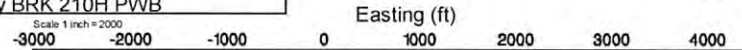


SOUTHWESTERN ENERGY

Location: Brooke County, WV
Field: Brooke
Facility: Russell Hervey BRK Pad

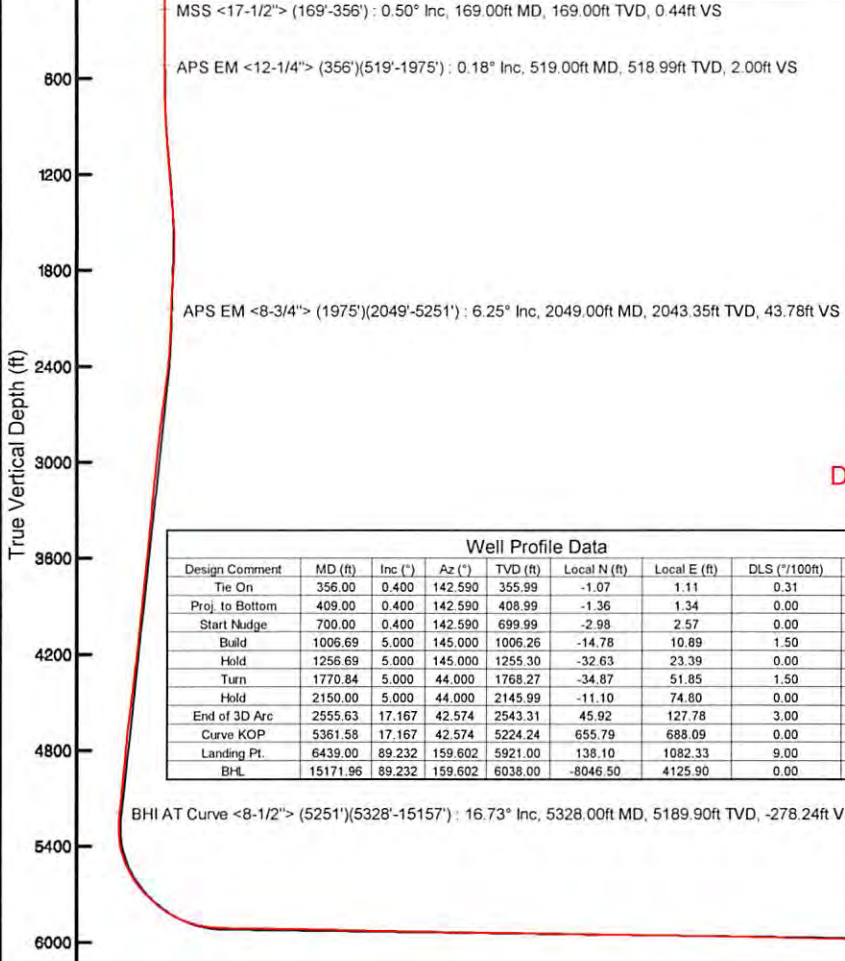
Slot: Slot #210
Well: Russell Hervey BRK 210H
Wellbore: Russell Hervey BRK 210H PWB

Plot reference wellpath is Russell Hervey BRK 210H PWB Rev-B.0	Grid System: NAD83 / UTM Zone 17 North, US feet
True vertical depths are referenced to SDC 46 (RKB)	* = Wellpath was transformed from a different geoidetic datum
Measured depths are referenced to SDC 46 (RKB)	North Reference: Grid north
SDC 46 (RKB) to Mean Sea Level: 1101 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot #210): -1165 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: edsaryar on 2016-09-23
	Database: WA_MPL_EASTERHMS_Dwh

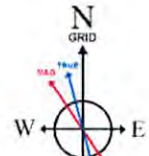
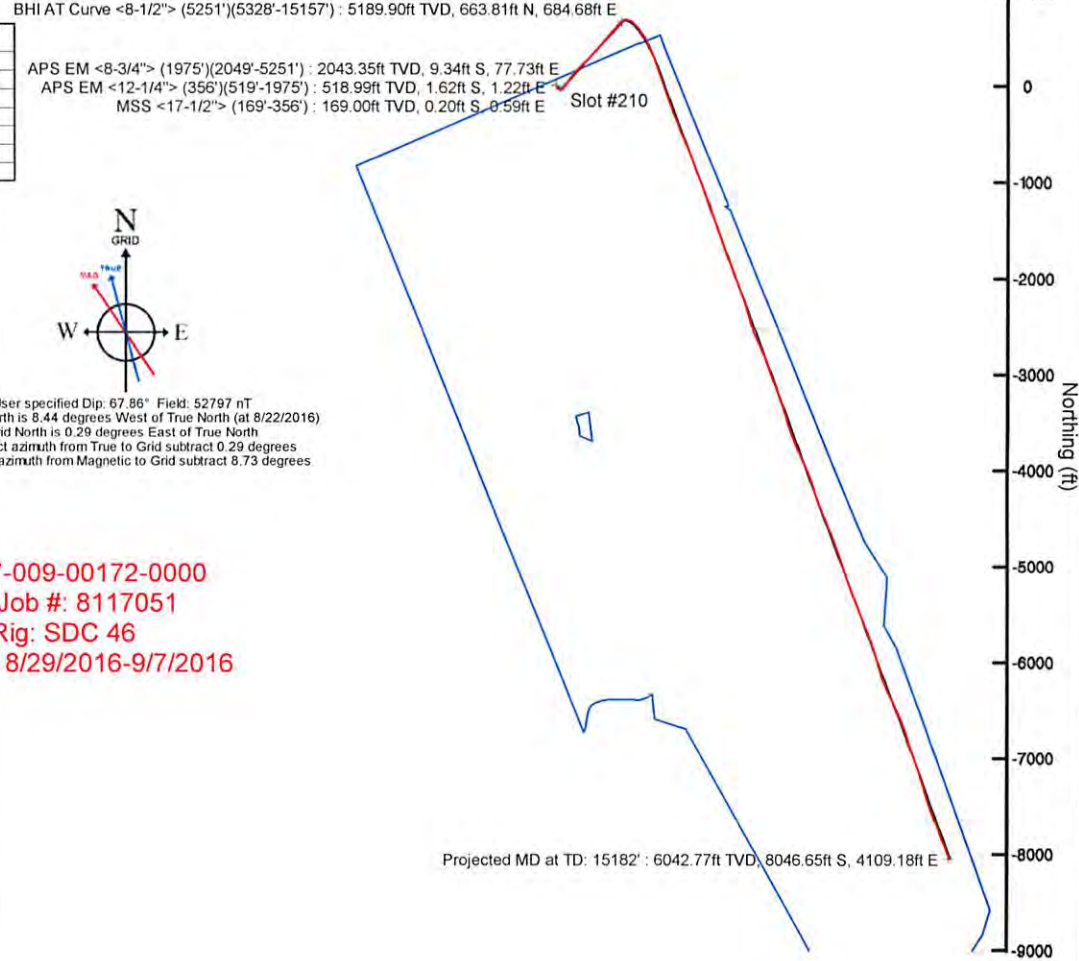


Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
Russell Hervey BRK Pad	1764114.320	14621028.950	40°15'29.154"N	80°33'23.868"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Longitude
Slot #210	-5.23	13.06	1764127.370	14621023.720	40°15'29.102"N 80°33'23.700"W
SDC 46 (RKB) to Mud line (At Slot: Slot #210)	26ft				
Mean Sea Level to Mud line (At Slot: Slot #210)	-1165ft				
SDC 46 (RKB) to Mean Sea Level	1191ft				

Scale 1 inch = 1200



Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	356.00	0.400	142.590	355.99	-1.07	1.11	0.31	1.46
Proj. to Bottom	409.00	0.400	142.590	408.99	-1.36	1.34	0.00	1.82
Start Nudge	700.00	0.400	142.590	699.99	-2.98	2.57	0.00	3.82
Build	1006.69	5.000	145.000	1006.26	-14.78	10.89	1.50	18.12
Hold	1256.69	5.000	145.000	1255.30	-32.63	23.39	0.00	39.71
Turn	1770.84	5.000	44.000	1768.27	-34.87	51.85	1.50	54.69
Hold	2150.00	5.000	44.000	2145.99	-11.10	74.80	0.00	44.01
End of 3D Arc	2555.63	17.167	42.574	2543.31	45.92	127.78	3.00	17.45
Curve KOP	5361.58	17.167	42.574	5224.24	655.79	688.09	0.00	-269.55
Landing Pt.	6439.00	89.232	159.602	5921.00	138.10	1082.33	9.00	371.01
BHL	15171.96	89.232	159.602	6038.00	-8046.50	4125.90	0.00	9042.63



User specified Dip: 87.86° Field, 52797 nT
Magnetic North is 8.44 degrees West of True North (at 8/22/2016)
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 8.73 degrees

API: 47-009-00172-0000
BHI Job #: 8117051
Rig: SDC 46
Duration: 8/29/2016-9/7/2016

Projected MD at TD: 15182' : 89.48° Inc, 15182.00ft MD, 6042.77ft TVD, 9035.14ft VS

Vertical Section (ft)
Azimuth 152.85° with reference 0.00 N, 0.00 E

Scale 1 inch = 1200

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Edsaryar
Scale	0.999618	Report Generated	9/23/2016 at 3:59:24 PM
Convergence at slot	0.29° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Russell_Hervey_BRK_210H_AWP_Proj_15182_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-5.23	13.06	1764127.37	14621023.72	40°15'29.102"N	80°33'23.700"W
Facility Reference Pt			1764114.32	14621028.95	40°15'29.154"N	80°33'23.868"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.478"W

WELLPATH DATUM

Calculation method	Minimum curvature	SDC 46 (RKB) to Facility Vertical Datum	1191.00ft
Horizontal Reference Pt	Slot	SDC 46 (RKB) to Mean Sea Level	1191.00ft
Vertical Reference Pt	SDC 46 (RKB)	SDC 46 (RKB) to Mud Line at Slot (Slot #210)	26.00ft
MD Reference Pt	SDC 46 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	152.85°

