

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 009 - 00197 County BROOKE District BUFFALO
Quad BETHANY Pad Name JOHN GOOD PAD Field/Pool Name PANHANDLE FIELD WET
Farm name JOHN P. GOOD, JR. IRREVOCABLE TRUST Well Number JOHN GOOD JR BRK 210H
Operator (as registered with the OOG) SWN PRODUCTION COMPANY, LLC
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,452,687.216 Easting 535,680.908
Landing Point of Curve Northing 4,452,734.124 Easting 536,110.150
Bottom Hole Northing 4,451,245.777 Easting 536,617.463

Elevation (ft) 1152.6 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

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WV Department of Environmental Protection

Date permit issued 6/6/2017 Date drilling commenced 6/26/17 Date drilling ceased 9/10/17
Date completion activities began 12/13/17 Date completion activities ceased 1/1/18
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 326 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 448 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 308 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

C. J. Bell 5.10.18

Reviewed by: _____

API 47-009 - 00197 Farm name JOHN P. GOOD, JR. IRREVOCABLE TRUST Well number JOHN GOOD JR BRK 210H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	26	20	126	NEW	J-55/94#		Y
Surface	17.5	13.375	415	NEW	H-40/48#		Y, 14 BBLs
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1668	NEW	J-55/36#		Y, 30 BBLs
Intermediate 2							
Intermediate 3							
Production	8.75/8.5	5.5	11761	NEW	HCP-110/20#		Y
Tubing		2.375	6454	NEW	P-110/4.7#		N
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	GROUT TO SURFACE				SURFACE	24
Surface	CLASS A	378	15.60	1.20	453.6	SURFACE	8
Coal	SEE SURFACE						
Intermediate 1	CLASS A	661	15.60	1.18	779.98	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2150	15.60	1.19	2558.5	SURFACE	24
Tubing							

Drillers TD (ft) 11761 Loggers TD (ft) 11761
 Deepest formation penetrated UPPER MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5501

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

SURFACE: 7 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 INTERMEDIATE: 24 CENTRALIZERS - EVERY THIRD JOINT OF CASING
 PRODUCTION: 181 CENTRALIZERS - EVERY THIRD JOINT FROM SURFACE TO TOP OF CURVE, THEN EVERY JOINT UNTIL TD

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

JOHN GOOD JR BRK 210H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	10/2/2017	11,437	11,625	42
2	12/14/2017	11,177	11,374	42
3	12/14/2017	10,917	11,114	42
4	12/14/2017	10,657	10,854	42
5	12/15/2017	10,397	10,594	42
6	12/15/2017	10,137	10,334	42
7	12/15/2017	9,877	10,074	42
8	12/15/2017	9,620	9,814	42
9	12/16/2017	9,359	9,554	42
10	12/16/2017	9,097	9,294	42
11	12/16/2017	8,837	9,034	42
12	12/16/2017	8,577	8,774	42
13	12/16/2017	8,317	8,514	42
14	12/17/2017	8,057	8,254	42
15	12/17/2017	7,797	7,994	42
16	12/17/2017	7,537	7,734	42
17	12/17/2017	7,282	7,474	42
18	12/17/2017	7,017	7,214	42
19	12/18/2017	6,757	6,954	42
20	12/18/2017	6,497	6,694	42

JOHN GOOD JR BRK 210H

Frac Summary

Attachment 2

STAGE NUM	Stim Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of water bbls	Amount of nitrogen/other
1	12/14/2017	99	7,840	8,740	4,041	503,200	7,877	
2	12/14/2017	95	7,818	8,542	4,110	500,220	7,198	
3	12/14/2017	99	8,087	8,733	4,110	496,220	7,282	
4	12/15/2017	99	7,990	8,810	3,993	503,500	7,280	
5	12/15/2017	92	7,276	8,575	4,200	515,245	7,344	
6	12/15/2017	94	7,321	8,155	4,211	499,505	7,152	
7	12/15/2017	97	7,807	8,553	4,022	503,340	7,209	
8	12/16/2017	97	8,116	8,624	4,133	511,780	7,288	
9	12/16/2017	99	7,297	8,024	4,511	500,800	7,145	
10	12/16/2017	100	7,014	8,261	4,303	502,020	7,046	
11	12/16/2017	100	7,460	8,448	4,370	499,480	7,080	
12	12/16/2017	98	7,316	7,899	4,226	506,640	7,125	
13	12/17/2017	98	7,272	8,307	4,391	504,910	6,969	
14	12/17/2017	99	7,125	8,175	4,148	509,390	7,326	
15	12/17/2017	99	6,594	7,377	4,235	510,890	6,984	
16	12/17/2017	97	6,654	7,047	4,211	497,530	6,866	
17	12/17/2017	99	6,882	9,074	4,295	512,280	6,913	
18	12/17/2017	100	6,974	7,889	4,067	513,840	7,077	
19	12/18/2017	97	6,743	8,168	4,157	507,160	6,846	
20	12/18/2017	100	6,392	7,162	4,285	507,380	6,565	



Well Name: John Good Jr BRK 210H 47009001970000

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	326.00	326.00	
Top of Salt Water	448.00	448.00	NA	NA	
Pittsburgh Coal	308.00	308.00	312.00	312.00	
Pottsville (ss)	440.00	440.00	477.00	477.00	
Mauch Chunk (shale)	639.00	639.00	1302.00	1302.00	
Raven Cliff (ss)	789.00	789.00	946.00	946.00	
Maxton (ss)	1130.00	1130.00	1302.00	1302.00	
Greenbriar (ls)	1302.00	1302.00	1448.00	1448.00	
Big Injun (ss)	1448.00	1446.00	1589.00	1585.00	
Berea (siltstone)	1932.00	1913.00	5666.00	5475.00	
Rhinestreet (shale)	5517.00	5335.00	5788.00	5586.00	
Cashaqua (shale)	5789.00	5587.00	5844.00	5636.00	
Middlesex (shale)	5844.00	5636.00	5911.00	5691.00	
Burket (shale)	5911.00	5691.00	5931.18	5707.89	
Tully (ls)	5931.18	5707.89	6007.73	5763.86	
Mahantango (shale)	6007.73	5763.86	6237.51	5888.31	
Marcellus (shale)	6237.51	5888.31	NA	NA	GAS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/14/2017
Job End Date:	12/18/2017
State:	West Virginia
County:	Brooke
API Number:	47-009-00197-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	John Good Jr. BRK 210H
Latitude:	40.22385000
Longitude:	-80.58068062
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,954
Total Base Water Volume (gal):	5,920,403
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	82.00123	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	1.03432	

			Acrylamide acrylate copolymer	Proprietary	30.00000	0.02439	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.02439	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02439	
			Methanol	67-56-1	60.00000	0.01324	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium	68424-85-1	30.00000	0.00662	
			Glutaraldehyde	111-30-8	10.00000	0.00221	
			Ethylene Glycol	107-21-1	30.00000	0.00201	
			Amine Triphosphate	Proprietary	30.00000	0.00201	Bryan Hooton 7705 Highway 90-A Sugar Land, Texas 77478 281-263-7000
			Non-hazardous food substance	Proprietary	100.00000	0.00030	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

