



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

Monday, April 1, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for YOCUM MSH 205H
47-051-02125-00-00

Changing type of production casing.

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: YOCUM MSH 205H
Farm Name: JOSEPH LEE AND MICHAEL D. YOCUM
U.S. WELL NUMBER: 47-051-02125-00-00
Horizontal 6A New Drill
Date Modification Issued: April 1, 2019

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-~~51~~ - ~~5125~~ ²¹²⁵ 04/05/2019
OPERATOR WELL NO. Yocum MSH 205H
Well Pad Name: Yocum MSH 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 494512924 051-Marshall 07-Liberty 438-Littleton
Operator ID County District Quadrangle

2) Operator's Well Number: Yocum MSH 205H Well Pad Name: Yocum MSH Pad

3) Farm Name/Surface Owner: Joseph Lee & Michael D. Yocum Public Road Access: Amos Hollow Road

4) Elevation, current ground: 1052' Elevation, proposed post-construction: 1052'

5) Well Type (a) Gas Oil Underground Storage
Other _____
(b) If Gas Shallow Deep _____
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Up-Dip Well to The North, Target Top TVD- 7067', Target Base TVD- 7104', Anticipated Thickness- 37', Associated Pressure- 4618

8) Proposed Total Vertical Depth: 7085'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 21,015'

11) Proposed Horizontal Leg Length: 13342.39'

12) Approximate Fresh Water Strata Depths: 438'

13) Method to Determine Fresh Water Depths: Deepest water well ID'd is Vellekoop, Peter V (depth of 180 T, subsea elevation of 642'), equating to 438' TVD at the pad. Logs for salinity analysis planned.

14) Approximate Saltwater Depths: 895' Depth is based on mapping the elevations of the Pottsville sandstone in the surrounding area. Logs will be run on the 1st well on the pad for salinity analysis.

15) Approximate Coal Seam Depths: 844'

16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.

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: _____

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WW-6B
(04/15)

51 2125
04/05/2019

API NO. 47-~~009~~ -
OPERATOR WELL NO. Yocum MSH 205H
Well Pad Name: Yocum MSH Pad

18) CASING AND TUBING PROGRAM

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	J-55	54.5#	538'	538'	506 sx/CTS
Coal	See	Interm	Casing				
Intermediate	9 5/8"	New	J-55	36#	2549'	2549'	936 sx/CTS
Production	5 1/2"	New	HP-110	23#	0'	7701'	Lead 504sx/Tail 3550sx/100 inside interval
Tubing	5 1/2"	New	HP-110	20#	7701'	21,015'	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal 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	See	Interm	Casing				
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/50% Excess
Tubing							
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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MAR 26 2019