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

WELLPATH DATA (177 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	108.290	0.00	0.00	0.00	0.00	1764127.37	14621023.72	40°15'29.102"N	80°33'23.700"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	108.290	26.00	0.00	0.00	0.00	1764127.37	14621023.72	40°15'29.102"N	80°33'23.700"W	0.00	0.000	0.00	0.00	0.00
169.00	0.500	108.290	169.00	0.44	-0.20	0.59	1764127.96	14621023.52	40°15'29.100"N	80°33'23.692"W	0.62	108.290	0.35	0.35	75.73
263.00	0.300	187.790	263.00	0.94	-0.57	0.95	1764128.32	14621023.15	40°15'29.096"N	80°33'23.688"W	1.11	120.930	0.57	-0.21	84.57
356.00	0.400	142.590	355.99	1.46	-1.07	1.11	1764128.48	14621022.65	40°15'29.092"N	80°33'23.686"W	1.54	133.810	0.31	0.11	-48.60
519.00	0.180	245.780	518.99	2.00	-1.62	1.22	1764128.59	14621022.10	40°15'29.086"N	80°33'23.684"W	2.03	142.982	0.29	-0.13	63.31
611.00	0.270	259.360	610.99	1.94	-1.72	0.88	1764128.25	14621022.00	40°15'29.085"N	80°33'23.689"W	1.94	152.954	0.11	0.10	14.76
704.00	0.670	173.650	703.99	2.38	-2.30	0.72	1764128.09	14621021.42	40°15'29.079"N	80°33'23.691"W	2.42	162.541	0.76	0.43	-92.16
797.00	1.880	162.660	796.97	4.39	-4.30	1.24	1764128.61	14621019.42	40°15'29.060"N	80°33'23.684"W	4.48	163.923	1.32	1.30	-11.82
890.00	3.380	161.730	889.86	8.61	-8.36	2.55	1764129.92	14621015.36	40°15'29.019"N	80°33'23.667"W	8.74	163.015	1.61	1.61	-1.00
983.00	4.400	155.750	982.65	14.88	-14.22	4.88	1764132.25	14621009.51	40°15'28.961"N	80°33'23.638"W	15.03	161.060	1.18	1.10	-6.43
1075.00	4.510	153.010	1074.37	22.02	-20.66	7.97	1764135.34	14621003.07	40°15'28.898"N	80°33'23.598"W	22.14	158.904	0.26	0.12	-2.98
1168.00	4.730	155.210	1167.07	29.51	-27.40	11.24	1764138.60	14620996.33	40°15'28.831"N	80°33'23.557"W	29.61	157.699	0.30	0.24	2.37
1261.00	4.860	138.140	1259.75	37.15	-33.81	15.47	1764142.84	14620989.92	40°15'28.767"N	80°33'23.502"W	37.19	155.410	1.53	0.14	-18.35
1354.00	5.730	126.500	1352.35	45.12	-39.51	21.83	1764149.20	14620984.23	40°15'28.711"N	80°33'23.421"W	45.14	151.072	1.48	0.94	-12.52
1446.00	5.860	109.470	1443.89	52.65	-43.81	29.96	1764157.31	14620979.93	40°15'28.668"N	80°33'23.316"W	53.07	145.635	1.87	0.14	-18.51
1539.00	6.160	92.070	1536.39	58.54	-45.57	39.42	1764166.77	14620978.17	40°15'28.650"N	80°33'23.194"W	60.25	139.139	1.98	0.32	-18.71
1632.00	5.990	68.120	1628.88	61.42	-43.94	48.91	1764176.26	14620979.80	40°15'28.666"N	80°33'23.072"W	65.75	131.937	2.71	-0.18	-25.75
1725.00	5.980	44.840	1721.39	60.37	-38.70	56.83	1764184.18	14620985.04	40°15'28.717"N	80°33'22.969"W	68.75	124.252	2.59	-0.01	-25.03
1817.00	6.640	29.320	1812.84	55.95	-30.66	62.81	1764190.16	14620993.07	40°15'28.796"N	80°33'22.892"W	69.90	116.017	1.98	0.72	-16.87
1910.00	6.570	29.660	1905.22	50.06	-21.35	68.08	1764195.42	14621002.38	40°15'28.888"N	80°33'22.823"W	71.35	107.411	0.09	-0.08	0.37
1975.00	6.410	38.340	1969.80	46.52	-15.27	72.17	1764199.51	14621008.45	40°15'28.948"N	80°33'22.770"W	73.77	101.947	1.53	-0.25	13.35
2049.00	6.250	48.070	2043.35	43.78	-9.34	77.73	1764205.07	14621014.38	40°15'29.006"N	80°33'22.698"W	78.29	96.851	1.46	-0.22	13.15
2095.00	6.110	47.710	2089.09	42.50	-6.02	81.40	1764208.74	14621017.70	40°15'29.039"N	80°33'22.650"W	81.63	94.229	0.32	-0.30	-0.78
2188.00	7.390	43.520	2181.44	39.23	1.65	89.18	1764216.52	14621025.37	40°15'29.114"N	80°33'22.549"W	89.20	88.941	1.47	1.38	-4.51
2281.00	10.100	39.800	2273.35	34.06	12.25	98.52	1764225.86	14621035.97	40°15'29.218"N	80°33'22.428"W	99.28	82.911	2.98	2.91	-4.00
2374.00	11.960	35.990	2364.63	26.51	26.32	109.41	1764236.74	14621050.03	40°15'29.357"N	80°33'22.287"W	112.53	76.476	2.15	2.00	-4.10
2466.00	14.570	35.920	2454.17	16.96	43.40	121.80	1764249.12	14621067.11	40°15'29.525"N	80°33'22.126"W	129.30	70.387	2.84	2.84	-0.08
2559.00	15.850	34.220	2543.91	5.58	63.38	135.81	1764263.12	14621087.07	40°15'29.722"N	80°33'21.944"W	149.87	64.982	1.46	1.38	-1.83
2652.00	16.250	34.740	2633.28	-6.64	84.57	150.36	1764277.67	14621108.26	40°15'29.930"N	80°33'21.755"W	172.52	60.644	0.46	0.43	0.56

