



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

Friday, March 20, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for FRANZ THOMAN OHI 605H
47-069-00314-00-00

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: FRANZ THOMAN OHI 605H
Farm Name: FRANZ THOMAN
U.S. WELL NUMBER: 47-069-00314-00-00
Horizontal 6A New Drill
Date Modification Issued: 3/19/20

Promoting a healthy environment.

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 069-Ohio 4-Richland 641-Tiltonsville
Operator ID County District Quadrangle

2) Operator's Well Number: Franz Thoman OHI 605H Well Pad Name: Franz Thoman PAD

3) Farm Name/Surface Owner: Franz Thoman Public Road Access: Cherry Hill Road CR 3


4) Elevation, current ground: 1138' Elevation, proposed post-construction: 1140'

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

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No No 

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- 5842', Target Base TVD- 5897', Anticipated Thickness- 55', Associated Pressure- 3833

8) Proposed Total Vertical Depth: 5881'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 25,626'

11) Proposed Horizontal Leg Length: 18,538.52'

12) Approximate Fresh Water Strata Depths: 326'

13) Method to Determine Fresh Water Depths: Determined to be minimum casing depth required by DEP, no nearby water wells, logs will be run on 1st well on pad.

14) Approximate Saltwater Depths: 470' salinity profile

15) Approximate Coal Seam Depths: 343'

16) Approximate Depth to Possible Void (coal mine, karst, other): Possible Void 343'

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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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	J-55	94#	126'	126'	CTS
Fresh Water	13 3/8"	New	J-55	54.4#	400'	400'	394 sx/CTS
Coal	See	Surface	Casing				
Intermediate	9 5/8"	New	J-55	36#	1747'	1747'	547 sx/CTS
Production	5 1/2"	New	P-110 HP	20#	25,626'	25,626'	Tail 4692sx inside intermediate
Tubing							
Liners							

[Signature] 2-4-20

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	Surface	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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WV Department of
Environmental Protection

Southwestern Energy Company

Proposed Drilling Program

Well: FRANZ THOMAN OHI 605
 Field: PANHANDLE FIELD \\
 County: OHIO
 SHL: 40.1366 Latitude -80.6598 Longitude
 BHL: 40.1910 Latitude -80.6699 Longitude
 KB Elev: 1,164 ft MSL KB: 26 ft AGL

Re-entry Rig: SDC 40
 Prospect: Marcellus Shale
 State: WV
 GL Elev: 1,138 ft MSL



C. Hall
 2-4-20

Coal Void at 343'

PROD TOC Lead @ 1,767' MD

PROD TOC Tail @ 5,021' MD

TUBULAR DETAIL

Casing String	Casing Size (in)	Weight (Min)	Grade (Min)	Planned Interval	
				From	To
Conductor	20	94.0 #	J-55	0'	126'
Surface	13.375	54.4 #	J-55	0'	400'
Intermediate	9.625	36.0 #	J-55	0'	1,747'
Production	5.5	20.0 #	P-110 HP	0'	25,626'

126' to 425'
Air/Mist

425' to 1,767'
Air/Mist

1,767' to 5,992'
Air/Mist

CEMENT DETAIL

	Sacks	Class	Density
Conductor:	151	A	19.3
Surface:	394	A	15.6
Intermediate:	547	A	15.6
Production:	4692	A	15.6

TD at 5,992'

5,992' to 7,192'
12.0-12.5 ppg

KOP at 5,992' MD

Freshwater Depth - 326' TVD
 Coal Void Depth - 343' TVD
 Saltwater Depth - 470' TVD
 TVD - 5,881'
 TMD - 25,626'

TD at 25,626' MD
 5,881' TVD

5,881' Target Center

EOB at 7,192' MD

SHL Onondaga 5,897' TVD

Onondaga 5,897' TVD

7,192' to 25,626'
12.5-13.5 ppg

February 6, 2020

Ms. Laura Adkins
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

RE: Proposed Modifications: Franz Thoman OHI 5H, 205H, 605H, 405H *KIC*

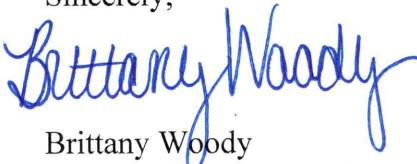
Dear Ms. Adkins

Enclosed please find the updated 6B & casing program for the above captioned wells. While drilling, we encountered an unexpected void and had to modify the surface casing to reflect this. Eric Blend, the DEP inspector for this county was notified and he signed off on the attached pages. These wells are situated on the Thoman's property, in Richland District, Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1613

Thank you.

Sincerely,



Brittany Woody
Senior Regulatory Analyst
Southwestern Energy Production Company, LLC

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