SOUTHWESTERN ENERGY

Location: Brooke County, WV
 Slot: Slot #210
 Well: John Good Jr BRK 210H
 Field: Brooke
 Facility: John Good Jr BRK Pad Wellbore: John Good Jr BRK 210H PWB

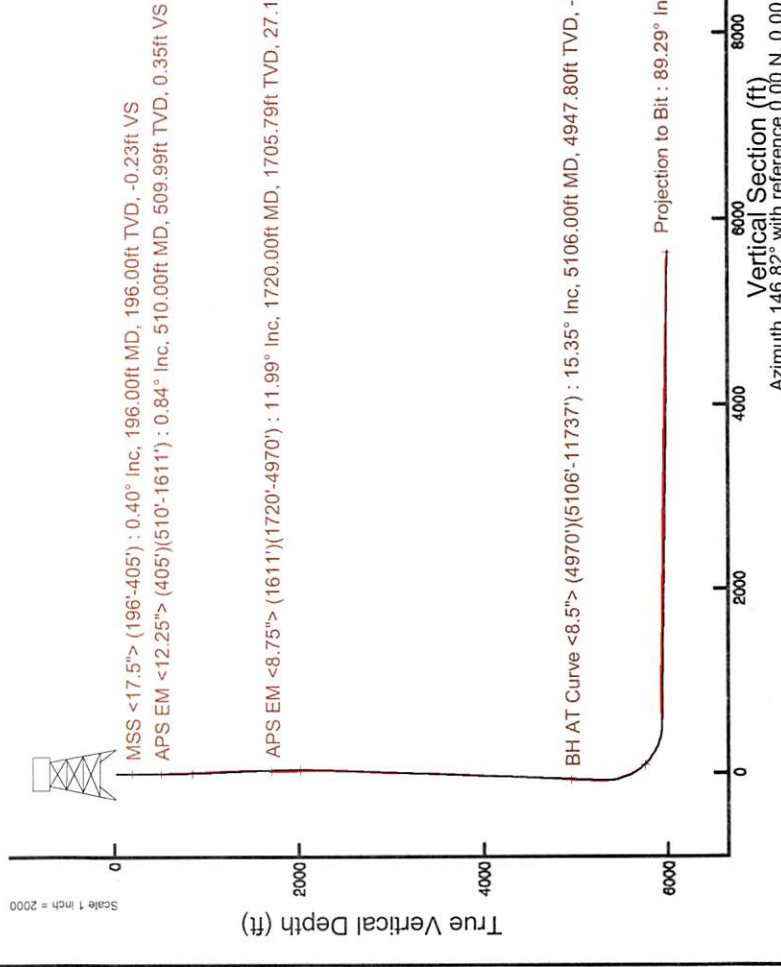
Plot reference wellpath is John Good Jr BRK 210H PWP Rev-A.0
 Grid System: NAD83 / UTM Zone 17 North, US feet
 True vertical depths are referenced to SDC-46 (KB)
 Measured depths are referenced to SDC-46 (KB)
 SDC-46 (KB) to Mean Sea Level: 1178.6 feet
 Mean Sea Level to Ground level (At Slot: Slot #210): -1152.6 feet
 Coordinates are in feet referenced to Slot
 Created by: amarcat on 2017-09-12
 Database: WA_MPL_EASTERNUS_Defn

Location Information

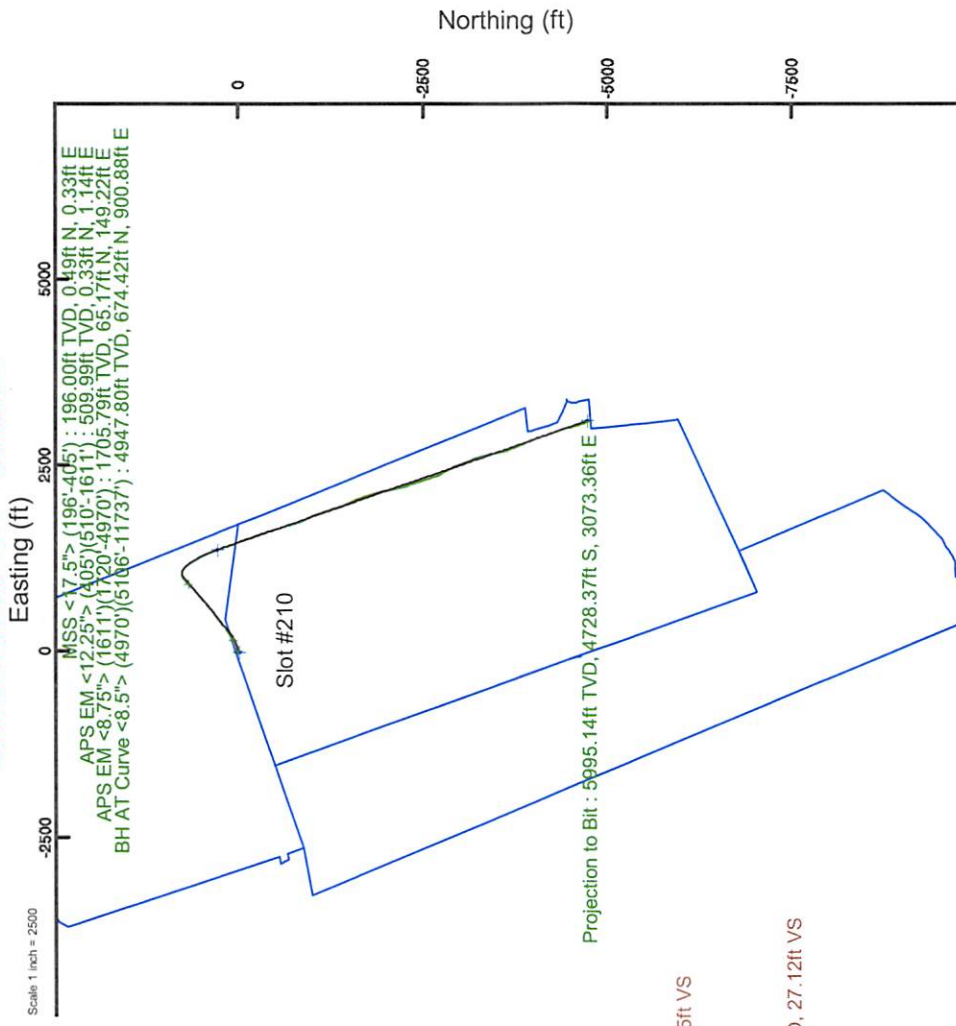
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
John Good Jr BRK Pad	1757463.232	14608504.851	40°13'25.666"N	80°34'50.452"W
Slot #210	18.97	15.82	40°13'25.853"N	80°34'50.247"W
SDC-46 (KB) to Ground level (At Slot: Slot #210)	26ft			
Mean Sea Level to Ground level (At Slot: Slot #210)	-1152.6ft			
SDC-46 (KB) to Mean Sea Level	1178.6ft			