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
[ft]	[°]	[°]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]			[ft]	[°]	[°/100ft]	[°/100ft]	[°/100ft]
2745.00	17.990	2722.17	-18.26	106.21	167.09	1764294.39	14621129.89	40°15'30.143"N	80°33'21.538"W	197.98	67.558	2.59	1.87	6.08	3.09
2837.00	19.300	2809.34	-28.79	128.11	186.71	1764314.01	14621151.78	40°15'30.359"N	80°33'21.283"W	226.43	55.544	1.73	1.42	3.09	2.28
2930.00	19.380	2897.09	-38.59	150.15	208.21	1764335.50	14621173.81	40°15'30.576"N	80°33'21.005"W	256.70	54.203	0.76	0.09	2.28	-0.49
3023.00	19.100	2984.90	-47.93	171.77	229.93	1764357.21	14621195.43	40°15'30.788"N	80°33'20.723"W	287.01	53.237	0.34	-0.30	-0.49	1.15
3116.00	19.130	3072.77	-57.04	193.15	251.62	1764378.89	14621216.79	40°15'30.998"N	80°33'20.442"W	317.20	52.490	0.38	0.03	1.15	-0.27
3208.00	18.450	3159.87	-65.71	213.79	272.88	1764400.14	14621237.43	40°15'31.201"N	80°33'20.166"W	346.65	51.922	0.74	-0.74	-0.27	-2.29
3301.00	17.760	3248.26	-74.73	234.34	293.19	1764420.45	14621257.97	40°15'31.403"N	80°33'19.903"W	375.34	51.365	1.03	-0.74	-2.29	2.63
3394.00	17.650	3336.86	-83.49	254.41	313.11	1764440.36	14621278.03	40°15'31.601"N	80°33'19.645"W	403.44	50.906	0.81	-0.12	2.63	0.03
3487.00	17.290	3425.57	-91.57	273.79	333.21	1764460.46	14621297.40	40°15'31.791"N	80°33'19.384"W	431.27	50.592	0.39	-0.39	0.03	-2.29
3579.00	16.560	3513.58	-99.76	292.71	352.16	1764479.39	14621316.32	40°15'31.977"N	80°33'19.139"W	457.92	50.267	1.04	-0.79	-2.29	1.11
3672.00	16.630	3602.94	-108.68	311.68	369.61	1764496.84	14621335.28	40°15'32.164"N	80°33'18.912"W	483.48	49.860	1.29	-1.00	-2.97	0.87
3765.00	16.340	3692.34	-117.91	330.80	386.65	1764513.87	14621354.39	40°15'32.352"N	80°33'18.691"W	508.85	49.451	0.82	0.76	1.11	-0.23
3858.00	15.860	3781.69	-127.04	349.93	403.94	1764531.16	14621373.51	40°15'32.540"N	80°33'18.467"W	534.44	49.098	0.52	-0.52	-0.23	0.02
3950.00	16.240	3870.11	-136.09	368.83	420.97	1764548.18	14621392.40	40°15'32.726"N	80°33'18.246"W	559.69	48.777	0.41	0.41	0.02	-0.12
4043.00	15.920	3959.47	-145.27	387.98	438.20	1764565.40	14621411.55	40°15'32.914"N	80°33'18.023"W	585.27	48.479	0.35	-0.34	-0.12	0.38
4135.00	16.960	4047.71	-154.49	407.29	455.66	1764582.85	14621430.86	40°15'33.104"N	80°33'17.796"W	611.15	48.208	1.14	1.13	0.38	0.87
4228.00	18.280	4136.34	-164.19	427.99	474.74	1764601.93	14621451.54	40°15'33.308"N	80°33'17.549"W	639.18	47.965	1.44	1.42	0.87	-1.91
4321.00	17.250	4224.91	-174.19	449.00	493.81	1764620.99	14621472.55	40°15'33.515"N	80°33'17.302"W	667.42	47.721	1.25	-1.11	-1.91	0.20
4414.00	17.750	4313.60	-184.42	469.98	512.30	1764639.47	14621493.52	40°15'33.721"N	80°33'17.062"W	695.22	47.467	0.54	0.54	0.20	0.72
4506.00	17.580	4401.26	-194.44	490.78	530.91	1764658.08	14621514.31	40°15'33.926"N	80°33'16.820"W	723.00	47.249	0.29	-0.18	0.72	-4.82
4599.00	16.930	4490.08	-205.17	511.91	548.61	1764675.77	14621535.44	40°15'34.134"N	80°33'16.591"W	750.36	46.982	1.59	-0.70	-4.82	0.04
4692.00	16.790	4579.08	-216.63	533.26	565.10	1764692.26	14621556.77	40°15'34.344"N	80°33'16.377"W	776.99	46.661	0.15	-0.15	0.04	3.43
4785.00	16.680	4668.15	-227.33	553.97	582.06	1764709.21	14621577.48	40°15'34.548"N	80°33'16.156"W	803.54	46.416	0.99	-0.43	3.43	2.22
4880.00	16.270	4759.25	-236.94	574.01	600.06	1764727.20	14621597.51	40°15'34.745"N	80°33'15.923"W	830.40	46.271	0.76	-0.43	2.22	2.92
4973.00	16.220	4848.54	-245.19	592.60	618.25	1764745.38	14621616.10	40°15'34.927"N	80°33'15.687"W	856.40	46.213	0.82	-0.05	2.92	-4.28
5066.00	15.500	4938.00	-253.48	610.94	635.83	1764762.95	14621634.43	40°15'35.108"N	80°33'15.459"W	881.77	46.143	1.40	-0.77	-4.28	0.58
5158.00	15.340	5026.69	-262.40	629.27	652.03	1764779.15	14621652.75	40°15'35.288"N	80°33'15.249"W	906.16	46.018	0.23	-0.17	0.58	3.28
5251.00	16.510	5116.12	-271.14	647.98	669.36	1764796.48	14621671.45	40°15'35.472"N	80°33'15.024"W	931.63	45.930	1.55	1.26	3.28	-0.56
5328.00	16.730	5189.90	-278.24	663.81	684.68	1764811.78	14621687.28	40°15'35.628"N	80°33'14.826"W	953.64	45.886	0.33	0.29	-0.56	0.13
5375.00	15.270	5235.08	-282.45	673.15	693.65	1764820.76	14621696.61	40°15'35.720"N	80°33'14.709"W	966.59	45.859	3.11	-3.11	0.13	

