

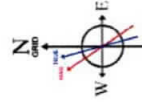
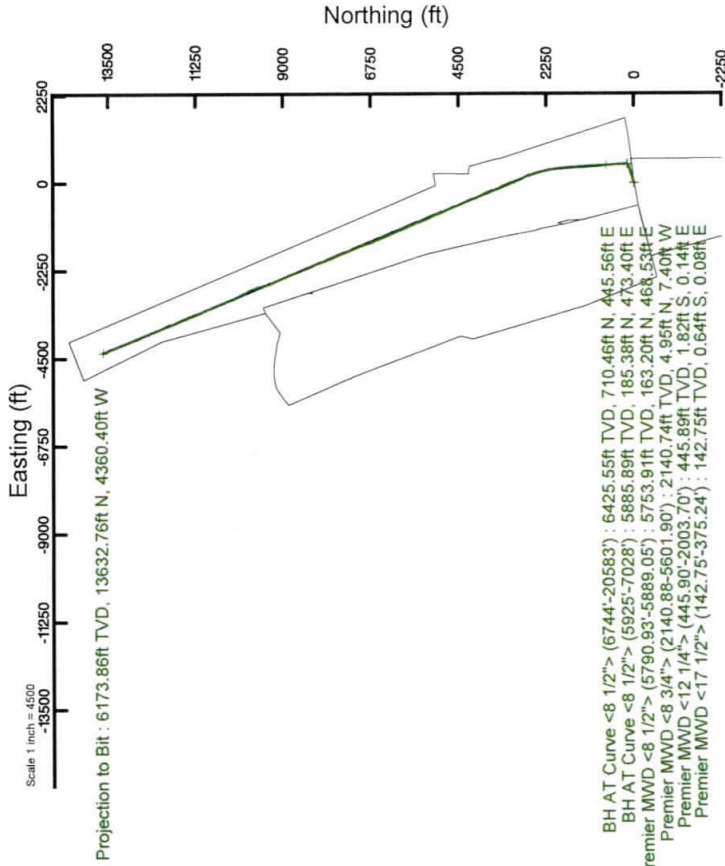
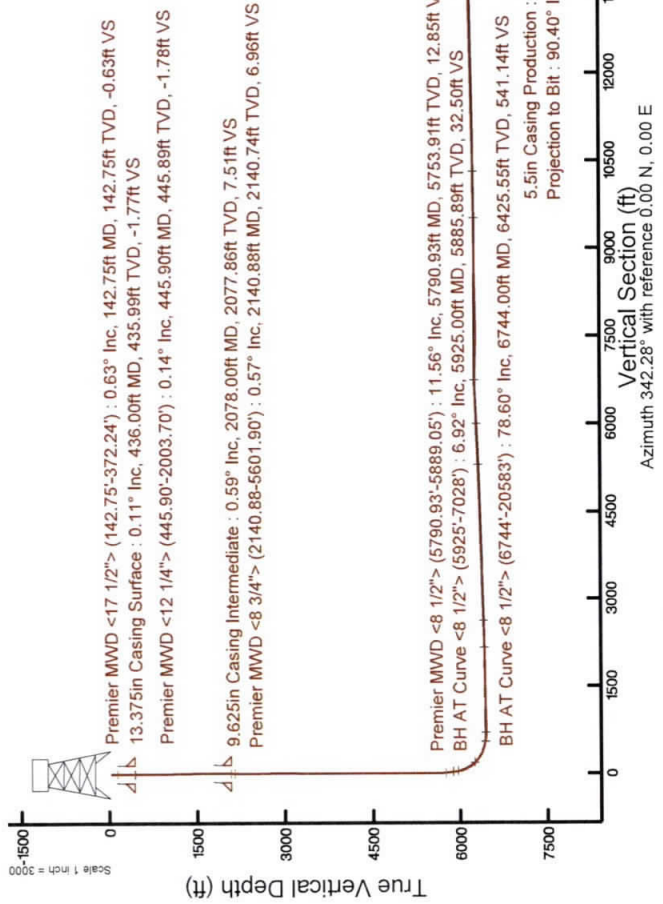
SOUTHWESTERN ENERGY

Location: Brooke County, WV Slot: Slot 5H
 Field: Brooke Well: Sandra Parr BRK 5H
 Facility: Sandra Parr BRK Pad Wellbore: Sandra Parr BRK 5H ST01 PWB

Pilot reference wellpath is Sandra Parr BRK 5H ST01 PWP Rev-D.0 Grid System: NAD83 / UTM Zone 17 North, US feet
 True vertical depths are referenced to SDC 42 (KB)
 Measured depths are referenced to SDC 42 (KB)
 Scale: True distance
 Depths are in feet
 SDC 42 (KB) to Mean Sea Level: 1302.1 feet
 Mean Sea Level to Ground level (At Slot: Slot 5H): -1275.8 feet
 Created by: ateljien on 2019-04-10
 Coordinates are in feet referenced to Slot
 Database: WA_MPL_EASTERNUS_Defn

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Sandra Parr BRK Pad	1774090.396	14592474.069	80°31'17.133"W
Slot	Local E (ft)	Grid East (US ft)	Longitude
Slot 5H	0.00	1774090.396	80°31'17.133"W
SDC 42 (KB) to Ground level (At Slot: Slot 5H)		14592474.069	26.3ft
Mean Sea Level to Ground level (At Slot: Slot 5H)			-1275.8ft
SDC 42 (KB) to Mean Sea Level			1302.1ft

Comments	
API: 47-009-00245-0100	
BH Job #: 109546520A	
Rig: SDC 42	
Duration: 02/20/2019 - 03/03/2019	
API: 47-009-00245-0000	
BH Job #: 109546520	
Rig: SDC 42	
Duration: 01/15/2019 - 01/22/2019	



User specified Dip: 67.52° Field: 52642 nt (9/16/2019)
 Magnetic North is 66.53 degrees East of True North
 Grid North is 63.31 degrees East of True North
 To correct azimuth from True to Grid subtract: 0.31 degrees
 To correct azimuth from Magnetic to Grid subtract: 8.77 degrees

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5.5in Casing Production : 90.40° Inc, 20608.00ft MD, 6173.86ft TVD, 14313.12ft VS
 Projection to Bit : 90.40° Inc, 20608.00ft MD, 6173.86ft TVD, 14313.12ft VS

Scale 1 inch = 3000

Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

REPORT SETUP INFORMATION	
Projection System	NAD83 / UTM Zone 17 North, US feet
Software System	WellArchitect® 5.1
North Reference	Grid
Scale	0.999620
Report Generated	4/15/2019 at 8:38:26 AM
Database/Source file	WA_MPL_EASTERNUS_Defn/Sandra_Parr_BRK_5H_ST02_AWP_Proj_20608_.xml
Convergence at slot	0.31° East
User	Atenjen

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	1774090.40	14592474.07	40°10'46.360"N	80°31'17.133"W
Facility Reference Pt			1774090.40	14592474.07	40°10'46.360"N	80°31'17.133"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM	
Calculation method	SDC 42 (KB) to Facility Vertical Datum
Horizontal Reference Pt	SDC 42 (KB) to Mean Sea Level
Vertical Reference Pt	SDC 42 (KB) to Ground Level at Slot (Slot 5H)
MD Reference Pt	Section Origin
Field Vertical Reference	Section Azimuth
Minimum curvature	1302.10ft
Slot	1302.10ft
SDC 42 (KB)	26.30ft
SDC 42 (KB)	N 0.00, E 0.00 ft
Mean Sea Level	342.28°

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Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 5H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 5H ST02
Area	Wellbore	Sandra Parr BRK 5H ST02 AWP
Field	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD
Facility		

