

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

RECEIVED  
Office of Oil and Gas

MAR 23 2018

WV Department of  
Environmental Protection

API 47 - 009 - 00188 County BROOKE District BUFFALO  
Quad BETHANY Pad Name JOHN GOOD JR BRK PAD Field/Pool Name PANHANDLE FIELD WET  
Farm name JOHN P. GOOD JR. IRREVOCABLE Well Number JOHN GOOD JR BRK 6H  
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 4,452,681.171 Easting 535,675.873  
Landing Point of Curve Northing 4,452,551.869 Easting 535,393.582  
Bottom Hole Northing 4,450,699.047 Easting 536,124.969

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

Date permit issued 3/29/2017 Date drilling commenced 6/22/17 Date drilling ceased 7/21/17  
Date completion activities began 11/13/17 Date completion activities ceased 1/9/18  
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. Miller* 5.10.18

Reviewed by:  
\_\_\_\_\_

API 47-009 - 00188 Farm name JOHN P. GOOD JR. IRREVOCABLE Well number JOHN GOOD JR BRK 6H

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	380	NEW	H-40/48#		Y, 15 BBLS
Coal	SEE SURFACE						
Intermediate 1	12.25	9.625	1660	NEW	J-55/36#		Y, 35 BBLS
Intermediate 2							
Intermediate 3							
Production	8.75/8.50	5.5	12966	NEW	HCP-110/20#		Y
Tubing		2.375	6258	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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	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	642	15.60	1.18	757.56	SURFACE	8
Intermediate 2							
Intermediate 3							
Production	CLASS A	2400	15.60	1.19	2856	SURFACE	24
Tubing							

Drillers TD (ft) 12966 Loggers TD (ft) 12966

Deepest formation penetrated MARCELLUS Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5292' MD

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 \_\_\_\_\_



API 47- 009 - 00188 Farm name JOHN P. GOOD JR. IRREVOCABLE Well number JOHN GOOD JR BRK 6H

PRODUCING FORMATION(S)	DEPTHS		
MARCELLUS	5867.49	TVD	6219.82 MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2307 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas 4031 mcfpd Oil 649 bpd NGL \_\_\_\_\_ bpd Water 767 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
	SEE	ATTACHMENT	3		

Please insert additional pages as applicable.

Drilling Contractor SWN DRILLING COMPANY  
Address PO BOX 12359 City SPRING State TX Zip 77391-2359

Logging Company BAKER HUGHES  
Address 9110 GROGANS MILL RD City THE WOODLANDS State TX Zip 77380

Cementing Company SCHLUMBERGER WELL SERVICES  
Address 110 SCHLUMBERGER DRIVE City SUGARLAND State TX Zip 77478

Stimulating Company HALLIBURTON ENERGY SERVICES  
Address 14851 MILNER ROAD, GATE 5A City HOUSTON State TX Zip 77032

Please insert additional pages as applicable.

Completed by Bobby Willis Telephone 832-796-2884  
Signature  Title Regulatory Analyst Date 3-21-18

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry



JOHN GOOD JR BRK 6H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
1	9/30/2017	12,747	12,848	42
2	11/14/2017	12,607	12,714	42
3	11/14/2017	12,467	12,574	42
4	11/15/2017	12,327	12,434	42
5	11/15/2017	12,187	12,294	42
6	11/15/2017	12,047	12,154	42
7	11/15/2017	11,907	12,014	42
8	11/16/2017	11,767	11,874	42
9	11/16/2017	11,627	11,734	42
10	11/16/2017	11,487	11,594	42
11	11/17/2017	11,347	11,454	42
12	11/17/2017	11,207	11,314	42
13	11/18/2017	11,067	11,174	42
14	11/18/2017	10,927	11,034	42
15	11/18/2017	10,787	10,894	42
16	11/19/2017	10,647	10,754	42
17	11/19/2017	10,507	10,614	42
18	11/20/2017	10,367	10,474	42
19	11/20/2017	10,227	10,334	42
20	11/20/2017	10,087	10,194	42
21	11/21/2017	9,947	10,054	42
22	11/21/2017	9,807	9,914	42
23	11/22/2017	9,667	9,774	42
24	11/22/2017	9,527	9,637	42
25	11/22/2017	9,387	9,494	42
26	11/23/2017	9,247	9,354	42
27	11/23/2017	9,107	9,214	42
28	11/23/2017	8,967	9,074	42
29	11/24/2017	8,827	8,934	42
30	11/24/2017	8,687	8,794	42
31	11/24/2017	8,547	8,654	42
32	11/24/2017	8,407	8,514	42
33	11/24/2017	8,267	8,374	42
34	11/24/2017	8,127	8,234	42
35	11/25/2017	7,987	8,094	42
36	11/25/2017	7,847	7,954	42
37	11/25/2017	7,707	7,814	42
38	11/25/2017	7,567	7,674	42
39	11/25/2017	7,427	7,534	42
40	11/25/2017	7,287	7,394	42
41	11/26/2017	7,147	7,254	42
42	11/26/2017	7,007	7,114	42
43	11/26/2017	6,867	6,968	42

JOHN GOOD JR BRK 6H

Perf Summary

Attachment 1

STAGE NUM	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG
44	11/26/2017	6,727	6,834	42
45	11/26/2017	6,587	6,694	42
46	11/26/2017	6,447	6,554	42
47	11/26/2017	6,307	6,414	42

JOHN GOOD JR BRK 6H

Stim Summary

Attachment 2

STAGE	Stim Date	Ave Pump	Ave	Max	ISIP (PSI)	Amount	Amount	Amount
1	11/14/2017	92	7,545	8,622	3,622	279,940	6,896	
2	11/14/2017	98	8,008	8,687	3,833	269,995	5,616	
3	11/14/2017	98	7,941	8,524	3,877	280,700	4,884	
4	11/15/2017	94	8,106	8,737	3,870	280,080	4,792	
5	11/15/2017	98	7,831	8,413	3,851	278,860	4,766	
6	11/15/2017	91	8,339	8,851	3,809	283,380	4,990	
7	11/15/2017	91	8,429	8,746	3,858	280,760	4,837	
8	11/16/2017	99	8,150	8,696	3,955	275,380	4,822	
9	11/16/2017	89	7,793	8,816	3,753	286,720	5,445	
10	11/17/2017	89	8,181	9,040	3,792	287,510	5,069	
11	11/17/2017	89	8,075	9,446	4,853	270,205	5,065	
12	11/17/2017	97	8,068	8,735	4,383	279,300	4,954	
13	11/18/2017	92	7,890	8,100	3,926	279,660	5,043	
14	11/18/2017	87	7,423	8,452	4,232	278,360	6,041	
15	11/19/2017	90	8,148	8,884	4,043	288,160	4,851	
16	11/19/2017	94	7,632	8,316	4,103	283,180	4,914	
17	11/19/2017	10	7,506	9,482	4,331	6,000	2,834	
18	11/20/2017	98	7,355	7,751	4,144	284,140	5,075	
19	11/20/2017	93	7,425	7,762	3,952	285,180	5,135	
20	11/21/2017	100	8,071	8,276	4,206	277,430	4,826	
21	11/21/2017	96	7,346	7,800	4,013	283,265	5,115	
22	11/21/2017	99	7,835	8,289	4,074	283,905	6,570	
23	11/22/2017	99	7,894	8,293	4,327	282,005	4,317	
24	11/22/2017	100	7,209	7,552	4,374	284,960	4,758	
25	11/22/2017	98	7,596	7,692	4,282	279,115	4,789	
26	11/23/2017	97	7,620	7,954	4,253	280,660	4,563	
27	11/23/2017	97	7,457	7,773	4,209	280,600	4,263	
28	11/24/2017	100	7,714	7,884	4,141	279,875	4,585	
29	11/24/2017	99	7,515	7,953	3,954	280,370	4,673	
30	11/24/2017	98	7,905	8,976	4,341	280,020	4,445	
31	11/24/2017	100	7,594	8,064	4,223	280,015	4,365	
32	11/24/2017	100	7,612	7,996	4,099	280,000	4,295	
33	11/24/2017	97	7,210	7,697	4,377	280,500	4,159	
34	11/25/2017	48	6,596	9,444	4,507	278,890	6,575	
35	11/25/2017	99	7,771	9,038	4,269	280,305	4,364	
36	11/25/2017	99	7,449	8,499	4,096	279,195	4,263	
37	11/25/2017	101	7,334	8,293	4,425	280,075	4,365	
38	11/25/2017	98	7,482	8,642	4,404	280,000	4,173	
39	11/25/2017	94	7,071	8,872	4,302	280,525	4,445	
40	11/25/2017	95	6,633	7,021	4,156	281,910	4,380	
41	11/26/2017	95	6,831	7,608	4,254	280,380	4,325	
42	11/26/2017	92	7,095	8,967	4,437	282,119	4,132	