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

WELLPATH DATA (177 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]
5421.00	14.490	60.640	5279.56	-284.64	680.34	702.87	1764829.97	14621703.80	40°15'35.790"N	80°33'14.590"W	978.21	45.933	9.46	-1.70	36.39
5467.00	15.660	75.770	5323.99	-283.47	684.69	713.91	1764841.01	14621708.15	40°15'35.833"N	80°33'14.447"W	989.18	46.197	8.90	2.54	32.89
5514.00	16.860	89.490	5369.13	-279.00	686.31	726.88	1764853.97	14621709.77	40°15'35.848"N	80°33'14.280"W	999.69	46.644	8.54	2.55	29.19
5560.00	18.950	100.970	5412.91	-271.39	684.95	740.89	1764867.98	14621708.40	40°15'35.834"N	80°33'14.099"W	1009.00	47.247	8.90	4.54	24.96
5607.00	21.640	111.760	5457.00	-260.14	680.28	756.44	1764883.52	14621703.74	40°15'35.787"N	80°33'13.899"W	1017.34	48.034	9.78	5.72	22.96
5653.00	24.090	120.360	5499.40	-245.83	672.39	772.43	1764899.50	14621695.85	40°15'35.708"N	80°33'13.693"W	1024.08	48.961	9.00	5.33	18.70
5699.00	27.740	128.210	5540.78	-228.17	661.01	788.95	1764916.01	14621684.48	40°15'35.595"N	80°33'13.481"W	1029.26	50.042	10.87	7.93	17.07
5746.00	31.110	132.660	5581.71	-206.82	646.01	806.48	1764933.54	14621669.49	40°15'35.446"N	80°33'13.256"W	1033.32	51.304	8.54	7.17	9.47
5792.00	34.980	135.340	5620.27	-183.08	628.57	824.49	1764951.55	14621652.05	40°15'35.273"N	80°33'13.025"W	1036.77	52.679	8.99	8.41	5.83
5838.00	39.250	138.560	5656.94	-156.39	608.28	843.40	1764970.45	14621631.76	40°15'35.071"N	80°33'12.782"W	1039.87	54.200	10.20	9.28	7.00
5885.00	43.840	141.990	5692.11	-125.97	584.29	863.28	1764990.32	14621607.78	40°15'34.833"N	80°33'12.527"W	1042.42	55.909	10.90	9.77	7.30
5931.00	46.610	144.190	5724.51	-93.80	558.18	882.88	1765009.91	14621581.68	40°15'34.574"N	80°33'12.276"W	1044.52	57.698	6.91	6.02	4.78
5976.00	48.500	145.560	5754.88	-60.91	531.01	901.98	1765029.00	14621554.53	40°15'34.305"N	80°33'12.032"W	1046.68	59.514	4.76	4.20	3.04
6023.00	51.800	147.430	5785.00	-25.06	500.93	921.88	1765048.89	14621524.45	40°15'34.006"N	80°33'11.777"W	1049.18	61.481	7.66	7.02	3.98
6069.00	57.120	150.960	5811.73	12.27	468.78	941.00	1765068.01	14621492.32	40°15'33.688"N	80°33'11.532"W	1051.30	63.519	13.14	11.57	7.67
6115.00	61.810	153.600	5835.10	51.88	433.71	959.40	1765086.41	14621457.26	40°15'33.340"N	80°33'11.297"W	1052.88	65.674	11.33	10.20	5.74
6162.00	66.990	156.260	5855.40	94.22	395.32	977.34	1765104.33	14621418.89	40°15'32.960"N	80°33'11.068"W	1054.26	67.977	12.14	11.02	5.66
6208.00	71.500	159.200	5871.70	137.06	355.53	993.62	1765120.60	14621379.11	40°15'32.566"N	80°33'10.861"W	1055.31	70.312	11.48	9.80	6.39
6256.00	75.400	160.340	5885.37	182.72	312.36	1009.52	1765136.50	14621335.96	40°15'32.139"N	80°33'10.659"W	1056.74	72.807	8.44	8.13	2.37
6301.00	78.450	160.760	5895.55	226.15	271.03	1024.11	1765151.09	14621294.65	40°15'31.730"N	80°33'10.473"W	1059.37	75.176	6.84	6.78	0.93
6393.00	86.180	160.800	5907.85	316.39	185.01	1054.10	1765181.07	14621208.66	40°15'30.878"N	80°33'10.092"W	1070.22	80.045	8.40	8.40	0.04
6486.00	89.230	159.290	5911.57	408.57	97.67	1085.81	1765212.77	14621121.36	40°15'30.013"N	80°33'09.689"W	1090.20	84.860	3.66	3.28	-1.62
6579.00	89.200	160.310	5912.84	500.87	10.40	1117.92	1765244.86	14621034.12	40°15'29.149"N	80°33'09.280"W	1117.97	89.467	1.10	-0.03	1.10
6672.00	89.140	160.910	5914.19	593.01	-77.31	1148.79	1765275.72	14620946.44	40°15'28.281"N	80°33'08.888"W	1151.39	93.850	0.65	-0.06	0.65
6764.00	89.170	160.980	5915.55	684.09	-164.26	1178.83	1765305.74	14620859.52	40°15'27.420"N	80°33'08.506"W	1190.22	97.933	0.08	0.03	0.08
6857.00	88.920	159.100	5917.10	776.34	-251.66	1210.57	1765337.47	14620772.16	40°15'26.555"N	80°33'08.102"W	1236.45	101.744	2.04	-0.27	-2.02
6950.00	88.860	158.550	5918.90	868.82	-338.36	1244.15	1765371.05	14620685.49	40°15'25.697"N	80°33'07.675"W	1289.35	105.214	0.59	-0.06	-0.59
7043.00	88.890	158.680	5920.72	961.33	-424.94	1278.06	1765404.94	14620598.94	40°15'24.839"N	80°33'07.243"W	1346.85	108.392	0.14	0.03	0.14
7136.00	88.740	158.110	5922.65	1053.87	-511.39	1312.29	1765439.16	14620512.53	40°15'23.984"N	80°33'06.807"W	1408.42	111.290	0.63	-0.16	-0.61
7229.00	88.550	156.480	5924.85	1146.56	-597.16	1348.18	1765475.03	14620426.79	40°15'23.134"N	80°33'06.350"W	1474.51	113.890	1.76	-0.20	-1.75