WELLPATH DATA (234 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	172.470	0.00	0.00	0.00	0.00	1774090.40	14592474.07	40°10'46.360"N	80°31'17.133"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	172.470	26.00	0.00	0.00	0.00	1774090.40	14592474.07	40°10'46.360"N	80°31'17.133"W	0.00	0.000	0.00	0.00	0.00
142.75	0.630	172.470	142.75	-0.63	-0.64	0.08	1774090.48	14592473.43	40°10'46.354"N	80°31'17.132"W	0.64	172.470	0.54	0.54	147.73
234.28	0.180	167.490	234.28	-1.27	-1.28	0.18	1774090.58	14592472.79	40°10'46.347"N	80°31'17.131"W	1.29	171.915	0.49	-0.49	-5.44
325.44	0.360	192.560	325.43	-1.66	-1.69	0.15	1774090.55	14592472.37	40°10'46.343"N	80°31'17.131"W	1.70	174.944	0.23	0.20	27.50
372.24	0.070	292.060	372.23	-1.77	-1.83	0.09	1774090.49	14592472.24	40°10'46.342"N	80°31'17.132"W	1.83	177.135	0.81	-0.62	212.61
445.90	0.140	96.910	445.89	-1.78	-1.82	0.14	1774090.54	14592472.25	40°10'46.342"N	80°31'17.131"W	1.83	175.633	0.28	0.10	223.80
513.58	0.420	28.120	513.57	-1.64	-1.61	0.34	1774090.73	14592472.46	40°10'46.344"N	80°31'17.129"W	1.65	168.160	0.58	0.41	-101.64
604.79	0.160	158.420	604.78	-1.53	-1.44	0.54	1774090.94	14592472.63	40°10'46.346"N	80°31'17.126"W	1.54	159.308	0.59	-0.29	142.86
700.24	0.160	34.000	700.23	-1.58	-1.45	0.67	1774091.06	14592472.62	40°10'46.346"N	80°31'17.125"W	1.60	155.325	0.30	0.00	-130.35
795.14	0.420	29.980	795.13	-1.27	-1.04	0.91	1774091.31	14592473.03	40°10'46.350"N	80°31'17.121"W	1.38	138.654	0.27	0.27	-4.24
890.80	0.700	5.420	890.79	-0.49	-0.15	1.14	1774091.54	14592473.92	40°10'46.358"N	80°31'17.118"W	1.15	97.626	0.38	0.29	-25.67
986.23	0.710	355.720	986.21	0.62	1.02	1.16	1774091.55	14592475.09	40°10'46.370"N	80°31'17.118"W	1.54	48.650	0.13	0.01	-10.16
1080.34	0.990	339.800	1080.31	2.00	2.36	0.83	1774091.23	14592476.43	40°10'46.383"N	80°31'17.122"W	2.50	19.390	0.39	0.30	-16.92
1176.09	0.950	335.330	1176.05	3.61	3.86	0.21	1774090.61	14592477.93	40°10'46.398"N	80°31'17.130"W	3.86	3.176	0.09	-0.04	-4.67
1270.88	0.980	320.820	1270.82	5.15	5.20	-0.63	1774089.77	14592479.27	40°10'46.411"N	80°31'17.141"W	5.24	353.137	0.26	0.03	-15.31
1366.48	1.070	319.190	1366.41	6.73	6.51	-1.73	1774088.67	14592480.58	40°10'46.424"N	80°31'17.155"W	6.74	345.153	0.10	0.09	-1.71
1463.21	1.430	306.980	1463.11	8.54	7.92	-3.28	1774087.12	14592481.99	40°10'46.438"N	80°31'17.175"W	8.57	337.502	0.46	0.37	-12.62
1559.13	0.720	289.210	1559.02	9.88	8.84	-4.81	1774085.59	14592482.90	40°10'46.448"N	80°31'17.194"W	10.06	331.467	0.81	-0.74	-18.53
1656.23	0.350	256.620	1656.11	10.27	8.97	-5.67	1774084.73	14592483.04	40°10'46.449"N	80°31'17.205"W	10.61	327.704	0.48	-0.38	-33.56
1752.66	0.480	226.620	1752.54	10.12	8.63	-6.25	1774084.15	14592482.69	40°10'46.446"N	80°31'17.218"W	10.65	324.070	0.26	0.13	-31.11
1848.08	0.530	192.090	1847.96	9.56	7.92	-6.63	1774083.77	14592481.99	40°10'46.439"N	80°31'17.218"W	10.33	320.049	0.32	0.05	-36.19
1944.88	0.660	193.690	1944.75	8.70	6.94	-6.86	1774083.54	14592481.01	40°10'46.429"N	80°31'17.221"W	9.76	315.334	0.14	0.13	1.65
2003.70	0.610	197.390	2003.57	8.15	6.31	-7.03	1774083.37	14592480.38	40°10'46.423"N	80°31'17.223"W	9.45	311.907	0.11	-0.09	6.29
2140.88	0.570	192.290	2140.74	6.96	4.95	-7.40	1774083.00	14592479.02	40°10'46.409"N	80°31'17.228"W	8.90	303.782	0.05	-0.03	-3.72
2237.61	1.420	110.210	2237.46	5.81	4.06	-6.37	1774084.02	14592478.13	40°10'46.400"N	80°31'17.215"W	7.56	302.521	1.50	0.88	-84.85
2334.23	3.890	80.850	2333.97	4.59	4.17	-2.01	1774088.38	14592476.24	40°10'46.401"N	80°31'17.159"W	4.63	334.230	2.84	2.56	-30.39
2430.81	6.520	73.270	2430.14	4.00	6.27	6.47	1774096.87	14592480.34	40°10'46.422"N	80°31'17.049"W	9.01	45.909	2.81	2.72	57.85
2528.00	7.970	69.720	2526.56	4.21	10.20	18.08	1774108.47	14592484.26	40°10'46.460"N	80°31'16.899"W	20.76	60.580	1.56	1.49	3.65
2623.04	8.610	67.210	2620.60	5.13	15.23	30.82	1774121.20	14592489.30	40°10'46.509"N	80°31'16.735"W	34.38	63.695	0.77	0.67	-2.64
2719.17	9.130	65.020	2715.58	6.73	21.24	44.37	1774134.74	14592495.30	40°10'46.568"N	80°31'16.560"W	49.19	64.414	0.64	0.54	-3.28
2814.04	8.240	69.370	2809.37	8.03	26.82	57.55	1774147.93	14592500.88	40°10'46.622"N	80°31'16.390"W	63.49	65.016	1.17	-0.94	-4.59

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WELLPATH DATA (234 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]
2909.35	8.350	71.330	2903.68	8.49	31.44	70.50	1774160.87	14592505.50	40°10'46.667"N	80°31'16.223"W	77.19	65.966	0.32	0.12	2.06
3006.68	9.050	68.620	2999.89	9.10	36.49	84.32	1774174.69	14592510.55	40°10'46.716"N	80°31'16.044"W	91.88	66.599	0.83	0.72	-2.78
3102.68	8.290	75.790	3094.79	9.15	40.94	98.06	1774188.42	14592515.00	40°10'46.759"N	80°31'15.867"W	106.27	67.339	1.37	-0.79	7.47
3199.72	7.730	80.740	3190.89	7.77	43.71	111.29	1774201.64	14592517.76	40°10'46.786"N	80°31'15.696"W	119.56	68.556	0.92	-0.58	5.10
3294.93	7.610	79.730	3285.25	6.01	45.87	123.81	1774214.16	14592519.92	40°10'46.807"N	80°31'15.535"W	132.03	69.673	0.19	-0.13	-1.06
3391.94	8.050	76.820	3381.35	4.64	48.56	136.74	1774227.09	14592522.61	40°10'46.833"N	80°31'15.368"W	145.11	70.449	0.61	0.45	-3.00
3487.95	8.270	73.820	3476.39	3.92	52.02	149.92	1774240.26	14592526.07	40°10'46.866"N	80°31'15.198"W	158.69	70.865	0.50	0.23	-3.12
3582.96	9.000	70.030	3570.32	4.03	56.46	163.47	1774253.80	14592530.51	40°10'46.909"N	80°31'15.023"W	172.94	70.946	0.97	0.77	-3.99
3679.57	8.760	69.680	3665.78	4.66	61.59	177.47	1774267.80	14592535.64	40°10'46.959"N	80°31'14.842"W	187.85	70.860	0.25	-0.25	-0.36
3775.58	7.620	72.440	3760.80	4.97	66.05	190.39	1774280.72	14592540.10	40°10'47.003"N	80°31'14.676"W	201.53	70.867	1.26	-1.19	2.87
3872.53	7.730	75.740	3856.89	4.56	69.60	202.84	1774293.16	14592543.64	40°10'47.037"N	80°31'14.515"W	214.45	71.062	0.47	0.11	3.40
3968.26	7.860	72.080	3951.73	4.19	73.20	215.31	1774305.62	14592547.24	40°10'47.072"N	80°31'14.354"W	227.41	71.224	0.54	0.14	-3.82
4063.81	7.650	74.390	4046.41	3.98	76.92	227.65	1774317.96	14592550.96	40°10'47.108"N	80°31'14.195"W	240.30	71.331	0.39	-0.22	2.42