JOHN GOOD JR BRK 6H

Stim Summary

Attachment 2

STAGE	Stim Date	Ave Pump	Ave	Max	ISIP (PSI)	Amount	Amount	Amount
43	11/26/2017	100	6,607	7,574	4,475	281,560	4,259	
44	11/26/2017	98	7,001	7,382	4,010	280,000	4,241	
45	11/26/2017	97	7,186	9,106	4,082	283,240	4,276	
46	11/26/2017	85	7,709	9,260	4,116	280,000	4,340	
47	11/26/2017	99	6,306	7,864	3,814	280,160	4,409	





Well Name: John Good Jr BRK 6H 47009001880000

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	1446.00	
Big Injun (ss)	1448.00	1446.00	1589.00	1585.00	
Berea (siltstone)	1932.00	1926.00	5459.00	5323.00	
Rhinestreet (shale)	5459.00	5323.00	5717.64	5560.53	
Cashaqua (shale)	5717.64	5560.53	5779.88	5614.07	
Middlesex (shale)	5779.88	5614.07	5863.83	5681.37	
Burket (shale)	5863.83	5681.37	5879.46	5693.05	
Tully (ls)	5879.46	5693.05	5960.64	5749.97	
Mahantango (shale)	5960.64	5749.97	6219.82	5867.49	
Marcellus (shale)	6219.82	5867.49	NA	NA	GAS

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/13/2017
Job End Date:	11/26/2017
State:	West Virginia
County:	Brooke
API Number:	47-009-00188-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	John Good Jr. BRK 6H
Latitude:	40.22379600
Longitude:	-80.58068000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	5,943
Total Base Water Volume (gal):	9,261,558
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	84.14447	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	1.60473	



SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant											
						Listed Below							
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant											
						Listed Below							
HYDROCHLORI C ACID	Halliburton	Solvent											
						Listed Below							
HAI-150E	Halliburton	Corrosion Inhibitor											
						Listed Below							
BIOC11219A	NALCO	Biocide											
						Listed Below							
SCAL16486A	NALCO	Scale Inhibitor											
						Listed Below							
FR-76	Halliburton	Friction Reducer											
						Listed Below							
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.													
					Crystalline silica, quartz	14808-60-7	100.00000	14.18812					
					Hydrochloric acid	7647-01-0	15.00000	0.23296					

			Acrylamide acrylate copolymer	Proprietary	30.00000	0.02583	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02583	
			Inorganic salt	Proprietary	30.00000	0.02583	
			Methanol	67-56-1	60.00000	0.01312	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium	68424-85-1	30.00000	0.00656	
			Glutaraldehyde	111-30-8	10.00000	0.00219	
			Amine Triphosphate	Proprietary	30.00000	0.00177	Bryan Hooton, Naico Champion, 7705 Highway 90-A Sugar Land, Texas 77478, 281-263-7000
			Ethylene Glycol	107-21-1	30.00000	0.00177	
			Non-hazardous food substance	Proprietary	100.00000	0.00047	

\* 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)

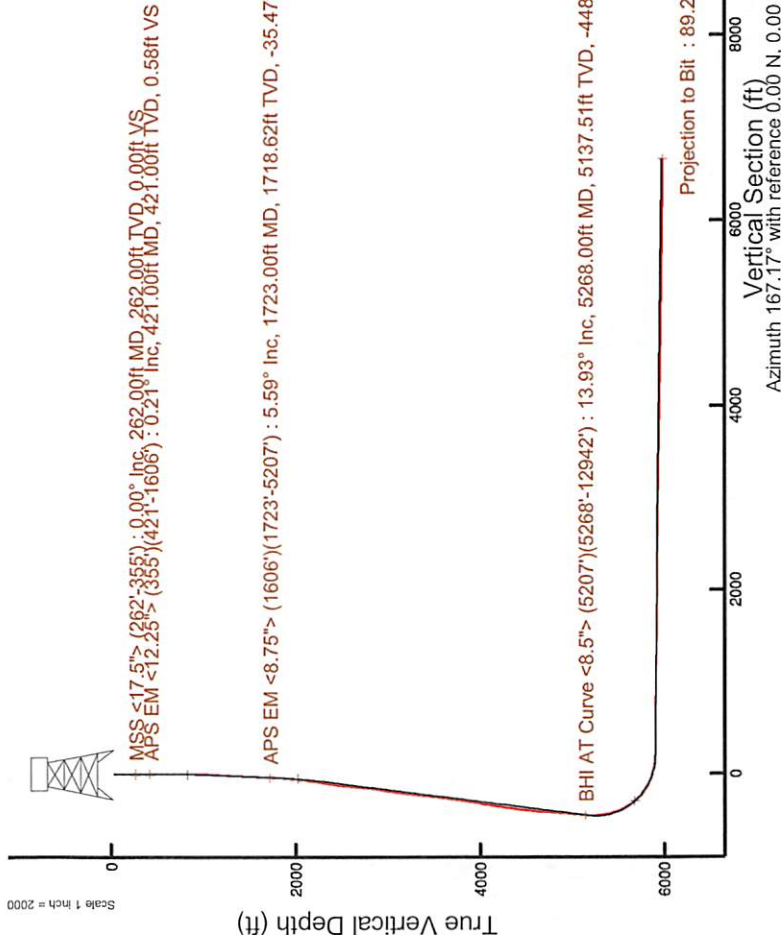
# SOUTHWESTERN ENERGY

Location: Brooke County, WV  
 Slot: Slot #06  
 Well: John Good Jr BRK 6H  
 Field: Brooke  
 Facility: John Good Jr BRK Pad Wellbore: John Good Jr BRK 6H PWB