Well Profile Data

Design Comment	MD (ft)	Az (°)	Inc (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	26.00	0.000	70.000	26.00	0.00	0.00	0.00	0.00
Start Nudge	600.00	0.000	70.000	600.00	0.00	0.00	0.00	0.00
End Nudge	1100.00	10.000	70.000	1097.47	14.89	40.90	2.00	9.92
Start Build/Turn	1813.37	10.000	70.000	1800.00	57.25	157.30	0.00	38.17
End Build/Turn	2270.98	17.924	50.131	2243.97	116.11	248.88	2.00	39.03
Curve KOP	5507.82	17.924	50.131	5323.71	754.69	1013.46	0.00	-77.01
Landing Point	6463.57	89.243	161.017	5933.00	282.10	1368.08	10.00	512.61
Total Depth	11761.30	89.243	161.017	6003.00	-4727.09	3091.18	0.00	5648.08



API: 47-009-00197-0000
 Job#: 8708695
 Rig: SDC-46
 Duration: 09/01/17 - 09/07/17



User specified Dip: 67.72° Field: 52683 nT
 Magnetic North is 8.30 degrees West of True North (at 27/Aug/2017)
 Grid North is 0.27 degrees East of True North
 To correct azimuth from True to Grid subtract 0.27 degrees
 To correct azimuth from Magnetic to Grid subtract 8.57 degrees

Scale 1 inch = 2000

Vertical Section (ft)
 Azimuth 146.82° with reference 0.00 N, 0.00 E

Actual Wellpath Report

John Good Jr BRK 210H AWP Proj: 11761'

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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	John Good Jr BRK 210H
Field	Brooke	Wellbore	John Good Jr BRK 210H AWB
Facility	John Good Jr BRK Pad		

REPORT SETUP INFORMATION

Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Amarcar
Scale	0.999616	Report Generated	12/Sep/2017 at 15:23
Convergence at slot	0.27° East	Database/Source file	WA_MPL_EASTERNUS_Defn/John_Good_Jr_BRK_210H_AWP_Proj_11761_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	18.97	15.82	1757479.05	14608523.81	40°13'25.853"N	80°34'50.247"W
Facility Reference Pt			1757463.23	14608504.85	40°13'25.666"N	80°34'50.452"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 (KB) to Facility Vertical Datum	26.00ft
Horizontal Reference Pt	Slot	SDC-46 (KB) to Mean Sea Level	1178.60ft
Vertical Reference Pt	SDC-46 (KB)	SDC-46 (KB) to Ground Level at Slot (Slot #210)	26.00ft
MD Reference Pt	SDC-46 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	146.82°



Actual Wellpath Report

John Good Jr BRK 210H AWP Proj: 11761'
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REFERENCE WELLPATH IDENTIFICATION

Operator	Area	Field	Facility	Slot	Slot #210
SOUTHWESTERN ENERGY	Brooke County, WV	Brooke	John Good Jr BRK Pad	Well	John Good Jr BRK 210H
				Wellbore	John Good Jr BRK 210H AWB

WELLPATH DATA (131 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	33.680	0.00	0.00	0.00	0.00	1757479.05	14608523.81	40°13'25.853"N	80°34'50.247"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	33.680	26.00	0.00	0.00	0.00	1757479.05	14608523.81	40°13'25.853"N	80°34'50.247"W	0.00	0.000	0.00	0.00	0.00
196.00	0.400	33.680	196.00	-0.23	0.49	0.33	1757479.38	14608524.30	40°13'25.858"N	80°34'50.243"W	0.59	33.680	0.24	0.24	19.81
288.00	0.300	62.380	288.00	-0.34	0.87	0.72	1757479.77	14608524.68	40°13'25.861"N	80°34'50.238"W	1.13	39.546	0.22	-0.11	31.20
405.00	0.400	230.280	405.00	-0.26	0.75	0.68	1757479.73	14608524.56	40°13'25.860"N	80°34'50.238"W	1.01	41.966	0.60	0.09	143.50
510.00	0.840	104.050	509.99	0.35	0.33	1.14	1757480.19	14608524.14	40°13'25.856"N	80°34'50.232"W	1.19	73.768	1.07	0.42	-120.22
603.00	1.810	93.440	602.97	1.72	0.08	3.27	1757482.32	14608523.89	40°13'25.853"N	80°34'50.205"W	3.27	88.616	1.07	1.04	-11.41
696.00	2.910	91.800	695.89	3.95	-0.08	7.10	1757486.14	14608523.73	40°13'25.852"N	80°34'50.155"W	7.10	90.672	1.18	1.18	-1.76
788.00	3.980	85.870	787.72	6.84	0.07	12.61	1757491.66	14608523.88	40°13'25.853"N	80°34'50.084"W	12.61	89.667	1.22	1.16	-6.45
881.00	5.290	82.120	880.41	10.24	0.89	20.08	1757499.12	14608524.70	40°13'25.861"N	80°34'49.988"W	20.10	87.452	1.45	1.41	-4.03
974.00	6.500	79.270	972.92	14.08	2.46	29.50	1757508.54	14608526.27	40°13'25.876"N	80°34'49.866"W	29.60	85.230	1.34	1.30	-3.06
1067.00	7.550	74.790	1065.22	17.98	5.04	40.57	1757519.60	14608528.85	40°13'25.901"N	80°34'49.724"W	40.88	82.912	1.27	1.13	-4.82
1159.00	8.680	72.490	1156.30	21.72	8.72	53.02	1757532.05	14608532.53	40°13'25.936"N	80°34'49.563"W	53.73	80.662	1.28	1.23	-2.50
1252.00	9.820	67.860	1248.09	25.13	13.82	67.06	1757546.08	14608537.62	40°13'25.986"N	80°34'49.381"W	68.47	78.356	1.46	1.23	-4.98
1345.00	11.470	64.860	1339.49	27.95	20.74	82.78	1757561.80	14608544.54	40°13'26.054"N	80°34'49.178"W	85.34	75.936	1.87	1.77	-3.23
1438.00	12.160	60.840	1430.52	29.93	29.44	99.70	1757578.71	14608553.24	40°13'26.139"N	80°34'48.960"W	103.96	73.550	1.15	0.74	-4.32
1530.00	12.730	57.170	1520.36	30.67	39.66	116.68	1757595.69	14608563.45	40°13'26.239"N	80°34'48.740"W	123.24	71.229	1.06	0.62	-3.99
1611.00	12.900	53.110	1599.34	30.14	49.92	131.41	1757610.41	14608573.71	40°13'26.340"N	80°34'48.550"W	140.58	69.199	1.13	0.21	-5.01
1720.00	11.990	45.460	1705.79	27.12	65.17	149.22	1757628.21	14608588.95	40°13'26.490"N	80°34'48.319"W	162.83	66.407	1.73	-0.83	-7.02
1812.00	11.740	54.430	1795.83	24.85	77.32	163.64	1757642.63	14608601.10	40°13'26.609"N	80°34'48.133"W	180.99	64.711	2.02	-0.27	9.75
1905.00	12.460	63.770	1886.77	25.67	87.25	180.34	1757659.32	14608611.03	40°13'26.706"N	80°34'47.917"W	200.34	64.180	2.24	0.77	10.04
1998.00	12.060	62.860	1977.65	27.90	96.12	197.98	1757676.96	14608619.89	40°13'26.793"N	80°34'47.689"W	220.08	64.103	0.48	-0.43	-0.98
2090.00	12.590	60.990	2067.53	29.64	105.37	215.31	1757694.27	14608629.14	40°13'26.884"N	80°34'47.465"W	239.71	63.923	0.72	0.58	-2.03
2183.00	13.660	58.270	2158.10	30.66	116.06	233.51	1757712.47	14608639.82	40°13'26.989"N	80°34'47.229"W	260.76	63.572	1.33	1.15	-2.92
2275.00	15.750	55.420	2247.08	30.63	128.86	253.03	1757731.99	14608652.62	40°13'27.114"N	80°34'46.977"W	283.96	63.012	2.40	2.27	-3.10
2368.00	18.520	53.800	2335.94	29.54	144.75	275.35	1757754.29	14608668.50	40°13'27.270"N	80°34'46.688"W	311.08	62.269	3.02	2.98	-1.74
2461.00	18.780	53.020	2424.06	27.77	162.48	299.23	1757778.16	14608686.23	40°13'27.444"N	80°34'46.379"W	340.49	61.498	0.39	0.28	-0.84
2553.00	18.310	51.150	2511.28	25.36	180.45	322.81	1757801.24	14608704.19	40°13'27.621"N	80°34'46.081"W	369.39	60.757	0.82	-0.51	-2.03
2646.00	18.070	50.720	2599.64	22.38	198.75	344.85	1757823.77	14608722.48	40°13'27.801"N	80°34'45.789"W	398.03	60.044	0.30	-0.26	-0.46
2739.00	17.760	49.140	2688.13	18.96	217.16	366.74	1757845.65	14608740.88	40°13'27.981"N	80°34'45.506"W	426.22	59.369	0.62	-0.33	-1.70