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Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

WELLPATH DATA (234 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]
4160.41	7.570	73.940	4142.16	3.56	80.41	239.96	1774330.26	14592554.45	40°10'47.142"N	80°31'14.036"W	253.07	71.474	0.10	-0.08	-0.47
4255.88	7.200	69.400	4236.84	3.68	84.26	251.60	1774341.90	14592558.29	40°10'47.179"N	80°31'13.886"W	265.33	71.486	0.72	-0.39	-4.76
4352.36	7.910	75.030	4332.48	3.66	88.10	263.68	1774353.97	14592562.13	40°10'47.217"N	80°31'13.730"W	278.00	71.525	1.06	0.74	5.84
4449.29	8.520	73.520	4428.42	3.19	91.86	277.00	1774367.29	14592565.89	40°10'47.253"N	80°31'13.558"W	291.84	71.654	0.67	0.63	-1.56
4545.67	8.240	69.950	4523.77	3.31	96.25	290.34	1774380.62	14592570.28	40°10'47.296"N	80°31'13.386"W	305.88	71.659	0.61	-0.29	-3.70
4640.93	8.850	72.310	4617.97	3.59	100.82	303.73	1774394.01	14592574.85	40°10'47.340"N	80°31'13.213"W	320.03	71.637	0.74	0.64	2.48
4737.05	8.900	71.550	4712.94	3.68	105.42	317.83	1774408.10	14592579.45	40°10'47.385"N	80°31'13.031"W	334.86	71.650	0.13	0.05	-0.79
4833.74	9.190	70.320	4808.43	4.04	110.38	332.20	1774422.46	14592584.41	40°10'47.433"N	80°31'12.846"W	350.05	71.619	0.36	0.30	-1.27
4929.12	9.500	69.780	4902.54	4.64	115.67	346.75	1774437.02	14592589.70	40°10'47.485"N	80°31'12.658"W	365.54	71.552	0.34	0.33	-0.57
5024.98	9.560	74.210	4997.08	4.72	120.57	361.84	1774452.09	14592594.59	40°10'47.532"N	80°31'12.463"W	381.40	71.571	0.77	0.06	4.62
5121.93	9.330	74.610	5092.71	4.13	124.85	377.16	1774467.41	14592598.87	40°10'47.574"N	80°31'12.265"W	397.29	71.685	0.25	-0.24	0.41
5217.38	9.150	70.220	5186.93	4.09	129.47	391.76	1774482.01	14592603.49	40°10'47.618"N	80°31'12.077"W	412.60	71.712	0.76	-0.19	-4.60
5314.07	8.980	75.060	5282.41	4.00	134.02	406.29	1774496.53	14592608.03	40°10'47.663"N	80°31'11.889"W	427.82	71.745	0.81	-0.18	5.01
5409.53	9.040	76.040	5376.69	3.14	137.75	420.76	1774511.00	14592611.76	40°10'47.699"N	80°31'11.703"W	442.74	71.873	0.17	0.06	1.03
5505.58	8.600	72.270	5471.61	2.65	141.75	434.93	1774525.16	14592615.77	40°10'47.738"N	80°31'11.520"W	457.44	71.948	0.76	-0.46	-3.93
5601.90	7.560	67.830	5566.97	3.14	146.34	447.65	1774537.88	14592620.35	40°10'47.782"N	80°31'11.356"W	470.97	71.898	1.26	-1.08	-4.61
5654.00	7.310	66.360	5618.63	3.75	148.96	453.86	1774544.09	14592622.97	40°10'47.808"N	80°31'11.275"W	477.68	71.830	0.60	-0.48	-2.82
5681.00	7.200	63.450	5645.42	4.19	150.40	456.95	1774547.17	14592624.42	40°10'47.822"N	80°31'11.235"W	481.07	71.781	1.42	-0.41	-10.78
5729.00	8.790	45.950	5692.96	6.28	154.30	462.28	1774552.50	14592628.31	40°10'47.860"N	80°31'11.167"W	487.35	71.542	6.02	3.31	-36.46
5777.00	11.000	30.690	5740.25	10.95	160.79	467.25	1774557.47	14592634.80	40°10'47.924"N	80°31'11.102"W	494.15	71.011	7.11	4.60	-31.79
5790.93	11.560	25.240	5753.91	12.85	163.20	468.53	1774558.75	14592637.20	40°10'47.948"N	80°31'11.085"W	496.14	70.796	8.64	4.02	-39.12
5815.85	12.050	20.590	5778.30	16.72	167.89	470.51	1774560.72	14592641.89	40°10'47.994"N	80°31'11.060"W	499.56	70.362	4.29	1.97	-18.66
5840.20	11.600	17.940	5802.13	20.70	172.60	472.16	1774562.37	14592646.60	40°10'48.040"N	80°31'11.038"W	502.71	69.920	2.90	-1.85	-10.88
5850.33	11.060	17.010	5812.07	22.33	174.50	472.75	1774562.97	14592648.50	40°10'48.059"N	80°31'11.030"W	503.93	69.741	5.63	-5.33	-9.18
5860.12	10.410	14.510	5821.69	23.85	176.25	473.25	1774563.47	14592650.25	40°10'48.076"N	80°31'11.024"W	505.00	69.573	8.17	-6.64	-25.54
5889.05	8.090	2.910	5850.24	27.96	180.81	474.01	1774564.22	14592654.81	40°10'48.121"N	80°31'11.014"W	507.32	69.120	10.25	-8.02	-40.10
5925.00	6.920	340.000	5885.89	32.50	185.38	473.40	1774563.61	14592659.38	40°10'48.167"N	80°31'11.021"W	508.40	68.615	8.86	-3.25	-63.73
5971.00	8.200	343.790	5931.49	38.55	191.13	471.53	1774561.75	14592665.13	40°10'48.224"N	80°31'11.045"W	508.80	67.935	2.98	2.78	8.24
6019.00	11.010	9.500	5978.83	46.05	198.94	471.33	1774561.55	14592672.94	40°10'48.301"N	80°31'11.047"W	511.60	67.116	10.54	5.85	53.56
6067.00	16.490	12.340	6025.44	56.03	210.13	473.55	1774563.76	14592684.12	40°10'48.411"N	80°31'11.018"W	518.07	66.072	11.50	11.42	5.92
6115.00	22.250	5.880	6070.71	70.26	225.84	475.94	1774566.15	14592699.82	40°10'48.566"N	80°31'10.986"W	526.80	64.615	12.79	12.00	-13.46
6162.00	27.920	359.300	6113.27	88.96	245.71	476.71	1774566.93	14592719.69	40°10'48.763"N	80°31'10.974"W	536.31	62.732	13.43	12.06	-14.00