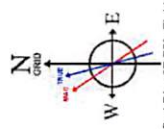
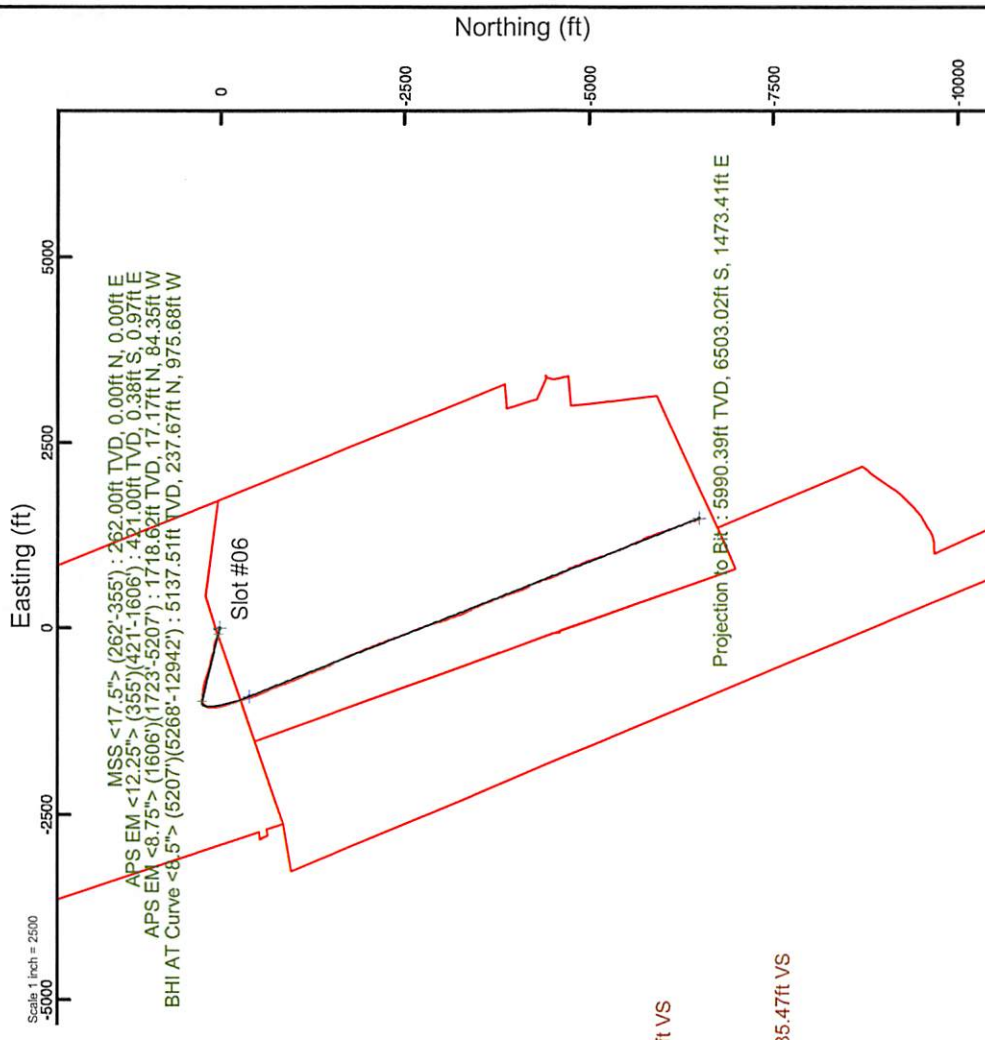
Plot reference wellpath is John Good Jr BRK 6H PWB Rev A.0 Grid System: NAD83 / UTM Zone 17 North, US feet  
 True vertical depths are referenced to SDC-46 (RKB) North Reference: Grid north  
 Measured depths are referenced to SDC-46 (RKB) Scale: True distance  
 SDC-46 (RKB) to Mean Sea Level: 1178.6 feet  
 Mean Sea Level to Ground level (At Slot: Slot #06): -1152.6 feet  
 Coordinates are in feet referenced to Slot Database: WA\_MPL\_EASTERNUS\_Dein

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
John Good Jr BRK Pad	1757463.232	14608504.851	80°34'50.452"W
Slot #06	Local N (ft)	Grid North (US ft)	Longitude
	0.03	1757463.260	80°34'50.452"W
SDC-46 (RKB) to Ground level (At Slot: Slot #06)	26ft		
Mean Sea Level to Ground level (At Slot: Slot #06)	-1152.6ft		
SDC-46 (RKB) to Mean Sea Level	1178.6ft		

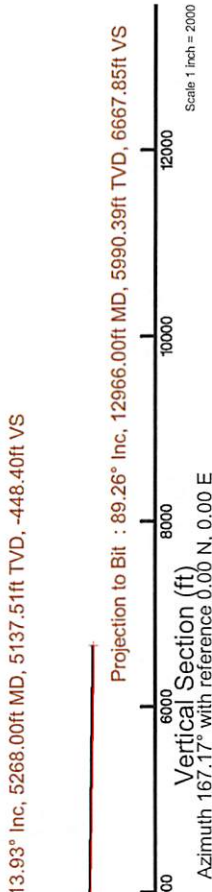
Well Profile Data								
Design Comment	MD (ft)	Az (°)	Inc (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	26.00	0.000	283.497	26.00	0.00	0.00	0.00	0.00
Start Nudge	700.00	0.000	283.497	700.00	0.00	0.00	0.00	0.00
End Nudge	950.00	5.000	283.497	949.68	2.54	-10.60	2.00	-4.83
Start Build	1753.37	5.000	283.497	1750.00	18.89	-78.69	0.00	-35.89
End Build	2313.59	16.204	283.496	2299.78	42.90	-178.75	2.00	-81.53
Curve KOP	5311.04	16.204	283.496	5178.15	238.13	-992.14	0.00	-452.49
Landing Point	6405.90	89.310	158.505	5897.00	-401.57	-921.88	9.00	186.84
Total Depth	12965.97	89.310	158.505	5976.00	-6504.96	1481.64	0.00	6671.56



API: 47-009-00188-0000  
 Job#: 8627635  
 Rig: SDC-46  
 Duration: 07/12/17 - 07/19/17



User specified Dip: 67.75° Field: 52721 nT  
 Magnetic North is 8.32 degrees West of True North (at 29 Jun 2017)  
 To correct azimuth from True North to Grid subtract 0.27 degrees  
 To correct azimuth from Magnetic to Grid subtract 8.59 degrees





## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H 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	24/Jul/2017 at 13:36
Convergence at slot	0.27° East	Database/Source file	WA_MPL_EASTERNUS_Defn/John_Good_Jr_BRK_6H_AWP_Proj_12966_.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-0.04	0.03	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"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 (RKB) to Facility Vertical Datum	26.00ft
Horizontal Reference Pt	Slot	SDC-46 (RKB) to Mean Sea Level	1178.60ft
Vertical Reference Pt	SDC-46 (RKB)	SDC-46 (RKB) to Ground Level at Slot (Slot #06)	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	167.17°





# Actual Wellpath Report

John Good Jr BRK 6H AWP Proj: 12966'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

## WELLPATH DATA (154 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	105.480	0.00	0.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	105.480	26.00	0.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	0.00	0.000	0.00	0.00	0.00
262.00	0.000	254.880	262.00	0.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	0.00	0.000	0.00	0.00	0.00
355.00	0.700	105.480	355.00	0.27	-0.15	0.55	1757463.81	14608504.66	40°13'25.664"N	80°34'50.445"W	0.57	105.480	0.75	0.75	113.42
421.00	0.210	165.590	421.00	0.58	-0.38	0.97	1757464.23	14608504.43	40°13'25.662"N	80°34'50.439"W	1.04	111.285	0.94	-0.74	91.08
514.00	0.380	167.820	513.99	1.06	-0.84	1.07	1757464.33	14608503.97	40°13'25.657"N	80°34'50.438"W	1.36	128.136	0.18	0.18	2.40
606.00	0.740	174.220	605.99	1.95	-1.73	1.20	1757464.46	14608503.08	40°13'25.648"N	80°34'50.436"W	2.11	145.336	0.40	0.39	6.96
699.00	0.930	236.640	698.98	2.82	-2.74	0.63	1757463.89	14608502.07	40°13'25.638"N	80°34'50.444"W	2.82	167.114	0.95	0.20	67.12
792.00	1.600	260.990	791.96	2.99	-3.36	-1.28	1757461.98	14608501.45	40°13'25.632"N	80°34'50.468"W	3.60	200.909	0.91	0.72	26.18
884.00	2.290	280.910	883.91	2.17	-3.22	-4.36	1757488.90	14608501.59	40°13'25.634"N	80°34'50.508"W	5.42	233.573	1.04	0.75	21.65
977.00	3.860	290.490	976.77	-0.30	-1.77	-9.12	1757454.15	14608503.04	40°13'25.649"N	80°34'50.569"W	9.29	259.018	1.77	1.69	10.30
1070.00	5.030	290.210	1069.49	-4.24	0.74	-15.87	1757447.39	14608505.55	40°13'25.674"N	80°34'50.656"W	15.89	272.653	1.26	1.26	-0.30
1163.00	5.950	289.130	1162.06	-9.02	3.72	-24.25	1757439.02	14608508.53	40°13'25.704"N	80°34'50.764"W	24.54	278.728	1.00	0.99	-1.16
1256.00	6.780	287.580	1254.49	-14.35	6.96	-34.04	1757429.23	14608511.77	40°13'25.736"N	80°34'50.890"W	34.75	281.557	0.91	0.89	-1.67
1348.00	7.350	286.140	1345.79	-19.95	10.24	-44.87	1757418.41	14608515.04	40°13'25.769"N	80°34'51.029"W	46.02	282.852	0.65	0.62	-1.57
1441.00	6.620	281.750	1438.10	-25.06	12.98	-55.83	1757407.45	14608517.79	40°13'25.796"N	80°34'51.171"W	57.32	283.090	0.97	-0.78	-4.72
1534.00	5.930	275.780	1530.54	-28.82	14.56	-65.86	1757397.42	14608519.36	40°13'25.813"N	80°34'51.300"W	67.45	282.464	1.02	-0.74	-6.42
1606.00	5.620	278.860	1602.18	-31.31	15.48	-73.05	1757390.24	14608520.28	40°13'25.822"N	80°34'51.392"W	74.67	281.962	0.61	-0.43	4.28
1723.00	5.590	278.150	1718.62	-35.47	17.17	-84.35	1757378.94	14608521.97	40°13'25.839"N	80°34'51.538"W	86.08	281.504	0.06	-0.03	-0.61
1816.00	7.220	285.580	1811.03	-39.87	19.38	-94.46	1757368.83	14608524.18	40°13'25.861"N	80°34'51.668"W	96.43	281.593	1.96	1.75	7.99
1909.00	8.650	286.970	1903.14	-46.13	22.99	-106.78	1757356.52	14608527.79	40°13'25.898"N	80°34'51.827"W	109.23	282.150	1.55	1.54	1.49
2002.00	9.060	287.500	1995.03	-53.30	27.23	-120.45	1757342.85	14608532.03	40°13'25.940"N	80°34'52.003"W	123.49	282.739	0.45	0.44	0.57
2095.00	10.880	291.300	2086.63	-61.92	32.62	-135.62	1757327.70	14608537.42	40°13'25.994"N	80°34'52.198"W	139.48	283.526	2.08	1.96	4.09
2187.00	13.700	296.210	2176.51	-73.66	40.59	-153.48	1757309.84	14608545.38	40°13'26.074"N	80°34'52.428"W	158.76	284.813	3.27	3.07	5.34
2280.00	15.380	292.920	2266.53	-87.80	50.26	-174.73	1757288.60	14608555.05	40°13'26.170"N	80°34'52.701"W	181.81	286.047	2.01	1.81	-3.54
2373.00	16.520	287.990	2355.95	-101.77	59.13	-198.67	1757264.67	14608563.92	40°13'26.259"N	80°34'53.009"W	207.28	286.575	1.92	1.23	-5.38
2465.00	17.530	281.530	2443.93	-114.17	65.92	-224.69	1757238.66	14608570.71	40°13'26.328"N	80°34'53.344"W	234.16	286.352	2.31	1.10	-6.95
2558.00	16.430	278.880	2532.87	-124.82	70.76	-251.41	1757211.95	14608575.54	40°13'26.377"N	80°34'53.688"W	261.18	285.718	1.45	-1.18	-2.85
2650.00	15.220	277.160	2621.39	-133.76	74.27	-276.25	1757187.12	14608579.05	40°13'26.412"N	80°34'54.008"W	286.06	285.048	1.41	-1.32	-1.87
2743.00	14.580	279.490	2711.26	-142.38	77.72	-299.91	1757163.47	14608582.50	40°13'26.448"N	80°34'54.313"W	309.81	284.529	0.94	-0.69	2.51