Actual Wellpath Report

John Good Jr BRK 210H AWP Proj: 11761'
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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #210
SOUTHWESTERN ENERGY	Well	John Good Jr BRK 210H
Area	Wellbore	John Good Jr BRK 210H AWB
Field		
Facility		

WELLPATH DATA (131 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]
2835.00	17.470	48.150	2779.63	14.83	236.35	388.55	1757867.45	14608760.07	40°13'28.170"N	80°34'45.223"W	454.79	58.688	0.43	-0.30	-1.03
2927.00	17.100	46.820	2867.47	10.40	254.82	408.70	1757887.59	14608778.53	40°13'28.352"N	80°34'44.962"W	481.63	58.057	0.59	-0.40	-1.45
3020.00	16.550	51.050	2956.49	6.69	272.50	428.97	1757907.86	14608796.21	40°13'28.525"N	80°34'44.700"W	508.21	57.574	1.44	-0.59	4.55
3116.00	15.540	52.450	3048.75	4.34	288.94	449.80	1757928.68	14608812.64	40°13'28.687"N	80°34'44.430"W	534.61	57.285	1.13	-1.05	1.46
3209.00	16.530	53.390	3138.13	2.60	304.42	470.30	1757949.17	14608828.11	40°13'28.839"N	80°34'44.165"W	560.23	57.085	1.10	1.06	1.01
3301.00	16.430	54.620	3226.36	1.31	319.76	491.42	1757970.28	14608843.45	40°13'28.989"N	80°34'43.892"W	586.29	56.948	0.39	-0.11	1.34
3394.00	16.470	53.960	3315.55	0.15	335.13	512.80	1757991.65	14608858.81	40°13'29.140"N	80°34'43.615"W	612.60	56.834	0.21	0.04	-0.71
3487.00	16.900	52.320	3404.63	-1.57	351.15	534.16	1758013.00	14608874.82	40°13'29.298"N	80°34'43.339"W	639.24	56.679	0.69	0.46	-1.76
3579.00	17.710	50.540	3492.47	-4.15	368.22	555.54	1758034.38	14608891.89	40°13'29.465"N	80°34'43.062"W	666.49	56.463	1.05	0.88	-1.93
3669.00	17.060	50.680	3578.36	-7.06	385.28	576.33	1758055.15	14608908.94	40°13'29.633"N	80°34'42.793"W	693.25	56.237	0.72	-0.72	0.16
3761.00	17.790	49.580	3666.14	-10.27	402.95	597.47	1758076.29	14608926.60	40°13'29.807"N	80°34'42.520"W	720.65	56.003	0.87	0.79	-1.20
3854.00	19.120	49.540	3754.35	-13.99	422.04	619.87	1758098.68	14608945.69	40°13'29.994"N	80°34'42.230"W	749.91	55.751	1.43	1.43	-0.04
3947.00	18.100	47.820	3842.49	-18.18	441.63	642.17	1758120.97	14608965.27	40°13'30.187"N	80°34'41.941"W	779.37	55.483	1.25	-1.10	-1.85
4040.00	17.920	50.220	3930.93	-22.09	460.48	663.87	1758142.66	14608984.11	40°13'30.372"N	80°34'41.660"W	807.94	55.253	0.82	-0.19	2.58
4132.00	17.650	49.870	4018.53	-25.40	478.53	685.41	1758164.20	14609002.15	40°13'30.549"N	80°34'41.381"W	835.93	55.079	0.32	-0.29	-0.38
4225.00	16.590	47.510	4107.41	-29.26	496.58	705.98	1758184.76	14609020.20	40°13'30.727"N	80°34'41.115"W	863.14	54.878	1.36	-1.14	-2.54
4321.00	17.250	48.650	4199.26	-33.50	515.25	726.77	1758205.54	14609038.86	40°13'30.910"N	80°34'40.846"W	890.88	54.665	0.77	0.69	1.19
4414.00	17.990	49.310	4287.89	-37.33	533.72	748.01	1758226.77	14609057.32	40°13'31.092"N	80°34'40.571"W	918.90	54.492	0.82	0.80	0.71
4506.00	18.270	50.270	4375.33	-40.83	552.20	769.88	1758248.63	14609075.80	40°13'31.273"N	80°34'40.288"W	947.44	54.350	0.45	0.30	1.04
4599.00	16.890	46.680	4463.98	-44.88	570.79	790.92	1758269.66	14609094.38	40°13'31.456"N	80°34'40.016"W	975.37	54.183	1.89	-1.48	-3.86
4692.00	17.950	48.960	4552.72	-49.21	589.47	811.56	1758290.29	14609113.05	40°13'31.640"N	80°34'39.748"W	1003.04	54.008	1.36	1.14	2.45
4785.00	19.110	50.000	4640.90	-52.98	608.66	834.03	1758312.76	14609132.24	40°13'31.828"N	80°34'39.457"W	1032.51	53.879	1.30	1.25	1.12
4877.00	17.930	47.010	4728.13	-57.18	628.00	855.92	1758334.64	14609151.57	40°13'32.018"N	80°34'39.174"W	1061.60	53.732	1.65	-1.28	-3.25
4970.00	16.400	43.570	4816.99	-62.63	647.27	875.45	1758354.16	14609170.83	40°13'32.208"N	80°34'38.921"W	1088.75	53.522	1.97	-1.65	-3.70
5106.00	15.350	42.650	4947.80	-71.44	674.42	900.88	1758379.58	14609197.97	40°13'32.475"N	80°34'38.592"W	1125.36	53.180	0.79	-0.77	-0.68
5199.00	18.290	53.200	5036.83	-75.38	692.23	920.91	1758399.60	14609215.77	40°13'32.650"N	80°34'38.332"W	1152.06	53.069	4.55	3.16	11.34
5292.00	20.670	53.240	5124.50	-77.32	710.79	945.75	1758424.43	14609234.33	40°13'32.832"N	80°34'38.011"W	1183.08	53.073	2.56	2.05	0.04
5384.00	20.720	52.420	5210.57	-79.58	730.44	971.65	1758450.33	14609253.97	40°13'33.025"N	80°34'37.676"W	1215.59	53.066	0.32	0.05	-0.89
5477.00	20.360	57.570	5297.66	-80.64	749.15	998.35	1758477.01	14609272.67	40°13'33.209"N	80°34'37.330"W	1248.17	53.116	1.98	-0.39	5.54
5570.00	20.770	77.610	5384.84	-74.56	761.38	1028.15	1758506.80	14609284.89	40°13'33.328"N	80°34'36.945"W	1279.37	53.479	7.55	0.44	21.55