WELLPATH DATA (234 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]
6208.00	32.850	354.630	6152.94	111.46	288.92	475.41	1774565.63	14592742.89	40°10'48.992"N	80°31'10.989"W	546.20	60.505	11.88	10.72	-10.15
6256.00	37.660	355.280	6192.13	138.48	296.51	472.99	1774563.20	14592770.47	40°10'49.265"N	80°31'11.019"W	558.24	57.917	10.05	10.02	1.35
6303.00	41.660	356.240	6228.30	167.64	326.42	470.78	1774561.00	14592800.36	40°10'49.561"N	80°31'11.045"W	572.87	55.264	8.61	8.51	2.04
6350.00	46.770	356.400	6261.98	199.43	359.12	468.68	1774558.90	14592833.05	40°10'49.884"N	80°31'11.070"W	590.45	52.540	10.87	10.87	0.34
6448.00	57.130	356.090	6322.30	274.22	436.02	463.62	1774553.84	14592909.92	40°10'50.644"N	80°31'11.130"W	636.44	46.757	10.57	10.57	-0.32
6545.00	65.340	355.740	6368.94	356.79	520.76	457.56	1774547.78	14592994.63	40°10'51.482"N	80°31'11.202"W	693.22	41.304	8.47	8.46	-0.36
6642.00	73.200	355.990	6403.24	444.90	611.17	451.02	1774541.25	14593085.01	40°10'52.375"N	80°31'11.280"W	759.58	36.426	8.11	8.10	0.26
6739.00	81.250	357.630	6424.68	536.39	705.54	445.79	1774536.01	14593179.34	40°10'53.308"N	80°31'11.341"W	834.58	32.286	8.46	8.30	1.69
6744.00	78.600	357.070	6425.55	541.14	710.46	445.56	1774535.79	14593184.26	40°10'53.357"N	80°31'11.343"W	838.62	32.093	54.13	-53.00	-11.20
6788.00	80.980	357.110	6433.35	583.00	753.71	443.36	1774533.59	14593227.49	40°10'53.784"N	80°31'11.369"W	874.44	30.466	5.41	5.41	0.09
6836.00	84.670	357.180	6439.34	629.03	801.26	440.99	1774531.22	14593275.03	40°10'54.254"N	80°31'11.396"W	914.60	28.827	7.69	7.69	0.15
6932.00	90.920	357.640	6443.04	721.58	897.05	436.66	1774526.89	14593370.77	40°10'55.201"N	80°31'11.445"W	997.68	25.956	6.53	6.51	0.48
7029.00	91.170	357.570	6441.27	815.12	993.95	432.60	1774522.84	14593467.63	40°10'56.159"N	80°31'11.490"W	1084.01	23.521	0.27	0.26	-0.07

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Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

WELLPATH DATA (234 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]
7124.00	91.660	357.270	6438.92	906.79	1088.82	428.33	1774518.56	14593562.47	40°10'57.097"N	80°31'11.539"W	1170.04	21.474	0.60	0.52	-0.32
7220.00	91.510	356.700	6436.27	999.61	1184.65	423.28	1774513.52	14593658.27	40°10'58.044"N	80°31'11.597"W	1258.00	19.662	0.61	-0.16	-0.59
7317.00	91.140	356.500	6434.02	1093.57	1281.45	417.53	1774507.77	14593755.03	40°10'59.001"N	80°31'11.665"W	1347.76	18.047	0.43	-0.38	-0.21
7413.00	91.050	356.220	6432.19	1186.67	1377.24	411.44	1774501.68	14593850.78	40°10'59.948"N	80°31'11.736"W	1437.38	16.633	0.31	-0.09	-0.29
7509.00	90.430	354.570	6430.95	1280.16	1472.92	403.97	1774493.97	14593946.43	40°11'00.894"N	80°31'11.829"W	1527.25	15.328	1.84	-0.65	-1.72
7606.00	90.920	355.070	6429.81	1374.83	1569.52	394.73	1774485.22	14594032.99	40°11'01.849"N	80°31'11.935"W	1618.45	14.125	0.72	0.51	0.52
7701.00	91.110	355.070	6428.12	1467.46	1664.15	386.81	1774477.06	14594137.58	40°11'02.784"N	80°31'12.034"W	1708.51	13.085	0.20	0.20	0.00
7798.00	90.490	354.780	6426.77	1562.10	1760.76	378.23	1774468.48	14594234.16	40°11'03.739"N	80°31'12.138"W	1800.93	12.124	0.71	-0.64	-0.30
7894.00	90.550	354.060	6425.90	1655.95	1856.30	368.90	1774459.15	14594329.66	40°11'04.684"N	80°31'12.251"W	1892.60	11.240	0.75	0.06	-0.75
7990.00	90.580	352.500	6424.95	1750.18	1951.63	357.66	1774447.92	14594424.96	40°11'05.627"N	80°31'12.389"W	1984.14	10.385	1.63	0.03	-1.62
8086.00	90.580	350.680	6423.98	1844.90	2046.59	343.62	1774433.89	14594519.88	40°11'06.566"N	80°31'12.564"W	2075.24	9.531	1.90	0.00	-1.90
8181.00	90.580	348.770	6423.02	1939.09	2140.06	326.68	1774416.95	14594613.31	40°11'07.490"N	80°31'12.775"W	2164.85	8.679	2.01	0.00	-2.01
8278.00	91.290	348.500	6421.43	2035.48	2235.14	307.57	1774397.85	14594708.36	40°11'08.431"N	80°31'13.015"W	2256.21	7.835	0.78	0.73	-0.28
8374.00	91.750	348.220	6418.89	2130.91	2329.14	288.21	1774378.49	14594802.32	40°11'09.361"N	80°31'13.258"W	2346.90	7.054	0.56	0.48	-0.29
8470.00	91.660	344.850	6416.03	2226.59	2422.44	265.87	1774356.16	14594895.59	40°11'10.284"N	80°31'13.539"W	2436.99	6.263	3.51	-0.09	-3.51
8565.00	91.690	341.460	6413.25	2321.52	2513.31	238.35	1774328.66	14594986.42	40°11'11.184"N	80°31'13.887"W	2524.59	5.417	3.57	0.03	-3.57
8661.00	91.690	340.760	6410.42	2417.46	2604.10	207.29	1774297.60	14595077.18	40°11'12.082"N	80°31'14.281"W	2612.34	4.551	0.73	0.00	-0.73
8757.00	91.750	340.990	6407.54	2513.39	2694.76	175.85	1774266.18	14595167.81	40°11'12.980"N	80°31'14.680"W	2700.50	3.734	0.25	0.06	0.24
8853.00	91.690	339.900	6404.66	2609.30	2785.18	143.73	1774234.07	14595258.19	40°11'13.875"N	80°31'15.088"W	2788.89	2.954	1.14	-0.06	-1.14
8950.00	91.750	338.100	6401.75	2706.09	2875.70	108.99	1774199.34	14595348.67	40°11'14.771"N	80°31'15.529"W	2877.76	2.170	1.86	0.06	-1.86
9046.00	91.660	336.720	6398.89	2801.70	2964.29	72.13	1774162.49	14595437.23	40°11'15.649"N	80°31'15.998"W	2965.17	1.394	1.44	-0.09	-1.44
9142.00	91.630	333.930	6396.13	2896.94	3051.48	32.07	1774122.45	14595524.39	40°11'16.513"N	80°31'16.508"W	3051.65	0.602	2.91	-0.03	-2.91
9239.00	92.060	335.080	6393.01	2993.00	3138.99	-9.66	1774080.74	14595611.86	40°11'17.380"N	80°31'17.039"W	3139.00	359.824	1.27	0.44	1.19
9335.00	91.660	336.220	6389.89	3088.31	3226.40	-49.22	1774041.19	14595699.24	40°11'18.245"N	80°31'17.543"W	3226.78	359.126	1.26	-0.42	1.19
9430.00	91.690	337.360	6387.12	3182.83	3313.67	-86.64	1774003.79	14595786.48	40°11'19.110"N	80°31'18.019"W	3314.81	358.502	1.20	0.03	1.20
9526.00	91.970	338.990	6384.05	3278.53	3402.74	-125.31	1773968.13	14595875.51	40°11'19.992"N	80°31'18.473"W	3404.94	357.941	1.72	0.29	1.70
9622.00	92.220	340.260	6380.54	3374.36	3492.67	-152.31	1773934.10	14595965.45	40°11'20.882"N	80°31'18.897"W	3496.14	357.447	1.35	0.26	1.32
9718.00	91.850	338.670	6377.13	3470.18	3582.52	-189.37	1773901.74	14596055.22	40°11'21.772"N	80°31'19.324"W	3587.52	356.974	1.70	-0.39	-1.66
9814.00	91.910	335.830	6373.98	3565.75	3670.99	-226.47	1773864.01	14596143.66	40°11'22.648"N	80°31'19.796"W	3677.97	356.470	2.96	0.06	-2.96
9910.00	91.940	337.130	6370.76	3661.20	3758.96	-264.76	1773825.74	14596231.60	40°11'23.520"N	80°31'20.283"W	3768.27	355.971	1.35	0.03	1.35
10007.00	92.190	339.410	6367.26	3757.90	3849.00	-300.64	1773789.87	14596321.61	40°11'24.411"N	80°31'20.740"W	3860.73	355.534	2.36	0.26	2.35
10103.00	91.940	338.980	6363.80	3853.69	3938.69	-334.72	1773755.81	14596411.25	40°11'25.299"N	80°31'21.172"W	3952.88	355.143	0.52	-0.26	-0.45

