west virginia department of environmental protection

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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

May 18, 2015

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 773914954

Re: Permit Modification Approval for API Number 6900186, Well #: ALICE EDGE OHI 10H

Modify weight and grade of 5 1/2" casing

Oil and Gas Operator:
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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

4706900186

swn
Southwestern Energy®

PO Box 1300
Jane Lew, WV 26378
PHONE: (832) 796-1610

May 18, 2015

Ms. Melanie Hankins
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Proposed New Well Alice Edge OHI 6H, Alice Edge OHI 10H, and Alice Edge OHI 210H

Dear Ms. Hankins:

Enclosed please find modifications for the above captioned wells. We would like to change the weight and grade on the 5 ½" casing. These wells are situated on the Edge's property, in Liberty District, Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1614

Thank you.

Sincerely,

Dee Southall
Regulatory Supervisor
Southwestern Energy Production Company, LLC
PO Box 1300
Jane Lew, WV 26378

$\frac{R^2}{A} \rightarrow V+$®

The Right People doing the Right Things, wisely Investing the cash flow from our underlying Assets, will create Value+

4706900186

WW-6B
(10/14)

API NO. 47- 69 - 00186 ab
OPERATOR WELL NO. Alice Edge OHI 10H
Well Pad Name: Alice Edge OHI 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 (Operator ID) | 69- Ohio (County) | 3- Liberty (District) | 648- Valley Grove (Quadrangle)

2) Operator's Well Number: Alice Edge OHI 10H Well Pad Name: Alice Edge OHI Pad

3) Farm Name/Surface Owner: Alice Mae Edge Public Road Access: State Route 40

4) Elevation, current ground: 1198' Elevation, proposed post-construction: 1198'

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

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 6373', Target Base TVD- 6393', Anticipated Thickness- 20, Associated Pressure- 4176

8) Proposed Total Vertical Depth: 6383'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,800'

11) Proposed Horizontal Leg Length: 7303'

12) Approximate Fresh Water Strata Depths: 425'

13) Method to Determine Fresh Water Depths: from log analysis and nearby water wells

14) Approximate Saltwater Depths: 1050'

15) Approximate Coal Seam Depths: 580'

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 x No ____

(a) If Yes, provide Mine Info: Name: Tunnel Ridge
Depth: 558'
Seam: Pittsburgh #8
Owner: Tunnel Ridge

Received
MAY 11 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

4706900186

WW-6B
(10/14)

API NO. 47- 69 - 00186 EB
OPERATOR WELL NO. Alice Edge OHI 10H
Well Pad Name: Alice Edge OHI 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	F-25	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	630'	630'	545 sx/CTS
Coal	9 5/8"	New	J-55	40#	2113'	2113'	777 sx/CTS
Intermediate	7"	New	HCP-110	20#	If Needed	If Needed	If Needed/As Needed
Production	5 1/2"	New	P-110RY	23#	14,800'	14,800'	[illegible]
Tubing	2 3/8'	New	P-110	4.7#	Approx. 7019'	Approx. 7019'	
Liners							

Changed this from 20#
Approved by Eric Bland 5/8/15 E.B.

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	0.020	Class A	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	0.020	Class A	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	0.020	Class A	1.19/50% Excess
Intermediate	7"	8 3/4"	0.317	4360	0.020	Class A	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	0.020	Class A	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190				
Liners							

PACKERS

Kind:	10K Arrowset AS1-X			Received
Sizes:	5 1/2"			
Depths Set:				MAY 11 2015

Office of Oil and Gas
WV Dept. of Environmental Protection