Actual Wellpath Report

John Good Jr BRK 210H AWP Proj: 11761'
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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #210
SOUTHWESTERN ENERGY	Well	John Good Jr BRK 210H
Area	Wellbore	John Good Jr BRK 210H AWB
Field		
Facility		

WELLPATH DATA (131 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]
5663.00	20.650	107.120	5472.07	-56.04	760.08	1060.01	1758538.65	14609283.60	40°13'33.314"N	80°34'36.535"W	1304.36	54.357	11.11	-0.13	31.73
5755.00	24.640	120.880	5557.02	-26.28	745.45	1092.01	1758570.64	14609268.97	40°13'33.168"N	80°34'36.123"W	1322.19	55.681	7.18	4.34	14.96
5848.00	30.530	134.500	5639.50	14.30	718.89	1125.56	1758604.18	14609242.43	40°13'32.904"N	80°34'35.692"W	1335.55	57.434	9.24	6.33	14.65
5941.00	38.790	141.630	5715.96	66.51	679.41	1160.57	1758639.17	14609202.96	40°13'32.512"N	80°34'35.243"W	1344.81	59.655	9.88	8.88	7.67
6034.00	49.320	145.850	5782.71	130.97	627.23	1198.56	1758677.15	14609150.80	40°13'31.995"N	80°34'34.757"W	1352.76	62.376	11.75	11.32	4.54
6127.00	57.860	149.020	5837.87	205.73	564.17	1238.70	1758717.28	14609087.76	40°13'31.369"N	80°34'34.243"W	1361.13	65.513	9.58	9.18	3.41
6219.00	65.750	152.210	5881.32	286.55	493.54	1278.38	1758756.93	14609017.16	40°13'30.670"N	80°34'33.736"W	1370.34	68.890	9.10	8.58	3.47
6266.00	69.880	153.850	5899.07	329.80	454.76	1298.10	1758776.65	14608978.40	40°13'30.286"N	80°34'33.484"W	1375.45	70.693	9.32	8.74	3.49
6312.00	74.810	156.560	5913.02	373.14	414.98	1316.46	1758795.00	14608938.63	40°13'29.892"N	80°34'33.250"W	1380.32	72.504	12.14	10.76	5.89
6358.00	79.770	158.920	5923.14	417.18	373.47	1333.45	1758811.98	14608897.13	40°13'29.481"N	80°34'33.033"W	1384.76	74.354	11.89	10.78	5.13
6405.00	85.130	160.310	5929.32	462.60	329.81	1349.66	1758828.19	14608853.49	40°13'29.048"N	80°34'32.827"W	1389.38	76.268	11.77	11.40	2.96
6451.00	91.170	161.590	5930.80	507.16	286.37	1364.66	1758843.19	14608810.07	40°13'28.618"N	80°34'32.636"W	1394.39	78.149	13.42	13.13	2.78
6497.00	91.450	161.880	5929.75	551.60	242.70	1379.08	1758857.59	14608766.42	40°13'28.186"N	80°34'32.453"W	1400.27	80.019	0.88	0.61	0.63
6590.00	91.350	160.640	5927.48	641.63	154.66	1408.95	1758887.45	14608678.41	40°13'27.315"N	80°34'32.074"W	1417.41	83.736	1.34	-0.11	-1.33
6682.00	91.510	159.960	5925.18	731.07	68.07	1439.95	1758918.44	14608591.85	40°13'26.458"N	80°34'31.679"W	1441.56	87.293	0.76	0.17	-0.74
6775.00	89.940	158.580	5924.00	821.87	-18.90	1472.86	1758951.34	14608504.92	40°13'25.597"N	80°34'31.260"W	1472.98	90.735	2.25	-1.69	-1.48
6868.00	90.000	159.980	5924.05	912.68	-105.88	1505.77	1758984.23	14608417.97	40°13'24.736"N	80°34'30.842"W	1509.48	94.022	1.51	0.06	1.51
6960.00	89.480	160.380	5924.47	1002.19	-192.43	1536.96	1759015.42	14608331.46	40°13'23.879"N	80°34'30.445"W	1548.96	97.136	0.71	-0.57	0.43
7053.00	88.980	160.840	5925.72	1092.50	-280.14	1567.83	1759046.28	14608243.77	40°13'23.011"N	80°34'30.052"W	1592.66	100.131	0.73	-0.54	0.49
7146.00	88.830	160.900	5927.50	1182.70	-367.99	1598.30	1759076.74	14608155.96	40°13'22.141"N	80°34'29.665"W	1640.12	102.966	0.17	-0.16	0.06
7239.00	88.890	162.520	5929.35	1272.34	-546.52	1626.71	1759105.13	14608067.42	40°13'21.265"N	80°34'29.304"W	1689.55	105.676	2.82	0.06	2.82
7331.00	88.490	162.990	5931.45	1360.65	-544.50	1653.52	1759131.93	14607979.52	40°13'20.394"N	80°34'28.964"W	1740.86	108.227	1.10	-0.43	-1.01
7424.00	89.350	162.670	5933.20	1450.11	-633.24	1681.27	1759159.68	14607890.81	40°13'19.516"N	80°34'28.612"W	1796.58	110.639	0.93	0.92	0.09
7517.00	89.290	163.520	5934.31	1539.38	-722.22	1708.32	1759186.71	14607801.87	40°13'18.635"N	80°34'28.268"W	1854.71	112.917	0.92	-0.06	0.91
7610.00	89.350	162.540	5935.41	1628.67	-811.16	1735.46	1759213.84	14607712.96	40°13'17.755"N	80°34'27.924"W	1915.67	115.052	1.06	0.06	-1.05
7703.00	89.420	156.940	5936.41	1719.28	-898.37	1767.65	1759246.01	14607625.79	40°13'16.892"N	80°34'27.514"W	1982.84	116.941	6.02	0.08	-6.02
7796.00	89.480	153.500	5937.30	1811.26	-982.79	1806.62	1759282.97	14607541.40	40°13'16.056"N	80°34'27.017"W	2056.63	118.546	3.70	0.06	-3.70
7888.00	89.450	158.220	5938.16	1902.09	-1066.72	1844.23	1759324.57	14607457.51	40°13'15.225"N	80°34'26.538"W	2130.51	120.045	5.13	-0.03	5.13
7981.00	89.510	163.430	5939.01	1992.29	-1154.52	1874.77	1759353.09	14607369.73	40°13'14.356"N	80°34'26.149"W	2201.74	121.626	5.60	0.06	5.60
8074.00	89.380	163.070	5939.91	2081.49	-1243.57	1901.57	1759379.88	14607280.72	40°13'13.474"N	80°34'25.809"W	2272.10	123.184	0.41	-0.14	-0.39