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WELLPATH DATA (234 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]
10199.00	91.940	337.250	6360.55	3949.38	4027.71	-370.48	1773720.06	14596500.25	40°11'26.181"N	80°31'21.627"W	4044.72	354.745	1.80	0.00	-1.80
10294.00	91.420	337.520	6357.77	4043.99	4115.37	-407.00	1773683.56	14596587.87	40°11'27.049"N	80°31'22.091"W	4135.45	354.352	0.62	-0.55	0.28
10390.00	91.420	338.120	6355.39	4139.67	4204.24	-443.23	1773647.34	14596676.70	40°11'27.929"N	80°31'22.552"W	4227.54	353.982	0.62	0.00	0.62
10487.00	91.450	338.260	6352.96	4236.40	4294.27	-479.25	1773611.33	14596766.70	40°11'28.821"N	80°31'23.010"W	4320.93	353.632	0.15	0.03	0.14
10583.00	91.450	337.900	6350.53	4332.11	4383.30	-515.08	1773575.51	14596855.70	40°11'29.703"N	80°31'23.466"W	4413.46	353.298	0.37	0.00	-0.38
10679.00	91.450	337.130	6348.10	4427.74	4471.97	-551.78	1773538.82	14596944.34	40°11'30.581"N	80°31'23.932"W	4505.89	352.966	0.80	0.00	-0.80
10776.00	91.420	336.290	6345.67	4524.26	4561.04	-590.12	1773500.50	14597033.37	40°11'31.463"N	80°31'24.420"W	4599.06	352.628	0.87	-0.03	-0.87
10871.00	91.970	335.590	6342.86	4618.63	4647.75	-628.84	1773461.80	14597120.04	40°11'32.322"N	80°31'24.913"W	4690.09	352.295	0.94	0.58	-0.74
10968.00	92.030	336.040	6339.48	4714.96	4736.18	-668.55	1773422.10	14597208.44	40°11'33.198"N	80°31'25.419"W	4783.13	351.965	0.47	0.06	0.46
11064.00	92.030	336.020	6336.08	4810.33	4823.84	-707.53	1773383.14	14597296.07	40°11'34.066"N	80°31'25.915"W	4875.46	351.656	0.02	0.00	-0.02
11158.00	92.060	336.340	6332.72	4903.73	4909.78	-745.47	1773345.21	14597381.98	40°11'34.917"N	80°31'26.398"W	4966.05	351.367	0.34	0.03	0.34
11252.00	92.030	336.370	6329.37	4997.17	4995.84	-783.14	1773307.55	14597468.00	40°11'35.770"N	80°31'26.877"W	5056.85	351.091	0.05	-0.03	0.03
11346.00	92.030	336.430	6326.04	5090.62	5081.92	-820.75	1773269.96	14597554.05	40°11'36.622"N	80°31'27.356"W	5147.77	350.826	0.06	0.00	0.06

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Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'
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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

