



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for MIKE RYNIAWEC BRK 3H
47-009-00237-00-00

Add Expected Void

SWN PRODUCTION COMPANY, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.


James A. Martin
Chief

Operator's Well Number: MIKE RYNIAWEC BRK 3H
Farm Name: MIKE RYNIAWEC
U.S. WELL NUMBER: 47-009-00237-00-00
Horizontal 6A / New Drill
Date Issued: 2/16/2018

Promoting a healthy environment.

02/16/2018

WW-6B
(10/14)

API NO. 47-008 - 00237
OPERATOR WELL NO. Mike Ryniawec BRK 3H
Well Pad Name: Mike Ryniawec PAD

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: SWN Production Co., LLC 49447757 009-Brooke 3- Buffalo 247-Bethany
Operator ID County District Quadrangle

2) Operator's Well Number: Mike Ryniawec BRK 3H Well Pad Name: Mike Ryniawec PAD

3) Farm Name/Surface Owner: Mike Ryniawec Public Road Access: Lazear Run Road

4) Elevation, current ground: 1147' Elevation, proposed post-construction: 1147'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No yes

C. [Signature] 2-15-18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 5910', Target Base TVD- 5951', Anticipated Thickness- 41', Associated Pressure- 3868

8) Proposed Total Vertical Depth: 5940'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17040'

11) Proposed Horizontal Leg Length: 10755.2'

12) Approximate Fresh Water Strata Depths: 346'

13) Method to Determine Fresh Water Depths: Salinity Profile

14) Approximate Saltwater Depths: 645'

15) Approximate Coal Seam Depths: 342'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 342'

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

WW-6B
(10/14)

API NO. 47-009 -
OPERATOR WELL NO. Mike Ryniawec BRK3H
Well Pad Name: Mike Ryniawec PAD

18)

CASING AND TUBING PROGRAM

47009002

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft./CTS)
Conductor	20"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	H-40	48#	426'	426'	415 sx/CTS
Coal	9 5/8"	New	J-55	36#	1691'	1691'	650 sx/CTS
Intermediate	7"	New	J-55	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	HCP-110	20#	17040'	17040'	Local 750sx to 2650sx 100' inside 750sx
Tubing	2 3/8"	New	HCP-110	4.7#	Approx. 5940'	Approx. 5940'	
Liners							

C. BLO 2-15-18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	30"	0.25	2120	81	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	633	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	3250	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			
Sizes:	5 1/2"			
Depths Set:				