Actual Wellpath Report

John Good Jr BRK 210H AWP Proj: 11761'
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REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	John Good Jr BRK 210H
Field	Brooke	Wellbore	John Good Jr BRK 210H AWB
Facility	John Good Jr BRK Pad		

WELLPATH DATA (131 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]
8167.00	89.420	160.770	5940.88	2171.26	-1331.97	1930.43	1759408.73	14607192.36	40°13'12.599"N	80°34'25.443"W	2345.35	124.605	2.47	0.04	-2.47
8259.00	89.630	158.690	5941.65	2260.93	-1418.26	1962.30	1759440.59	14607106.09	40°13'11.745"N	80°34'25.037"W	2421.17	125.858	2.27	0.23	-2.26
8352.00	89.450	157.220	5942.39	2352.17	-1504.46	1997.20	1759475.48	14607019.93	40°13'10.892"N	80°34'24.593"W	2500.44	126.990	1.59	-0.19	-1.58
8444.00	89.450	155.630	5943.28	2442.88	-1588.77	2033.99	1759512.26	14606935.65	40°13'10.057"N	80°34'24.124"W	2580.95	127.994	1.73	0.00	-1.73
8537.00	89.510	160.660	5944.12	2534.03	-1675.06	2068.60	1759546.85	14606849.40	40°13'09.203"N	80°34'23.683"W	2661.75	128.999	5.41	0.06	5.41
8630.00	89.600	164.110	5944.84	2623.61	-1763.68	2096.74	1759574.98	14606760.81	40°13'08.325"N	80°34'23.326"W	2739.87	130.069	3.71	0.10	3.71
8723.00	89.540	164.790	5945.54	2712.24	-1853.28	2121.67	1759599.90	14606671.25	40°13'07.439"N	80°34'23.010"W	2817.11	131.137	0.73	-0.06	0.73
8816.00	89.380	167.900	5946.42	2799.87	-1943.63	2143.62	1759621.84	14606580.93	40°13'06.545"N	80°34'22.733"W	2893.58	132.199	3.35	-0.17	3.34
8908.00	88.950	167.770	5947.76	2885.75	-2033.56	2163.00	1759641.22	14606491.04	40°13'05.655"N	80°34'22.488"W	2968.83	133.233	0.49	-0.47	-0.14
9001.00	88.980	168.420	5949.44	2972.39	-2124.54	2182.19	1759660.39	14606400.09	40°13'04.755"N	80°34'22.247"W	3045.59	134.233	0.70	0.03	0.70
9094.00	88.950	167.170	5951.12	3059.21	-2215.42	2201.84	1759680.04	14606309.24	40°13'03.856"N	80°34'21.999"W	3123.49	135.176	1.34	-0.03	-1.34
9183.00	89.230	158.530	5952.53	3144.66	-2300.37	2228.06	1759706.25	14606224.33	40°13'03.016"N	80°34'21.666"W	3202.49	135.915	9.71	0.31	-9.71
9276.00	89.320	160.590	5953.71	3235.36	-2387.51	2260.53	1759738.71	14606137.23	40°13'02.153"N	80°34'21.253"W	3287.89	136.565	2.22	0.10	2.22
9369.00	89.690	163.060	5954.51	3325.18	-2475.86	2289.54	1759767.70	14606048.91	40°13'01.279"N	80°34'20.885"W	3372.22	137.239	2.69	0.40	2.66
9461.00	89.110	163.540	5955.48	3413.39	-2563.97	2315.97	1759794.13	14605960.83	40°13'00.407"N	80°34'20.549"W	3455.09	137.909	0.82	-0.63	0.52
9554.00	89.140	160.240	5956.90	3503.17	-2652.34	2344.88	1759823.02	14605872.49	40°12'59.532"N	80°34'20.182"W	3540.25	138.521	3.55	0.03	-3.55
9647.00	89.110	152.730	5958.32	3594.78	-2737.55	2381.95	1759860.08	14605787.32	40°12'58.688"N	80°34'19.710"W	3628.75	138.973	8.07	-0.03	-8.08
9739.00	88.980	150.560	5959.85	3686.43	-2818.49	2425.64	1759903.75	14605706.41	40°12'57.886"N	80°34'19.152"W	3718.55	139.284	2.36	-0.14	-2.36
9832.00	89.050	153.350	5961.45	3779.04	-2900.55	2469.35	1759947.45	14605624.38	40°12'57.073"N	80°34'18.593"W	3809.32	139.591	3.00	0.08	3.00
9925.00	89.080	161.890	5962.97	3870.29	-2986.46	2504.72	1759982.80	14605538.17	40°12'56.223"N	80°34'18.143"W	3897.76	140.014	9.18	0.03	9.18
10017.00	89.050	157.930	5964.48	3959.87	-3072.83	2536.31	1760014.38	14605452.51	40°12'55.368"N	80°34'17.741"W	3984.36	140.464	4.30	-0.03	-4.30
10110.00	89.230	156.300	5965.87	4051.35	-3158.52	2572.41	1760050.46	14605366.51	40°12'54.519"N	80°34'17.281"W	4073.52	140.839	1.67	0.19	-1.66
10203.00	89.260	162.760	5967.10	4142.00	-3245.63	2604.84	1760082.89	14605279.44	40°12'53.657"N	80°34'16.868"W	4161.64	141.251	6.85	0.03	6.85
10296.00	88.950	166.440	5968.55	4230.53	-3335.26	2629.53	1760107.57	14605189.84	40°12'52.770"N	80°34'16.556"W	4247.16	141.748	3.97	-0.33	3.96
10388.00	88.980	169.170	5970.21	4316.41	-3425.16	2648.96	1760126.99	14605099.97	40°12'51.881"N	80°34'16.311"W	4329.98	142.282	2.97	0.03	2.97
10481.00	88.950	167.690	5971.89	4402.85	-3516.25	2667.61	1760145.63	14605008.92	40°12'50.980"N	80°34'16.076"W	4413.64	142.814	1.59	-0.03	-1.59
10574.00	88.950	164.710	5973.60	4490.56	-3606.52	2689.79	1760167.80	14604918.66	40°12'50.086"N	80°34'15.796"W	4499.12	143.284	3.20	0.00	-3.20
10667.00	88.980	160.340	5975.28	4580.05	-3695.22	2717.70	1760195.70	14604830.02	40°12'49.209"N	80°34'15.441"W	4587.00	143.667	4.70	0.03	-4.70
10759.00	88.950	156.900	5976.94	4670.08	-3780.86	2751.23	1760229.22	14604744.41	40°12'48.361"N	80°34'15.015"W	4675.91	143.958	3.74	-0.03	-3.74
10852.00	88.950	156.980	5978.65	4761.62	-3866.41	2787.65	1760255.63	14604658.89	40°12'47.514"N	80°34'14.550"W	4766.57	144.209	0.09	0.00	0.09