WELLPATH DATA (234 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]
11440.00	91.910	336.320	6322.81	5184.06	5167.99	-858.40	1773232.32	14597640.09	40°11'37.475"N	80°31'27.835"W	5238.80	350.569	0.17	-0.13	-0.12
11535.00	92.030	335.650	6319.54	5278.44	5254.72	-897.04	1773193.70	14597726.78	40°11'38.334"N	80°31'28.327"W	5330.73	350.312	0.72	0.13	-0.71
11629.00	92.030	337.670	6316.21	5371.92	5340.97	-934.26	1773156.50	14597813.00	40°11'39.188"N	80°31'28.801"W	5422.06	350.078	2.15	0.00	2.15
11724.00	92.030	339.630	6312.85	5466.67	5429.39	-968.82	1773121.95	14597901.38	40°11'40.064"N	80°31'29.240"W	5515.15	349.883	2.06	0.00	2.06
11818.00	92.060	336.210	6309.49	5560.32	5516.42	-1004.12	1773086.65	14597988.55	40°11'40.926"N	80°31'29.688"W	5607.07	349.684	3.64	0.03	-3.64
11912.00	93.140	336.930	6305.23	5653.76	5602.58	-1041.46	1773049.33	14598074.51	40°11'41.779"N	80°31'30.164"W	5698.56	349.469	1.38	1.15	0.77
12006.00	93.050	337.610	6300.15	5747.26	5689.16	-1077.73	1773013.08	14598161.05	40°11'42.637"N	80°31'30.626"W	5790.34	349.273	0.73	-0.10	0.72
12101.00	92.060	337.130	6295.92	5841.81	5776.75	-1114.25	1772976.57	14598248.62	40°11'43.504"N	80°31'31.090"W	5883.23	349.083	1.16	-1.04	-0.51
12195.00	91.690	336.420	6292.84	5935.33	5863.09	-1151.30	1772939.54	14598334.92	40°11'44.359"N	80°31'31.562"W	5975.06	348.891	0.85	-0.39	-0.76
12289.00	90.980	336.170	6290.65	6028.79	5949.13	-1189.08	1772901.77	14598420.93	40°11'45.212"N	80°31'32.043"W	6066.80	348.697	0.80	-0.76	-0.27
12384.00	91.600	336.310	6288.51	6123.24	6036.06	-1227.34	1772863.52	14598507.82	40°11'46.073"N	80°31'32.530"W	6159.58	348.506	0.67	0.65	0.15
12478.00	92.090	336.930	6285.48	6216.73	6122.29	-1264.62	1772826.25	14598594.03	40°11'46.927"N	80°31'33.004"W	6251.54	348.329	0.84	0.52	0.66
12572.00	92.060	336.440	6282.67	6310.22	6208.56	-1301.80	1772789.09	14598680.26	40°11'47.781"N	80°31'33.477"W	6343.57	348.158	0.52	-0.03	-0.52
12667.00	92.060	336.370	6278.67	6404.66	6295.56	-1339.80	1772751.10	14598767.23	40°11'48.643"N	80°31'33.961"W	6436.55	347.986	0.07	0.00	-0.07
12761.00	91.510	335.570	6275.74	6498.05	6381.37	-1378.06	1772712.86	14598853.01	40°11'49.493"N	80°31'34.448"W	6528.48	347.814	1.03	-0.59	-0.85
12855.00	90.430	336.080	6274.15	6591.44	6467.12	-1416.55	1772674.38	14598938.72	40°11'50.342"N	80°31'34.938"W	6620.44	347.645	1.27	-1.15	0.54
12950.00	90.030	337.000	6273.77	6685.96	6554.26	-1454.37	1772636.58	14599025.83	40°11'51.205"N	80°31'35.420"W	6713.68	347.489	1.06	-0.42	0.97
13045.00	90.030	339.040	6273.72	6780.69	6642.35	-1489.93	1772601.04	14599113.89	40°11'52.078"N	80°31'35.872"W	6807.40	347.357	2.15	0.00	2.15
13139.00	89.200	340.860	6274.35	6874.61	6730.65	-1522.15	1772568.82	14599202.15	40°11'52.952"N	80°31'36.281"W	6900.62	347.257	2.13	-0.88	1.94
13233.00	88.460	341.470	6276.27	6968.57	6819.60	-1552.49	1772538.50	14599291.06	40°11'53.833"N	80°31'36.666"W	6994.08	347.175	1.02	-0.79	0.65
13327.00	88.620	341.610	6278.66	7062.53	6908.73	-1582.25	1772508.75	14599380.16	40°11'54.715"N	80°31'37.043"W	7087.60	347.100	0.23	0.17	0.15
13422.00	88.090	338.710	6281.39	7157.41	6998.04	-1614.47	1772476.54	14599469.44	40°11'55.599"N	80°31'37.452"W	7181.86	347.009	3.10	-0.56	-3.05
13516.00	88.000	337.660	6284.60	7251.12	7085.26	-1649.38	1772441.64	14599556.63	40°11'56.463"N	80°31'37.896"W	7274.71	346.895	1.12	-0.10	-1.12
13610.00	89.080	337.920	6286.99	7344.80	7172.26	-1684.90	1772406.14	14599643.59	40°11'57.324"N	80°31'38.348"W	7367.51	346.780	1.18	1.15	0.28
13705.00	90.000	337.230	6287.75	7439.47	7260.07	-1721.14	1772369.91	14599731.37	40°11'58.194"N	80°31'38.809"W	7461.30	346.663	1.21	0.97	-0.73
13799.00	90.060	338.100	6287.70	7533.17	7347.02	-1756.86	1772334.20	14599818.28	40°11'59.055"N	80°31'39.263"W	7554.15	346.552	0.93	0.06	0.93
13894.00	90.060	336.870	6287.61	7627.83	7434.77	-1793.24	1772297.84	14599906.41	40°11'59.924"N	80°31'39.726"W	7647.98	346.439	1.29	0.00	-1.29
13988.00	90.740	336.880	6286.95	7721.41	7521.22	-1830.16	1772260.94	14599992.02	40°12'00.780"N	80°31'40.196"W	7740.68	346.324	0.72	0.72	0.01
14082.00	90.770	336.300	6285.71	7814.94	7607.47	-1867.50	1772223.61	14600078.64	40°12'01.635"N	80°31'40.671"W	7833.34	346.208	0.62	0.03	-0.62
14176.00	91.050	337.110	6284.22	7908.48	7693.80	-1904.67	1772186.45	14600164.93	40°12'02.490"N	80°31'41.145"W	7926.05	346.095	0.91	0.30	0.86
14271.00	90.770	337.920	6282.71	8003.14	7781.56	-1941.00	1772150.14	14600252.66	40°12'03.359"N	80°31'41.607"W	8019.99	345.994	0.90	-0.29	0.85
14365.00	91.450	338.860	6280.89	8096.91	7868.94	-1975.61	1772115.54	14600340.01	40°12'04.224"N	80°31'42.047"W	8113.15	345.906	1.23	0.72	1.00

WELLPATH DATA (234 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]
14459.00	90.890	338.990	6278.97	8190.73	7956.63	-2009.40	1772081.76	14600427.67	40°12'05.093"N	80°31'42.476"W	8206.44	345.827	0.61	-0.60	0.14
14554.00	91.540	339.170	6276.95	8285.56	8045.35	-2043.32	1772047.86	14600516.35	40°12'05.971"N	80°31'42.907"W	8300.77	345.750	0.71	0.68	0.19
14648.00	91.170	340.670	6274.73	8379.45	8133.61	-2075.58	1772015.61	14600604.57	40°12'06.845"N	80°31'43.317"W	8394.26	345.684	1.64	-0.39	1.60
14742.00	91.230	340.440	6272.76	8473.38	8222.23	-2106.86	1771984.34	14600693.16	40°12'07.722"N	80°31'43.714"W	8487.87	345.628	0.25	0.06	-0.24
14837.00	91.230	339.180	6270.72	8568.27	8311.37	-2139.64	1771951.57	14600782.27	40°12'08.605"N	80°31'44.130"W	8582.36	345.563	1.33	0.00	-1.33
14931.00	90.620	337.600	6269.21	8662.04	8398.75	-2174.26	1771916.97	14600869.61	40°12'09.470"N	80°31'44.571"W	8675.62	345.486	1.80	-0.65	-1.68
15025.00	90.680	336.600	6268.14	8755.65	8485.33	-2210.83	1771880.41	14600956.16	40°12'10.328"N	80°31'45.036"W	8768.62	345.396	1.07	0.06	-1.06
15120.00	90.430	336.370	6267.22	8850.16	8572.44	-2248.73	1771842.52	14601043.24	40°12'11.190"N	80°31'45.519"W	8862.48	345.301	0.36	-0.26	-0.24
15214.00	90.460	336.360	6266.49	8943.65	8658.55	-2286.42	1771804.85	14601129.32	40°12'12.043"N	80°31'45.998"W	8955.34	345.208	0.03	0.03	-0.01
15309.00	90.430	335.770	6265.75	9038.09	8745.38	-2324.96	1771766.32	14601216.11	40°12'12.903"N	80°31'46.489"W	9049.15	345.112	0.62	-0.03	-0.62
15403.00	90.370	336.930	6265.09	9131.59	8831.48	-2362.67	1771728.63	14601302.18	40°12'13.756"N	80°31'46.969"W	9142.06	345.023	1.24	-0.06	1.23
15498.00	90.460	337.310	6264.41	9226.20	8919.00	-2399.60	1771691.71	14601389.67	40°12'14.623"N	80°31'47.439"W	9236.16	344.942	0.41	0.09	0.40
15592.00	90.400	336.980	6263.70	9319.82	9005.62	-2436.11	1771655.22	14601476.25	40°12'15.481"N	80°31'47.904"W	9329.30	344.863	0.36	-0.06	-0.35

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Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