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

WELLPATH DATA (177 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]
7321.00	88.740	156.630	5927.02	1238.34	-681.54	1384.77	1765511.61	14620342.44	40°15'22.299"N	80°33'05.883"W	1543.40	116.205	0.26	0.21	0.16
7414.00	88.710	157.500	5929.09	1331.07	-767.16	1421.01	1765547.83	14620256.85	40°15'21.451"N	80°33'05.422"W	1614.87	118.363	0.94	-0.03	0.94
7506.00	89.050	159.700	5930.89	1422.58	-852.80	1454.57	1765581.38	14620171.25	40°15'20.603"N	80°33'04.994"W	1686.13	120.383	2.42	0.37	2.39
7599.00	89.020	161.260	5932.46	1514.74	-940.44	1485.63	1765612.43	14620083.64	40°15'19.735"N	80°33'04.599"W	1758.28	122.335	1.68	-0.03	1.68
7692.00	89.080	158.230	5934.00	1607.05	-1027.67	1517.82	1765644.61	14619996.45	40°15'18.872"N	80°33'04.190"W	1833.00	124.101	3.26	0.06	-3.26
7785.00	89.020	157.800	5935.54	1699.66	-1113.89	1552.63	1765679.41	14619910.26	40°15'18.018"N	80°33'03.747"W	1910.87	125.656	0.47	-0.06	-0.46
7877.00	89.050	159.830	5937.09	1791.14	-1199.66	1585.87	1765712.63	14619824.52	40°15'17.169"N	80°33'03.323"W	1988.51	127.106	2.21	0.03	2.21
7970.00	89.170	161.410	5938.54	1883.27	-1287.37	1616.73	1765743.48	14619736.84	40°15'16.300"N	80°33'02.931"W	2066.68	128.530	1.70	0.13	1.70
8063.00	89.230	161.240	5939.83	1975.25	-1375.47	1646.51	1765773.24	14619648.78	40°15'15.428"N	80°33'02.553"W	2145.44	129.875	0.19	0.06	-0.18
8157.00	89.230	161.550	5941.10	2068.20	-1464.55	1676.49	1765803.22	14619559.73	40°15'14.546"N	80°33'02.172"W	2226.10	131.140	0.33	0.00	0.33
8249.00	89.170	159.400	5942.38	2159.37	-1551.24	1707.24	1765833.95	14619473.07	40°15'13.688"N	80°33'01.781"W	2306.73	132.259	2.34	-0.07	-2.34
8342.00	89.170	160.130	5943.73	2251.68	-1638.49	1739.40	1765866.10	14619385.86	40°15'12.824"N	80°33'01.372"W	2389.60	133.289	0.78	0.00	0.78
8433.00	89.140	161.030	5945.07	2341.84	-1724.31	1769.65	1765896.34	14619300.08	40°15'11.975"N	80°33'00.987"W	2470.81	134.256	0.99	-0.03	0.99
8523.00	89.140	158.800	5946.42	2431.15	-1808.82	1800.55	1765927.23	14619215.60	40°15'11.138"N	80°33'00.594"W	2552.22	135.131	2.48	0.00	-2.48
8616.00	88.950	159.090	5947.97	2523.61	-1895.60	1833.96	1765960.63	14619128.85	40°15'10.279"N	80°33'00.169"W	2637.56	135.947	0.37	-0.20	0.31
8708.00	88.890	158.530	5949.71	2615.09	-1981.36	1867.21	1765993.86	14619043.12	40°15'09.430"N	80°32'59.746"W	2722.55	136.699	0.61	-0.07	-0.61
8801.00	89.080	158.080	5951.35	2707.66	-2067.76	1901.58	1766028.22	14618956.75	40°15'08.574"N	80°32'59.308"W	2809.21	137.397	0.53	0.20	-0.48
8894.00	89.070	160.710	5952.86	2800.03	-2154.79	1934.30	1766060.93	14618869.76	40°15'07.713"N	80°32'58.892"W	2895.63	138.086	2.83	-0.01	2.83
8987.00	89.080	161.770	5954.36	2892.02	-2242.84	1964.21	1766090.82	14618781.74	40°15'06.841"N	80°32'58.512"W	2981.35	138.789	1.14	0.01	1.14
9079.00	89.110	163.430	5955.81	2982.68	-2330.61	1991.72	1766118.32	14618694.00	40°15'05.972"N	80°32'58.163"W	3065.73	139.483	1.80	0.03	1.80
9172.00	89.050	164.080	5957.30	3073.99	-2419.89	2017.73	1766144.32	14618604.76	40°15'05.089"N	80°32'57.834"W	3150.73	140.178	0.70	-0.06	0.70
9265.00	89.080	161.190	5958.82	3165.61	-2508.63	2045.48	1766172.06	14618516.05	40°15'04.211"N	80°32'57.481"W	3236.85	140.807	3.11	0.03	-3.11
9357.00	89.010	156.880	5960.36	3257.04	-2594.51	2078.38	1766204.96	14618430.21	40°15'03.360"N	80°32'57.063"W	3324.33	141.303	4.68	-0.08	-4.68
9450.00	89.050	156.070	5961.93	3349.84	-2679.76	2115.50	1766242.06	14618344.99	40°15'02.516"N	80°32'56.590"W	3414.16	141.711	0.87	0.04	-0.87
9543.00	89.050	156.120	5963.47	3442.68	-2764.78	2153.18	1766279.72	14618260.01	40°15'01.674"N	80°32'56.109"W	3504.31	142.089	0.05	0.00	0.05
9636.00	89.050	158.280	5965.01	3535.39	-2850.49	2189.21	1766315.74	14618174.32	40°15'00.825"N	80°32'55.650"W	3594.16	142.475	2.32	0.00	2.32
9729.00	88.800	161.050	5966.76	3627.71	-2937.67	2221.52	1766348.04	14618087.18	40°14'59.962"N	80°32'55.239"W	3683.08	142.903	2.99	-0.27	2.98
9821.00	88.860	160.200	5968.64	3718.85	-3024.44	2252.04	1766378.54	14618000.44	40°14'59.103"N	80°32'54.851"W	3770.80	143.328	0.93	0.07	-0.92
9914.00	88.800	158.180	5970.54	3811.25	-3111.35	2285.07	1766411.56	14617913.56	40°14'58.243"N	80°32'54.431"W	3860.32	143.705	2.17	-0.06	-2.17
10007.00	88.800	158.480	5972.48	3903.81	-3197.76	2319.40	1766445.88	14617827.19	40°14'57.387"N	80°32'53.994"W	3950.35	144.046	0.32	0.00	0.32