# Actual Wellpath Report

John Good Jr BRK 6H AWP Proj: 12966'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

## WELLPATH DATA (154 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]
2839.00	15.580	285.800	2803.96	-153.14	83.22	-324.23	1757139.15	14608588.00	40°13'26.503"N	80°34'54.626"W	334.74	284.396	2.00	1.04	6.57
2932.00	16.840	289.550	2893.26	-166.34	91.13	-348.94	1757114.45	14608595.91	40°13'26.582"N	80°34'54.945"W	360.65	284.637	1.76	1.35	4.03
3025.00	16.860	288.770	2882.27	-180.62	99.98	-374.41	1757089.00	14608604.75	40°13'26.671"N	80°34'55.272"W	387.53	284.951	0.24	0.02	-0.84
3117.00	17.220	284.270	3070.23	-193.82	107.63	-400.24	1757063.17	14608612.40	40°13'26.748"N	80°34'55.605"W	414.46	285.051	1.49	0.39	-4.89
3210.00	17.050	280.580	3159.11	-205.51	113.53	-426.88	1757036.44	14608618.29	40°13'26.807"N	80°34'55.949"W	441.82	284.889	1.18	-0.18	-3.97
3303.00	16.080	279.320	3248.25	-215.78	118.12	-453.10	1757010.34	14608622.88	40°13'26.854"N	80°34'56.286"W	468.24	284.611	1.11	-1.04	-1.35
3396.00	14.960	278.710	3337.86	-225.04	122.02	-477.67	1756985.77	14608626.78	40°13'26.894"N	80°34'56.602"W	493.01	284.330	1.22	-1.20	-0.66
3488.00	15.120	281.490	3426.71	-234.35	126.21	-501.17	1756962.29	14608630.97	40°13'26.936"N	80°34'56.905"W	516.82	284.135	0.80	0.17	3.02
3581.00	16.280	286.010	3516.24	-245.63	132.22	-525.59	1756937.88	14608636.98	40°13'26.997"N	80°34'57.219"W	541.96	284.121	1.81	1.25	4.86
3674.00	16.200	287.300	3605.53	-258.43	139.67	-560.50	1756912.97	14608644.43	40°13'27.071"N	80°34'57.540"W	567.94	284.237	0.40	-0.09	1.39
3767.00	15.810	286.990	3694.92	-271.24	147.23	-575.00	1756888.48	14608651.99	40°13'27.147"N	80°34'57.855"W	593.55	284.362	0.43	-0.42	-0.33
3859.00	14.300	286.490	3783.76	-283.04	154.12	-597.89	1756865.60	14608658.87	40°13'27.216"N	80°34'58.150"W	617.43	284.455	1.65	-1.64	-0.54
3952.00	14.580	289.950	3873.83	-295.00	161.37	-619.90	1756843.60	14608666.12	40°13'27.289"N	80°34'58.433"W	640.56	284.591	0.98	0.30	3.72
4044.00	17.030	292.970	3962.34	-309.15	170.58	-643.20	1756820.31	14608675.33	40°13'27.381"N	80°34'58.733"W	665.43	284.854	2.81	2.66	3.28
4137.00	18.370	291.120	4050.94	-325.30	181.18	-669.41	1756794.11	14608685.92	40°13'27.487"N	80°34'59.070"W	693.49	285.145	1.56	1.44	-1.99
4230.00	18.980	287.020	4139.05	-341.02	190.89	-697.54	1756765.99	14608695.62	40°13'27.584"N	80°34'59.433"W	723.19	285.305	1.56	0.66	-4.41
4326.00	18.580	283.930	4229.94	-355.67	199.14	-727.31	1756736.23	14608703.87	40°13'27.667"N	80°34'59.816"W	754.08	285.312	1.12	-0.42	-3.22
4418.00	17.210	282.960	4317.48	-368.19	205.72	-754.80	1756708.75	14608710.45	40°13'27.734"N	80°35'00.170"W	782.33	285.246	1.52	-1.49	-1.05
4511.00	16.100	281.050	4406.58	-379.40	211.28	-780.87	1756682.69	14608716.01	40°13'27.790"N	80°35'00.506"W	808.94	285.140	1.33	-1.19	-2.05
4604.00	15.280	280.800	4496.12	-389.53	216.05	-805.56	1756658.01	14608720.77	40°13'27.838"N	80°35'00.824"W	834.03	285.013	0.88	-0.88	-0.27
4697.00	15.490	278.110	4585.78	-398.88	220.09	-829.89	1756633.69	14608724.82	40°13'27.879"N	80°35'01.137"W	858.58	284.853	0.80	0.23	-2.89
4789.00	14.960	273.690	4674.56	-406.65	222.59	-853.91	1756609.68	14608727.32	40°13'27.905"N	80°35'01.446"W	882.44	284.610	1.39	-0.58	-4.80
4882.00	16.100	277.070	4764.16	-414.45	224.95	-878.68	1756584.92	14608729.67	40°13'27.929"N	80°35'01.766"W	907.02	284.360	1.56	1.23	3.63
4975.00	15.280	272.910	4853.70	-422.17	227.16	-903.72	1756559.89	14608731.88	40°13'27.952"N	80°35'02.088"W	931.83	284.110	1.50	-0.88	-4.47
5068.00	14.350	277.260	4943.61	-429.45	229.24	-927.39	1756536.23	14608733.96	40°13'27.974"N	80°35'02.399"W	955.31	283.884	1.56	-1.00	4.68
5160.00	14.200	280.610	5032.77	-437.86	232.76	-949.79	1756513.83	14608737.48	40°13'28.010"N	80°35'02.682"W	977.90	283.770	0.91	-0.16	3.64
5207.00	14.200	281.490	5078.33	-442.52	234.97	-961.11	1756502.82	14608739.69	40°13'28.032"N	80°35'02.828"W	989.41	283.738	0.46	0.00	1.87
5268.00	13.930	279.540	5137.51	-448.40	237.67	-975.68	1756487.95	14608742.39	40°13'28.060"N	80°35'03.015"W	1004.21	283.691	0.89	-0.44	-3.20
5314.00	13.110	269.970	5182.24	-451.66	238.59	-986.36	1756477.28	14608743.31	40°13'28.069"N	80°35'03.153"W	1014.81	283.598	5.17	-1.78	-20.80
5360.00	14.110	248.650	5226.97	-451.99	236.54	-996.81	1756466.84	14608741.26	40°13'28.049"N	80°35'03.288"W	1024.49	283.349	11.06	2.17	-46.35



## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

## WELLPATH DATA (154 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]
5407.00	15.000	237.950	5272.47	-449.14	231.23	-1007.30	1756456.35	14608735.95	40°13'27.997"N	80°35'03.423"W	1033.50	282.928	6.02	1.89	-22.77
5453.00	15.610	229.130	5316.85	-444.27	224.02	-1017.03	1756446.63	14608728.74	40°13'27.927"N	80°35'03.549"W	1041.41	282.422	5.23	1.33	-19.17
5499.00	17.770	221.720	5360.91	-437.28	214.73	-1026.38	1756437.28	14608719.46	40°13'27.835"N	80°35'03.670"W	1048.60	281.816	6.58	4.70	-16.11
5546.00	20.790	218.050	5405.27	-427.86	202.80	-1036.30	1756427.36	14608707.54	40°13'27.718"N	80°35'03.799"W	1055.96	281.073	6.92	6.43	-7.81
5592.00	23.680	211.840	5447.85	-416.14	188.52	-1046.21	1756417.46	14608693.26	40°13'27.577"N	80°35'03.928"W	1063.06	280.215	8.09	6.28	-13.50
5638.00	25.510	201.510	5489.70	-401.38	171.45	-1054.72	1756408.95	14608676.19	40°13'27.409"N	80°35'04.038"W	1068.56	279.233	10.14	3.98	-22.46
5685.00	27.220	190.860	5531.83	-383.17	151.46	-1060.46	1756403.21	14608656.22	40°13'27.212"N	80°35'04.114"W	1071.22	278.129	10.68	3.64	-22.66
5731.00	29.710	183.650	5572.28	-362.59	129.75	-1063.16	1756400.51	14608634.51	40°13'26.997"N	80°35'04.150"W	1071.05	276.958	9.22	5.41	-15.67
5778.00	32.500	179.170	5612.52	-339.07	105.49	-1063.72	1756399.95	14608610.26	40°13'26.757"N	80°35'04.158"W	1068.94	275.664	7.71	5.94	-9.53
5824.00	36.660	176.570	5650.39	-313.42	79.41	-1062.72	1756400.95	14608584.19	40°13'26.500"N	80°35'04.147"W	1065.69	274.274	9.59	9.04	-5.65
5870.00	41.180	174.060	5686.17	-284.82	50.63	-1060.33	1756403.34	14608555.42	40°13'26.215"N	80°35'04.118"W	1061.54	272.734	10.41	9.83	-5.46
5917.00	45.380	170.370	5720.39	-252.74	18.73	-1055.93	1756407.74	14608523.53	40°13'25.900"N	80°35'04.063"W	1056.10	271.016	10.43	8.94	-7.85
5963.00	49.230	168.140	5751.58	-218.96	-14.48	-1049.61	1756414.06	14608490.34	40°13'25.571"N	80°35'03.984"W	1049.71	269.210	9.10	8.37	-4.85
6010.00	54.840	166.180	5780.48	-181.92	-50.58	-1041.35	1756422.31	14608454.25	40°13'25.214"N	80°35'03.880"W	1042.58	267.219	12.38	11.94	-4.17
6056.00	59.800	164.450	5805.31	-143.24	-88.02	-1031.53	1756432.13	14608416.83	40°13'24.844"N	80°35'03.755"W	1035.28	265.123	11.24	10.78	-3.76
6102.00	65.010	163.460	5826.61	-102.55	-127.18	-1020.26	1756443.40	14608377.68	40°13'24.456"N	80°35'03.612"W	1028.15	262.894	11.49	11.33	-2.15
6149.00	69.220	163.290	5844.88	-59.36	-168.66	-1007.87	1756455.78	14608336.22	40°13'24.046"N	80°35'03.455"W	1021.88	260.500	8.96	8.96	-0.36
6192.00	71.540	163.170	5859.32	-18.95	-207.44	-996.18	1756467.46	14608297.45	40°13'23.662"N	80°35'03.307"W	1017.55	258.237	5.40	5.40	-0.28
6238.00	74.310	162.950	5872.83	24.90	-249.50	-983.37	1756480.27	14608255.41	40°13'23.246"N	80°35'03.144"W	1014.53	255.763	6.04	6.02	-0.48
6284.00	78.730	161.790	5883.55	69.47	-292.12	-969.82	1756493.81	14608212.81	40°13'22.824"N	80°35'02.972"W	1012.86	253.237	9.92	9.61	-2.52
6331.00	82.970	161.210	5891.02	115.63	-336.11	-955.10	1756508.53	14608168.83	40°13'22.389"N	80°35'02.785"W	1012.52	250.612	9.10	9.02	-1.23
6424.00	89.450	162.410	5897.16	207.97	-424.22	-926.15	1756537.47	14608080.75	40°13'21.517"N	80°35'02.417"W	1018.69	245.390	7.09	6.97	1.29
6516.00	89.510	161.170	5898.00	299.56	-511.61	-897.40	1756566.20	14607993.40	40°13'20.652"N	80°35'02.052"W	1033.00	240.313	1.35	0.07	-1.35
6609.00	89.110	156.640	5899.12	391.56	-598.35	-863.94	1756599.65	14607906.69	40°13'19.793"N	80°35'01.626"W	1050.91	235.294	4.89	-0.43	-4.87
6702.00	89.170	154.490	5900.52	482.65	-683.00	-825.48	1756638.10	14607822.07	40°13'18.955"N	80°35'01.135"W	1071.41	230.396	2.31	0.06	-2.31
6794.00	89.630	159.810	5901.48	573.21	-767.75	-789.77	1756673.80	14607737.36	40°13'18.116"N	80°35'00.680"W	1101.44	225.810	5.80	0.50	5.78
6887.00	89.570	160.720	5902.13	665.53	-865.28	-758.37	1756705.19	14607649.86	40°13'17.249"N	80°35'00.280"W	1143.08	221.563	0.98	-0.06	0.98
6979.00	89.510	159.510	5902.87	756.83	-941.79	-727.08	1756736.46	14607563.38	40°13'16.393"N	80°34'59.882"W	1189.80	217.669	1.32	-0.07	-1.32
7072.00	89.050	155.180	5904.04	848.43	-1027.59	-691.27	1756772.26	14607477.62	40°13'15.543"N	80°34'59.425"W	1238.46	213.929	4.68	-0.49	-4.66
7165.00	88.890	155.260	5905.71	939.40	-1112.01	-652.29	1756811.22	14607393.23	40°13'14.707"N	80°34'58.928"W	1289.21	210.395	0.19	-0.17	0.09





# Actual Wellpath Report

John Good Jr BRK 6H AWP Proj: 12966'