WELLPATH DATA (234 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]
15686.00	90.430	336.560	6263.02	9413.38	9092.00	-2473.18	1771618.16	14601562.60	40°12'16.336"N	80°31'48.376"W	9422.37	344.783	0.45	0.03	-0.45
15780.00	90.400	335.460	6262.34	9506.82	9177.87	-2511.40	1771579.95	14601648.44	40°12'17.187"N	80°31'48.862"W	9515.28	344.696	1.17	-0.03	-1.17
15875.00	90.680	336.310	6261.44	9601.22	9264.58	-2550.21	1771541.16	14601735.11	40°12'18.046"N	80°31'49.357"W	9609.16	344.610	0.94	0.29	0.89
15969.00	91.970	339.920	6259.27	9694.93	9351.76	-2585.24	1771506.15	14601822.26	40°12'18.909"N	80°31'49.802"W	9702.52	344.547	4.08	1.37	3.84
16063.00	90.740	342.640	6257.05	9788.88	9440.76	-2615.39	1771476.00	14601911.22	40°12'19.790"N	80°31'50.185"W	9796.33	344.516	3.17	-1.31	2.89
16158.00	90.920	344.000	6255.67	9883.84	9531.89	-2642.18	1771449.23	14602002.32	40°12'20.692"N	80°31'50.524"W	9891.31	344.507	3.07	0.19	2.06
16252.00	90.800	343.100	6254.26	9977.79	9622.16	-2668.32	1771423.09	14602092.56	40°12'21.586"N	80°31'50.855"W	9985.29	344.501	1.60	-0.13	-1.60
16347.00	91.050	342.250	6252.73	10072.77	9712.84	-2696.61	1771394.82	14602183.20	40°12'22.483"N	80°31'51.213"W	10080.23	344.484	0.93	0.26	-0.89
16441.00	90.950	339.240	6251.09	10166.71	9801.56	-2727.60	1771363.84	14602271.89	40°12'23.361"N	80°31'51.606"W	10174.00	344.449	3.20	-0.11	-3.20
16536.00	90.620	333.440	6249.78	10261.15	9888.53	-2765.70	1771325.75	14602358.82	40°12'24.223"N	80°31'52.091"W	10268.01	344.374	6.11	-0.35	-6.11
16630.00	90.890	332.070	6248.54	10353.85	9972.09	-2808.73	1771282.74	14602442.35	40°12'25.051"N	80°31'52.540"W	10360.09	344.270	1.49	0.29	-1.46
16725.00	90.740	332.640	6247.19	10447.42	10056.24	-2852.84	1771238.68	14602526.47	40°12'25.885"N	80°31'53.203"W	10453.06	344.162	0.62	-0.16	0.60
16819.00	90.770	332.810	6245.95	10540.10	10139.78	-2895.88	1771195.62	14602609.98	40°12'26.712"N	80°31'53.752"W	10545.20	344.061	0.18	0.03	0.18
16913.00	91.720	335.340	6243.91	10633.11	10224.29	-2936.96	1771154.56	14602694.46	40°12'27.550"N	80°31'54.276"W	10637.76	343.973	2.87	1.01	2.69
17008.00	91.140	336.490	6241.54	10727.49	10310.99	-2975.72	1771115.82	14602781.12	40°12'28.408"N	80°31'54.769"W	10731.79	343.902	1.36	-0.61	1.21
17102.00	91.510	337.000	6239.37	10821.03	10397.33	-3012.82	1771078.73	14602867.43	40°12'29.264"N	80°31'55.242"W	10825.04	343.840	0.67	0.39	0.54
17197.00	91.260	338.170	6237.07	10915.68	10485.12	-3049.03	1771042.53	14602955.19	40°12'30.133"N	80°31'55.703"W	10919.45	343.786	1.26	-0.26	1.23
17291.00	91.260	338.360	6235.00	11009.43	10572.42	-3083.83	1771007.74	14603042.46	40°12'30.998"N	80°31'56.145"W	11013.00	343.739	0.20	0.00	0.20
17386.00	91.350	337.810	6232.84	11104.15	10660.53	-3119.28	1770972.30	14603130.53	40°12'31.870"N	80°31'56.596"W	11107.51	343.690	0.59	0.09	-0.58
17480.00	91.200	337.370	6230.75	11197.81	10747.41	-3155.11	1770936.49	14603217.38	40°12'32.730"N	80°31'57.052"W	11200.96	343.639	0.49	-0.16	-0.47
17575.00	91.080	336.380	6228.86	11292.37	10834.76	-3192.41	1770899.20	14603304.70	40°12'33.596"N	80°31'57.527"W	11295.29	343.583	1.05	-0.13	-1.04
17669.00	91.140	336.240	6227.04	11385.84	10920.82	-3230.17	1770861.46	14603390.73	40°12'34.448"N	80°31'58.008"W	11388.52	343.523	0.16	0.06	-0.15
17763.00	91.140	335.780	6225.17	11479.26	11006.69	-3268.38	1770823.26	14603476.56	40°12'35.298"N	80°31'58.494"W	11481.70	343.461	0.49	0.00	-0.49
17857.00	91.200	335.670	6223.25	11572.63	11092.36	-3307.02	1770784.64	14603562.19	40°12'36.147"N	80°31'58.987"W	11574.83	343.399	0.13	0.06	-0.12
17951.00	91.170	335.470	6221.30	11665.96	11177.92	-3345.89	1770745.79	14603647.73	40°12'36.995"N	80°31'59.482"W	11667.94	343.336	0.22	-0.03	-0.21
18046.00	91.140	336.640	6219.39	11760.38	11264.73	-3384.44	1770707.25	14603734.50	40°12'37.854"N	80°31'59.973"W	11762.16	343.277	1.23	-0.03	1.23
18140.00	91.200	338.670	6217.47	11854.05	11351.65	-3420.16	1770671.54	14603821.38	40°12'38.715"N	80°32'00.427"W	11855.69	343.233	2.16	0.06	2.16
18234.00	91.170	338.630	6215.52	11947.84	11439.18	-3454.38	1770637.34	14603908.88	40°12'39.582"N	80°32'00.862"W	11949.37	343.197	0.05	-0.03	-0.04
18329.00	91.140	337.880	6213.61	12042.59	11527.40	-3489.57	1770602.16	14603997.07	40°12'40.456"N	80°32'01.310"W	12044.00	343.158	0.79	-0.03	-0.79
18423.00	91.110	337.380	6211.76	12136.26	11614.31	-3525.33	1770566.41	14604083.94	40°12'41.316"N	80°32'01.765"W	12137.55	343.115	0.53	-0.03	-0.53
18517.00	91.140	336.780	6209.92	12229.85	11700.87	-3561.93	1770529.82	14604170.47	40°12'42.174"N	80°32'02.231"W	12231.01	343.069	0.64	0.03	-0.64
18612.00	91.260	337.500	6207.93	12324.45	11788.39	-3598.83	1770492.94	14604257.96	40°12'43.040"N	80°32'02.701"W	12325.49	343.023	0.77	0.13	0.76

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WELLPATH DATA (234 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]
18706.00	91.110	337.830	6205.99	12418.13	11875.32	-3634.55	1770457.24	14604344.85	40°12'43.901"N	80°32'03.155"W	12419.06	342.983	0.39	-0.16	0.35
18801.00	91.170	337.910	6204.10	12512.83	11963.30	-3670.33	1770421.47	14604432.80	40°12'44.772"N	80°32'03.610"W	12513.67	342.944	0.11	0.06	0.08
18895.00	91.050	338.680	6202.27	12606.58	12050.62	-3705.08	1770386.73	14604520.09	40°12'45.637"N	80°32'04.052"W	12607.34	342.909	0.83	-0.13	0.82
18989.00	91.170	338.980	6200.45	12700.39	12138.26	-3739.02	1770352.80	14604607.70	40°12'46.505"N	80°32'04.484"W	12701.09	342.879	0.34	0.13	0.32
19084.00	91.080	339.310	6198.59	12795.23	12227.02	-3772.84	1770319.00	14604696.42	40°12'47.384"N	80°32'04.914"W	12795.87	342.852	0.36	-0.09	0.35
19178.00	91.660	337.260	6196.34	12888.97	12314.32	-3807.60	1770284.24	14604783.69	40°12'48.248"N	80°32'05.356"W	12889.54	342.818	2.27	0.62	-2.18
19273.00	91.540	336.990	6193.69	12983.55	12401.81	-3844.52	1770247.34	14604871.15	40°12'49.115"N	80°32'05.826"W	12984.04	342.777	0.31	-0.13	-0.28
19367.00	91.350	336.170	6191.32	13077.05	12488.04	-3881.87	1770210.01	14604957.34	40°12'49.969"N	80°32'06.302"W	13077.46	342.732	0.90	-0.20	-0.87
19460.00	91.320	336.090	6189.15	13169.49	12573.06	-3919.49	1770172.40	14605042.33	40°12'50.811"N	80°32'06.781"W	13169.82	342.686	0.09	-0.03	-0.09
19555.00	91.350	336.320	6186.94	13263.94	12659.96	-3957.81	1770134.10	14605129.20	40°12'51.672"N	80°32'07.269"W	13264.20	342.639	0.24	0.03	0.24
19649.00	91.350	336.210	6184.72	13357.39	12745.99	-3995.64	1770096.28	14605215.19	40°12'52.524"N	80°32'07.751"W	13357.59	342.595	0.12	0.00	-0.12
19743.00	90.950	338.040	6182.84	13450.99	12832.57	-4032.17	1770059.77	14605301.75	40°12'53.381"N	80°32'08.216"W	13451.15	342.557	1.99	-0.43	1.95
19838.00	90.770	338.790	6181.41	13545.76	12920.90	-4067.11	1770024.84	14605390.04	40°12'54.256"N	80°32'08.660"W	13545.89	342.528	0.81	-0.19	0.79