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #210
SOUTHWESTERN ENERGY	Well	John Good Jr BRK 210H
Area	Wellbore	John Good Jr BRK 210H AWB
Field		
Facility		

WELLPATH DATA (131 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]
10945.00	88.770	158.150	5980.50	4852.97	-3952.35	2823.14	1760301.10	14604572.98	40°12'46.663"N	80°34'14.098"W	4857.08	144.462	1.27	-0.19	1.26
11038.00	88.740	159.580	5982.52	4943.89	-4039.08	2856.66	1760334.61	14604486.29	40°12'45.804"N	80°34'13.672"W	4947.19	144.730	1.54	-0.03	1.54
11130.00	88.680	162.050	5984.59	5033.13	-4125.94	2886.88	1760364.82	14604399.47	40°12'44.944"N	80°34'13.288"W	5035.62	145.020	2.68	-0.07	2.68
11223.00	88.650	162.540	5986.75	5122.74	-4214.51	2915.16	1760393.08	14604310.93	40°12'44.068"N	80°34'12.929"W	5124.47	145.329	0.53	-0.03	0.53
11316.00	88.740	161.020	5988.87	5212.56	-4302.82	2944.23	1760422.14	14604222.65	40°12'43.194"N	80°34'12.560"W	5213.71	145.618	1.64	0.10	-1.63
11409.00	89.080	162.010	5990.64	5302.50	-4391.00	2973.71	1760451.61	14604134.50	40°12'42.321"N	80°34'12.185"W	5303.19	145.893	1.13	0.37	1.06
11501.00	89.380	165.660	5991.88	5390.45	-4479.34	2999.32	1760477.21	14604046.20	40°12'41.447"N	80°34'11.861"W	5390.77	146.194	3.98	0.33	3.97
11594.00	89.290	165.470	5992.96	5478.51	-4569.40	3022.50	1760500.38	14603956.17	40°12'40.556"N	80°34'11.567"W	5478.59	146.517	0.23	-0.10	-0.20
11687.00	89.200	161.760	5994.18	5567.52	-4658.60	3048.72	1760526.60	14603867.01	40°12'39.673"N	80°34'11.235"W	5567.52	146.798	3.99	-0.10	-3.99
11737.00	89.290	159.930	5994.84	5616.02	-4705.83	3065.13	1760542.99	14603819.80	40°12'39.205"N	80°34'11.026"W	5616.03	146.922	3.66	0.18	-3.66
11761.00	89.290	159.930	5995.14	5639.40	-4728.37	3073.36	1760551.23	14603797.27	40°12'38.982"N	80°34'10.922"W	5639.42	146.977	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: John Good Jr BRK 210H AWB Ref Wellpath: John Good Jr BRK 210H AWP Proj: 11761'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
17.5in Open Hole	26.00	435.00	409.00	26.00	435.00	0.00	0.00	0.62	0.60
13.375in Casing Surface	26.00	415.00	389.00	26.00	415.00	0.00	0.00	0.71	0.63
12.25in Open Hole	435.00	1687.00	1252.00	435.00	1673.52	0.62	0.60	60.42	144.18
9.625in Casing Intermediate	26.00	1668.00	1642.00	26.00	1654.96	0.00	0.00	57.74	141.14
8.75in Open Hole	1687.00	5044.00	3357.00	1673.52	4888.08	60.42	144.18	662.21	889.54
8.5in Open Hole	5044.00	11761.00	6717.00	4888.08	5995.14	662.21	889.54	-4728.37	3073.36

REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #210
SOUTHWESTERN ENERGY	Well	John Good Jr BRK 210H
Area	Wellbore	John Good Jr BRK 210H AWB
Field		
Facility		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
John Good Jr N LL	5897.00	-19.01	-15.80	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr S LL	5897.00	-19.01	-15.80	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr SW LL	5897.00	-19.01	-15.80	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr BRK 210H LP Rev-2	5933.00	282.10	1368.08	1758846.60	14608805.80	40°13'28.576"N	80°34'32.593"W	point
John Good Jr BRK 210H BHL Rev-2	6003.00	-4727.09	3091.18	1760569.04	14603798.55	40°12'38.994"N	80°34'10.692"W	point

WELLPATH COMPOSITION - Ref Wellbore: John Good Jr BRK 210H AWB Ref Wellpath: John Good Jr BRK 210H AWP Proj: 11761'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	405.00	LOWSG EMS rev2 - Standard	01 MSS <17.5"> (196'-405')	John Good Jr BRK 210H AWB
405.00	1611.00	BHI NaviTrak (Axial)	02 APS EM <12.25"> (405')(510'-1611')	John Good Jr BRK 210H AWB
1611.00	4970.00	BHI NaviTrak (Axial)	03 APS EM <8.75"> (1611')(1720-4970')	John Good Jr BRK 210H AWB
4970.00	11737.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8.5"> (4970')(5106'-11737')	John Good Jr BRK 210H AWB
11737.00	11761.00	Blind Drilling (std)	Projection to bit	John Good Jr BRK 210H AWB

REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #210
Area	Brooke County, WV	Well	John Good Jr BRK 210H
Field	Brooke	Wellbore	John Good Jr BRK 210H AWB
Facility	John Good Jr BRK Pad		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
196.00	0.400	33.680	196.00	MSS <17.5"> (196'-405')
510.00	0.840	104.050	509.99	APS EM <12.25"> (405')(510'-1611')
1720.00	11.990	45.460	1705.79	APS EM <8.75"> (1611')(1720'-4970')
5106.00	15.350	42.650	4947.80	BH AT Curve <8.5"> (4970')(5106'-11737')
11761.00	89.290	159.930	5995.14	Projection to Bit

COMMENTS

Wellpath general comments
API: 47-009-00197-0000
Job#: 8708695
Rig: SDC-46
Duration: 09/01/17 - 09/07/17

Top Hole Latitude: 40°15'00"

10,937'

7,887'