Page 5 of 9



## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

## WELLPATH DATA (154 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]
7258.00	88.800	161.480	5907.59	1031.24	-1198.40	-618.04	1756845.46	14607306.87	40°13'13.852"N	80°34'58.492"W	1348.39	207.281	6.69	-0.10	6.69
7350.00	88.710	158.750	5909.58	1122.52	-1284.89	-586.75	1756876.73	14607220.42	40°13'12.996"N	80°34'58.094"W	1412.52	204.544	2.97	-0.10	-2.97
7443.00	88.620	157.170	5911.75	1214.29	-1371.07	-551.87	1756911.61	14607134.27	40°13'12.143"N	80°34'57.649"W	1477.97	201.925	1.70	-0.10	-1.70
7536.00	88.580	155.720	5914.02	1305.64	-1456.29	-514.71	1756948.75	14607049.08	40°13'11.299"N	80°34'57.175"W	1544.58	199.465	1.56	-0.04	-1.56
7629.00	88.680	156.510	5916.25	1396.88	-1541.30	-477.07	1756986.38	14606964.10	40°13'10.457"N	80°34'56.695"W	1613.45	197.198	0.86	0.11	0.86
7722.00	89.170	154.700	5917.99	1487.98	-1625.98	-438.66	1757024.76	14606879.46	40°13'09.618"N	80°34'56.205"W	1684.11	195.098	2.02	0.53	-1.95
7814.00	89.140	156.290	5919.35	1578.06	-1709.68	-400.51	1757062.90	14606795.79	40°13'08.789"N	80°34'55.719"W	1755.97	193.184	1.73	-0.03	1.73
7907.00	89.080	160.820	5920.79	1669.98	-1796.21	-366.52	1757096.88	14606709.29	40°13'07.933"N	80°34'55.286"W	1833.22	191.533	4.87	-0.06	4.87
8000.00	89.170	158.210	5922.21	1762.13	-1883.31	-333.98	1757129.41	14606622.23	40°13'07.071"N	80°34'54.872"W	1912.70	190.056	2.81	0.10	-2.81
8092.00	89.510	155.890	5923.27	1852.68	-1968.02	-298.11	1757165.26	14606537.55	40°13'06.232"N	80°34'54.414"W	1990.47	188.614	2.55	0.37	-2.52
8185.00	89.570	157.670	5924.02	1944.15	-2053.48	-261.45	1757201.91	14606452.12	40°13'05.386"N	80°34'53.947"W	2070.06	187.256	1.92	0.06	1.91
8278.00	89.450	158.840	5924.82	2036.02	-2139.86	-227.00	1757236.35	14606366.78	40°13'04.530"N	80°34'53.508"W	2151.86	186.055	1.26	-0.13	1.26
8371.00	89.510	158.760	5925.66	2128.03	-2226.56	-193.37	1757269.97	14606279.11	40°13'03.672"N	80°34'53.080"W	2234.94	184.963	0.11	0.06	-0.09
8464.00	89.660	162.620	5926.33	2220.42	-2314.31	-162.62	1757300.70	14606191.40	40°13'02.804"N	80°34'52.689"W	2320.01	184.019	4.15	0.16	4.15
8556.00	89.570	160.230	5926.95	2311.94	-2401.51	-133.32	1757329.99	14606104.23	40°13'01.941"N	80°34'52.316"W	2405.20	183.177	2.60	-0.10	-2.60
8649.00	89.230	157.510	5927.93	2403.96	-2488.24	-99.80	1757363.50	14606017.53	40°13'01.082"N	80°34'51.890"W	2490.24	182.297	2.95	-0.37	-2.92
8742.00	89.170	157.380	5929.23	2495.61	-2574.12	-64.13	1757399.16	14605931.69	40°13'00.232"N	80°34'51.435"W	2574.92	181.427	0.15	-0.06	-0.14
8835.00	89.200	157.440	5930.55	2587.26	-2659.98	-28.41	1757434.86	14605845.86	40°12'59.381"N	80°34'50.980"W	2660.13	180.612	0.07	0.03	0.06
8928.00	89.140	158.630	5931.90	2679.07	-2746.21	6.37	1757469.63	14605759.66	40°12'58.528"N	80°34'50.537"W	2746.22	179.867	1.28	-0.06	1.28
9021.00	89.200	162.050	5933.24	2771.38	-2833.77	37.65	1757500.90	14605672.13	40°12'57.661"N	80°34'50.139"W	2834.02	179.239	3.68	0.06	3.68
9113.00	89.200	163.470	5934.53	2863.10	-2921.63	64.92	1757528.15	14605584.31	40°12'56.792"N	80°34'49.793"W	2922.35	178.727	1.54	0.00	1.54
9206.00	89.350	161.270	5935.70	2955.76	-3010.25	93.08	1757556.30	14605495.73	40°12'55.914"N	80°34'49.435"W	3011.68	178.229	2.37	0.16	-2.37
9299.00	89.350	159.660	5936.76	3048.11	-3097.88	124.17	1757587.39	14605408.12	40°12'55.047"N	80°34'49.040"W	3100.37	177.705	1.73	0.00	-1.73
9392.00	89.420	161.310	5937.76	3140.47	-3185.53	155.24	1757618.44	14605320.51	40°12'54.179"N	80°34'48.645"W	3189.31	177.210	1.78	0.08	1.77
9485.00	89.420	156.810	5938.70	3232.51	-3272.86	188.47	1757651.65	14605233.71	40°12'53.320"N	80°34'48.222"W	3277.79	176.704	4.84	0.00	-4.84
9578.00	89.080	154.240	5939.92	3323.58	-3356.99	226.99	1757690.16	14605149.11	40°12'52.482"N	80°34'47.743"W	3364.66	176.132	2.79	-0.37	-2.76
9670.00	88.890	156.700	5941.55	3413.65	-3440.67	265.17	1757728.33	14605065.47	40°12'51.653"N	80°34'47.243"W	3450.87	175.593	2.68	-0.21	2.67
9763.00	88.800	158.060	5943.42	3505.28	-3526.50	300.94	1757764.08	14604979.68	40°12'50.803"N	80°34'46.787"W	3539.31	175.122	1.47	-0.10	1.46
9856.00	88.800	157.550	5945.37	3597.02	-3612.59	336.06	1757799.19	14604893.62	40°12'49.951"N	80°34'46.340"W	3628.18	174.685	0.55	0.00	-0.55
9948.00	88.890	157.460	5947.22	3687.69	-3697.57	371.25	1757834.37	14604808.67	40°12'49.109"N	80°34'45.892"W	3716.16	174.266	0.14	0.10	-0.10



## REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

## WELLPATH DATA (154 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]
10041.00	88.920	159.380	5949.00	3779.59	-3784.03	405.45	1757868.55	14604722.24	40°12'48.253"N	80°34'45.456"W	3805.69	173.884	2.06	0.03	2.06
10134.00	89.050	160.470	5950.65	3871.83	-3871.37	437.37	1757900.46	14604634.94	40°12'47.389"N	80°34'45.050"W	3895.99	173.554	1.18	0.14	1.17
10227.00	89.050	161.380	5952.19	3964.27	-3959.25	467.75	1757930.83	14604547.09	40°12'46.519"N	80°34'44.664"W	3986.78	173.262	0.98	0.00	0.98
10319.00	89.020	161.370	5953.74	4055.78	-4046.42	497.13	1757960.20	14604459.96	40°12'45.656"N	80°34'44.290"W	4076.84	172.996	0.03	-0.03	-0.01
10412.00	89.020	155.830	5955.33	4147.69	-4132.96	531.05	1757994.10	14604373.45	40°12'44.800"N	80°34'43.858"W	4166.93	172.678	5.96	0.00	-5.96
10505.00	89.110	153.020	5956.85	4238.38	-4216.83	571.19	1758034.23	14604289.61	40°12'43.969"N	80°34'43.346"W	4255.33	172.286	3.02	0.10	-3.02
10598.00	89.020	156.490	5958.37	4329.18	-4300.92	610.84	1758073.86	14604205.55	40°12'43.136"N	80°34'42.840"W	4344.08	171.917	3.73	-0.10	3.73
10691.00	88.950	162.720	5960.02	4421.31	-4388.03	643.23	1758106.24	14604118.47	40°12'42.274"N	80°34'42.428"W	4434.93	171.661	6.70	-0.08	6.70
10783.00	89.140	162.840	5961.55	4513.03	-4475.90	670.46	1758133.46	14604030.64	40°12'41.404"N	80°34'42.082"W	4525.83	171.481	0.24	0.21	0.13
10876.00	89.020	155.630	5963.05	4605.07	-4562.79	703.41	1758166.39	14603943.79	40°12'40.544"N	80°34'41.663"W	4616.69	171.236	7.75	-0.13	-7.75
10969.00	88.920	153.420	5964.72	4695.79	-4646.73	743.40	1758206.37	14603859.88	40°12'39.713"N	80°34'41.153"W	4705.82	170.911	2.38	-0.11	-2.38
11062.00	89.450	151.550	5966.04	4785.74	-4729.19	786.35	1758249.31	14603777.44	40°12'38.896"N	80°34'40.604"W	4794.12	170.559	2.09	0.57	-2.01
11155.00	89.570	157.050	5966.84	4876.36	-4812.96	826.67	1758289.61	14603693.71	40°12'38.066"N	80°34'40.090"W	4883.44	170.254	5.92	0.13	5.91
11247.00	89.050	156.440	5967.94	4966.84	-4897.48	862.99	1758325.92	14603609.22	40°12'37.229"N	80°34'39.627"W	4972.93	170.006	0.87	-0.57	-0.66
11340.00	89.050	159.900	5969.46	5058.67	-4983.78	897.56	1758360.47	14603522.95	40°12'36.375"N	80°34'39.186"W	5063.96	169.791	3.72	0.03	3.72
11433.00	88.990	161.300	5971.04	5151.04	-5071.49	928.45	1758391.35	14603435.28	40°12'35.506"N	80°34'38.794"W	5155.78	169.626	1.51	-0.11	1.51
11526.00	89.320	161.580	5972.42	5243.57	-5159.64	958.05	1758420.94	14603347.16	40°12'34.634"N	80°34'38.418"W	5247.83	169.481	0.47	0.37	0.30
11619.00	89.290	159.990	5973.54	5335.98	-5247.45	988.65	1758451.53	14603259.38	40°12'33.765"N	80°34'38.029"W	5339.77	169.330	1.71	-0.03	-1.71
11712.00	89.280	159.340	5974.72	5428.17	-5334.65	1020.97	1758483.83	14603172.22	40°12'32.902"N	80°34'37.617"W	5431.47	169.166	0.70	-0.03	-0.70
11804.00	89.290	158.760	5975.89	5519.24	-5420.56	1053.86	1758516.71	14603086.34	40°12'32.051"N	80°34'37.199"W	5522.05	168.998	0.63	0.03	-0.63
11897.00	89.320	155.790	5977.01	5610.84	-5506.32	1089.78	1758552.62	14603000.61	40°12'31.202"N	80°34'36.741"W	5613.13	168.805	3.19	0.03	-3.19
11990.00	89.230	158.420	5978.19	5702.40	-5591.98	1125.95	1758588.78	14602914.99	40°12'30.354"N	80°34'36.280"W	5704.21	168.616	2.83	-0.10	2.83
12083.00	89.290	156.210	5979.39	5794.01	-5677.78	1161.81	1758624.63	14602829.23	40°12'29.504"N	80°34'35.823"W	5795.43	168.436	2.38	0.06	-2.38
12175.00	89.280	154.460	5980.56	5884.05	-5761.37	1200.27	1758663.00	14602745.66	40°12'28.676"N	80°34'35.334"W	5885.06	168.233	1.90	-0.03	-1.90
12265.00	89.320	156.180	5981.67	5972.12	-5843.14	1237.78	1758700.56	14602663.93	40°12'27.867"N	80°34'34.854"W	5972.81	168.040	1.91	0.07	1.91
12358.00	89.260	161.930	5982.83	6064.14	-5929.95	1271.01	1758733.77	14602577.17	40°12'27.007"N	80°34'34.431"W	6064.64	167.902	6.18	-0.06	6.18
12451.00	89.320	162.300	5983.98	6156.77	-6018.45	1299.56	1758762.32	14602488.68	40°12'26.131"N	80°34'34.069"W	6157.16	167.815	0.40	0.06	0.40
12544.00	89.350	160.280	5985.06	6249.27	-6106.53	1329.39	1758792.14	14602400.64	40°12'25.259"N	80°34'33.690"W	6249.56	167.718	2.17	0.03	-2.17
12636.00	89.170	158.230	5986.25	6340.38	-6192.55	1361.98	1758824.71	14602314.65	40°12'24.408"N	80°34'33.275"W	6340.56	167.596	2.24	-0.20	-2.23
12729.00	89.320	159.160	5987.47	6432.36	-6279.19	1395.76	1758858.48	14602228.05	40°12'23.550"N	80°34'32.845"W	6432.44	167.468	1.01	0.16	1.00



### REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

### WELLPATH DATA (154 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]
12822.00	89.260	163.240	5988.62	6524.83	-6367.20	1425.73	1758888.43	14602140.07	40°12'22.679"N	80°34'32.464"W	6524.87	167.379	4.39	-0.06	4.39
12915.00	89.350	159.550	5989.75	6617.33	-6455.32	1455.39	1758918.09	14602051.99	40°12'21.807"N	80°34'32.087"W	6617.35	167.295	3.97	0.10	-3.97
12942.00	89.260	159.220	5990.08	6644.08	-6480.59	1464.89	1758927.59	14602026.73	40°12'21.557"N	80°34'31.966"W	6644.09	167.263	1.27	-0.33	-1.22
12966.00	89.260	159.220	5990.39	6667.85	-6503.02	1473.41	1758936.10	14602004.30	40°12'21.335"N	80°34'31.858"W	6667.85	167.234	0.00	0.00	0.00

### HOLE & CASING SECTIONS - Ref Wellbore: John Good Jr BRK 6H AWB Ref Wellpath: John Good Jr BRK 6H AWP Proj: 12966'

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	400.00	374.00	26.00	400.00	0.00	0.00	-0.30	0.91
13.375in Casing Surface	26.00	380.00	354.00	26.00	380.00	0.00	0.00	-0.23	0.79
12.25in Open Hole	400.00	1680.00	1280.00	400.00	1675.82	-0.30	0.91	16.56	-80.20
9.625in Casing Intermediate	26.00	1661.00	1635.00	26.00	1656.91	0.00	0.00	16.29	-78.36
8.75in Open Hole	1680.00	5281.00	3601.00	1675.82	5150.13	16.56	-80.20	238.12	-978.75
8.5in Open Hole	5281.00	12966.00	7685.00	5150.13	5990.39	238.12	-978.75	-6503.02	1473.41

### REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

### TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
John Good Jr BRK 6H LP Rev-4	5897.00	-401.57	-921.88	1756541.74	14608103.39	40°13'21.740"N	80°35'02.361"W	point
John Good Jr N LL	5897.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr S LL	5897.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr SW LL	5897.00	0.00	0.00	1757463.26	14608504.81	40°13'25.666"N	80°34'50.452"W	polygon
John Good Jr BRK 6H BHL Rev-2	5976.00	-6504.96	1481.64	1758944.33	14602002.36	40°12'21.315"N	80°34'31.752"W	point

### WELLPATH COMPOSITION - Ref Wellbore: John Good Jr BRK 6H AWB Ref Wellpath: John Good Jr BRK 6H AWP Proj: 12966'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	355.00	OWSG EMS rev2 + HRGM	01_MSS <17.5"> (262'-355')	John Good Jr BRK 6H AWB
355.00	1606.00	BHI NaviTrak (Axial)	02_APS EM <12.25"> (355')(42.1'-1606')	John Good Jr BRK 6H AWB
1606.00	5207.00	BHI NaviTrak (Axial)	03_APS EM <8.75"> (1606')(1723'-5207')	John Good Jr BRK 6H AWB
5207.00	12942.00	BHI AutoTrak Curve (Short)	04_BHI AT Curve <8.5"> (5207')(5268'-12942')	John Good Jr BRK 6H AWB
12942.00	12966.00	Blind Drilling (std)	Projection to bit	John Good Jr BRK 6H AWB



### REFERENCE WELLPATH IDENTIFICATION

Operator	SOUTHWESTERN ENERGY	Slot	Slot #06
Area	Brooke County, WV	Well	John Good Jr BRK 6H
Field	Brooke	Wellbore	John Good Jr BRK 6H AWB
Facility	John Good Jr BRK Pad		

### WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
262.00	0.000	254.880	262.00	MSS <17.5"> (262'-355')
421.00	0.210	165.590	421.00	APS EM <12.25"> (355')(421'-1606')
1723.00	5.590	278.150	1718.62	APS EM <8.75"> (1606')(1723'-5207')
5268.00	13.930	279.540	5137.51	BHI AT Curve <8.5"> (5207')(5268'-12942')
12966.00	89.260	159.220	5990.39	Projection to Bit

### COMMENTS

Wellpath general comments  
 API: 47-009-00188-0000  
 Job#: 8627635  
 Rig: SDC-46  
 Duration: 07/12/17 - 07/19/17



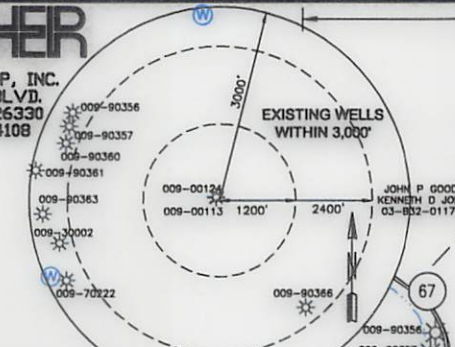
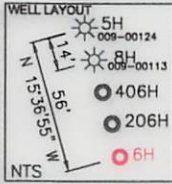
Top Hole Latitude: 40°15'00"

10953'

Bottom Hole Latitude: 40°15'00"-9512'

# THRASHER

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



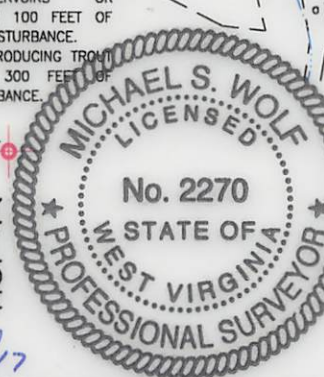
<b>SURFACE HOLE LOCATION (SHL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,681.171 EASTING: 535,675.873
<b>LANDING POINT LOCATION (LPL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,551.869 EASTING: 535,393.582
<b>BOTTOM HOLE LOCATION (BHL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,699.047 EASTING: 536,124.969

TRACT	ADJOINER	TAX PARCEL
A	JOHN PRATHER GOOD III & LAURE THOMAS	03-832-0119-0000
B	JOHN PRATHER GOOD JR. IRREVOCABLE TRUST	03-833-0057-0000
C	DAVID G. OWENS & LINDA WALTERS	03-838-0032-0000
D	DAVID G. OWENS & LINDA WALTERS	03-838-0033-0000
E	DAVID G. OWENS & LINDA WALTERS	03-838-0034-0000
F	DAVID G. OWENS & LINDA WALTERS	03-838-0035-0000
G	RUTH GERSON, JEFFREY WOY, SUE MOORE, PATRICIA WEST & SARA WOY	03-838-0037-0000
H	GEORGE SCOTT RICE	03-838-0038-0000
I	BRIAN CORWIN	03-843-0026-0000
J	MARY WELLS CHAMBERS	03-843-0012-0000
K	MARY WELLS CHAMBERS	03-843-0013-0000
L	WINDSOR POWER HOUSE COAL CO	03-843-0015-0000
M	MARY W. CHAMBERS	03-843-0014-0000
N	WINDSOR POWER HOUSE COAL CO	03-843-0016-0000
O	WINDSOR POWER HOUSE COAL CO	03-842-0048-0000
P	JOHN B. DAUGHERTY	03-837-0065-0000
Q	SHAWN C. ARACH	03-837-0066-0000
R	JAMES ALAN HAZLETT AND JO ELLEN HAZLETT, HUSBAND AND WIFE	03-843-0064-0000
S	LESLIE & GAYLENE ELSON	03-838-0055-0000
T	LESLIE & GAYLENE ELSON	03-838-0048-0000
U	HARRY J. LOWE	03-838-0047-0000
V	WILLIAM F. & MARY FOHNER	03-838-0044-0000
W	MATTHEW T. NICHOLSON	03-838-0043-0000
X	MARK T. & KIMBERLY J. NICHOLSON	03-838-0042-0000
Y	ROY T. NICHOLSON	03-838-0041-0000
Z	MARK T. NICHOLSON	03-838-0045-0000
AA	MARK T. NICHOLSON	03-838-0046-0000
AB	LESLIE & GAYLENE ELSON	03-838-0051-0000
AC	LESLIE & GAYLENE ELSON	03-838-0052-0000
AD	KEITH LOTHIE	03-837-0067-0000
AE	THEODORE W. BUNNELL	03-837-0068-0000
AF	WILLIAM E. JOHNSTON & HAZEL E. JOHNSTON	03-837-0073-0000
AG	WILLIAM E. JOHNSTON & HAZEL E. JOHNSTON	03-837-0069-0000
AH	JOSEPH K. BOHMAN, SR. & CLORA J. BOHMAN	03-837-0069-0001
AI	JOSEPH K. BOHMAN, SR. & CLORA J. BOHMAN	03-837-0070-0000
AJ	MARLIN C. CRAWFORD SR & JOY CRAWFORD	03-837-0055-0000
AK	ERVAN COWAN, RICHARD COWAN, DIANE E. DIGHT, JOY TENNANT	03-837-0056-0000
AL	JEREMY S. PERSINGER	03-837-0057-0000
AM	TRAVIS FOLEN	03-837-0059-0000
AN	JOHN E. RIPLEY & SHERRILL J. RIPLEY	03-837-0081-0000
AO	MARLIN C. CRAWFORD SR & JOY CRAWFORD	03-837-0053-0007
AP	MARLIN C. CRAWFORD SR & JOY CRAWFORD	03-837-0055-0000
AQ	LAWRENCE PAUL SMITH, SR.	03-837-0054-0000
AR	WILLIAM E. & HAZEL E. JOHNSTON	03-837-0053-0001
AS	CLED KLAGES	03-837-0052-0000
AT	LLOYD M. MENHA & ALICE MENHA	03-832-0125-0000
AU	BRADFORD L. JONES & SHARON E. SKYDER	03-832-0123-0000
AV	TRAVIS A. MILLER	03-832-0122-0000
AW	CRAG & COURTNEY HAMELKA	03-832-0121-0000
AX	PENNY MARIE STUMPF	03-838-0057-0000

1" = 3000'

### 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 TROUGH STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.



<b>SURFACE HOLE LOCATION (SHL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,681.171 EASTING: 535,675.873
<b>LANDING POINT LOCATION (LPL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,452,558.818 EASTING: 535,394.993
<b>BOTTOM HOLE LOCATION (BHL):</b>
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,450,699.995 EASTING: 536,127.118

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 *M.S. Wolf* 8/23/17



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE OF SURVEY GRADE GPS ELEVATION: (NAVD 88, US FT)

COMPANY: **SWN** Production Company, LLC

**SWN** Production Company™

WELL TYPE: OIL  WASTE DISPOSAL  PRODUCTION  DEEP  GAS  LIQUID INJECTION  STORAGE  SHALLOW

WATERSHED: BUFFALO CREEK ELEVATION: 1152.6'

DISTRICT: BUFFALO COUNTY: BROOKE QUADRANGLE: BETHANY

SURFACE OWNER: JOHN P. GOOD III, TRUSTEE OF THE JOHN P GOOD JR IRREVOCABLE TRUST ACREAGE: 66.57

OIL & GAS ROYALTY OWNER: JOHN P GOOD JR ACREAGE: 66.57

DRILL  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION

CONVERT  PLUG & ABANDON  CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: 5,990' TVD 12,966' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 CITY: JANE LEW STATE: WV ZIP CODE: 26378

<b>LEGEND:</b>	○ PROPOSED SURFACE HOLE / BOTTOM HOLE	— SURVEYED BOUNDARY
☼ EXISTING / PRODUCING WELLHEAD	— DRILLING UNIT	— LEASE BOUNDARY
LPL* LANDING POINT LOCATION	— PROPOSED PATH	— AS-DRILLED PATH
⊙ EXISTING WATER WELL		
⊕ EXISTING SPRING		

<b>REVISIONS:</b>	DATE: 08-18-2017
	DRAWN BY: R. DOERR
	SCALE: 1" = 2000'
	DRAWING NO: 050-5700
	WELL LOCATION PLAT