Actual Wellpath Report

Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot 5H
SOUTHWESTERN ENERGY	Well	Sandra Parr BRK 5H ST02
Brooke County, WV	Wellbore	Sandra Parr BRK 5H ST02 AWB
Brooke	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD
Sandra Parr BRK Pad		

WELLPATH DATA (234 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]
19932.00	90.800	338.810	6180.12	13639.58	13008.53	-4101.10	1769990.86	14605477.64	40°12'55.124"N	80°32'09.092"W	13639.68	342.502	0.04	0.03	0.02
20026.00	91.020	337.950	6178.63	13733.35	13095.91	-4135.73	1769956.24	14605564.98	40°12'55.989"N	80°32'09.533"W	13733.43	342.474	0.94	0.23	-0.91
20121.00	90.400	336.780	6177.45	13827.99	13183.58	-4172.29	1769919.70	14605652.62	40°12'56.857"N	80°32'09.998"W	13828.04	342.439	1.39	-0.65	-1.23
20215.00	90.490	337.720	6176.72	13921.62	13270.26	-4208.64	1769883.36	14605739.27	40°12'57.716"N	80°32'10.461"W	13921.66	342.404	1.00	0.10	1.00
20309.00	90.430	337.530	6175.97	14015.31	13357.18	-4244.42	1769847.60	14605826.16	40°12'58.576"N	80°32'10.916"W	14015.33	342.372	0.21	-0.06	-0.20
20403.00	90.400	337.130	6175.29	14108.96	13443.92	-4280.65	1769811.38	14605912.86	40°12'59.435"N	80°32'11.377"W	14108.96	342.338	0.43	-0.03	-0.43
20498.00	90.400	337.120	6174.62	14203.57	13531.44	-4317.58	1769774.47	14606000.35	40°13'00.302"N	80°32'11.848"W	14203.57	342.303	0.01	0.00	-0.01
20583.00	90.400	337.070	6174.03	14288.22	13609.74	-4350.66	1769741.40	14606078.62	40°13'01.077"N	80°32'12.269"W	14288.22	342.272	0.06	0.00	-0.06
20608.00	90.400	337.070	6173.86	14313.12	13632.76	-4360.40	1769731.66	14606101.63	40°13'01.306"N	80°32'12.393"W	14313.12	342.263	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Sandra Parr BRK 5H ST02 AWB Ref Wellpath: Sandra Parr BRK 5H ST02 AWP Proj: 20608'

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	436.00	410.00	26.00	435.99	0.00	0.00	0.00	-1.82
13.375in Casing Surface	26.00	436.00	410.00	26.00	435.99	0.00	0.00	0.00	-1.82
12.25in Open Hole	436.00	2078.00	1642.00	435.99	2077.86	-1.82	0.12	0.12	5.57
9.625in Casing Intermediate	26.00	2078.00	2052.00	26.00	2077.86	0.00	0.00	0.00	5.57
8.75in Open Hole	2078.00	5601.90	3523.90	2077.86	5566.97	5.57	146.34	-7.25	146.34
8.5in Open Hole	5601.90	5777.00	175.10	5566.97	5740.25	146.34	160.79	447.65	160.79
8.5in Open Hole	5777.00	6739.00	962.00	5740.25	6424.68	160.79	705.54	467.25	705.54
8.5in Open Hole	6739.00	20608.00	13869.00	6424.68	6173.86	705.54	13632.76	445.79	13632.76
5.5in Casing Production	26.00	20608.00	20582.00	26.00	6173.86	0.00	0.00	0.00	-4360.40

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Sandra Parr BRK 5H ST01 BHL Rev-2	6188.10	13634.13	-4356.01	1769736.05	14606103.00	40°13'01.319"N	80°32'12.336"W	point
Sandra Parr BRK TP ST01 Rev-2	6410.00	2785.01	145.00	1774235.34	14595258.02	40°11'13.873"N	80°31'15.071"W	point

TARGETS									
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape	
Sandra Parr BRK TP ST01 Rev-1	6412.66	2785.01	145.00	1774235.34	14595258.02	40°11'13.873"N	80°31'15.071"W	point	
Sandra Parr BRK 5H ST01 LP Rev-2	6435.00	860.24	433.00	1774523.23	14593333.98	40°10'54.838"N	80°31'11.495"W	point	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot 5H
Area	Brooke County, WV	Well	Sandra Parr BRK 5H ST02
Field	Brooke	Wellbore	Sandra Parr BRK 5H ST02 AWB
Facility	Sandra Parr BRK Pad	Sidetrack from	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

WELLPATH COMPOSITION - Ref Wellbore: Sandra Parr BRK 5H ST02 AWB Ref Wellpath: Sandra Parr BRK 5H ST02 AWP Proj: 20608'			
Start MD	End MD	Positional Uncertainty Model	Log Name/Comment
[ft]	[ft]		Wellbore
26.00	372.24	OWSG MWD rev2 + HRGM	Sandra Parr BRK 5H AWB
372.24	2003.70	OWSG MWD rev2 + HRGM	Sandra Parr BRK 5H AWB
2003.70	5601.90	OWSG MWD rev2 + HRGM	Sandra Parr BRK 5H AWB
5601.90	5777.00	BHI AutoTrak Curve (SAG, Short)	Sandra Parr BRK 5H AWB
5777.00	5889.05	OWSG MWD rev2 + HRGM	Sandra Parr BRK 5H ST01 AWB
5889.05	6739.00	BHI AutoTrak Curve (Short)	Sandra Parr BRK 5H ST01 AWB
6739.00	20583.00	BHI AutoTrak Curve (Short)	Sandra Parr BRK 5H ST02 AWB
20583.00	20608.00	Blind Drilling (std)	Sandra Parr BRK 5H ST02 AWB
			Projection to bit
			01_Premier MWD <17 1/2"> (142.75'-372.24')
			02_Premier MWD <12 1/4"> (445.90'-2003.70')
			03_Premier MWD <8 3/4"> (2140.88'-5601.90')
			04_BH AT Curve <8 1/2"> (5654'-13514')
			05_Premier MWD <8 1/2"> (5777')(5790.93'-5889.05')
			06_BH AT Curve <8-1/2"> (5889.05')(5925'-7028')
			07_BH AT Curve <8-1/2"> (6739')(6744'-20583')

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REFERENCE WELLPATH IDENTIFICATION		
Operator	SOUTHWESTERN ENERGY	Slot 5H
Area	Brooke County, WV	Sandra Parr BRK 5H ST02
Field	Brooke	Sandra Parr BRK 5H ST02 AWP
Facility	Sandra Parr BRK Pad	Sandra Parr BRK 5H ST01 AWP Proj: 7053' at 6739.00 MD

COMMENTS
<p>Wellpath general comments API: 47-009-00245-0100 BH Job #: 109546520A Rig: SDC 42 Duration: 02/20/2019 - 03/03/2019 API: 47-009-00245-0100 BH Job #: 109546520A Rig: SDC 42 Duration: 02/20/2019 - 03/03/2019 API: 47-009-00245-0000 BH Job #: 109546520 Rig: SDC 42 Duration: 01/15/2019 - 01/22/2019</p>

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