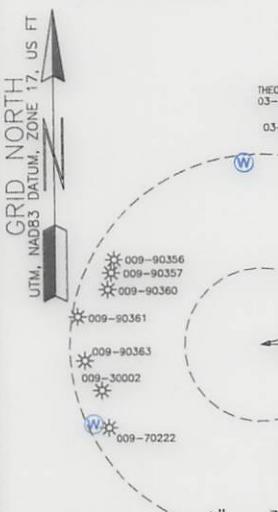
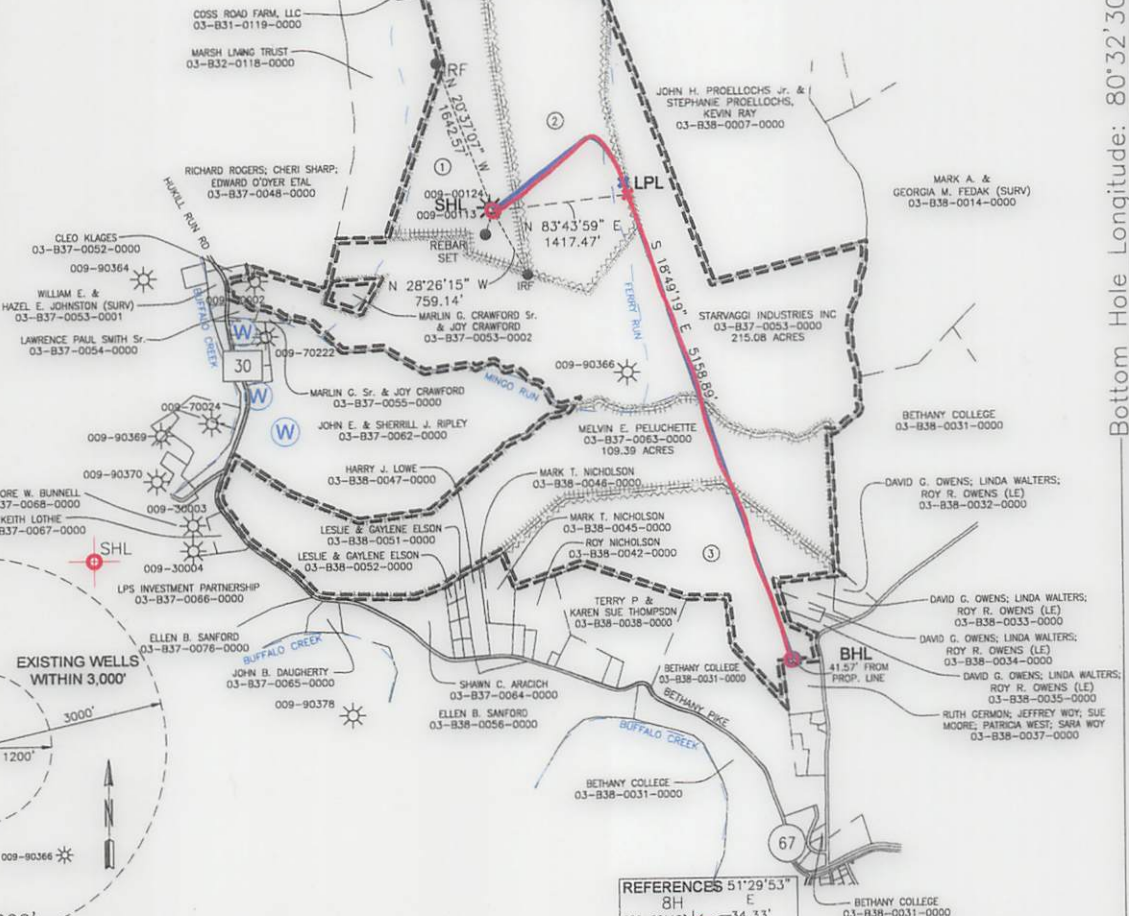
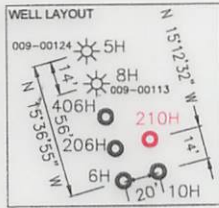
Bottom Hole Latitude: 40°15'00"

THRASHER

THE THRASHER GROUP, INC.
600 WHITE OAKS BLVD.
BRIDGEPORT, WV 26330
PHONE 304-624-4108

NOTES ON SURVEY

- COORDINATES SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
- SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND FIELD LOCATIONS.
- THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
- NO DWELLINGS AND BUILDINGS WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
- NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
- NO PERENNIAL STREAMS, LAKES, PONDS, RESERVOIRS OR WETLANDS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
- NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.

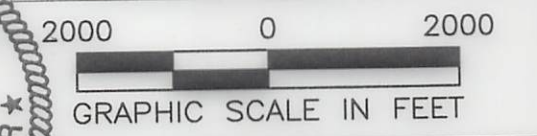
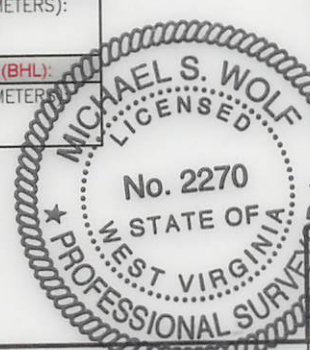


SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,687.216 EASTING: 535,680.908	SURFACE HOLE LOCATION (SHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,687.216 EASTING: 535,680.908
LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,772.913 EASTING: 536,097.516	LANDING POINT LOCATION (LPL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,734.124 EASTING: 536,110.150
BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,451,246.701 EASTING: 536,622.517	BOTTOM HOLE LOCATION (BHL): UTM (NAD83, ZONE 17, METERS): NORTHING: 4,451,245.777 EASTING: 536,617.463

TRACT	SURFACE OWNER	TAX PARCEL	ACRES
1	JOHN PRATHER GOOD III, TRUSTEE OF THE JOHN P. GOOD JR. IRREVOCABLE TRUST	03-B38-0001-0000	66.57
2	MARY JANE JACKSON	03-B33-0060-0000	89.784
3	ALLEN SCOTT JOHNSON, WARREN RAY JOHNSON, DEBORAH SUE CRAIG, VICTORIA LYNN OWENS, CHARLES LAWRENCE JOHNSON	03-B38-0034-0000	84.00

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2270 *[Signature]* 1/6/18



<p>(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS</p> <p>WVDEP OFFICE OF OIL & GAS 601 57TH STREET CHARLESTON, WV 25034</p>	MINIMUM DEGREE OF ACCURACY: 1/200 PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)	OPERATOR'S WELL #: JOHN GOOD JR BRK 210H API WELL #: 47 STATE COUNTY PERMIT
	WELL TYPE: OIL <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> PRODUCTION <input checked="" type="checkbox"/> DEEP <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> STORAGE <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	WATERSHED: BUFFALO CREEK DISTRICT: BUFFALO COUNTY: BROOKE SURFACE OWNER: JOHN P. GOOD III, TRUSTEE OF THE JOHN P GOOD JR IRREVOCABLE TRUST OIL & GAS ROYALTY OWNER: JOHN P GOOD JR
DRILL <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/>	CONVERT <input type="checkbox"/> PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/> OTHER CHANGE <input checked="" type="checkbox"/> (SPECIFY) AS-DRILLED	ESTIMATED DEPTH: 5,995 TVD 11,761 TMD
WELL OPERATOR: SWN PRODUCTION COMPANY, LLC ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	DESIGNATED AGENT: DEE SOUTHALL ADDRESS: P.O. BOX 1300 CITY: JANE LEW STATE: WV ZIP CODE: 26378	DATE: 01-08-2018