	345.160	5745.56	8312.89	6781.11	-4830.29	1739845.12	14592521.18	40°10'48.417"N	80°38'38.495"W	8325.57	324.537	3.50	0.14	-3.49
14210.00	90.310	344.100	5744.79	8400.90	6869.81	-4854.68	1739820.74	14592609.85	40°10'49.294"N	80°38'38.804"W	8412.03	324.752	1.21	-0.37	-1.15
14303.00	90.490	344.580	5744.14	8490.00	6959.36	-4879.78	1739795.65	14592699.36	40°10'50.180"N	80°38'39.123"W	8499.70	324.963	0.55	0.19	0.52
14396.00	90.340	343.710	5743.47	8579.19	7048.82	-4905.19	1739770.25	14592788.79	40°10'51.065"N	80°38'39.446"W	8587.59	325.166	0.95	-0.16	-0.94
14489.00	90.430	340.560	5742.84	8669.24	7137.32	-4933.71	1739741.74	14592877.26	40°10'51.941"N	80°38'39.809"W	8676.57	325.346	3.39	0.10	-3.39
14582.00	90.490	338.170	5742.10	8760.31	7224.34	-4966.48	1739708.98	14592964.25	40°10'52.802"N	80°38'40.227"W	8766.82	325.493	2.57	0.06	-2.57
14675.00	90.550	339.340	5741.25	8851.58	7311.02	-5000.18	1739675.29	14593050.89	40°10'53.660"N	80°38'40.656"W	8857.36	325.631	1.26	0.06	1.26
14767.00	90.430	341.820	5740.47	8941.26	7397.77	-5030.77	1739644.72	14593137.61	40°10'54.518"N	80°38'41.046"W	8946.27	325.783	2.70	-0.13	2.70
14860.00	90.650	344.250	5739.59	9030.94	7486.72	-5057.90	1739617.60	14593226.52	40°10'55.398"N	80°38'41.391"W	9035.11	325.958	2.62	0.24	2.61
14953.00	90.800	343.230	5738.41	9120.31	7575.99	-5083.94	1739591.57	14593315.75	40°10'56.282"N	80°38'41.722"W	9123.71	326.136	1.11	0.16	-1.10
15045.00	90.920	341.270	5737.03	9209.34	7663.59	-5111.98	1739563.54	14593403.33	40°10'57.148"N	80°38'42.078"W	9212.11	326.295	2.13	0.13	-2.13
15138.00	90.740	340.580	5735.69	9299.87	7751.48	-5142.37	1739533.16	14593491.17	40°10'58.018"N	80°38'42.465"W	9302.12	326.440	0.77	-0.19	-0.74
15228.00	90.770	341.230	5734.50	9387.48	7836.52	-5171.81	1739503.73	14593576.18	40°10'58.860"N	80°38'42.840"W	9389.28	326.577	0.72	0.03	0.72
15319.00	90.680	342.100	5733.35	9475.78	7922.89	-5200.43	1739475.12	14593662.52	40°10'59.714"N	80°38'43.205"W	9477.17	326.720	0.96	-0.10	0.96

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 401H
SOUTHWESTERN ENERGY	Well	Rayle Coal OHI 401H
Area	Wellbore	Rayle Coal OHI 401H AWB
Field		
Facility		

WELLPATH DATA (187 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]
15410.00	90.800	342.110	5732.17	9563.91	8009.48	-5228.39	1739447.17	14593749.08	40°11'00.571"N	80°38'43.560"W	9564.93	326.864	0.13	0.13	0.01
15501.00	90.800	342.770	5730.90	9651.91	8096.23	-5255.84	1739419.73	14593835.79	40°11'01.429"N	80°38'43.910"W	9652.61	327.010	0.73	0.00	0.73
15591.00	90.800	341.450	5729.65	9739.07	8181.87	-5283.49	1739392.10	14593921.40	40°11'02.277"N	80°38'44.261"W	9739.52	327.147	1.47	0.00	-1.47
15683.00	90.890	339.580	5728.29	9828.76	8268.59	-5314.17	1739361.43	14594008.08	40°11'03.135"N	80°38'44.652"W	9829.04	327.271	2.03	0.10	-2.03
15774.00	90.740	340.020	5726.99	9917.73	8353.98	-5345.59	1739330.02	14594093.44	40°11'03.980"N	80°38'45.053"W	9917.88	327.385	0.51	-0.16	0.48
15805.00	90.830	341.330	5726.57	9947.94	8383.23	-5355.85	1739319.77	14594122.68	40°11'04.269"N	80°38'45.183"W	9948.05	327.426	4.24	0.29	4.23
15830.00	90.830	341.330	5726.21	9972.23	8406.91	-5363.85	1739311.77	14594146.35	40°11'04.504"N	80°38'45.285"W	9972.32	327.461	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Rayle Coal OHI 401H AWB Ref Wellpath: Rayle Coal OHI 401H AWP Proj: 15830'MD

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]
17.5in Open Hole	26.00	385.00	359.00	26.00	384.99	0.00	2.06	0.00	1.60
13.375in Casing	26.00	385.00	359.00	26.00	384.99	0.00	2.06	0.00	1.60
12.25in Open Hole	385.00	1755.00	1370.00	384.99	1749.02	2.06	-45.70	1.60	-92.83
9.625in Casing	26.00	1755.00	1729.00	26.00	1749.02	0.00	-45.70	0.00	-92.83
8.75in Open Hole	1755.00	6441.00	4686.00	1749.02	5661.47	-45.70	-435.34	-92.83	-2510.70
8.5in Open Hole	6441.00	15830.00	9389.00	5661.47	5726.21	-435.34	8406.91	-2510.70	-5363.85

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal OHI Pad		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Rayle Coal OHI 401H BHL Rev-3	5728.00	8429.85	-5328.37	1739347.23	14594169.29	40°11'04.729"N	80°38'44.827"W	point
Rayle Coal OHI 401H LP Rev-2	5792.00	-89.61	-2847.09	1741827.55	14585653.14	40°09'40.441"N	80°38'13.306"W	point
Rayle Coal OHI 401H LP Rev-4	5802.00	43.92	-2886.65	1741788.00	14585786.62	40°09'41.762"N	80°38'13.809"W	point

WELLPATH COMPOSITION - Ref Wellbore: Rayle Coal OHI 401H AWB Ref Wellpath: Rayle Coal OHI 401H AWP Proj: 15830'MD

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	313.00	BHI Generic gyro - northseeking (Standard)	01_Gyro <17.5">(50-313')	Rayle Coal OHI 401H AWB
313.00	1680.00	OWSG MWD rev2 + HRGM	02_MWD+HRGM <12.25"> (313')(402'-1680')	Rayle Coal OHI 401H AWB
1680.00	6441.00	OWSG MWD rev2 + HRGM	03_MWD+HRGM <8.75"> (1680')(1758'-6441')	Rayle Coal OHI 401H AWB
6441.00	15805.00	BHI AutoTrak Curve (Short)	04_BH AT Curve <8.5"> (6441')(6488'-15805')	Rayle Coal OHI 401H AWB
15805.00	15830.00	Blind Drilling (std)	Projection to bit	Rayle Coal OHI 401H AWB



REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 401H
Area	Ohio County, WV	Well	Rayle Coal OHI 401H
Field	Ohio	Wellbore	Rayle Coal OHI 401H AWB
Facility	Rayle Coal OHI Pad		

COMMENTS

Wellpath general comments

API: 47-069-00278-0000
 BH Job #: 109318132
 Rig: SDC 41
 Duration: 08/23/2018 - 08/26/2018