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

WELLPATH DATA (177 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]	
10099.00	88.860	160.140	5974.36	3995.20	-3283.81	2351.90	1766478.36	14617741.18	40°14'56.535"N	80°32'53.581"W	4039.16	144.389	1.81	0.07	1.80	
10192.00	88.800	163.340	5976.26	4087.05	-3372.09	2381.03	1766507.48	14617652.92	40°14'55.661"N	80°32'53.211"W	4127.99	144.774	3.44	-0.06	3.44	
10285.00	88.800	164.430	5978.21	4178.31	-3461.42	2406.83	1766533.28	14617563.63	40°14'54.777"N	80°32'52.884"W	4215.95	145.188	1.17	0.00	1.17	
10378.00	88.830	162.710	5980.13	4269.67	-3550.60	2433.13	1766559.57	14617474.49	40°14'53.895"N	80°32'52.550"W	4304.29	145.578	1.85	0.03	-1.85	
10470.00	88.710	159.410	5982.11	4360.69	-3637.59	2462.98	1766589.41	14617387.53	40°14'53.033"N	80°32'52.171"W	4392.98	145.898	3.59	-0.13	-3.59	
10563.00	88.770	156.080	5984.15	4453.32	-3723.62	2498.19	1766624.60	14617301.53	40°14'52.181"N	80°32'51.723"W	4484.01	146.142	3.58	0.06	-3.58	
10656.00	88.800	154.180	5986.13	4546.22	-3807.98	2537.29	1766663.69	14617217.21	40°14'51.346"N	80°32'51.224"W	4575.87	146.324	2.04	0.03	-2.04	
10749.00	88.770	154.250	5988.10	4639.17	-3891.70	2577.74	1766704.12	14617133.52	40°14'50.517"N	80°32'50.708"W	4667.98	146.481	0.08	-0.03	0.08	
10842.00	88.860	156.440	5990.02	4732.06	-3976.20	2616.52	1766742.89	14617049.05	40°14'49.680"N	80°32'50.213"W	4759.87	146.653	2.36	0.10	2.35	
10935.00	88.770	160.250	5991.95	4824.59	-4062.60	2650.83	1766777.18	14616962.68	40°14'48.824"N	80°32'49.777"W	4850.94	146.876	4.10	-0.10	4.10	
11027.00	88.830	160.490	5993.87	4915.78	-4149.23	2681.73	1766808.07	14616876.08	40°14'47.966"N	80°32'49.384"W	4940.43	147.125	0.27	0.07	0.26	
11120.00	88.740	162.310	5995.85	5007.72	-4237.35	2711.38	1766837.71	14616788.00	40°14'47.094"N	80°32'49.007"W	5030.58	147.386	1.96	-0.10	1.96	
11213.00	89.260	159.680	5997.47	5099.76	-4325.26	2741.66	1766867.98	14616700.12	40°14'46.224"N	80°32'48.623"W	5121.00	147.631	2.88	0.56	-2.83	
11305.00	89.290	158.270	5998.63	5191.23	-4411.13	2774.67	1766900.97	14616614.29	40°14'45.374"N	80°32'48.203"W	5211.22	147.829	1.53	0.03	-1.53	
11398.00	89.260	157.440	5999.81	5283.86	-4497.26	2809.72	1766936.01	14616528.19	40°14'44.521"N	80°32'47.756"W	5302.82	148.004	0.89	-0.03	-0.89	
11491.00	89.320	157.080	6000.96	5376.58	-4583.02	2845.67	1766971.94	14616442.46	40°14'43.672"N	80°32'47.298"W	5394.62	148.163	0.39	0.06	-0.39	
11583.00	89.260	158.070	6002.10	5468.26	-4668.06	2880.76	1767007.02	14616357.46	40°14'42.830"N	80°32'46.851"W	5485.39	148.320	1.08	-0.07	1.08	
11676.00	89.540	159.290	6003.08	5560.77	-4754.69	2914.57	1767040.82	14616270.86	40°14'41.972"N	80°32'46.421"W	5576.90	148.492	1.35	0.30	1.31	
11769.00	89.570	161.460	6003.80	5652.96	-4842.28	2945.80	1767072.04	14616183.30	40°14'41.105"N	80°32'46.024"W	5667.93	148.686	2.33	0.03	2.33	
11861.00	89.600	161.990	6004.46	5743.86	-4929.63	2974.65	1767100.87	14616095.98	40°14'40.240"N	80°32'45.658"W	5757.59	148.892	0.58	0.03	0.58	
11954.00	89.570	161.870	6005.14	5835.69	-5018.05	3003.49	1767129.71	14616007.60	40°14'39.365"N	80°32'45.292"W	5848.23	149.098	0.13	-0.03	-0.13	
12047.00	89.570	161.870	6005.84	5927.54	-5106.43	3032.43	1767158.64	14615919.26	40°14'38.490"N	80°32'44.924"W	5938.96	149.296	0.00	0.00	0.00	
12139.00	89.540	160.750	6006.55	6018.53	-5193.57	3061.91	1767188.11	14615832.15	40°14'37.627"N	80°32'44.550"W	6028.97	149.478	1.22	-0.03	-1.22	
12232.00	89.510	159.150	6007.32	6110.81	-5280.93	3093.79	1767219.97	14615744.82	40°14'36.763"N	80°32'44.145"W	6120.44	149.636	1.72	-0.03	-1.72	
12325.00	89.570	159.550	6008.07	6203.21	-5367.95	3126.59	1767252.76	14615657.83	40°14'35.901"N	80°32'43.728"W	6212.12	149.781	0.43	0.06	0.43	
12418.00	89.600	158.180	6008.74	6295.70	-5454.69	3160.12	1767286.28	14615571.13	40°14'35.042"N	80°32'43.301"W	6303.97	149.915	1.47	0.03	-1.47	
12510.00	89.540	157.540	6009.43	6387.34	-5539.90	3194.79	1767320.93	14615485.95	40°14'34.198"N	80°32'42.859"W	6395.09	150.028	0.70	-0.07	-0.70	
12603.00	89.570	157.930	6010.15	6480.00	-5625.97	3230.03	1767356.16	14615399.92	40°14'33.346"N	80°32'42.411"W	6487.26	150.139	0.42	0.03	0.42	
12696.00	89.480	156.870	6010.93	6572.70	-5711.82	3265.77	1767391.88	14615314.09	40°14'32.496"N	80°32'41.956"W	6579.52	150.241	1.14	-0.10	-1.14	
12789.00	89.600	159.370	6011.67	6665.30	-5798.11	3300.42	1767426.52	14615227.84	40°14'31.641"N	80°32'41.514"W	6671.65	150.350	2.69	0.13	2.69	



Actual Wellpath Report

Russell Hervey BRK 210H AWP Proj: 15182'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

WELLPATH DATA (177 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]
12881.00	89.570	165.230	6012.34	6756.01	-5885.72	3328.38	1767454.47	14615140.27	40°14'30.774"N	80°32'41.160"W	6761.64	150.512	6.37	-0.03	6.37
12974.00	89.170	164.760	6013.36	6846.92	-5975.54	3352.45	1767478.54	14615050.48	40°14'29.885"N	80°32'40.855"W	6851.72	150.706	0.66	-0.43	-0.51
13067.00	89.110	164.690	6014.76	6937.92	-6065.24	3376.95	1767503.02	14614960.81	40°14'28.998"N	80°32'40.545"W	6941.97	150.892	0.10	-0.06	-0.08
13160.00	89.230	161.980	6016.11	7029.35	-6154.32	3403.62	1767529.68	14614871.77	40°14'28.116"N	80°32'40.207"W	7032.80	151.055	2.92	0.13	-2.91
13253.00	89.200	157.190	6017.38	7121.67	-6241.45	3436.04	1767562.09	14614784.67	40°14'27.254"N	80°32'39.795"W	7124.75	151.166	5.15	-0.03	-5.15
13347.00	89.170	153.440	6018.72	7215.56	-6326.83	3475.29	1767601.32	14614699.32	40°14'26.408"N	80°32'39.294"W	7218.48	151.220	3.99	-0.03	-3.99
13438.00	89.140	154.590	6020.06	7306.53	-6408.62	3515.16	1767641.17	14614617.56	40°14'25.598"N	80°32'38.786"W	7309.36	151.255	1.26	-0.03	1.26
13531.00	89.080	155.290	6021.50	7399.46	-6492.86	3554.54	1767680.55	14614533.36	40°14'24.763"N	80°32'38.284"W	7402.16	151.301	0.76	-0.06	0.75
13624.00	89.110	156.920	6022.97	7492.29	-6577.87	3592.21	1767718.20	14614448.38	40°14'23.921"N	80°32'37.803"W	7494.82	151.361	1.75	0.03	1.75
13716.00	89.140	160.130	6024.38	7583.82	-6663.46	3625.88	1767751.86	14614362.82	40°14'23.074"N	80°32'37.375"W	7586.09	151.447	3.49	0.03	3.49
13809.00	89.140	162.420	6025.77	7675.80	-6751.53	3655.73	1767781.69	14614274.79	40°14'22.202"N	80°32'36.996"W	7677.73	151.566	2.46	0.00	2.46
13902.00	89.080	161.990	6027.22	7767.55	-6840.07	3684.15	1767810.10	14614186.28	40°14'21.326"N	80°32'36.635"W	7769.13	151.693	0.47	-0.06	-0.46
13995.00	89.170	161.440	6028.64	7859.43	-6928.36	3713.32	1767839.27	14614098.02	40°14'20.452"N	80°32'36.265"W	7860.72	151.810	0.60	0.10	-0.59
14087.00	89.110	161.230	6030.02	7950.41	-7015.51	3742.76	1767868.69	14614010.91	40°14'19.589"N	80°32'35.891"W	7951.46	151.920	0.24	-0.07	-0.23
14180.00	89.260	161.540	6031.34	8042.37	-7103.64	3772.45	1767898.37	14613922.81	40°14'18.716"N	80°32'35.514"W	8043.20	152.029	0.37	0.16	0.33
14273.00	89.140	163.560	6032.64	8134.03	-7192.34	3800.33	1767926.24	14613834.14	40°14'17.838"N	80°32'35.161"W	8134.64	152.149	2.18	-0.13	2.17
14366.00	89.170	162.560	6034.01	8225.54	-7281.30	3827.42	1767953.32	14613745.22	40°14'16.958"N	80°32'34.817"W	8225.96	152.271	1.08	0.03	-1.08
14458.00	89.200	162.500	6035.32	8316.22	-7369.04	3855.04	1767980.93	14613657.51	40°14'16.090"N	80°32'34.467"W	8316.50	152.384	0.07	0.03	-0.07
14551.00	89.260	162.860	6036.57	8407.85	-7457.82	3882.73	1768008.60	14613568.77	40°14'15.211"N	80°32'34.116"W	8408.01	152.497	0.39	0.06	0.39
14644.00	89.170	158.760	6037.85	8499.93	-7545.63	3913.29	1768039.15	14613481.00	40°14'14.342"N	80°32'33.728"W	8500.02	152.588	4.41	-0.10	-4.41
14737.00	89.140	157.510	6039.22	8592.52	-7631.92	3947.92	1768073.77	14613394.73	40°14'13.487"N	80°32'33.287"W	8592.57	152.648	1.34	-0.03	-1.34
14829.00	89.570	158.960	6040.25	8684.10	-7717.36	3982.03	1768107.87	14613309.33	40°14'12.641"N	80°32'32.853"W	8684.13	152.707	1.64	0.47	1.58
14922.00	89.630	158.730	6040.90	8776.59	-7804.09	4015.59	1768141.41	14613222.63	40°14'11.782"N	80°32'32.426"W	8776.60	152.772	0.26	0.06	-0.25
15015.00	89.570	158.940	6041.55	8869.08	-7890.81	4049.17	1768174.98	14613135.94	40°14'10.924"N	80°32'31.999"W	8869.08	152.835	0.23	-0.06	0.23
15108.00	89.660	158.890	6042.18	8961.56	-7977.58	4082.62	1768208.42	14613049.20	40°14'10.065"N	80°32'31.573"W	8961.56	152.898	0.11	0.10	-0.05
15157.00	89.480	159.000	6042.54	9010.28	-8023.31	4100.23	1768226.02	14613003.49	40°14'09.612"N	80°32'31.349"W	9010.29	152.931	0.43	-0.37	0.22
15182.00	89.480	159.000	6042.77	9035.14	-8046.65	4109.18	1768234.97	14612980.16	40°14'09.381"N	80°32'31.235"W	9035.15	152.948	0.00	0.00	0.00

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Russell Hervey BRK 210H LP Rev-2	5910.00	138.10	1082.33	1765209.29	14621161.77	40°15'30.413"N	80°33'09.731"W	point
Russell Hervey BRK 210H BHL Rev-2	6028.00	-8046.50	4125.90	1768251.68	14612980.31	40°14'09.381"N	80°32'31.020"W	point

WELLPATH COMPOSITION - Ref Wellbore: Russell Hervey BRK 210H AWB Ref Wellpath: Russell Hervey BRK 210H AWP Proj: 15182'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	356.00	OWSG EMS rev2 + HRGM	01_MSS <17-1/2"> (169'-356')	Russell Hervey BRK 210H AWB
356.00	1975.00	BHI NaviTrak (Axial)	02_APS EM <12-1/4"> (356')(519'-1975')	Russell Hervey BRK 210H AWB
1975.00	5251.00	BHI NaviTrak (Axial)	03_APS EM <8-3/4"> (1975')(2049'-5251')	Russell Hervey BRK 210H AWB
5251.00	15157.00	BHI AutoTrak Curve (Short)	04_BHI AT Curve <8-1/2"> (5251')(5328'-15157')	Russell Hervey BRK 210H AWB
15157.00	15182.00	Blind Drilling (std)	Projection to bit	Russell Hervey BRK 210H AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	Russell Hervey BRK 210H
Field	Brooke	Wellbore	Russell Hervey BRK 210H AWB
Facility	Russell Hervey BRK Pad		

COMMENTS
<p>Wellpath general comments API: 47-009-00172-0000 BHI Job #: 8117051 Rig: SDC 46 Duration: 8/29/2016-9/7/2016 MSS <17-1/2"> (169'-356') APS EM <12-1/4"> (356')(519'-1975') APS EM <8-3/4"> (1975')(2049'-5251') BHI AT Curve <8-1/2"> (5251')(5328'-15157') Projected MD at TD: 15182'</p>